

# NEONATOLOGY TODAY

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in Neonatal and Perinatal Medicine



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## Guidelines for Management of Infants Delivered during the COVID-19 Pandemic in the USA and "Across the Pond"

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Loma Linda, CA 92354  
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*Spedale*

# Guidelines for Management of Infants Delivered during the COVID-19 Pandemic in the USA and "Across the Pond"

Ahmed Afifi, MBBCH, MSc, David Corcoran MD, Allison C. Walker, MD, Alexandra Adamczak, M.D., T. Allen Merritt, MD, Jan Mazela, MD, PhD, Thomas A. Clarke, MD

The COVID-19 pandemic has brought unprecedented contemporary challenges to the delivery of health care to pregnant women and their infants. The World Health Organization (1), and the Centers for Disease Control and Prevention (2), and the American Academy of Pediatrics (3) have issued guidelines regarding mother-infant-postpartum care if a mother is COVID-19 positive and emphasize the importance of a model of shared decision making between mother, health care providers, and family members regarding the need for separation of mothers and infants while they are in the hospital. The guidelines from the American Academy of Pediatrics have been undergoing revision with the latest update provided on May 21, 2020. Key guidance focuses on the use of delayed-cord clamping and that "there is no reason why the infant should not have the benefits of delayed cord clamping and skin-to-skin contact after delivery." The amended guidance acknowledges that "experts are divided" regarding rooming-in for mothers. "While difficult to separate mother and infant, this is the safest action, at least temporarily," as they may provide the mother time to become less infectious," and the goal is not to separate a family from its newborn." The American Academy of Pediatrics strongly supports breastfeeding as "to date, breast milk is considered to be an unlikely course of transmission of SARS-CoV-2 and encourages mothers who are COVID-19 positive to express breastmilk after appropriate hygiene which may be fed to the infant by an un-infected caregiver. If mothers prefer to nurse their infant, they should follow strict preventive precautions. Early hospital discharge is discouraged, and frequent post-discharge follow is recommended. Guidance for visitation to the NICU is that mothers and partners who are COVID-10 positive or persons under investigation should not enter the NICU until their status is resolved. ([www.aapnews.org](http://www.aapnews.org) May 21, 2020).

The initial Chinese response and guidance regarding neonatal management during the Coronavirus (COVID-19) outbreak was reported by Ma and coworkers from Wuhan, China (4), in May 2020. In the April edition, Neonatology Today featured management guidelines for the SARS-CoV-2 virus in Ontario, Canada (5). However, there are some important differences in these guidelines, and there has been some "push back" from some groups regarding the duration of maternal-infant separation, restrictions on mother's caring for their infant, including breastfeeding, or the exclusive use of expressed breast milk rather than breastfeeding using some personal protective equipment (PPE). Obstetricians, midwives, nurses, neonatologists and paediatricians attending deliveries are performing procedures that are associated with aerosolization of infant respiratory secretions and maternal blood and/or vaginal secretions that pose hazards to those providing care for mothers and their infants. Furthermore, suggested changes in "Neonatal Resuscitation Where the Mother Has a Suspected or Confirmed case of COVID-19" in terms of neonatologist

use of personal protective equipment and safety for healthcare workers and management of mothers in Italy were published by Trevisanuto et al. (6) and Ng et al. in Hong Kong (7). The American Heart Association and the American Association of Critical Care Nurses have recently published interim guidelines regarding neonatal resuscitation and support of children and neonates with suspected or confirmed COVID-19 (8)

*"The American Heart Association and the American Association of Critical Care Nurses have recently published interim guidelines regarding neonatal resuscitation and support of children and neonates with suspected or confirmed COVID-19 (8)"*

Current data support the limited vertical transmission of COVID-19 via the placenta with the greatest risk associated with maternal blood and aerosolized secretions occurring at the time of birth or immediately afterward. Two recent reports from China found no clinical findings or investigations suggestive of COVID 19 in neonates born to affected mothers, and all samples, including amniotic fluid, cord blood, and breast milk, were negative for SARS-CoV-2, the vertical maternal-fetal transmission cannot be ruled out. (6,7) Zeng et al. reported that 3 of 33 infants presented with early-onset SARS-COV-2 infection even when strict infection control measures were taken during delivery. The authors conclude that the likely sources of the infant's infection were of maternal origin (9).

In the Republic of Ireland had 25, 163 confirmed cases of COVID-19 with 1670 deaths (6.6%), Northern Ireland 4776 cases with 535 deaths (11.2%) while in Poland 25410 cases and 1137 deaths (4.4%) reported as of June 5, 2020 (<https://www.statista.com/statistics/1043366/novel-coronavirsu-2019nov-cases-worldwidebycounty.html>). Other countries in Europe face similar challenges with the exponential rise of cases in Italy, Spain and Germany during April 2020. Neonatology Today, co-editors in Ireland and Poland have shared their guidelines for the management of infants in Ireland, Belfast, Northern Ireland, and Poland during this worldwide pandemic.

## Ireland

Ireland has 19 maternity hospital departments and nurseries, and in Ireland, the Institute of Obstetricians and Gynaecologists of the Royal College of Physicians of Ireland outlined recommendations for Neonatal Management for Maternal and Neonatal Manage-

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ment (11). These guidelines for Neonatal Management are summarized as steps to be taken at Delivery and Policies in the Neonatal Nursery Unit, and Discharge Home. These are summarized as follows (please note spellings conform with this guideline).

**Delivery:** The neonatal team should be informed of plans to deliver the baby of a woman affected by COVID-19 infection, as far in advance as possible and should also be given sufficient notice at the time of birth, to allow them to attend and don PPE before entering the room/theatre. However, COVID-19 infection in the mother is not per se an indication for the neonatal team to routinely attend low-risk delivery. Furthermore, there is a risk that medical staff attending such deliveries may be more difficult or have delayed response time to concurrent emergencies.

A designated member of the neonatal team should be assigned to attend suspected/confirmed COVID-19 deliveries. The most senior person likely to be required must attend in the first instance to minimize staff exposure. If there is a high rate of maternal infection, units might choose to establish a dedicated COVID Neonatal Team with a dedicated Registrar and Consultant during working hours. Local units should make their own arrangements for designating staff, but senior involvement is expected. PPE should be donned in an adjacent room, and the team member should wait outside the delivery room, ready to be called in should the baby, require any intervention(s). If it is anticipated that the baby will require respiratory support, appropriately skilled neonatal team members should be present at delivery wearing PPE.

Neonatal resuscitation/stabilization should proceed as per guidance. If additional equipment is required, this can be passed to the team by a "clean" staff member outside the room. Neonates should be transferred in a closed incubator, although where the baby is unwell, they may need to be transferred by resuscitator or resuscitation warmer (with staff in full personal protective equipment). Where possible, all procedures and investigations should be carried out in a single room or an isolation room/bay with a minimal number of staff present.

There is no evidence to suggest that antenatal corticosteroids for fetal lung maturation cause any harm in the context of COVID-19, except perhaps where the pregnant woman has a critical illness in which case a multidisciplinary discussion is required to determine their relative benefits. Steroids should, therefore, be given to mothers anticipating preterm delivery where indicated, and urgent delivery should not be delayed for their administration. Magnesium Sulphate should be given for neuroprotection of babies <32 weeks' gestation as per the current guidance.

Regarding neonatal management of suspected, probable, and confirmed cases of maternal COVID-19 infection, the umbilical cord should be clamped, and the neonate should be transferred to the resuscitation area for routine assessment and if appropriate assessment by the attending neonatal team. There is insufficient evidence regarding whether delayed cord clamping (DCC) increases the risk of infection to the newborn via direct contact. The most recent guidance clearly states that deferred cord clamping is still recommended, provided there are no other contraindications. The baby can be dried as normal while the cord is still intact. In the case of a preterm baby, standard thermoregulatory measure, including the use of a plastic bag, should also be used.

Whether DCC is practiced or not, the neonate should be transferred after delivery to the resuscitator for initial assessment by the attending midwife, or by the neonatal team as appropriate. An Immediate skin to skin approach with the COVID-19 positive mothers should not take place; this can be considered when the mother has taken appropriate hand hygiene and sterile PPE precautions. Asymptomatic well babies should not be admitted to the

neonatal unit. Babies of COVID-19 positive mothers who need admission to the neonatal unit (NNU) for any reason should be isolated and managed in their own isolette in a designated isolation area, with dedicated staffing.

### **Rooming-in and Infant Feeding**

Given the current lack of information, it seems reasonable to assume that a newborn from a mother with COVID-19 at delivery could possibly be infected, either in utero or perinatally, and thus should be placed in isolation to avoid exposure to other newborns. However, well term/near-term babies, not otherwise requiring neonatal unit care should stay with their mother, if at all possible. If the mother is severely or critically ill, separation may then be necessary, but the need for this should be regularly reviewed. Maternal illness is not in itself an indication for newborn admission to the NNU so that the baby may be cared for in an isolette in the nursery or isolation with the mother, e.g., on a COVID-19 assigned ward. It is recommended that the baby is cared for at home if the mother is admitted to an Acute Adult Hospital to reduce the risk of infection to the baby. In light of current evidence, the benefits of breastfeeding outweigh any potential risks of transmission of the virus through breastmilk. If the woman is asymptomatic or mildly affected, breastfeeding should be supported by encouraging mothers in coordination with healthcare providers. Breastfeeding can still be supported by encouraging mothers who have been separated from their babies to express milk. Either way, mothers should have a designated breast pump for exclusive use and local infection being followed regarding equipment decontamination.

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***“Breastfeeding can still be supported by encouraging mothers who have been separated from their babies to express milk. Either way, mothers should have a designated breast pump for exclusive use and local infection being followed regarding equipment decontamination.”***

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In the case of rooming-in, the baby's cot should be kept at least 2 meters from the mother's bed, and a physical barrier such as a curtain may be used. An incubator can also be used in the room as a physical barrier. Babies requiring subsequent additional care (e.g., intravenous antibiotics) should be assessed in the delivery suite or postnatal wards and a decision made as to whether additional care can safely be provided at the mother's bedside. NNU admission should be avoided if at all possible and safe. Any need to separate mothers with COVID-19 infection from their newborns, with the consequence that they are unable to breastfeed directly, may impede early bonding as well as the establishment of lactation. These factors will inevitably cause additional stress for mothers in the postpartum period. As well as caring for their physical wellbeing, medical teams should consider the mental wellbeing of these mothers, showing appropriate concern and providing support when needed.

The Neonatal Paediatric COVID-19 guidance group have issued recommendations for breastfeeding during the COVID-19 pandemic. These state that the Faculty of Paediatrics encourage breastfeeding to protect children and reiterate that "the benefits of breastfeeding outweigh the potential for exposure to the virus.

**Testing:**

There is currently no clinical indication to test any well-baby born to a COVID-19 positive mother. Performing nasal swabs on asymptomatic infants may also result in false negatives, and the optimal time of testing, in any case, is unclear. Asymptomatic patients, including infants, even if positive, are unlikely to transmit the virus, providing everyone adheres to basic hygiene measures. Viral RNA may be detectable in the stool for several weeks, but this does not mean that the faecal material is necessarily infective; providing caregivers adhere to the basic hygiene measures, the risk is not thought to be significant.

Asymptomatic babies should not be routinely admitted to the NNU. If subsequently admitted for other issues such as jaundice or hypoglycaemia they do not require testing unless their symptoms fit the case definition. Case definition: newborns may not show all the features of influenza-like illness, particularly a fever, so clinicians should have a high index of suspicion in all babies admitted to the NNU, and monitor for signs of respiratory illness during the admission.

Babies of COVID-19 positive mothers who need admission to the NNU for any reason should be isolated and managed in their own isolette in a designated isolation area, with dedicated staffing. They must be monitored for signs of COVID-19 during their admission. If they develop signs, they should be tested. Symptomatic babies that meet the definition only by virtue of requiring respiratory support for an anticipated non-COVID-19 respiratory pathology (e.g., RDS) should be tested after 72 hours of age to avoid potential early false-negative results. It is suggested to test again on day five before declaring them negative and non-infected.

Babies can come out of isolation despite continuing to need for respiratory support, providing the tests on days 3 and 5 are negative, and the baby is following the projected clinical course (e.g., expected for RDS, etc.). If there is clinical concern that a baby who has been in isolation meets the case definition is not following a typical clinical course for an anticipated non-COVID-19 respiratory pathology, they should be tested that day.

Known COVID-19 positive babies should be isolated until their symptoms resolve, and they no longer need respiratory support; they can then be allowed out of isolation but must remain in an incubator and monitored respiratory signs and symptoms for a further 14 days. Babies awaiting test results and less than seven days of age can be cohorted in the same isolation room, provided they remain in incubators; airborne transmission (except for aerosol-generating procedures) is not currently thought to be a major mechanism of transmission in this clinical context.

Clinical investigations should be minimized whilst maintaining standards of care. In the absence of evidence, it is reasonable to treat the baby's respiratory illness in the same way as if they were not potentially exposed to COVID-19. The evidence in favour of early intubation is limited to adults and older children. All babies requiring respiratory support should be nursed in an incubator. Intubation is an aerosol-generating procedure, although the risk of transmission soon after birth is thought to be low; however, it is recommended that staff follow their local guidelines regarding the use of appropriate PPE, even in an emergency. In-line suction with an endotracheal tube should be used where possible. Where possible, the use of a video-laryngoscope should be considered for intubation, which might facilitate keeping the baby within the incubator. By reducing proximity to the baby's airway, this may help to reduced exposure to the virus. Intubation should be undertaken by staff with appropriate competencies. CPAP and high flow therapies are associated with aerosolization, and staff caring for infants receiving these therapies must also adhere to their local guidance regarding the use of appropriate PPE.

Transfers should be limited to a minimum, and per network escalation policies. Exposure to COVID-19, in itself, is not a reason to transfer. All staff must adhere to the locally recommended PPE guidelines before entering the isolation room. A register must be kept of all staff entering isolation rooms. All equipment coming out of the isolation room should be cleaned. It is anticipated that NNU capacity may become problematic either due to cot capacity or staff availability. Individual units should have agreed to staffing plans when optimal staffing plans cannot be achieved. The co-horting of confirmed positive cases may be necessary and should follow local guidance.

COVID-19 positive mothers should not visit their baby on the NNU until they are asymptomatic and have tested negative. Partners of COVID-19 positive mothers must adhere to the current advice regarding self-isolation and the hospital policy regarding visiting the maternity wards and NNU, except under exceptional circumstances.

#### **Newborn Screening:**

Newborn Infant physical examination should be completed as usual in the hospital, prior to discharge. Newborn Blood Spot screen should take place as usual. Audiology screening should continue in maternity units and on the NNU. The ability to perform investigations and tests once the infant has left hospital will be restricted, and when possible, tests should be performed before discharge from the maternity or neonatal units. Maternity units should aim to maintain sufficient staffing in order to perform the necessary screening before discharge.

#### **Discharge Home:**

When babies and mothers are ready for hospital discharge, they should be provided with written advice regarding what to look out for in terms of respiratory symptoms, lethargy or poor feeding, and from whom to seek further advice should they have concerns. They should be advised to self-isolate for 14 days. All measures aimed at early discharge from the NNU should be scaled up, where possible, to avoid vulnerable infants with chronic lung disease attending clinics. Consider telephone/video consultation for neonatal follow up when possible, to avoid vulnerable infants from attending clinics.

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***“Given the current lack of information, it seems reasonable to assume that a newborn from a mother with COVID-19 at delivery could possibly be infected, either in utero or perinatally, and thus should be placed in isolation to avoid exposure to other newborns. However, well term/near-term babies, not otherwise requiring neonatal unit care should stay with their mother, if at all possible.”***

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Advice should be provided to parents of those infants at increased risk (e.g., immunocompromised, chronic lung disease, cardiac disease) about reducing the risk of infection (reduced social contact, handwashing) and interventions aimed at preventing other diseases (e.g., immunizations) should be optimized. Parents who

telephone NNUs for help should receive experienced advice, with the aim of minimizing direct contact with either neonatal or paediatric services.

Among the 19 maternity hospitals and nurseries, or among midwives delivering at home (which is rare in Ireland) there has been a survey or an audit of adherence to these recommended practices; nonetheless, there is great hope that having a standardized approach will reduce maternal to infant transmission of COVID-19 and protect professionals caring for both mothers and their babies."

#### Northern Ireland

At the Royal Maternity Hospital in Belfast, Northern Ireland, policies were developed in response to COVID-19, focusing on specific guidance around infection prevention within the National Health Service of the United Kingdom. (12)

**Hand Hygiene:** Strict hand hygiene must be adhered to. Arms should be bare to the elbows, with no hand and wrist jewelry except for a single metal ring band), have clean short fingernails with no artificial nails or nail products, and any cuts or abrasions should be covered with waterproof dressings. The Seven-Step Technique should always be observed when washing or gelling hands.

**Uniform:** Staff are asked to travel to and from work in their own clothes and change into scrubs once on site. Scrubs should then be removed at the end of a shift and placed in the appropriate laundry bag. There are facilities available if staff wish to shower before traveling home.

**Social Distancing:** Where possible, staff are asked to maintain a distance of 2 metres between each other while at work. Additional alternative areas for breaks will be made available. Measures such as limiting the number of infants within a room, and limiting one parent to the bedside at a time are also being undertaken to facilitate this.

**Essential Personnel Only:** Only essential personnel should physically attend work. Where possible staff should try and facilitate working from home via remote access, video conferencing, and other methods of remote access. Elective and non-urgent work should be reviewed and either canceled or relocated as able.

**Aerosol Generating Procedures** requires additional care when performed on patients with suspected or confirmed COVID-19. Aerosol Generating Procedures should only be carried out when absolutely necessary, with only essential staff present. These include:

Intubation, extubation, and related procedures, manual ventilation, Less invasive surfactant administration, Open suctioning, non-invasive ventilation, e.g., Bi-level positive airway pressure (BiPAP and Continuous Positive Airway Pressure Ventilation (CPAP), high-frequency oscillating ventilation, High flow Nasal Oxygen, Tracheotomy/tracheostomy procedures. Placement of an oral or nasal gastric tube, use of low flow oxygen, nebulisers and Entonox are considered to be aerosol-generating procedures.

**Personal Protective Equipment.** On April 4, 2020, Public Health England recommend that due to sustained background transmission of COVID-19 within the UK, personal protective equipment is required in every patient area regardless of infection status. This led the Belfast Trust to categorise all hospital areas with a traffic light "zoning" system. This has been modified with the Neonatal Nursery Unit as follows:

**Green Zone:** Areas that are generally considered "clean" with no

direct patient contact, i.e., main corridors, tea room, canteen, and offices where NO PPE are required

**Amber Zone:** These areas will contain infants, who may be undergoing aerosol-generating procedures, but have had no exposure to coronavirus and consist of the main clinical areas with the NICU and main delivery suite.—Standard PPE=Apron and non-sterile gloves, fluid-resistant surgical face mask, and the use of eye protection should be considered if risks of splashes or droplets.

**Red Zone:** These areas will contain infants of mothers with suspected or confirmed COVID-19 or infants who are at risk of horizontal transmission where enhanced PPE required. Attendance at all deliveries of suspected or confirmed COVID-19 positive mothers, working within a COVID-19 cohort area with infants with suspected or confirmed COVID-19 virus, where aerosol-generating procedures are being performed or anticipated, and when resuscitating the acutely collapsed infant regardless of maternal status, will also require advanced PPE. This enhanced PPE includes FFP3 respiratory mask, long-sleeved disposable gown, disposable eye protection, Gloves, Apron, disposable hat. All PPE must be donned and doffed in an established sequence, with specific care and attention taken at each stage. Donning PPE with a "buddy" ensures satisfactory technique and enhances user safety.

**Antenatal Admission and Delivery at Royal Maternity Hospital (RMH), Belfast**

**Entry to RMH:** Everyone visiting or presenting to the RMH will now have to buzz for entry to the building with strict entry criteria in place due to the restricted visiting policies. If entry is permitted, the person will be allowed access to the reception area before being asked a series of questions including:

Do you have a cough?

Do you have a temperature?

Do you have any shortness of breath?

Are you/have you recently been, self-isolating?

---

***“All PPE must be donned and doffed in an established sequence, with specific care and attention taken at each stage. Donning PPE with a "buddy" ensures satisfactory technique and enhances user safety.”***

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**Have you been in contact with anyone who is self-isolating or had COVID19?**

If the answer to any of these is 'yes' the person will either be denied entry or treated as a patient with 'suspected COVID-19'. For the purpose of this guideline, we are defining a mother with 'suspected COVID' as a person who has had swabs taken, but results are not yet available.

Any woman presenting to admission with either suspected or confirmed COVID-19 will be transferred to an active birthing centre room. The donning area for these rooms is set up in the corridor just outside these rooms. The doffing areas are in the corridors between rooms. A dedicated COVID-19 resuscitation trolley

## Less Than 27 Weeks Gestation

Antenatal admission of woman with suspected or confirmed COVID-19  
**<27 weeks gestation**

- Neonatal team to be informed at time of admission
- Senior neonatal team to meet and begin preparations including:
  - identification and allocation of staff roles
  - location of mother
  - route for transfer of infant
  - intended admission location for infant

Delivery, resuscitation and stabilisation

- **Designated consultant and senior nurse to attend delivery**
- Attend delivery area and don appropriate PPE, in designated donning area
- Only when delivery is anticipated, enter delivery area and prepare resuscitaire and essential equipment
- Delayed cord clamping should be considered as per unit protocol
- Infant should be moved directly to resuscitaire once cord cut
- Resuscitate and stabilise as per NLS algorithm
- An in-line micro HME filter should be used with all respiratory support

Maternal suspected or confirmed COVID-19:  
**mother asymptomatic**  
or  
**only mildly symptomatic**

- Infant may be initially shown to parents but social distancing should be observed
- Once infant stabilised, if the mother is able to apply a surgical face mask and gel hands, she may have contact with her infant if desired and/or feasible, prior to transfer to NICU

Maternal suspected or confirmed COVID-19,  
**mother symptomatic**  
and/or  
**acutely unwell**

- Infant may be shown to parents but social distancing should be observed throughout

## Transfer to NICU

- Once the infant has been stabilised, NICU should be informed of the pending admission
- Transfer to NICU should be via the agreed route only
- Additional 'clean' helpers should be available to clear corridors, and open doors etc
- Only the 'middle lift' should be used for transport between floors
- Infants <27 weeks gestation should be transferred using a resuscitaire

## Admission to NICU

- Admit to designated cohort area within NICU
- Give a clear handover to the receiving team before transferring the infant to the incubator
- The transport resuscitaire should be moved to the designated doffing area to have an initial clean, before moving it to an area outwith the cohort area for further cleaning
- Staff should doff PPE in the designated area before exiting the cohort area

## Inform NNNI

- The NNNI should be informed of all admissions of an infant born to a mother with suspected or confirmed COVID-19
- Consideration should be made to whether a Network Call should be scheduled



## 27 – 35 Weeks Gestation

Antenatal admission of woman with suspected or confirmed COVID-19  
**27 - 34+6 wks gestation**

- Neonatal team to be informed at time of admission
- Senior neonatal team to meet and begin preparations including:
  - identification and allocation of staff roles
  - location of mother
  - route for transfer of infant
  - intended admission location for infant

Delivery, resuscitation and stabilisation

- **ST4+ and senior nurse to attend delivery unless infant considered 'high risk'**
- Attend delivery area and don appropriate PPE, in designated donning area
- Only when delivery is anticipated, enter delivery area and prepare resuscitaire and essential equipment
- Delayed cord clamping should be considered as per unit protocol
- Infant should be moved directly to resuscitaire once cord cut
- Resuscitate and stabilise as per NLS protocols
- An in-line micro HME filter should be used with all respiratory support
- All infants of this gestation will require admission

Maternal suspected or confirmed COVID-19:  
**mother asymptomatic**  
or  
**only mildly symptomatic**

- Infant may be initially shown to parents but social distancing should be observed
- Once infant stabilised, if the mother is able to apply a surgical face mask and gel hands, she may have contact with her infant if desired and/or feasible, prior to transfer to NICU

Maternal suspected or confirmed COVID-19,  
**mother symptomatic**  
and/or  
**acutely unwell**

- Infant should be shown to parents but social distancing should be observed throughout

## Transfer to NICU

- Once the infant has been stabilised, inform the NICU of the pending admission
- Transfer to NICU should be via the agreed route only
- Additional 'clean' helpers should be available to clear corridors, and open doors etc
- Only the 'middle lift' should be used for transport between floors
- Infants requiring respiratory support should be transported on a resuscitaire. All other infants may be transported in an incubator

## Admission to NICU

- Admit to designated cohort area within NICU
- Give a clear handover to the receiving team before transferring the infant to the incubator
- The transport resuscitaire or incubator should be moved to the designated doffing area to have an initial clean, before moving it to an area outwith the cohort area for further cleaning
- Staff should doff PPE in the designated area before exiting the cohort area

## Inform NNNI

- The NNNI should be informed of all admissions of an infant born to a mother with suspected or confirmed COVID-19
- Consideration should be made to whether a Network Call should be scheduled

## Greater Than or Equal to 35 Weeks Gestation

Antenatal admission of woman with suspected or confirmed COVID-19  $\geq$  35 weeks gestation

- Neonatal team to be informed at time of admission
- Senior neonatal team to meet and begin preparations including:
  - identification and allocation of staff roles
  - location of patient
  - route for transfer of infant

Attendance at delivery

- Neonatal attendance at deliveries of infants  $\geq$  35 weeks should be requested as per current RMH policy
- Suspected or confirmed maternal COVID-19 status is NOT an indication in itself for neonatal attendance at birth

Delivery, resuscitation and stabilisation

- **If neonatal attendance is required at delivery but the infant is considered 'low risk' - ST4+ to attend delivery**
- **If infant considered 'high risk' - consultant and senior nurse to attend and be present in room prior to delivery**
- Attend delivery area and don appropriate PPE in designated donning area
- Wait outside delivery area and only enter room if newborn requires resuscitation (unless high risk). It is the responsibility of the midwifery team within the delivery area to have checked and prepared resuscitaire
- Delayed cord clamping should be performed as per unit protocol
- If required, resuscitate and stabilise as per NLS algorithm
- Use an in-line micro HME filter for all respiratory support

Maternal suspected or confirmed COVID-19:  
**mother asymptomatic**  
or  
**only mildly symptomatic**

- If infant well, every effort should be made to keep the infant and mother together postnatally
- Depending on maternal infection status and symptoms, there should be consideration of maternal use of a face mask when handling and feeding the infant while in hospital, with distancing measures observed at other times. Infant should be nursed in an incubator
- Discharge home should be facilitated as soon as feasible
- Family should be educated in hygiene and distancing measures to avoid viral spread

Maternal confirmed  
COVID-19:  
mother acutely unwell

- Infant to be isolated from mother at birth. If the infant is well it may remain within same room initially, within an incubator, until a suitable carer or care area can be identified (not NNU)
- Infant discharge with an alternative carer (clinically well and not self isolating) should be considered

Transfer to NICU

- If the infant requires admission, NICU should be urgently informed of the pending admission
- Transfer to NICU via the agreed route only
- Additional 'clean' helpers should be available to clear corridors, and open doors etc
- Only the 'middle lift' should be used for transport between floors
- Infants requiring respiratory support should be transported on a resuscitaire. All other infants may be transported in an incubator

Admission to NICU

- Admit to designated cohort area within NICU
- Give a clear handover to the receiving team before transferring the infant to the incubator
- The transport resuscitaire or incubator should be moved to the designated doffing area to have an initial clean, before moving it to an area outwith the cohort area for further cleaning
- Staff should doff PPE in the designated area before exiting the cohort area

Inform NNNI

- The NNNI should be informed of all admissions of an infant born to a mother with suspected / confirmed COVID-19
- Consideration should be made to whether a Network Call should be scheduled

# Resuscitation Equipment

Newborn resuscitation should continue as per the standard NLS algorithm.

Although the vertical transmission of SARS-CoV-2 is considered possible, it remains to be definitively proven. It is assumed that, even if an infant was infected at birth, the viral load would be either very low or undetectable. This, in combination with the fact that infants' lungs are not aerated at time birth and much lower tidal volumes are used compared to adults practice, means that newborn resuscitation, including AGPs, is considered to carry a low risk of infection.

However, we are advising a slight alteration to our standard equipment to further minimise risk of transmission to staff. This is the inclusion of an in-line heat and moisture exchanger (HME) micro filter during respiratory support. These filters should be used for both Neopuff/mask support and when intubated. The photos below demonstrate their position within the equipment. Although some recent work has indicated that tidal volumes and pressures delivered are not affected with the inclusion of a filter, both the weight and the potential dead space of the circuit may be increased and staff should be cognisant of this. Once the ETT position is confirmed with the Neostat and visible chest rise, there is an option to remove the Neostat from your circuit.



Neopuff and Mask with In-Line HME Filter



Neopuff, Neostat and ETT with In-Line HME Filter

## Transfer of a Newborn Infant to NNU

If a newborn requires admission to the NNU at birth, the Sister-in-charge should be informed as soon as this decision is made in order to allow time for preparation and staff allocation.

The infant will be admitted to the cohort area within the NNU.

There are specified transfer routes out of both delivery suite and theatres and these should be adhered to. Specifically, the potentially exposed team and infant should NOT use the back lift or enter the NNU through the NICU area.

Additional identified members of staff will travel before and behind the neonatal transfer team to ensure corridors are cleared and doors are open. They will remain at a distance of at least 2 metres from the team and will not assist in the transport itself.

**From Delivery Suite (Rooms 19 – 16):** Exit out of the back door of the link corridor (doffing area) onto the main hospital corridor. Travel to the middle lift and ascend to the 2<sup>nd</sup> floor. Enter the NNU cohort area via the side door.

**From Theatre (ground floor):** Exit out of Theatre 2 onto the main theatre corridor. Travel out through theatre reception into the main corridor and out onto the main hospital ground floor. Travel to the middle lift and ascent to the 2<sup>nd</sup> floor. Enter the NNU cohort area via the side door.

Walk through videos of each of these routes have been made and shared with the wider group.

# Admission to NNU: Suspected Newborns

All preterm or term unwell infants of mothers with either suspected or confirmed COVID-19 will be admitted directly to the cohort area in the NNU (see below). Given the low likelihood that a newborn will be COVID-19 positive at birth, medical treatment and management should be mainly determined based on their pathology and clinical needs rather than being influenced by specific considerations around coronavirus.

All infants should be nursed in a closed incubator for the duration of their stay within the cohort area. This acts as a further layer of isolation.

## COVID-19 Screening in Infants of Suspected or Confirmed Mothers

All infants of mothers who have a suspected or confirmed COVID-19 status, admitted to the NNU immediately following birth, require screening. It has been suggested that optimal testing for possible vertical transmission should include IgM / IgG analysis of cord blood at birth. This requires written parental consent but is not being undertaken in RMH until reliable IgM/IgG testing has been developed.

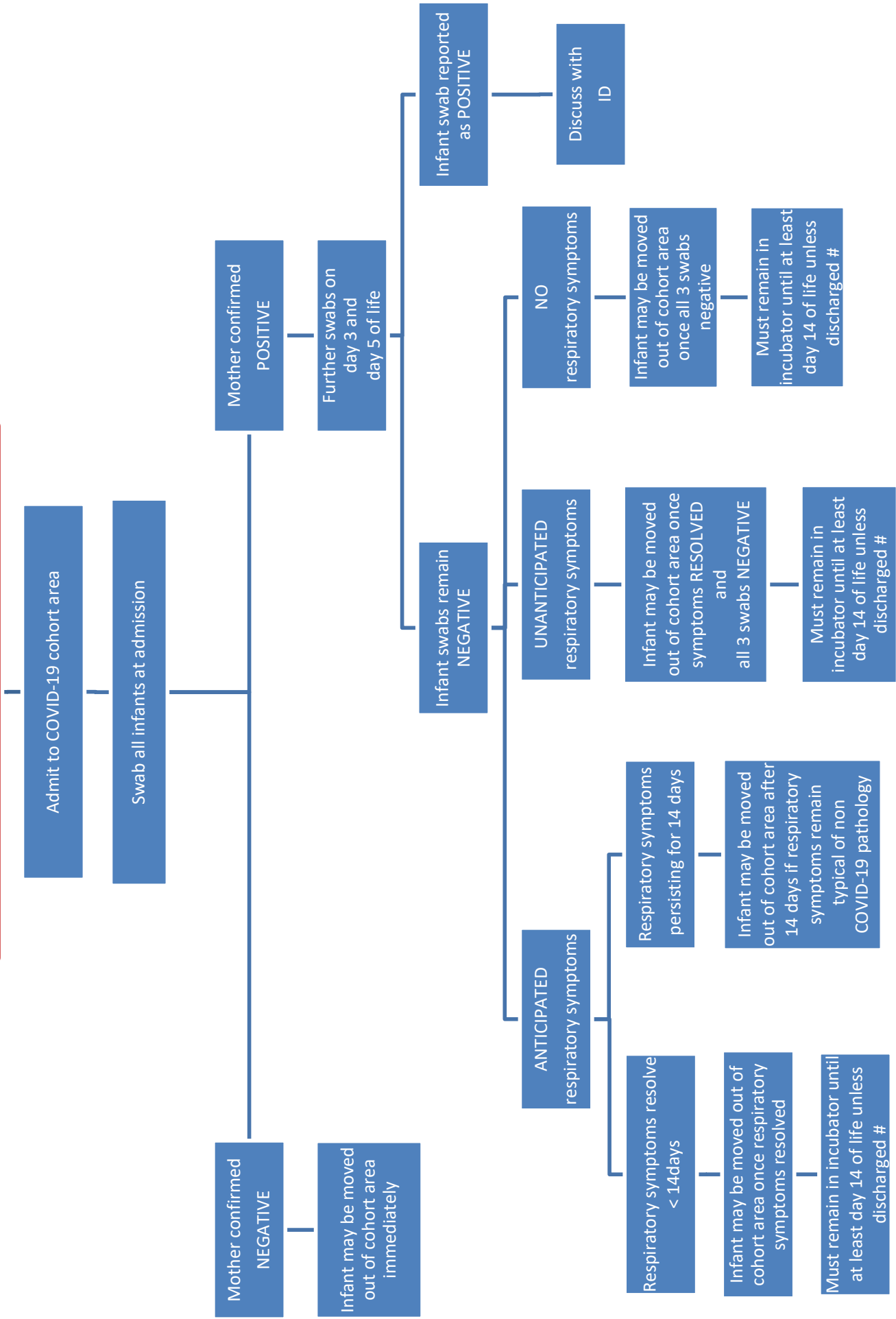
Current screening schedule for infants admitted at birth is:

- First set of swabs at admission
- Second set of swabs at 72hrs (day 3)
- Third set of swabs on day 5

Two dry swabs should be taken at each screen with one swab of the nasopharynx and one deep throat swab. This should make the patient gag to be effective. If the infant is ventilated, then secretions obtained by ET suction should be sent. The process for swabbing is outlined below with further Trust guidance available on the Hub:

- Label the universal container before entering the cohort area. A hazard warning label should be affixed to the container
- Do not take the paper request form into the cohort area. A hazard label should also be added to the form
- Take the nasopharyngeal and throat swabs as above
- Place both swabs into the same universal container
- Wipe outside of sample with Difficil-S or Actichlor Plus (1/1000ppm)
- Place into a leak proof bag and wipe outside with with Difficil-S or Actichlor Plus
- Ideally a buddy should meet you at door and hold open a second bag for you to place leak proof bag into
- Place the form into this bag too and seal
- A 'COVID-19 biohazard' label should be attached to the outside of the second bag
- The bag containing the samples must be hand transported to the lab by a porter. The pneumatic tube system **must not be used**

Infant of mothers with suspected or confirmed COVID-19, requiring admission to NNU from delivery suite or theatres



# Isolate at home until day 14



## Transfer Out of the COVID-19 Cohort Area

The flow chart above also outlines timeframes for when the infant may be considered for transfer out of the cohort area.

If an infant is admitted to the cohort area due to maternal 'suspected' status, and maternal results are subsequently reported as negative, the infant may be moved out of the cohort area immediately. There is no need for a further period of isolation within an incubator, and normal neonatal care should continue.

For infants of mothers with confirmed COVID-19, the duration within the cohort area is mainly based on the presence and nature of their respiratory symptoms.

**No Respiratory Symptoms:** If the infant has been admitted for reasons other than respiratory support, and they have no respiratory symptoms, they may be transferred into the general clinical areas once all 3 sets of swabs are reported as negative. Examples would include late preterm infants who are admitted due to gestation and feeding support but require no respiratory support.

**Anticipated Respiratory Symptoms:** Anticipated respiratory symptoms are defined as clinical features in keeping with the diagnosed pathology. Examples would include respiratory distress and x-ray changes in keeping with surfactant deficiency in a 25 week preterm infant.

**Unanticipated Respiratory Symptoms:** Unanticipated respiratory symptoms are defined as clinical features that are outwith the expected clinical course for an infant of their gestation or pathology. An example would be a 36 week infant with no antenatal concerns who required intubation due to increased work of breathing and climbing oxygen requirements, with no acute pathology to account for this.

If an infant is able to be moved out of the cohort area, into either the general clinical areas within the NNU or the PNW, before 2 weeks of age they should remain within an incubator until day 14 of life regardless of weight etc.

Finally, if an infant is ready for discharge home prior to a full set of swab results being performed, they may be discharged home directly from the cohort area. No further swabs will be required. The family should be advised to self-isolate at home until the infant is 2 weeks of age.

# Admission to NNU: PNW Infant

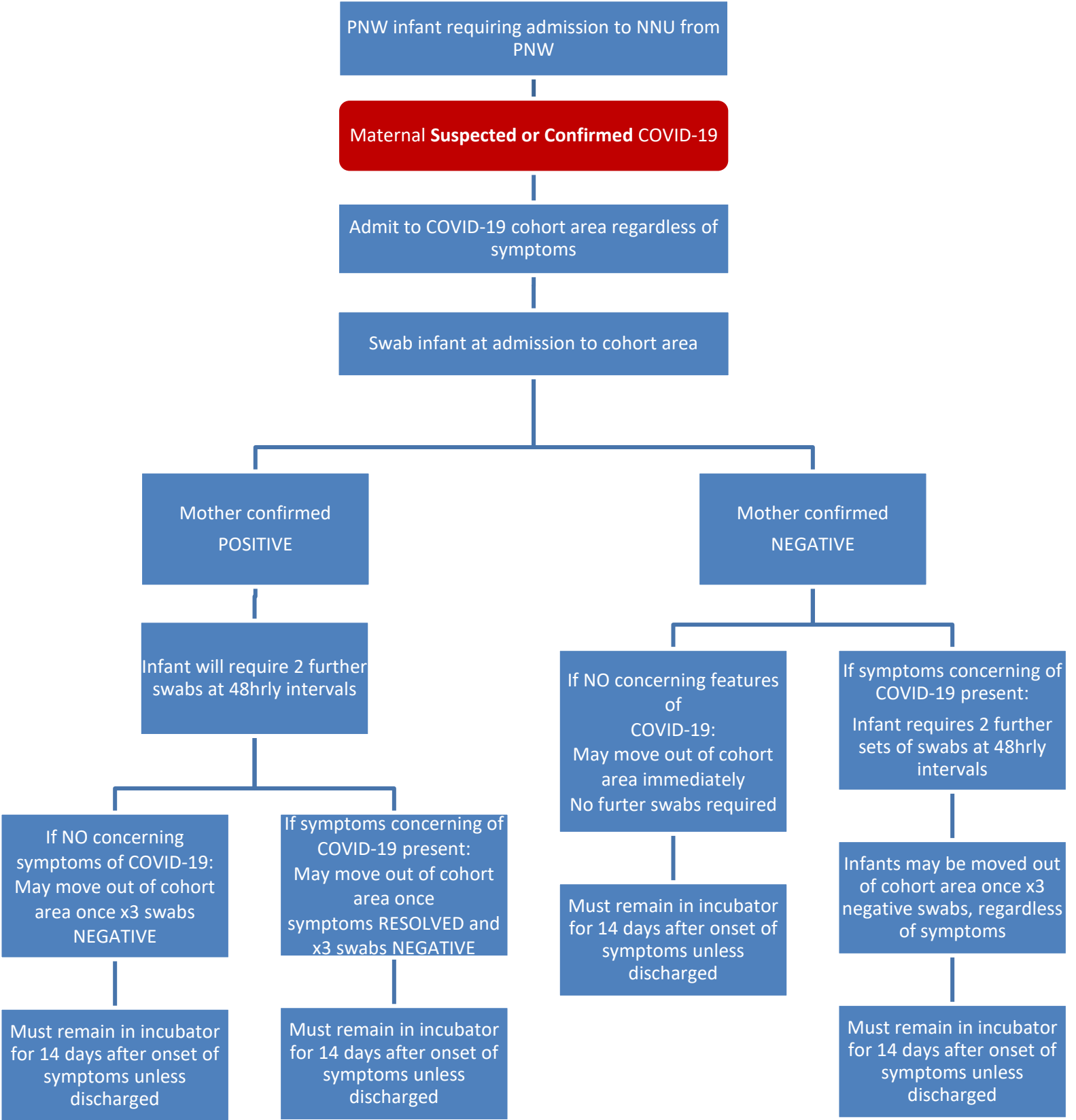
Whilst COVID-19 should be considered as a possible diagnosis in PNW infants who become unwell, it is anticipated that the majority of admissions will be more likely due to common pathologies such as hypoglycaemia or infants requiring lumbar puncture. Accordingly, the vast majority of these infants will be able to be admitted to the NNU as normal, rather than the COVID-19 cohort area.

It is expected that all cases will be discussed with the consultant on duty, regardless of symptoms. As shown in the flowchart below, an infant admitted from PNW with unanticipated respiratory symptoms, or whose mother is suspected or confirmed Covid, should be admitted directly to the COVID-19 cohort areas (Bay 3 or 4) initially. These infants should have swabs performed at admission with 2 more sets performed at 48hrly intervals.

In the situation where the mother has no suspicions of COVID-19 but her infant is swabbed, the mother must also be swabbed regardless of symptoms and is unable to visit the NNU until her results are confirmed negative.

If an infant is considered fit for discharge either back to the PNW or home, prior to completing a full set of screening swabs, they should be discharged and no further swabs are required. If an infant has been investigated for coronavirus, the family should self-isolate for 14 days after the onset of symptoms, regardless of swab results.

The flow chart below aims to represent the journey of a PNW admission. We have endeavoured to represent the range of reasons for PNW admissions and try and encompass the various clinical outcomes, but recognise the complexity of the chart as a result.



PNW infant requiring admission to NNU

No maternal COVID-19 concerns

Clinical symptoms / concerns of possible COVID-19

No symptoms / concerns of possible COVID-19

Admit to COVID-19 cohort area

Admit to ICU / HDU / SCBU as required

Swab infant at admission to cohort area

Swab mother

Do NOT swab

Will require 2 further swabs at 48hrly intervals

Mother unable to visit until swab confirmed NEGATIVE

If at any point infant develops any symptoms in keeping with possible COVID-19, immediately transfer to the cohort area and swab

Infants may be moved out of cohort area once x3 negative swabs, regardless of symptoms

Nurse within incubator

Must remain in incubator for 14 days after onset of symptoms unless discharged

Discharge back to PNW or home when able

# COVID-19 Concerns in NNU Inpatient

Although strict general IPC protocols remain in place and visiting has been significantly restricted, our vulnerable patients within the NNU remain at theoretical risk of infection with COVID-19 from both parents and staff.

If an infant within the general NNU areas has an unexpected deterioration, COVID-19 should be considered as a differential diagnosis if they fit the 'case definition' as defined by Public Health England:

- They are an inpatient  
AND
- have either clinical or radiological evidence of pneumonia  
OR
- acute respiratory distress syndrome  
OR
- influenza like illness (fever  $\geq 37.8^{\circ}\text{C}$  and at least one of the following respiratory symptoms, which must be of acute onset: persistent cough (with or without sputum), hoarseness, nasal discharge or congestion, shortness of breath, sore throat, wheezing, sneezing)

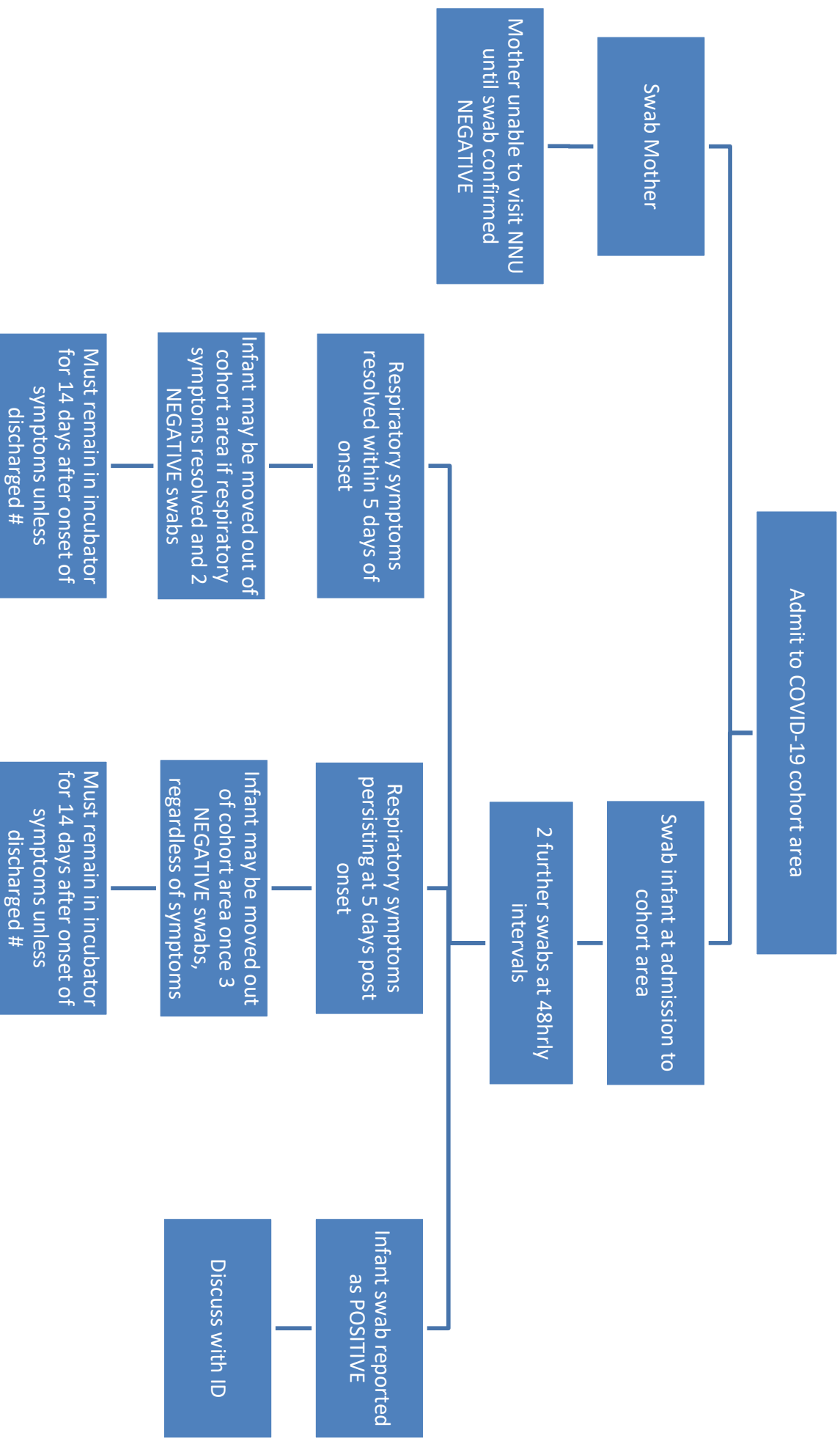
However, the RCPCH have also noted that “newborn infants may not show all the features of an influenza-like illness, particularly a fever, so clinicians should have a high index of suspicion in all infants admitted to NICU and monitor for signs of respiratory illness during the admission”.

It remains essential however to consider all other possible pathologies that are encountered within routine neonatal care and there should be a discussion with either the consultant on service or on-call before investigating or cohorting an infant from the general NNU area, for suspected COVID-19.

Below is a flowchart designed to aid with decision making around these infants.

Of note, we again advise that, if an infant is moved to the cohort area and screened for possible COVID-19, the mother should also be swabbed regardless of her symptoms. She will be unable to visit the NNU until her swab is confirmed negative.

Neonatal inpatient, within general clinical area, who develops symptoms of possible COVID-19



# Isolate at home until day 14 of symptom onset

has been created and is situated in the corridor outside the rooms. If the infant requires NNU admission, transport should be via the designated route. If the infant can remain with the mother, PPE must be doffed before leaving.

### Working Within The Cohort Area:

COVID-19 NNU Cohort Areas: With the exception of a facemask (surgical or FFP3), all PPE should be doffed at the door of the infant bays before exiting. The facemask should then be removed just outside the bay before exiting into a Green Zone. Corridors between infant bays are screened off, and foot traffic between these areas is discouraged. Staff will be allocated to work within the cohort area at staff handover. The principle of the minimum number of staff entering infant rooms during a shift should be observed, and records should be kept of all staff entering the cohort area. Staff who are pregnant or have significant chronic health conditions will not be assigned to the cohort area.

### When working within the cohort area:

1. All staff must wear appropriate PPE. Masks, gowns, and hats should be used on a sessional basis. The fluid-resistant surgical mask has a lifespan of approximately 4 hours, with the FFP2 respirators lasting up to 12 hrs unless they become wet. There is no need to change scrubs when out on a break. If an infant within the cohort area is ventilated, closed suction should be used.
2. Due to the risk of contamination, patient notes and observation charts should NOT be kept within the cohort area where possible. If any paper records or charts are used within the cohort area, they must be digitally imaged and archived within the patient record and stored/disposed of once the patient leaves the area. Electronic versions of nursing care notes and observation records have been made available. When possible, the drug Kardex should NOT be used within the room, it should remain outside the cohort room, and drugs should be double-checked with a clean helper where possible. If a Kardex is used within the cohort area, it must be digitally imaged and archived within the patient record and stored/disposed of once the patient leaves the area.
3. The use of reusable equipment should be avoided if possible. If used, it should be decontaminated in the doffing area prior to removal from the cohort area. A dedicated blood gas analyser and ultrasound machine have been made available for use with the cohort area. Blood investigations should be rationalized to a minimum with Point of Care used where possible. If more than one infant within the cohort area requires blood draws, these should be coordinated and performed at the same time if able. Blood samples must be handled and transported to the labs with additional precautions: Perform the blood sample as routine, apply a patient identification label and biohazard sticker to both the sample tube and request form, wipe outside of sample tube with disinfectant, place into a clear leak-proof bag attached to the request form and wipe outside of the bag with disinfectant. Ideally, a buddy should meet you at the door and hold open a second bag for the sample to be placed into. Attach the "COVID-19 biohazard" label to the outside of the second bag, and these must be hand-carried to the lab. No use of the pneumatic tube system is permitted.

Parents are permitted to visit their infant whilst they are in the cohort area, as long as they are COVID-19 suspected or positive but also in adherence to the general restrictions for visiting, as outlined in the visiting policy.

### Postnatal Management of the Term, Well Infant

Term infants who remain well at the time of delivery should remain with their mother even if she is COVID-19 positive, as long as the mother is physically able to care for her child. The pair should be cohorted into an individual room where possible. There is no indication to test the well term infant for COVID-19, regardless of maternal status, unless they become symptomatic.

For mothers who are confirmed COVID-19 positive or suspected, the following measures apply, regardless of the symptoms:

- Strict hand hygiene measures at all times
- The infant should be nursed in an incubator within the room
- Social distancing is observed where possible
- Use of surgical face mask when feeding
- Early discharge of the pair should be considered, with clear handover to the community team
- Staff should wear appropriate PPE when working within the room
- If the mother is acutely unwell and unable to care for her child, the infant should be isolated from the mother, and attempts should be made to identify an alternative non-quarantined caregiver or relative that could provide care for the infant at home.

### Term Infants Requiring Review, Investigation and/or Treatment

Routine procedures such as Newborn Hearing Screening and pre-discharge physical examination should be undertaken by midwives and audiology staff as normal. An infant who is cohorted with the mother in an individual room due to maternal proven or suspected coronavirus should have these procedures performed beside the mother, within the individual room.

### Management of the Term Infant with Acute Collapse

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If the neonatal team is called urgently for an acutely unwell infant, the infant will be deemed as potentially infected with COVID-19 regardless of maternal infection status. Given this, it is imperative that staff don full enhanced PPE prior to resuscitating the infant, as your own personal safety is paramount. This is essential, even if it results in a short delay in the initial treatment. Staff will be issued with their own fit-tested FFP3 mask, which should be carried with them while on duty. This will ensure appropriate protection is available for each individual regardless of location. Upon full consideration of available equipment and space within the postnatal areas, we are currently recommending that in event of an acute collapse, the infant should be transferred out of their room or bay and onto the resuscitaire within the ward Treatment Room. While this is not ideal from an infection perspective, it will allow full access to resuscitaire and emergency equipment. Neonatal resuscitation should continue per standard algorithm. Once stabilized, inform the Bed Manager of the pending admission to the NNU should be informed as additional help will be required to ensure a clear route during transfer, and this should be undertaken via designated routes when possible.

### Infant Feeding

Breastmilk and breastfeeding have many significant benefits for mothers and babies. This is particularly true for an infant born prematurely where breast milk is known to help protect against respiratory infections and necrotizing enterocolitis. There is currently no evidence to date that COVID-19 is transferred to breastmilk, and the benefits of breastfeeding are thought to outweigh any potential risks of transmission of coronavirus through breastmilk. Therefore, an infant born to mothers with suspected probably, or confirmed COVID-19 should be fed according to standard infant feeding guidelines, while applying necessary precautions. The main risk for infants breastfeeding is the close contact with the mother and the potential exposure to her infective airborne droplets. It is, therefore important that the benefits of breastfeeding and any potential risks associated with COVID-19 transmission are discussed with the mothers. Infants on the Postnatal Ward or Discharged Home

1. Wash their hands before touching the baby, breast pump or bottles
2. Try and avoid coughing or sneezing on your baby while feeding at the breast
3. Consider wearing a face mask while breastfeeding
4. Where mothers are expressing breastmilk in hospital, a dedicated breast pump should be used
5. Follow recommendations for pump cleaning after each use
6. Consider asking someone else who is well to feed expressed breastmilk
7. For women bottle-feeding with formula or expressed breastmilk adherence to sterilization guidelines is recommended.

### Infants within the Neonatal Unit

For infant admitted to the neonatal unit whose mother is suspected or confirmed as having COVID-19

1. Breastfeeding should be encouraged through supporting mothers who have been separated from their baby to express milk
2. Mothers should have a designated breast pump for exclusive use

3. Specific COVID-19 cleaning procedures should be used when cleansing the breast pump
4. Breastmilk should be expressed, labeled, stored, and transported to the neonatal unit in line with local infection/ COVID-19 control procedures.

### Delivery of EBM to NNU from Mothers with Suspected or Confirmed COVID-19

Unfortunately, parents will not be permitted to visit the unit during the period that their infant is in isolation. However, it is important that maternal milk continues to be used for these infants where possible. Mother's will be given advise as follows:

1. Milk should be labeled and stored at home in the home fridge/freezer until transported
2. Parents should arrange for milk to be transported to the NNU. This needs to be someone who is not requiring isolation for any reason and not from the same household. The milk should be transferred in a cool bag.
3. Staff will meet that person in the reception area. The staff member will wear an apron and gloves to receive the milk. The milk bottles should be transferred from the cool bag into a plastic bag. The NICU staff will take the milk to the storage area and clean with detergent before placing it in the identified area.
4. Extra expressing bottles, labels, and pump attachments should be ordered for collection by phone and picked up at reception when delivering milk.
5. Maternal Expressed breastmilk will be stored in a dedicated COVID 19 fridge/freezer within the NICU.

Of note, when handling this milk at the bedside, staff should continue to comply with current hand hygiene and PPE policy. As an extra precaution, it is advised that staff wipe the outside of bottles/ syringes containing expressed breastmilk with a decontamination wipe before and after any handling.

### Visiting Policy

During these challenging circumstances of the COVID-19 pandemic, visiting across all hospital sites has been prohibited except for exceptional circumstances. Although having a child within neonatal intensive care is a special circumstance, restrictions will apply. Currently, the restrictions are:

1. Visiting is limited to parents or named guardians only
2. Only one parent is allowed at the bedside at a time
3. Siblings are not allowed to visit the unit
4. Parents will not be present on ward rounds
5. Parents or guardians with confirmed or suspected COVID-19 are not permitted to visit the hospital until they are fully recovered and completed the self-isolation period.
6. Parents or guardians in self-isolation are not permitted to visit the hospital
7. In accordance with infectious disease advice, COVID-19 suspected or confirmed mothers should not visit the NNU until symptom-free and at least seven days after the onset of their illness.



8. In cases where visiting has been restricted, alternatives such as video call may be considered.

### Discharge Home and Follow-up

For COVID-19 suspected or confirmed mothers with a term well infant, the aim is to facilitate early discharge home as soon as is appropriate and safe. These family must self-isolate at home for 14 days following discharge. Several NHS parental information sheets are available on illness in newborns and coronavirus. For infants who have been admitted to the NNU, whose mother is confirmed COVID-19, the need for the family to self-isolate at discharge will depend on the timing of maternal infection relative to the infant's admission. All infants with confirmed COVID-19 infection will require outpatient follow-up, although the timing and duration of this are currently unclear. These infants should be discussed with Infectious Disease consultants regarding appropriate follow-up arrangements prior to discharge.

### POLAND

In Poland, the Ministry of Health assembled national experts in infectious diseases and neonatologists to promulgate guidelines for the management of pregnant women and their infants (13). This group of experts published practice guidelines for managing labor as well as neonatal care guidelines.

#### The Polish Guidelines are as follows:

The Instruction sets out the rules for the management of neonates born in the Gynaecology and Obstetrics Research and Teaching Hospital by mothers with a suspected or confirmed diagnosis of infection by, or after contact with, the SARS-CoV-2 coronavirus causing COVID-19.

The Instruction applies to all Hospital Units/Subunits and the Bed Management Department.

The Head of the Hospital Unit/Subunit, the Head Nurse/Midwife, and the head of the organisational unit, are responsible for communicating the contents of the Instruction to their subordinate personnel.

#### I. Diagnostic criteria

Considering that:

1. there is no definite evidence that babies can be infected in the womb, no proof for vertical infection,
2. the effect of the mother's infection in the first and second trimesters of pregnancy on the baby is unclear,
3. there is no conclusive evidence for virus transmission from the mother to the baby during natural childbirth,

the likely route of transmission of the virus from the mother to the baby has been established. Non-compliance with the sanitary regime during childbirth, relating to the mother's failure to use a face mask with filter, increases the risk of neonatal infection with SARS-CoV-2 by the droplet route.

#### II. Procedures to follow

1. The delivery of a neonate by a mother with a suspected or confirmed diagnosis of infection by, or after contact with, the SARS-CoV-2 coronavirus causing COVID-19, requires the appointment of a neonatological team including a physician from the Neonatal Isolation Unit (7 am – 3 pm) and from the Neonatal Unit (after 3 pm and at night). Additional staffing of

midwives is decided on by the Head Midwife.

2. The natural birth or caesarean section takes place in a separate isolation zone in the Admission Room. The zone may include the entire Admission Room or a temporary Admission Room for patients with signs of infection. The extension of the isolation zone to encompass the entire Admission Room is done in response to a clinical case (confirmed SARS-CoV-2 infection) and a greater number of patients requiring hospitalisation in the GPSK.
3. Depending on the clinical circumstances (suspected or confirmed viral infection in the mother), members of the neonatological team must use personal protective equipment during the delivery, including:
  - if the mother shows no symptoms (but she has been in contact with the virus) – barrier gown with long sleeves, safety gloves, face mask with FFP3 or FFP2 filter, safety glasses;
  - if the mother shows clinical symptoms and infection with SARS-CoV-2 is confirmed – protective overalls, face mask with FFP3 or FFP2 filter, safety glasses. Protective clothing is available in the Admission Room.
4. If the newborn is isolated from the mother and placed in a closed incubator, members of personnel must wear a barrier gown with long sleeves, safety gloves, a face mask with FFP3 or FFP2 filter, and safety glasses while performing neonatal examinations and providing care.

#### Neonates not requiring hospitalisation in the NICU

1. After birth, the newborn remains isolated from the mother in a closed incubator on any premises of the Admission Room other than where the mother is recovering.
2. The newborn does not require hospitalisation for more than two days.
3. While being hospitalised, the newborn can be fed with expressed breast milk, provided that the mother complies with the sanitary regime (face mask with filter, safety gloves, appropriate hand hygiene procedure) – at the neonatologist's discretion.
4. After two days of hospitalisation, the newborn may be discharged and taken home by the legal guardian.
5. At discharge from the hospital, the legal guardian should be instructed to observe the baby for signs of respiratory distress for 14 days after birth.
6. The legal guardian should be instructed to report to the hospital designated by the governor of Wielkopolska Province (Appendix 1) for medical consultation if the baby develops symptoms such as fever, cough, shortness of breath, difficulty breathing, or an increased breathing rate.
7. The legal guardian should be informed about the possibility of calling an emergency medical team to transfer the baby from home to a selected hospital.
8. The neonatologist must notify the District Sanitary Inspector in charge of the territory of the patient with suspected SARS-CoV-2 infection (24-hour telephone service: 609 794 670).

Neonates not requiring hospitalisation in the NICU, but requiring treatment in a hospital with an infectious diseases unit

1. After birth, the newborn remains isolated from the mother in a closed incubator on any premises of the Admission Room.
2. The newborn is urgently transferred to a hospital with an infectious diseases unit designated by the Governor of Wielkopolska Province in accordance with Appendix 1 to the Instruction.
3. The patient (in a closed incubator) may be transported to the hospital with an infectious diseases unit by the hospital's neonatal ambulance.
4. The neonatologist must notify the District Sanitary Inspector in charge of the territory of the patient with suspected SARS-CoV-2 infection.

Neonates without clinical symptoms of SARS-CoV-2 infection but requiring hospitalisation in the NICU because of their clinical condition after birth

1. After the natural birth or caesarean section, the newborn is placed in a closed incubator and transferred to the Neonatal Isolation Unit.
2. An isolation zone should be designated within the continuous care subunit in the Neonatal Isolation Unit. No other patients may be hospitalised in this zone.
3. While being hospitalised in the isolation zone of the Neonatal Isolation Unit, the baby should be placed in a closed incubator until the isolation is completed (at least 14 days after birth).
4. Taking samples from the baby for identification tests for SARS-CoV-2 should be considered (as set out in the Appendix).
5. Separate personnel should be appointed to care for the baby.
6. For patient care, medical personnel must wear protective clothing: barrier gown with long sleeves, disposable diagnostic gloves, face mask with FFP3 filter, or FFP2 filter in the lock (intermediate space before the isolation zone).
7. After handling the newborn baby, the procedure is to remove gloves first and disinfect the hands. In the lock (intermediate space), the personnel should take off the barrier gown, remove the safety glasses and face mask, and perform an extended hand hygiene procedure (washing and disinfection).
8. The maximum duration for wearing a single mask with a filter is 8 hours and a standard surgical mask – 1 hour.
9. As the risk of transmission of infection from the mother to the baby during childbirth is very low, there is no need for the personnel to wear protective overalls.
10. Protective overalls should be worn if the neonatal medical personnel assists in the delivery of a patient with a confirmed infection by SARS-CoV-2, causing COVID-19.
11. The standard hand hygiene procedure should be extended to washing hands with soap and water, followed by disinfection with an alcohol-based antiseptic.
12. The newborn should be isolated for 14 days after birth.
13. During this period, the baby should be fed with a formula.

14. The isolation zone should be provided with the necessary equipment for the treatment and care of the isolated newborn. The equipment must remain in the zone for the entire period of isolation.
15. Waste and bedding must remain in the lock of the insulation zone until being collected directly by the cleaning services (laundry staff, waste transport workers) according to the daily schedule.
16. Hospital bedding must be placed securely in a red plastic bag and marked with a black marker: CAUTION – CONTAMINATED BEDDING, SUSPECTED SARS-CoV-2 INFECTION.
17. The cleaning of the isolation zone is carried out according to the cleaning company's procedures approved by the hospital representative. The person responsible for overseeing the proper conduct of the procedure is the Specialist for Epidemiology.
18. After the end of the isolation period, it is advisable to have the premises disinfected by fogging, subject to arrangements with the unit management personnel. Responsible Person: Specialist for Epidemiology.
19. Any questions or concerns should be directed to the Specialist for Epidemiology

There have been no critical analyses of whether adherence to the guidelines published in Ontario, Canada, the American Academy of Pediatrics, Ireland, Northern Ireland or Poland have been thoroughly implemented by all maternity and infant care units. Such an international survey would permit an analysis of different approaches and their effectiveness in mitigating the transmission of COVID-19, and establish if these approaches are unnecessarily restricting the support of mothers during labor and delivery interfering with attachment and feeding of her infant. Furthermore, ideal methods for ongoing infant and mother evaluation and care during the 4th trimester after birth evaluating growth, physical development, and providing recommended immunizations between 6-8 weeks after birth are still under development.

Based on empirical evidence through May 2020, vertical transmission of the virus through the placenta, amniotic fluid, or breastmilk has not been demonstrated. Further, neonatal mortality rates specific to COVID-19 are minimal with reports from China, Italy, and one two-center report from New York City (14,15). These reports to date have been of limited numbers, and have shown variation in mother-infant dyad separation and postpartum practices between reporting centers. Vertical transmission cannot be ruled out. Horizontal transmission from mother to infant may occur, thus increasing exposure risk to care personnel caring for the newborn. Sutton and coworkers reported from New York City that universal screening of 215 women presenting to labor and delivery units, 4 (1.9%) of whom has a fever or other symptoms of COVID-19 and all 4 tested positive, while of 211 without symptoms on admission, 29 (13.7%) were found to be positive for COVID-19 but asymptomatic at presentation. Of these, three women developed a fever prior to hospital discharge (mean time two days), and two were treated with antibiotics for presumptive endomyometritis. One patient was felt to have COVID-19 received supportive care. (16) These authors suggest that universal testing of all women admitted to Labor and Delivery suites is beneficial better, informs healthcare providers of appropriate isolation procedures and bed assignments, informs neonatal care providers, and more appropriate allocation of PPE, and thus lessening transmission of the virus. In Southern Connecticut, 782 women presenting for childbirth were screened for COVID-19; 1.5% were previously diag-

nosed with COVID, and of the remaining 770 women 30/ of 770 (3.9) tested positive for COVID-19 of whom 73.3% were without symptoms. The overall prevalence of positive test results among asymptomatic women was 2.9% to 5% over the month of testing. No asymptomatic women who tested negative developed symptoms during their hospital stay and no healthcare workers were removed from work due to SARS-CoV-2 exposure or transmission from a known positive mother via patient contact (17)

Neonatologists must also be concerned with late-onset sepsis associated with COVID-19. As reported in addition to this issue, and Munoz et al. from Houston (18) who reported on a three-week-old infant and born at 36 weeks gestation with a 2-day history of nasal congestion, tachypnea, and reduced feeding who had received a 48-hour course of antibiotics for suspected sepsis but in whom bacterial cultures were negative. The initial chest radiograph showed bilateral linear opacities and consolidation in the right upper lobe. Oxygen was administered, and ampicillin and gentamicin were initiated. After transfer to a children's hospital, he required intubation, volume support, and vasopressors. Reverse-transcription PCR testing to detect SARS-CoV-2 on admission to the children's hospital was positive by day seven, and he was treated and discharged on day 9. Only one of eight household contacts was symptomatic, but none were tested for SARS-CoV-2. In the May issue of Neonatology, Liu and Stovall (19) reported a 33-week infant whose mother on day 6 had a syncopal like episode while visiting her infant but did not have symptoms consistent with COVID-19, and she continued to visit her baby. On the infant's 19th day of life, the mother was hospitalized for cough, fever, and hyperglycemia and was found to be SARS-CoV-2 PCR positive. The infant was weaned from expressed maternal milk, placed on premature formula, and placed in a negative pressure room. On the infant's 22nd day of life, the infant's SARS-CoV-2 PCR was positive. On days of life 23 through 25, the infant had mild nasal congestion, occasional sneezing, and cough. Contact tracing was rigorous, and 74 potential exposures were documented; however, secondary exposure risk to healthcare personnel was deemed low exposure to the mother within 6 feet for >5 minutes with contact through the portals of the incubator with the mother holding and feeding without either a mask or gown. Buonsenso et al. reported outcomes, seven pregnant women, with documented SARS-CoV-2 infection, one woman had a spontaneous abortion at eight weeks gestational age, four women recovered and continues to be followed, and of the two newborns delivered both were negative at birth, but one was found to SARS-CoV-2 positive at eight days. (20) Thus, the horizontal transmission was strongly inferred. These cases suggest that infants presenting with a clinical presentation consistent with late-onset neonatal sepsis require an expanded search for pathogens, including the SARS-CoV-2 test by PCR.

According to the aforementioned guidelines, taking simple precautions such as assigning designated staff for attending deliveries (if intervention is anticipated), allowing rooming-in of the baby with its mother and monitoring breastfeeding while keeping appropriate physical barrier, staff adherence to the appropriate PPE policy, and facilitating respiratory support inside incubators (if needed) would allow safe management of those suspected cases. This would apply to either infants of asymptomatic mothers with a history of significant COVID-19 contact or infants of symptomatic mothers awaiting COVID-19 test results. It is clear that additional resources are needed, including increased physical distance and, moreover, PPE not only for healthcare workers but also for parent(s) visiting one at a time for short intervals, and rapid testing with acceptable sensitivity and specificity need to be made available to neonatologists. Also, additional incubators must be available to safely care, ideally in a negative pressure environment, for the medical needs of mothers and their babies, and for the health care workers to be able to care for them safely.

In conclusion, the main threats presented by COVID-19 to the safe provision of maternity care are related to the prevalence of the condition in the community and to the possibility that asymptomatic carriers could expose other mothers or hospital staff to infection. Large scale staff reductions due to the need for isolation or due to infection will reduce the safety and efficiency of maternity care provision. Even in countries with high prevalence and high numbers of fatalities, serious illness in mothers seems rare, and seriously affected infants are thankfully extremely rare. This may be due to effective self-isolation being practised by a vast majority of expectant mothers. As "stay at home" or "lockdowns" ease in the coming months, the pressure to reduce visitor restrictions will increase, with an inevitable increase in risk to staff. The staff will need to be vigilant regarding the risk which mothers and their partners present and will need to wear appropriate PPE to mitigate this risk. More importantly, they need to be aware of the risk they present to each other and to ensure adequate hand hygiene and social distancing to avoid congested communal staff facilities such as rest areas, and dining areas, and to be aware of the surface transmission risks presented by shared computers and keyboards. Team building and educational activities have rapidly migrated to electronic platforms, and these enhanced efforts will need to be sustained for the foreseeable future. For the present, and probably for months, there will be a reversion to what has been "normal practice."

As in North America and "across the pond," we do indeed live in challenging times.

#### References:

1. World Health Organization. (April 22, 2020) What matters to women in the postnatal period? <http://www.who.int/news-room/detail/22-04-2020-what-matters-to-women-in-the-postnatal-period>.
2. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (April 4, 2020) Considerations for inpatient obstetric healthcare settings. <https://cdc.gov/coronavirus/2019-ncov/hcp/inpatient-obstetric-healthcare-guidance.html>.
3. Puopolo, KM, Hudak ML, Kimberlin DW, Cummings J. Initial Guidance: Management of Infants Born to Mothers with COVID-19: April 2, 2020, American Academy of Pediatrics
4. Ma X, Zhu, J, Du, Uzhong. Neonatal Management During the Coronavirus Disease (COVID-19) Outbreak: The Chinese Experience. *NeoReview* May 2020, 21(5) e293-2297.
5. Ontario Health Toronto: Toronto Region COVID-19 Hospital Operations Table Version Date March 17, 2020, taken from Graham R. Covid-19 and the NICU Balancing Safety and Care. *Neonatology Today*, April 2020. 15(4): 25-28.
6. Trevisanuto D, Moschino L, Doglioni N, Roeher, CC, Gervasi MT, Baraldi E. Neonatal Resuscitation Where the Mother Has a Suspected or Confirmed Novel Coronavirus (SARS-CoV-2) Infection: Suggestion for a Pragmatic Action Plan. *Neonatology* April 24, 2020, DOI 10.1159/000507935.
7. Ng, PC. Infection control measures for COVID-19 in labour suite and neonatal unit-A commentary *Neonatology* 2020 DOI:10.1159/000508002
8. American Heart Association. Interim Guidance for Basic and Advanced Life Support in Children and Neonates with suspected or confirmed COVID-19. *Pediatrics* 2020 doi: 10.1542/peds.2020-1403
9. Zhu H, Wang L, Fang C, et al. Clinical analysis of 10 neonates born to mothers with 2019-nCoV pneumonia. *Transl. Pediatr.* 2020; 9(1):51-60 doi: 10.21037/tp.2020.02.06
10. Chen H. Guo J, Wang C et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *Lancet* 2020; 396(10226):809-815 doi:10.1016/S0140-673(20)30360-3.

11. Royal College of Physicians and Surgeons, Ireland: Institute of Obstetricians and Gynaecologists of the Royal College of Physicians of Ireland outlined recommendations for Neonatal Management for Maternal and Neonatal Management, April 2020.
12. Walker A. Royal Maternity Hospital Neonatal Unit COVID-19 Policy., Edition April 5 29, 2020. Belfast Health and Social Care Trust, Belfast, Northern Ireland.
13. Ziarnik M, Sosnowska J, Chmaj-Wierzchowska K, Figlerowicz M, Wysocki J, Mazela J. COVID-19 -epidemiologia, obraz kliniczny oraz postepowanie z ciezarna I noworodkiem. *Standy Medyczne Pediatria/April, 2020.*
14. Zeng L, Xia S, Yuan W. et al. Neonatal Early-Onset infection with SARS-CoV-2 in 33 neonates born to mothers(<https://www.statista.com/statistics/1043366/novel-coronaviruses-2019-nCoV-cases-worldwide-by-county.html>) rs with COVID-19 in Wuhan, China. *JAMA Pediatr.* March 26, 2020 (online) doi:10.1001/jamapediatrics.2020.0878.
15. Breslin N, Baptiste C, Gyamfi-Bannerman C, Miller R, Martinez R, Bernstein K, Goffman D. COVID-19 infection among asymptomatic and symptomatic pregnant Women: Two weeks of confirmed presentation to an affiliated pair of New York City hospitals. *American J. Obstet & Gynecol MFM.* Advance online publication. Doi: 10.1016/ajogmf.2020.100118.
16. Sutton D, Fuchs K, D'alton M, Goffman D. Universal screening for SARS-CoV-2 in Women Admitted for Delivery. *N Engl J. Med* 2020 382: 2163. Doi: 10.1056/NEJMc2009316.
17. Campbell, KH, Tornatore JM, Lawrence et al. Prevalence of SARS-CoV-2 Among Patients Admitted for Childbirth in Southern Connecticut. *JAMA* May 26.2020. doi:10.1001/jama2020.8904.
18. Munoz AC, Nawaratne U, McMann D, Ellsworth M, Meliones J, Boukas K. *NEJM* April 22, 2020: 382.e49 doi: 10.1056/NEJMc2020614.
19. Liu W and Stovall S. Case of a preterm newborn with the nosocomial Acquisition of COVID 19 Infection in the Neonatal Intensive Care Unit and Contract Tracing. *Neonatology Today* 15(5) May 2020: 12-20.
20. Buonsenso D, Costa S, Sanguinetti M et al. Neonatal Late COVID-19 Infection with Severe Acute Respiratory Syndrome Coronavirus 2. *Am J Perinatology* 2020 doi: 10.1055/s-9949-1710541.
21. Note added in proof: On May 20, 2020, the Centers for Disease Control and Prevention Revised their recommendations on "Evaluation and Management Considerations for Neonates At Risk for COVID-19 and Care for Breastfeeding Women for the USA.

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**NT**



Ahmed Afifi, MBBCH, MSc  
Neonatal/Paediatric Registrar,  
Rotunda Hospital,  
Dublin, Ireland

Principle Author



David Corcoran MD FRCPI IMC 9632  
Consultant Neonatologist and Paediatrician  
Clinical Associate Professor of Paediatrics  
Rotunda Hospital ,  
Royal College of Surgeons in Ireland  
Dublin, Ireland



Allison C. Walker, MD,  
Consultant Neonatologist,  
Royal Maternal Neonatal Unit  
Belfast, Northern Ireland

Corresponding Author



*T. Allen Merritt, MD  
Professor of Pediatrics  
Loma Linda University School of Medicine  
Division of Neonatology  
Department of Pediatrics  
email: T. Allen Merritt <[allenmerritt.md@gmail.com](mailto:allenmerritt.md@gmail.com)>*



*Thomas A Clarke, MD  
Emeritus Consultant in Neonatology  
The Rotunda Hospital,  
Dublin, Ireland*



*Aleksandra M. Adamczak, MD  
Neonatology Fellow, PGY1  
Cook County Health  
Chicago, IL*

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*Jan Mazela, M.D., Ph.D.,  
Professor of Paediatrics,  
Poznan University of Medical Sciences,  
Poznan, Poland*





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- It has not been demonstrated that the clinical outcomes observed in patients treated with Omegaven are a result of the omega-6: omega-3 fatty acid ratio of the product.

#### Contraindications

- Omegaven is contraindicated in patients with known hypersensitivity to fish or egg protein or to any of the active ingredients or excipients, severe hemorrhagic disorders due to a potential effect on platelet aggregation, severe hyperlipidemia or severe disorders of lipid metabolism characterized by hypertriglyceridemia (serum triglyceride concentrations greater than 1000 mg/dL).

Please see Brief Summary of Prescribing  
Information for Omegaven on the reverse side.



## OMEGAVEN (fish oil triglycerides) injectable emulsion, for intravenous use

### BRIEF SUMMARY OF PRESCRIBING INFORMATION

This brief summary does not include all the information needed to use Omegaven safely and effectively. Please see full prescribing information for Omegaven (fish oil triglycerides) injectable emulsion for intravenous use at [www.fresenius-kabi.com/us](http://www.fresenius-kabi.com/us).

### INDICATIONS AND USAGE

Omegaven is indicated as a source of calories and fatty acids in pediatric patients with parenteral nutrition-associated cholestasis (PNAC).

#### Limitations of Use:

Omegaven is not indicated for the prevention of PNAC. It has not been demonstrated that Omegaven prevents PNAC in parenteral nutrition (PN)-dependent patients.

It has not been demonstrated that the clinical outcomes observed in patients treated with Omegaven are a result of the omega-6: omega-3 fatty acid ratio of the product.

### DOSAGE AND ADMINISTRATION

Prior to administration, correct severe fluid and electrolyte disorders and measure serum triglycerides to establish a baseline level. Initiate dosing in PN-dependent pediatric patients as soon as direct or conjugated bilirubin levels are 2 mg/dL or greater. The recommended daily dose (and the maximum dose) in pediatric patients is 1 g/kg/day. Administer Omegaven until direct or conjugated bilirubin levels are less than 2 mg/dL or until the patient no longer requires PN.

### CONTRAINDICATIONS

Omegaven is contraindicated in patients with known hypersensitivity to fish or egg protein or to any of the active ingredients or excipients, severe hemorrhagic disorders due to a potential effect on platelet aggregation, severe hyperlipidemia or severe disorders of lipid metabolism characterized by hypertriglyceridemia (serum triglyceride concentrations greater than 1,000 mg/dL).

### WARNINGS AND PRECAUTIONS

- Risk of Death in Preterm Infants due to Pulmonary Lipid Accumulation: Deaths in preterm infants after infusion of soybean oil-based intravenous lipid emulsions have been reported in medical literature. Autopsy findings in these preterm infants included intravascular lipid accumulation in the lungs. The risk of pulmonary lipid accumulation with Omegaven is unknown. Preterm and small-for-gestational-age infants have poor clearance of intravenous lipid emulsion and increased free fatty acid plasma levels following lipid emulsion infusion. This risk due to poor lipid clearance should be considered when administering intravenous lipid emulsions. Monitor patients receiving Omegaven for signs and symptoms of pleural or pericardial effusion.
- Hypersensitivity Reactions: Omegaven contains fish oil and egg phospholipids, which may cause hypersensitivity reactions. Signs or symptoms of a hypersensitivity reaction may include: tachypnea, dyspnea, hypoxia, bronchospasm, tachycardia, hypotension, cyanosis, vomiting, nausea, headache, sweating, dizziness, altered mentation, flushing, rash, urticaria, erythema, fever, or chills. If a hypersensitivity reaction occurs, stop infusion of Omegaven immediately and initiate appropriate treatment and supportive measures.
- Risk of Infections: The risk of infection is increased in patients with malnutrition-associated immunosuppression, long-term use and poor maintenance of intravenous catheters, or immunosuppressive effects of other conditions or concomitant drugs. To decrease the risk of infectious complications, ensure aseptic technique in catheter placement and maintenance, as well as in the preparation and administration of Omegaven. Monitor for signs and symptoms of early infections including fever and chills, laboratory test results that might indicate infection (including leukocytosis and hyperglycemia), and frequently inspect the intravenous catheter insertion site for edema, redness, and discharge.
- Fat Overload Syndrome: A reduced or limited ability to metabolize lipids accompanied by prolonged plasma clearance may result in this syndrome, which is characterized by a sudden deterioration in the patient's condition including fever, anemia, leukopenia, thrombocytopenia, coagulation disorders, hyperlipidemia, hepatomegaly, deteriorating liver function, and central nervous system manifestations (e.g., coma).
- Refeeding Syndrome: Administering PN to severely malnourished patients may result in refeeding syndrome, which is characterized by the intracellular shift of potassium, phosphorus, and magnesium as the patient becomes anabolic. Thiamine deficiency and fluid retention may also develop. To prevent these complications, closely monitor severely malnourished patients and slowly increase their nutrient intake.
- Hypertriglyceridemia: Impaired lipid metabolism with hypertriglyceridemia may occur in conditions such as inherited lipid disorders, obesity, diabetes mellitus, and metabolic syndrome. Serum triglyceride levels greater than 1,000 mg/dL have been associated with an increased risk of pancreatitis. To evaluate the patient's capacity to metabolize and eliminate the infused lipid emulsion, measure serum triglycerides before the start of infusion (baseline value), and regularly throughout treatment. If hypertriglyceridemia (triglycerides greater than 250 mg/dL in neonates and infants or greater than 400 mg/dL in older children) develops, consider stopping the administration of Omegaven for 4 hours and obtain a repeat serum triglyceride level. Resume Omegaven based on new result as indicated.
- Aluminum Toxicity: Aluminum may reach toxic levels with prolonged parenteral administration if kidney function is impaired. Preterm infants are particularly at risk because their kidneys are immature, and they require large amounts of calcium and phosphate solutions, which contain aluminum. Patients with impaired kidney function, including preterm infants, who receive parenteral levels of aluminum at greater than 4 to 5 mcg/kg/day accumulate aluminum at levels associated with central nervous system and bone toxicity. Tissue loading may occur at even lower rates of administration.
- Monitoring and Laboratory Tests: **Routine Monitoring:** Monitor serum triglycerides, fluid and electrolyte status, blood glucose, liver and kidney function, coagulation parameters, and complete blood count including platelets throughout treatment. **Essential Fatty Acids:** Monitoring patients for laboratory evidence of essential fatty acid deficiency (EFAD) is recommended. Laboratory tests are available to determine serum fatty acids levels. Reference values should be consulted to help determine adequacy of essential fatty acid status.
- Interference with Laboratory Tests: The lipids contained in Omegaven may interfere with some laboratory blood tests (e.g., hemoglobin, lactate dehydrogenase, bilirubin, and oxygen saturation) if blood is sampled before lipids have cleared from the bloodstream. Lipids are normally cleared after a period of 5 to 6 hours once the lipid infusion is stopped.

### ADVERSE REACTIONS

The most common adverse drug reactions (>15%) are: vomiting, agitation, bradycardia, apnea and viral infection.

### Clinical Trials Experience

The safety database for Omegaven reflects exposure in 189 pediatric patients (19 days to 15 years of age) treated for a median of 14 weeks (3 days to 8 years) in two clinical trials.

Adverse reactions that occurred in more than 5% of patients who received Omegaven and with a higher incidence than the comparator group are: vomiting, agitation, bradycardia, apnea, viral infection, erythema, rash, abscess, neutropenia, hypotonia and incision site erythema. Patients had a complicated medical and surgical history prior to receiving Omegaven treatment and the mortality was 13%. Underlying clinical conditions prior to the initiation of Omegaven therapy included prematurity, low birth weight, necrotizing enterocolitis, short bowel syndrome, ventilator dependence, coagulopathy, intraventricular hemorrhage, and sepsis.

Twelve (6%) Omegaven-treated patients were listed for liver transplantation (1 patient was listed 18 days before treatment, and 11 patients after a median of 42 days [range: 2 days to 8 months] of treatment); 9 (5%) received a transplant after a median of 121 days (range: 25 days to 6 months) of treatment, and 3 (2%) were taken off the waiting list because cholestasis resolved.

One hundred thirteen (60%) Omegaven-treated patients reached DBil levels less than 2 mg/dL and AST or ALT levels less than 3 times the upper limit of normal, with median AST and ALT levels for Omegaven-treated patients at 89 and 65 U/L, respectively, by the end of the study.

Median hemoglobin levels and platelet counts for Omegaven-treated patients at baseline were 10.2 g/dL and 173 x 10<sup>9</sup>/L, and by the end of the study these levels were 10.5 g/dL and 217 x 10<sup>9</sup>/L, respectively. Adverse reactions associated with bleeding were experienced by 74 (39%) of Omegaven-treated patients.

Median glucose levels at baseline and the end of the study were 86 and 87 mg/dL for Omegaven-treated patients, respectively. Hyperglycemia was experienced by 13 (7%) Omegaven-treated patients.

Median triglyceride levels at baseline and the end of the study were 121 mg/dL and 72 mg/dL for Omegaven-treated patients respectively. Hypertriglyceridemia was experienced by 5 (3%) Omegaven-treated patients.

The triene:tetraene (Mead acid:arachidonic acid) ratio was used to monitor essential fatty acid status in Omegaven-treated patients only in Study 1 (n = 123). The median triene:tetraene ratio was 0.02 (interquartile range: 0.01 to 0.03) at both baseline and the end of the study. Blood samples for analysis may have been drawn while the lipid emulsion was being infused and patients received enteral or oral nutrition.

### Postmarketing Experience

The following adverse reaction has been identified with use of Omegaven in another country. Life-threatening hemorrhage following a central venous catheter change was reported in a 9 month-old infant with intestinal failure who received PN with Omegaven as the sole lipid source; he had no prior history of bleeding, coagulopathy, or portal hypertension.

**To report SUSPECTED ADVERSE REACTIONS, contact Fresenius Kabi USA, LLC, at 1-800-551-7176, option 5, or FDA at 1-800-FDA-1088 or [www.fda.gov/medwatch](http://www.fda.gov/medwatch).**

### DRUG INTERACTIONS

Prolonged bleeding time has been reported in patients taking antiplatelet agents or anticoagulants and oral omega-3 fatty acids. Periodically monitor bleeding time in patients receiving Omegaven and concomitant antiplatelet agents or anticoagulants.

### USE IN SPECIFIC POPULATIONS

- Pregnancy: There are no available data on Omegaven use in pregnant women to establish a drug-associated risk of major birth defects, miscarriage, or adverse maternal or fetal outcomes. Animal reproduction studies have not been conducted with fish oil triglycerides. The estimated background risk of major birth defects and miscarriage in the indicated population is unknown. All pregnancies have a background risk of birth defect, loss, or other adverse outcomes. In the US general population, the estimated background risk of major birth defects and miscarriage in clinically recognized pregnancies is 2% to 4% and 15% to 20%, respectively.
- Lactation: No data available regarding the presence of fish oil triglycerides from Omegaven in human milk, the effects on the breastfed infant, or the effects on milk production. Lactating women receiving oral omega-3 fatty acids have been shown to have higher levels of omega-3 fatty acids in their milk. The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for Omegaven, and any potential adverse effects of Omegaven on the breastfed infant.
- Pediatric Use: The safety of Omegaven was established in 189 pediatric patients (19 days to 15 years of age). The most common adverse reactions in Omegaven-treated patients were vomiting, agitation, bradycardia, apnea and viral infection.
- Geriatric Use: Clinical trials of Omegaven did not include patients 65 years of age and older.

### OVERDOSE

In the event of an overdose, fat overload syndrome may occur. Stop the infusion of Omegaven until triglyceride levels have normalized and any symptoms have abated. The effects are usually reversible by stopping the lipid infusion. If medically appropriate, further intervention may be indicated. Lipids are not dialyzable from serum.

### REFERENCES:

1. Omegaven Prescribing Information, Fresenius Kabi USA, LLC. 2018.



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# HeRO Monitoring: Does It Lead to Unnecessary Testing and Treatment?

William E King, MS

## Introduction

Evidence continues to build that HeRO monitoring improves outcomes of premature infants, including all-cause NICU mortality, (1) mortality after infection, (2) mortality at 18-22 months, (3) mortality-or-severe-cerebral-palsy at 18-22 months, (3) and NICU length of stay. (4) Yet some neonatologists find themselves hesitant to adopt HeRO monitoring for fear that it may lead to higher rates of testing and antibiotic usage. Here, we examine whether those fears are well-founded and the hesitancy justified.

*“Yet some neonatologists find themselves hesitant to adopt HeRO monitoring for fear that it may lead to higher rates of testing and antibiotic usage. Here, we examine whether those fears are well-founded and the hesitancy justified.”*

## Background

The HeRO Score (aka HRC Index) is calculated every hour and identifies abnormal heart rate patterns of reduced variability and transient decelerations that are associated with cytokines (5-7) and often precede sepsis(8-18) UTI, (19) NEC, (20,21), meningitis, (19) neuro trauma, (22-25) respiratory decompensation, (26) extubation readiness, (27,28) and death. (23,25, 29-31) HeRO monitoring has been utilized as an early warning system, (32) and Moorman et al. hypothesized that it may lead to early diagnoses, earlier interventions, and improved outcomes. In the largest RCT ever published among premature neonates, 3003 VLBW patients at nine hospitals were randomized to either receive standard of care monitoring, or standard of care monitoring plus HeRO. (1)

While mortality and other outcomes described above were statistically significantly improved for those patients randomized to the HeRO-display group, Moorman et al. described non-significant trends toward increased testing and antibiotics: “Infants whose HRC monitoring results were displayed had 10% more blood cultures drawn for the suspicion of sepsis (1.8 per month compared with 1.6,  $P = .05$ ) and 5% more days on antibiotics (15.7 compared with 15.0,  $P = .31$ , Table).” (1)

Mortality, however, is a competing outcome with both cultures drawn and antibiotic days, and properly accounting for the in-

crease in survival when assessing other outcomes can change the result. Indeed, we have previously reported that length of stay among this cohort was longer among the HeRO-display group when failing to account for the competing outcome of mortality, but shorter when so doing. (4)

We hypothesized that metrics of blood culture rates and antibiotic usage would favor HeRO-monitoring after adjusting for the competing outcome of mortality.

## Methods

We calculated the following composite metrics for each patient: number of days alive without antibiotics, number of days alive without a blood culture, and number of days alive without a negative blood culture for suspicion of sepsis. Event days were assessed discretely—that is, if there were any antibiotics/cultures on a particular day of life, that entire day was assessed as having antibiotics/cultures. The mean values of each metric were calculated for the HeRO display group and the control group. The difference in distributions was assessed using a two-tailed t-test, with statistical significance set at  $P < 0.05$ . Data were queried from the SQL database (Microsoft Corporation) and analyzed using R (R Core Team). (33) Data were analyzed from birth through 120 days of life (a departure from the report of the RCT, where data were analyzed from randomization (mean 3.8 days after birth) to 120 days post randomization (1)). We performed a sensitivity analysis to determine whether analyzing the 120 days beginning at randomization changed the results.

*“When comparing the number of days alive and without a negative blood culture for suspicion of sepsis, the benefit of HeRO-monitoring was significant (110.5 days versus 108.4,  $P=0.048$ ).”*

## Results

Baseline demographics of the patients enrolled in the RCT have been described in previous reports and were not statistically significantly different between the two arms (1).

The results of this analysis are presented in Table 1. Patients randomized to HeRO-display had non-significant trends toward more days alive and without antibiotics in their first 120 days than controls (96.1 versus 94.5,  $P=0.187$ ) and more days alive without a blood culture in their first 120 days (109.0 versus 107.1,  $P=0.071$ ).

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Outcome	Control	HeRO	Delta	P
<b>Component Outcomes</b>				
Days alive	110.2	112.4	2.2	0.029
Days with antibiotics	15.7	16.3	0.6	0.350
Days with a blood culture	3.06	3.43	0.37	0.010
Days with a negative blood culture for suspicion of sepsis	1.74	1.96	0.22	0.014
<b>Composite Outcomes</b>				
Days alive and without antibiotics	94.5	96.1	1.6	0.187
Days alive and without a blood culture	107.1	109.0	1.9	0.071
Days alive and without a negative blood culture for suspicion of sepsis	108.4	110.5	2.1	0.048

Table 1. Mean days alive, days with an event, and days alive without an event for Control (standard of care cardio-respiratory monitoring) versus HeRO (standard of care cardio-respiratory monitoring plus HeRO).

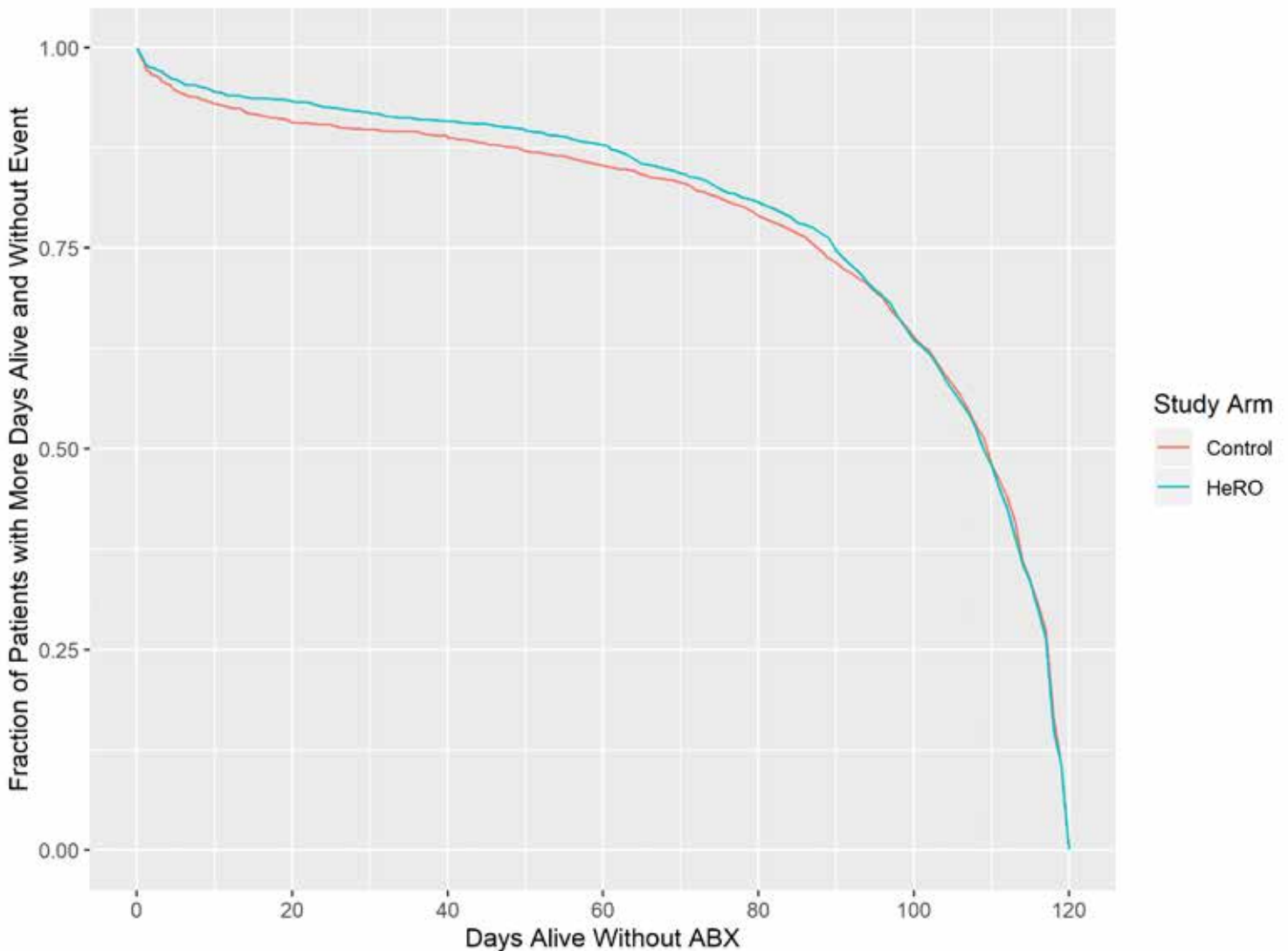


Figure 1. Days alive without antibiotics

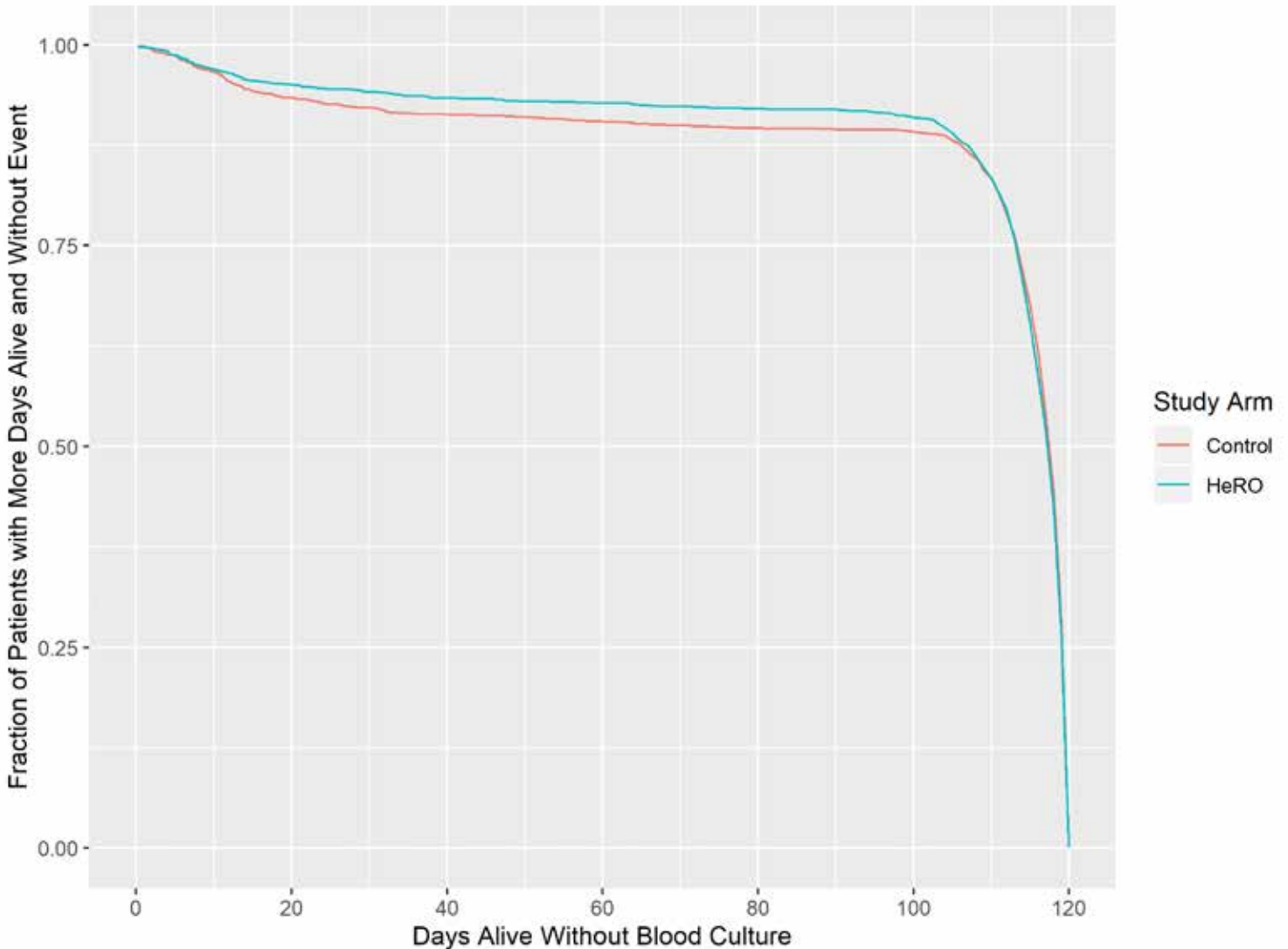


Figure 2. Days alive without blood culture

When comparing the number of days alive and without a negative blood culture for suspicion of sepsis, the benefit of HeRO-monitoring was significant (110.5 days versus 108.4,  $P=0.048$ ). Results were similar and statistical significance was not affected when we analyzed 120 days beginning at randomization rather than birth.

In Figures 1, 2, and 3, we present curves comparing the difference between the Control and HeRO-display arms of the RCT in each of the three composite outcomes. The x-axis represents the number of days a patient was alive and without antibiotics, alive without a blood culture, or alive without a negative blood culture drawn for suspicion of sepsis, respectively, during their first 120 days of life. At a particular point along the x-axis, the y-axis represents the fraction of patients that had at least that number of days alive and without event. These plots can be interpreted much like Kaplan-Meier survival curves, with the provisos that the outcome plotted is a composite of death and/or event, and that the data are right-censored at 120 days. By definition, all trends originate at 1.0 at 0 days, separate based on differences in the measured outcome, and converge to 0.0 at 120 days.

## Discussion

Concern regarding over-testing and over-utilization of antimicrobials among neonatologists has grown in recent years and may have led many to hesitate in adopting HeRO monitoring. In this

analysis, we attempt to both (a) assess over-testing and over-treatment of VLBW neonates in the context of the competing outcome of improved mortality, and (b) contextualize the relative costs of death versus over-testing/over-treatment. Toward both ends, we tested the composite outcomes of days alive and without antibiotics, days alive and without blood culture, and days alive and without unnecessary blood culture (i.e., a negative blood culture that was drawn for suspicion of sepsis).

All three metrics trended in favor of HeRO monitoring, and one of the three was statistically significant. Arguably, the statistical equivalence demonstrated by the other two metrics also favors the adoption of HeRO monitoring, as they indicate that there is no increase in death-or-testing and death-or-treatment.

Moorman et al. reported a number needed to treat of 48 patients to save a life with HeRO monitoring. (1) Here we report that HeRO-monitored patients had 0.22 more days with an unnecessary blood culture (defined as a negative blood culture drawn for suspicion of sepsis) and an estimate of 0.6 additional days of antibiotics per patient. Among VLBWs in a NICU, the price of saving one life with HeRO monitoring is 10.6 unnecessary blood cultures ( $48 \times 0.22$ ) and 29 days of antibiotics ( $48 \times 0.6$ ). Importantly, all of the additional days of antibiotics went to septic patients per Fairchild et al, (2) Table 1, where the authors reported non-septic patients had identical days of antibiotics (7.6 days for HeRO versus 7.6 for

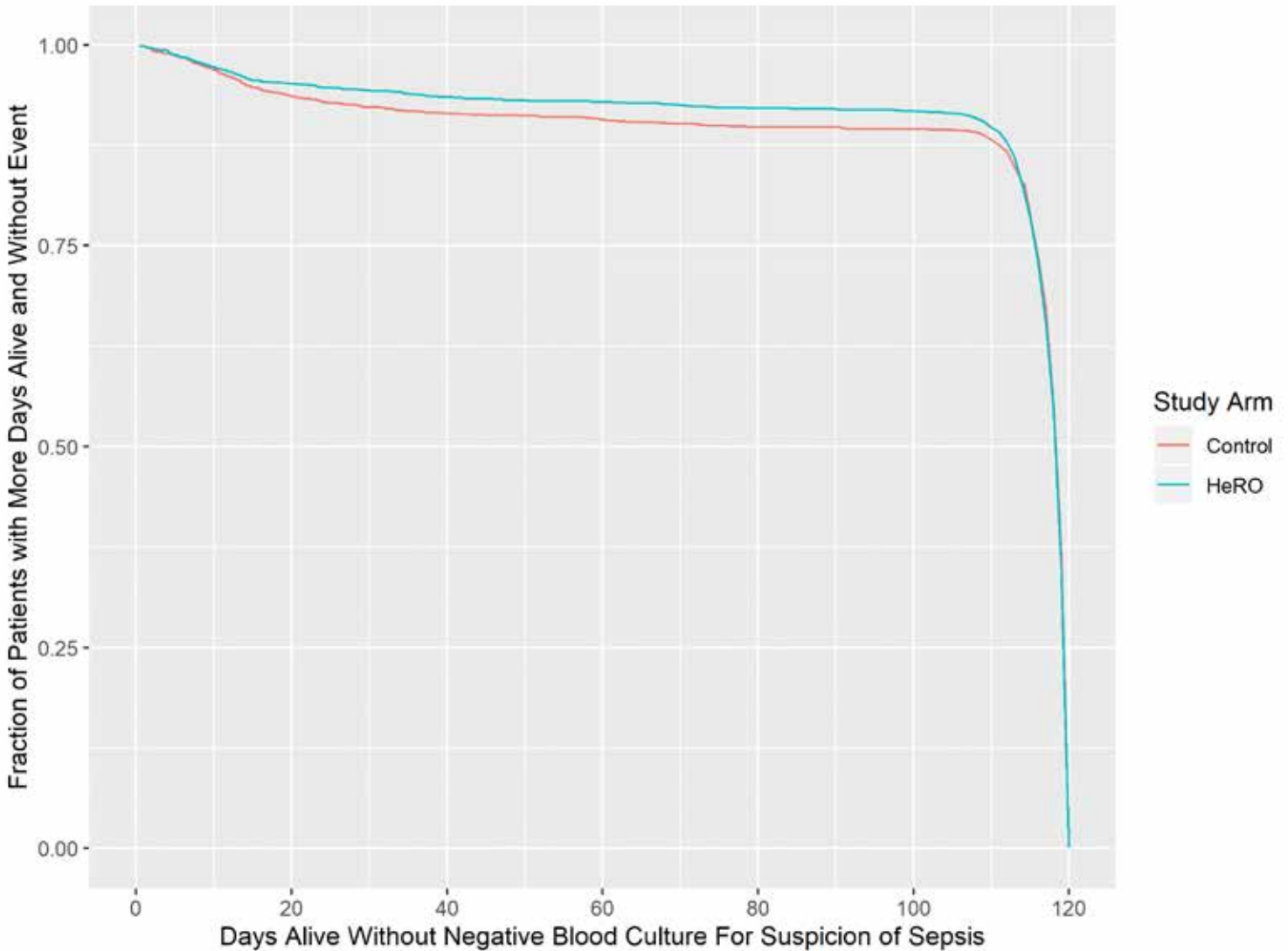


Figure 3. Days alive without unnecessary blood culture

controls), while septic patients had 32.1 days with HeRO versus 29.0 for controls (P=0.047).

Furthermore, the concern that the excess testing or excess therapy will have later consequences is unwarranted because the number needed to treat of 48 is based on the all-cause mortality improvement—the net effect of HeRO monitoring on NICU mortality where any possible consequences of excess testing/treatment were built into the calculation. And among the ELBW patients with a neurodevelopmental follow-up, Schelonka et al. reported that the mortality benefit of HeRO monitoring persisted at 18-22 months<sup>3</sup>.

A possible weakness of analyzing days alive and without event (antibiotics, a blood culture, or an unnecessary blood culture) is

that it treats a day with an event as equivalent to a day deceased. Obviously, this overestimates the relative cost of antibiotics and cultures versus death.

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***“Nevertheless, when examining those concerns after controlling for, and in the context of, the mortality improvement associated with HeRO monitoring, hesitancy in adopting the technology is not justified.”***

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But this weakness is also a strength because it paints a stark contrast. It is axiomatic that a day with antibiotics or an unnecessary culture is better than death. If no parent would ever choose to exchange the death of their child to avoid an unnecessary blood culture or course of antibiotics, why would some neonatologists, who serve as advocates for their patients, choose to do so?

#### Conclusion

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Previous reports have indicated trends toward increased testing and treatment associated with HeRO monitoring, so clinician concern is well-founded. Nevertheless, when examining those concerns after controlling for, and in the context of, the mortality improvement associated with HeRO monitoring, hesitancy in adopting the technology is not justified.

**References:**

1. Moorman JR, Carlo WA, Kattwinkel J, Schelonka RL, Porcelli PJ, Navarrete CT, Bancalari E, Aschner JL, Whit Walker M, Perez JA, Palmer C, Stukenborg GJ, Lake DE, Michael O'Shea T. Mortality reduction by heart rate characteristic monitoring in very low birth weight neonates: a randomized trial. *J Pediatr.* 2011 Dec;159(6):900-6. e1. doi: 10.1016/j.jpeds.2011.06.044. Epub 2011 Aug 24. PMID: 21864846; PMCID: PMC3215822.
2. Fairchild KD, Schelonka RL, Kaufman DA, Carlo WA, Kattwinkel J, Porcelli PJ, Navarrete CT, Bancalari E, Aschner JL, Walker MW, Perez JA, Palmer C, Lake DE, O'Shea TM, Moorman JR. Septicemia mortality reduction in neonates in a heart rate characteristics monitoring trial. *Pediatr Res.* 2013 Nov;74(5):570-5. doi: 10.1038/pr.2013.136. Epub 2013 Aug 13. PMID: 23942558; PMCID: PMC4026205.
3. Schelonka RL, Carlo WA, Bauer CR, Peralta-Carcelen M, Phillips V, Helderan J, Navarrete CT, Moorman JR, Lake DE, Kattwinkel J, Fairchild KD, O'Shea TM. Mortality and Neurodevelopmental Outcomes in the Heart Rate Characteristics Monitoring Randomized Controlled Trial. *J Pediatr.* 2020 Apr;219:48-53. doi: 10.1016/j.jpeds.2019.12.066. Epub 2020 Feb 4. PMID: 32033793; PMCID: PMC7096280.
4. Swanson JR, King WE, Sinkin RA, Lake DE, Carlo WA, Schelonka RL, Porcelli PJ, Navarrete CT, Bancalari E, Aschner JL, Perez JA, O'Shea TM, Walker MW. Neonatal Intensive Care Unit Length of Stay Reduction by Heart Rate Characteristics Monitoring. *J Pediatr.* 2018 Jul;198:162-167. doi: 10.1016/j.jpeds.2018.02.045. Epub 2018 Apr 24. PMID: 29703576.
5. Fairchild KD, Saucerman JJ, Raynor LL, Sivak JA, Xiao Y, Lake DE, Moorman JR. Endotoxin depresses heart rate variability in mice: cytokine and steroid effects. *Am J Physiol Regul Integr Comp Physiol.* 2009 Oct;297(4):R1019-27. doi: 10.1152/ajpregu.00132.2009. Epub 2009 Aug 5. PMID: 19657103; PMCID: PMC2763816.
6. Fairchild KD, Srinivasan V, Moorman JR, Gaykema RP, Goehler LE. Pathogen-induced heart rate changes associated with cholinergic nervous system activation. *Am J Physiol Regul Integr Comp Physiol.* 2011 Feb;300(2):R330-9. doi: 10.1152/ajpregu.00487.2010. Epub 2010 Nov 10. PMID: 21068197; PMCID: PMC3043803.
7. Raynor LL, Saucerman JJ, Akinola MO, Lake DE, Moorman JR, Fairchild KD. Cytokine screening identifies NICU patients with Gram-negative bacteremia. *Pediatr Res.* 2012 Mar;71(3):261-6. doi: 10.1038/pr.2011.45. Epub 2012 Jan 25. PMID: 22278182; PMCID: PMC3552187.
8. Griffin MP, Moorman JR. Toward the early diagnosis of neonatal sepsis and sepsis-like illness using novel heart rate analysis. *Pediatrics.* 2001 Jan;107(1):97-104. doi: 10.1542/peds.107.1.97. PMID: 11134441.
9. Kovatchev BP, Farhy LS, Cao H, Griffin MP, Lake DE, Moorman JR. Sample asymmetry analysis of heart rate characteristics with application to neonatal sepsis and systemic inflammatory response syndrome. *Pediatr Res.* 2003 Dec;54(6):892-8. doi: 10.1203/01.PDR.0000088074.97781.4F. Epub 2003 Aug 20. PMID: 12930915.
10. Griffin MP, O'Shea TM, Bissonette EA, Harrell FE Jr, Lake DE, Moorman JR. Abnormal heart rate characteristics preceding neonatal sepsis and sepsis-like illness. *Pediatr Res.* 2003 Jun;53(6):920-6. doi: 10.1203/01.PDR.0000064904.05313.D2. Epub 2003 Mar 19. PMID: 12646726.
11. Griffin MP, Lake DE, Moorman JR. Heart rate characteristics and laboratory tests in neonatal sepsis. *Pediatrics.* 2005 Apr;115(4):937-41. doi: 10.1542/peds.2004-1393. PMID: 15805367.
12. Moorman JR, Lake DE, Griffin MP. Heart rate characteristics monitoring for neonatal sepsis. *IEEE Trans Biomed Eng.* 2006;53(1):126-132. doi:10.1109/TBME.2005.859810
13. Griffin MP, Lake DE, O'Shea TM, Moorman JR. Heart rate characteristics and clinical signs in neonatal sepsis. *Pediatr Res.* 2007 Feb;61(2):222-7. doi: 10.1203/01.pdr.0000252438.65759.af. PMID: 17237726.
14. Moorman JR, Delos JB, Flower AA, Cao H, Kovatchev BP, Richman JS, Lake DE. Cardiovascular oscillations at the bedside: early diagnosis of neonatal sepsis using heart rate characteristics monitoring. *Physiol Meas.* 2011 Nov;32(11):1821-32. doi: 10.1088/0967-3334/32/11/S08. Epub 2011 Oct 25. PMID: 22026974; PMCID: PMC4898648.
15. Fairchild KD. Predictive monitoring for early detection of sepsis in neonatal ICU patients. *Curr Opin Pediatr.* 2013;25(2):172-179. doi:10.1097/MOP.0b013e32835e8fe6
16. Lake DE, Fairchild KD, Moorman JR. Complex signals bioinformatics: evaluation of heart rate characteristics monitoring as a novel risk marker for neonatal sepsis. *J Clin Monit Comput.* 2014 Aug;28(4):329-39. doi: 10.1007/s10877-013-9530-x. Epub 2013 Nov 19. PMID: 24248424; PMCID: PMC4026344.
17. Hicks JH, Fairchild KD. Heart rate characteristics in the NICU: what nurses need to know. *Adv Neonatal Care.* 2013 Dec;13(6):396-401. doi: 10.1097/ANC.0000000000000031. PMID: 24300957.
18. Pugni L, Ronchi A, Bizzarri B, Pietrasanta C, Araimo G,


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- Ghirardi B, Casciati MC, Perniciaro S, Casartelli M, Mosca F. [HEART RATE CHARACTERISTICS INDEX SCORE: Is it Useful to Predict Neonatal Sepsis?]. *La Pediatria Medica # Chirurgica - Medical and Surgical Pediatrics* Volume 37, N. 1, January-March 2015. Italian.
19. Weitkamp JH, Aschner JL, Carlo WA, Bancalari E, Perez JA, Navarrete CT, Schelonka RL, Whit Walker M, Porcelli P Jr, O'Shea TM, Palmer C, Grossarth S, Lake DE, Fairchild KD. Meningitis, urinary tract, and bloodstream infections in very low birth weight infants enrolled in a heart rate characteristics monitoring trial. *Pediatr Res.* 2019 Dec 4. doi: 10.1038/s41390-019-0701-4. Epub ahead of print. PMID: 31801155.
  20. Stone ML, Tatum PM, Weitkamp JH, Mukherjee AB, Attridge J, McGahren ED, Rodgers BM, Lake DE, Moorman JR, Fairchild KD. Abnormal heart rate characteristics before clinical diagnosis of necrotizing enterocolitis. *J Perinatol.* 2013 Nov;33(11):847-50. doi: 10.1038/jp.2013.63. Epub 2013 May 30. PMID: 23722974; PMCID: PMC4026091.
  21. Sullivan BA, Fairchild KD. Predictive monitoring for sepsis and necrotizing enterocolitis to prevent shock. *Semin Fetal Neonatal Med.* 2015 Aug;20(4):255-61. doi: 10.1016/j.siny.2015.03.006. Epub 2015 Mar 29. PMID: 25823938.
  22. Addison K, Griffin MP, Moorman JR, Lake DE, O'Shea TM. Heart rate characteristics and neurodevelopmental outcome in very low birth weight infants. *J Perinatol.* 2009 Nov;29(11):750-6. doi: 10.1038/jp.2009.81. Epub 2009 Jun 25. PMID: 19554011; PMCID: PMC2834345.
  23. Fairchild KD, Sinkin RA, Davalian F, Blackman AE, Swanson JR, Matsumoto JA, Lake DE, Moorman JR, Blackman JA. Abnormal heart rate characteristics are associated with abnormal neuroimaging and outcomes in extremely low birth weight infants. *J Perinatol.* 2014 May;34(5):375-9. doi: 10.1038/jp.2014.18. Epub 2014 Feb 20. PMID: 24556979.
  24. Kayton A, DeGrazia M, Sharpe E, Smith D, Perez JA, Weiss MD. Correlation Between Heart Rate Characteristic Index Score and Severity of Brain Injury in Neonates With Hypoxic-Ischemic Encephalopathy. *Adv Neonatal Care.* 2020 Jan 27. doi: 10.1097/ANC.0000000000000686. Epub ahead of print. PMID: 31895138.
  25. Vergales BD, Zanelli SA, Matsumoto JA, Goodkin HP, Lake DE, Moorman JR, Fairchild KD. Depressed heart rate variability is associated with abnormal EEG, MRI, and death in neonates with hypoxic ischemic encephalopathy. *Am J Perinatol.* 2014 Nov;31(10):855-62. doi: 10.1055/s-0033-1361937. Epub 2013 Dec 17. PMID: 24347263.
  26. Clark MT, Vergales BD, Paget-Brown AO, Smoot TJ, Lake DE, Hudson JL, Delos JB, Kattwinkel J, Moorman JR. Predictive monitoring for respiratory decompensation leading to urgent unplanned intubation in the neonatal intensive care unit. *Pediatr Res.* 2013 Jan;73(1):104-10. doi: 10.1038/pr.2012.155. Epub 2012 Nov 8. PMID: 23138402; PMCID: PMC5321074.
  27. Alonzo CJ, Fairchild KD. Dexamethasone effect on heart rate variability in preterm infants on mechanical ventilation. *J Neonatal Perinatal Med.* 2017;10(4):425-430. doi: 10.3233/NPM-16157. PMID: 29286932.
  28. Goel N, Chakraborty M, Watkins WJ, Banerjee S. Predicting Extubation Outcomes-A Model Incorporating Heart Rate Characteristics Index. *J Pediatr.* 2018 Apr;195:53-58.e1. doi: 10.1016/j.jpeds.2017.11.037. Epub 2018 Jan 10. PMID: 29329913.
  29. Griffin MP, O'Shea TM, Bissonette EA, Harrell FE Jr, Lake DE, Moorman JR. Abnormal heart rate characteristics are associated with neonatal mortality. *Pediatr Res.* 2004 May;55(5):782-8. doi: 10.1203/01.PDR.0000119366.21770.9E. Epub 2004 Jan 22. PMID: 14739356.
  30. Griffin MP, Lake DE, Bissonette EA, Harrell FE Jr, O'Shea TM, Moorman JR. Heart rate characteristics: novel physiologic markers to predict neonatal infection and death. *Pediatrics.* 2005 Nov;116(5):1070-4. doi: 10.1542/peds.2004-2461. PMID: 16263991.
  31. Sullivan BA, McClure C, Hicks J, Lake DE, Moorman JR, Fairchild KD. Early Heart Rate Characteristics Predict Death and Morbidities in Preterm Infants. *J Pediatr.* 2016 Jul;174:57-62. doi: 10.1016/j.jpeds.2016.03.042. Epub 2016 Apr 22. PMID: 27113378; PMCID: PMC5672906.
  32. Fairchild KD. Predictive monitoring for early detection of sepsis in neonatal ICU patients. *Curr Opin Pediatr.* 2013 Apr;25(2):172-9. doi: 10.1097/MOP.0b013e32835e8fe6. PMID: 23407184.
  33. R Core Team (2019). *R: A language and environment for statistical computing.* R Foundation for Statistical Computing, Vienna, Austria. URL <http://www.R-project.org/>

**Disclosure:** Mr. King is Chief Executive Officer of Medical Predictive Science Corporation, where he has developed and coded real-time implementations of algorithms to predict infection in neonates based on physiological monitoring data, obtained FDA and other regulatory approvals, developed an FDA compliant quality system and sold devices to customers throughout the world. Mr. King is employed by MPSC, manufacturer of HeRO.

**NT**

Corresponding Author:



Will King  
CEO  
Medical Predictive Science Corporation, an ISO registered company  
1233 Cedars Court, Suite 201  
Charlottesville, VA 22903  
(434) 220 0703  
(800) 394 1625 x1113(toll-free)  
Email [wking@HeROScore.com](mailto:wking@HeROScore.com)

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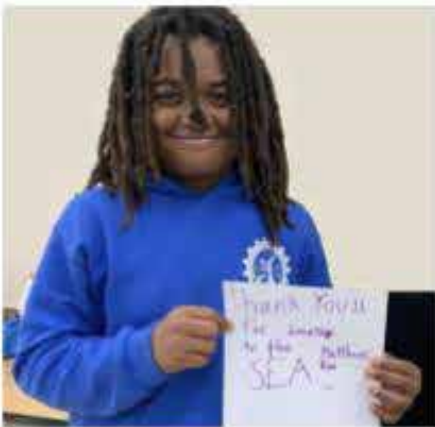
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# The Village Son



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## Fellow Column: A Neonate with Fetal Brain Disruption Sequence

Andrea Ho, MD, Robin Clark, MD, Gilbert Martin, MD

### Introduction:

Fetal brain disruption sequence (FBDS) is a condition with many causes that is characterized by severe microcephaly of prenatal onset, overlapping sutures, scalp rugae, neurological impairment, normal hair pattern, and occipital bone prominence. FBDS is postulated to result from a disruption in brain development during the second or third trimester, which leads to decreased intracranial hydrostatic pressure with the consequent collapse of the fetal skull. Overlapping sutures, occipital bone prominence, and scalp rugae follow as a result of this collapse. Preservation of hair formation is explained by otherwise normal development during the first 18 weeks of gestation, the period when hair follicles develop.

### Case History:

A two-day-old male was transferred to Loma Linda University Children's Hospital for cyanosis associated with feeding, desaturations, and hypothermia. The mother was a 24-year-old G2P2 female. The mother used tobacco before she came to the knowledge of her pregnancy and did not receive prenatal care. She denied the use of illicit drugs. Based on the last menstrual period, the neonate was 41 weeks 6 days gestation at birth. The mother reported an untreated urinary tract infection and pubic folliculitis at 30-33 weeks of gestation. Parents also stated that they were exposed to mold during the entire pregnancy and that the family moved at 39 weeks of gestation. He was born via spontaneous vaginal delivery at home, where the parents noted that his head was small and misshapen. Paramedics arrived shortly after delivery and transported the neonate to an outside hospital. The parents were told that he had anencephaly, and they brought him home for hospice care. On day two of life, he was at the pediatrician's office breastfeeding when he choked and became cyanotic and limp. He was taken to an outside hospital, where he was hypothermic to 94.3 F, had periodic breathing, desaturated to 84%, and required nasal cannula 1 LPM. He was treated with ampicillin and gentamicin. Chest x-ray showed ground-glass opacities. A brain MRI showed diffuse symmetric microcephaly with abnormal sulcation suggestive of a simplified gyral pattern, a 7mm subdural hematoma, a thin corpus callosum, mild symmetric dilation of the occipital horns, a diminutive appearance of the optic nerves, and fluid in the mastoid air cells. The neonate was then transferred to our facility for genetics, and pediatric neurology consults as well as for further management of respiratory failure.

*“Less than twenty-four hours after arrival to the pediatrics unit, the neonate had bradycardic events with heart rate in the 80's and desaturations to 60% despite tactile stimulation and nasal cannula 1 LPM. A cardiopulmonary arrest was suspected.”*

Less than twenty-four hours after arrival to the pediatrics unit, the neonate had bradycardic events with heart rate in the 80's and desaturations to 60% despite tactile stimulation and nasal cannula 1 LPM. A cardiopulmonary arrest was suspected. A code was called, and ROSC was achieved after five cycles of chest compressions with bag-mask ventilation. The neonate was then transferred to the NICU.

The mother of this neonate was 24-years-old at the time of his birth. She is healthy, though she reports having a “small head.” She is of Russian, French, German, and Italian descent. The father is 37-years-old. He has numbness of the hands and feet as well as constant migraines, and he has been referred to a neurologist. He is of Spanish and possibly French-Canadian ancestry. The parents denied consanguinity and previous miscarriages. Their head circumferences are unavailable. The neonate has a 3-year-old full sister who is healthy.

The neonate had the following additional physical anomalies: a prominent occipital ridge that extended in the transverse plane, overriding occipital sutures, deep scalp folds, small for gestational age, narrow and sloped forehead, downward slanting palpebral fissures, high and broad nasal bridge, low set and posteriorly rotated ears, micrognathia, dry skin, high-arched and narrow palate, sacral indentation, sustained arm extension when eliciting Moro reflex, absent Babinski reflexes, absent rooting response, and optic nerve hypoplasia of both eyes. The infant's head circumference at two days of life was 26cm, which represents a Z score (standard deviation) of -7.34 for infants of this gestational age. The first recorded weight available, on day 2 of life, was 2.885kg, which correlates with a Z-score of -2.49. Due to transient hypertonic episodes followed by periods of low tone, a video EEG was performed, which showed a burst-suppression pattern with gen-





eralized myotonic seizures and generalized tonic seizures consistent with Ohtahara syndrome. Despite the resolution of the subdural hematoma on brain MRI, the neonate's seizures persisted. He was treated with levetiracetam for an indefinite duration as well as phenobarbital. Due to poor feeding, the neonate later required a gastrostomy tube. Due to optic nerve hypoplasia, an evaluation for panhypopituitarism was performed, which showed no abnormalities. An echocardiogram revealed no congenital heart disease.

Laboratory studies were not revealing. The newborn screen was normal. Laboratory tests for congenital infections were negative. Zika virus PCR was negative. IgM and IgG antibodies for CMV and toxoplasma were negative. The chromosomal microarray was normal. Microcephaly Next Generation Sequencing (NGS) panel (Fulgent Diagnostics, 76 genes tested) and Lissencephaly NGS panel (Fulgent Diagnostics, 15 genes tested) also revealed no abnormalities. Plasma amino acids, ammonia, urine organic acid, and acylcarnitine profile were within normal ranges.

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### ***"FBDS was first recognized in 1984 in three infants who had a pattern of microcephaly, occipital bone prominence, overlying sutures, and scalp rugae. (7)"***

---

#### **Discussion:**

FBDS was first recognized in 1984 in three infants who had a pattern of microcephaly, occipital bone prominence, overlying sutures, and scalp rugae. (7) A 2001 review of twenty cases of FBDS identified the most common features of this sequence as normal scalp hair pattern, scalp rugae, overlapped sutures, and occipital bone prominence; microcephaly was a cardinal feature, with an average standard deviation of occipitofrontal circumference of -5.8. (1) Autopsy and CT head findings in these subjects included the destruction of cerebral hemispheres, hydranencephaly, a deficit in cortical tissues, ventriculomegaly, small cerebellum, intracranial calcification, intracranial hemorrhage, porencephaly, colpocephaly, small gyri, and lissencephaly. Proposed mechanisms of FBDS include viral infections, disruptions of vascular supply to the fetal brain, and genetic disorders. When viral infections are implicated, the most common viruses are CMV and Zika virus. Vascular disruption events that cause FBDS include prenatal cocaine exposure, trauma, death of a co-twin, and DIC. (1) Autosomal recessive genetic disorders can cause fetal brain disruption-like phenomenon, such as ALG11-congenital disorder of glycosylation and deletion of 16p13.11, which can unmask a pathogen variant in the NDE1 gene on the intact homolog, creating a biallelic loss of function for this gene. (5, 6)

This infant's numerous scalp folds suggested cutis verticis gyrate (CVG) to some examiners. CVG presents as symmetric, redundant scalp folds that exhibit deep furrows and convolutions mimicking that of cerebral gyri. CVG presents in adults or adolescents and is rare in infants and children. It is focal with tightly arranged and fixed folds. It can be seen with psychiatric disorders, seizures, and intellectual disability, but it is not associated with congenital microcephaly. This patient has scalp skin folds that are not characteristic of CVG: they are diffuse, involving the entire scalp. They are loose and are not fixed firmly in place.

This neonate's prominently rugated scalp, overlapping sutures, occipital bone prominence, profound microcephaly, and normal hair pattern are consistent with the diagnosis of FBDS. His microcephaly, characterized by head circumference Z score of -7.34, was more severe than the reported average Z score of -5.8. Additionally, the neonate's brain MRI findings of occipital horn dilation and a simplified gyral pattern are consistent with colpocephaly and lissencephaly from the report of Corona-Rivera et al. Although the cause of FBDS in this neonate is unknown, one contributing factor from the gestational history is maternal tobacco smoking. Smoking is known to increase vascular resistance of the placenta, which limits blood flow to the fetus. Using the Swedish Medical Birth Registry, information on 1,362,169 infants born during 1983-1996, Källén (2000) found a highly significant association between small head circumference for gestational age and maternal smoking. CMV and Zika virus infections were ruled out by laboratory results. There is no known association between prenatal mold exposure and microcephaly. Although the Microcephaly NGS panel, which includes the NGE1 gene, and the Lissencephaly NGS panel were normal, ALG11, which is responsible for ALG11-congenital disorder of glycosylation, was not included in these panels. In retrospect, a whole-exome sequencing test would have been a more comprehensive and cost-effective genetic strategy in this circumstance. Due to the lack of prenatal care, it is uncertain whether other environmental agents or infectious etiologies contributed to FBDS in this neonate; however, genetic counseling will be offered to this family because an autosomal recessive disorder has not been ruled out.

#### **Practical Applications:**

1. Consider the diagnoses of fetal brain disruption sequence when the pattern of microcephaly presents with scalp rugae, overriding sutures, and occipital bone prominence.
2. In infants with fetal brain disruption sequence is diagnosed, brain imaging and ophthalmologic evaluations help detect structural abnormalities of the brain and eye that may require further intervention.
3. Investigate deletions on chromosome microarray, especially at 16p13.11, with comprehensive genetic testing (exome) because a deletion may unmask a deleterious variant on the other intact chromosome.
4. After prenatal infection with CMV and Zika virus have been ruled out, order trio whole-exome sequencing test, which is more comprehensive and less costly than serial gene panels that may miss some causative genes. Offer genetic counseling to families of infants with unexplained severe congenital microcephaly, because autosomal recessive traits could increase recurrence risks for future pregnancies.
5. Refer to early infant stimulation and other intervention programs for children with developmental and intellectual delays.

#### **References**

1. CDC COVID-19 Response Team. *Coronavirus Disease 2019 in Children - United States, February 12-April 2, 2020*. *MMWR Morb Mortal Wkly Rep*. 2020; 69 (14):422. *Epub* 2020 April 10
2. Breslin, N. B.-B. (2020). *COVID-19 infection among asymptomatic and symptomatic pregnant women: Two weeks of confirmed presentations to an affiliated pair of New York City hospitals*. *American Journal of Obstetrics & Gynecology* MFM, 100118.

3. Sutton, D. K. (2020). *Universal Screening for SARS-CoV-2 in Women Admitted for Delivery*. *New England Journal of Medicine*.
4. Chandrasekharan, P. V.-C.-2. (2020). *Neonatal Resuscitation and Postresuscitation Care of Infants Born to Mothers with Suspected or Confirmed SARS-CoV-2 Infection*. *American Journal of Perinatology*.
5. Tran, K. C.-S. (2012). *Aerosol generating procedures and risk of transmission of acute respiratory infections to health-care workers: a systematic review*. *PLoS one*.
6. Puopolo, K. M. (2020). *Management of Infants Born to Mothers with COVID-19*. *American Academy of Pediatrics Committee on Fetus and Newborn, Section on Neonatal-Perinatal Medicine, and Committee on Infectious Diseases*.
7. Dubler, S. Z. (2016). *Bacterial and viral contamination of breathing circuits after extended use - an aspect of patient safety?* *Anaesthesiologica Scandinavica*.
8. Zeng, H. X. (2020). *Antibodies in infants born to mothers with COVID-19 pneumonia*. *JAMA*.
9. Yu, N. L. (2020). *Clinical features and obstetric and neonatal outcomes of pregnant patients with COVID-19 in Wuhan, China: a retrospective, single-centre, descriptive study*. *The Lancet Infectious Diseases*.
10. Zeng, L. X. (2020). *Neonatal early-onset infection with SARS-CoV-2 in 33 neonates born to mothers with COVID-19 in Wuhan, China*. *JAMA pediatrics*.
11. Chen H, G. J. (2020). *Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records*. *Lancet*.
12. Cao, Q., Chen, Y. C., Chen, C. L., & Chiu, C. H. (2020). *SARS-CoV-2 infection in children: Transmission dynamics and clinical characteristics*. *J Formos Med Assoc*, 119(3), 670-673.
13. Xia, W. S. (2020). *Clinical and CT features in pediatric patients with COVID-19 infection: Different points from adults*. *Clinical Pathology*.
14. Zhu, H. W. (2020). *Clinical analysis of 10 neonates born to mothers with 2019-nCoV pneumonia*. *Translational Pediatrics*, 51.
15. Wang, L., Shi, Y., Xiao, T., Fu, J., Feng, X., Mu, D., ... & Lu, G. (2020). *Chinese expert consensus on the perinatal and neonatal management for the prevention and control of the 2019 novel coronavirus infection*. *Annals of Translational Medicine*, 8(3).



Gilbert I Martin, MD, FAAP  
 Division of Neonatal Medicine  
 Department of Pediatrics  
 Professor of Pediatrics  
 Loma Linda University School of Medicine  
[gimartin@llu.edu](mailto:gimartin@llu.edu)  
 Office Phone: 909-558-7448

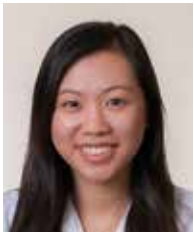


Robin Clark, MD  
 Professor, Pediatrics  
 Loma Linda University School of Medicine  
 Division of Genetics  
 Department of Pediatrics  
[rclark@llu.edu](mailto:rclark@llu.edu)

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**NT**

Corresponding Author



Andrea Ho, MD  
 Pediatric Resident  
 Loma Linda University Children's Hospital  
 Email: [Ho, Andrea <AnHo@llu.edu>](mailto:Ho_Andrea@llu.edu)

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- Topics may include Perinatology, Neonatology, and Younger Pediatric patients.
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# Next-Level Perinatal/Neonatal Comfort Care Training

## Creating an Interdisciplinary Palliative Care Plan for Each Baby and Their Family

A 3-day intensive training of seminars and hands-on activity sessions to provide an overview of the methods, elements, and strategies needed to create a comprehensive neonatal comfort care plan for the entire perinatal team.

Perinatal detection of congenital anomalies leads to the identification of infants who are affected by life-limiting conditions with a short life expectancy. Moreover, a significant number of newborns admitted to the neonatal ICU in critical condition face potentially adverse prognoses. Perinatal palliative care offers a plan for improving quality of life of the infant and the family, when extending the baby's life is no longer the goal of care or the complexity of the medical condition is associated with uncertain prognosis. The evidence base for perinatal palliative care continues to grow. However, there is no consensus about best clinical practice in promoting support for the family or comfort for the neonate. Support for the family is achieved through appropriate pre- and postnatal consults, shared-decision making, and advance care planning. A state of comfort for the neonate is achieved when basic needs such as bonding, maintenance of body temperature, relief of hunger/thirst, and alleviation of pain/discomfort are met.

This three-day training will cover virtually all aspects of perinatal palliative care, including information about the successful experiences of the [Neonatal Comfort Care Program](#) in providing perinatal palliative care for over a decade at Columbia University Irving Medical Center (CUIMC). Faculty will discuss evidence-based rationale, practical aspects and strategies for implementing and applying aspects of comfort care to provide support for families and achieve a state of comfort for newborns with limiting or life-threatening conditions. Additional emphasis will be given to hands-on simulations and case studies. Health professionals at all career stages are welcome to attend. Registration is required.

**Elvira Parravicini, MD**, Columbia University and New York Presbyterian/Morgan Stanley Children's Hospital, Director of Columbia University's Neonatal Comfort Care Program

**Brian Carter, MD**, University of Missouri-Kansas City and Children's Mercy Hospital

**Alexandra Mancini, RN**, Chelsea & Westminster Foundation Trust & True Colour Trust, London, UK

**Charlotte Wool, PhD, RN**, York College of Pennsylvania; Perinatal Palliative Care Consultant

*See site for full instructor list.*

### Continuing Medical Education (CME) and Continuing Nursing Education (CNE):

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More details and registration: [mailman.columbia.edu/comfort-care](http://mailman.columbia.edu/comfort-care)



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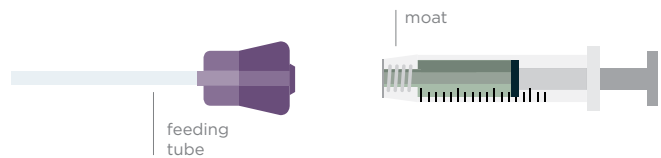


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## SAFETY IN THE NICU

*New tubes, new problems?*

**A new tubing design meant to eliminate tubing misconnections has introduced new challenges for the NICU population.** Pediatric providers must deliver medication in small volumes to tiny patients with high levels of accuracy. The new tubing design, known as ENFit®, could present dosing accuracy and workflow challenges.



### DOSING ACCURACY

- The moat, or area around the syringe barrel, is difficult to clear. Medication can hide there, inadvertently increasing the delivered dose when the syringe and feeding tube are connected; patients may receive extra medication.

### INFECTION RISK

- The moat design can increase risk for infection if residual breast milk or formula remains in the moat and transfers to the feeding tube.

### WORKFLOW ISSUES

- Increased nursing workflow is seen with additional steps for clearing syringe moats, cleaning tube hubs, and using multiple connectors.

Improved standards are important to protect patients from the dangers of tubing misconnections. But we must avoid mitigating existing risks by creating new ones.

Individual hospitals should consider all factors impacting their NICU patients before adopting a new tubing design.

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Protecting Access for Premature Infants through Age Two

A collaborative of professional, clinical, community health, and family support organizations focused on the health and safety of premature infants.

[infanthealth.org](http://infanthealth.org)



# When an Infant Dies: The Need to Acknowledge Grief and Find Bereavement Support

Barb Himes, IBCLC



Saving babies. Supporting families.

*First Candle's efforts to support families during their most difficult times and provide new answers to help other families avoid the tragedy of the loss of their baby are without parallel.*

We are in a time when pandemic conditions have placed an additional burden on grief, not only because coronavirus brings its own paths of mortality with it, but because it complicates feelings of grief and bereavement even when the losses are not related to it.

*“We are in a time when pandemic conditions have placed an additional burden on grief, not only because coronavirus brings its own paths of mortality with it, but because it complicates feelings of grief and bereavement even when the losses are not related to it.”*

First Candle's mission is the elimination of Sudden Infant Death Syndrome (SIDS) and other sleep-related infant deaths, through



**Did you know that premature and low birth weight babies have a 4x greater risk for SIDS?**

At First Candle we're educating parents, grandparents and caregivers about safer sleep to make sure all babies reach their first birthday. Learn more at [firstcandle.org](http://firstcandle.org)

education, while providing support for grieving families who have suffered a loss.

This bereavement support takes several forms and specifically assists different causes of infant loss:

- **A 24-hour grief line.** Grief counseling day or night for a family member in need, offering one-on-one support and access to materials and local support services.
- **Bereavement library.** Resources on surviving the death of a baby, guidance on coping with birthdays, anniversaries, holidays, and difficult considerations such as having another child, as well as ways for families to honor the memory of their baby.
- **Peer-to-peer online support groups.** A safe and supportive environment for individuals and families to talk about pregnancy and infant loss. Group members connect and find an empathetic outlet for their feelings of grief, anger, anxiety, and depression, sharing personal experiences and offering one another emotional comfort and moral support. There are separate groups that specifically address infant loss due to SIDS and other sleep-related causes, stillbirth, and miscarriage.

We are finding that the nature of this Covid-19 time can add complexity to the already painful burden of infant loss and that grief itself can widen, as we hear not only from families suffering an immediate loss but also from those who are re-experiencing grief. It may be for an infant who died years past, and the memory of that loss is being rekindled in this period of global morbidity and mortality, or it may even be a feeling of grief for another lost family member that is even heavier now.

It brings to light the reality that there is a patchwork of existing bereavement support services that is further diminished – such as restriction or unavailability of in-person group gatherings – during this pandemic, and underscores the value of those services that do exist. People will turn to what they can find in their time of need.

It also reminds us that experiencing infant loss and addressing grief can be part of the prenatal, perinatal and postpartum health care professional's environment, presenting difficulties for both the grieving family seeking counsel and support and for the health professionals themselves, as their overriding drive is at all times to save the infant and maternal life. The focus is on survival, not death, and dying.

So there may, therefore, be times when simple, straightforward

guidance around bereavement situations can be helpful. For hospitals, this can include:

- *Listen.* The number one way to support a grieving person is to let them talk and then **listen**.
- *Recognize.* Say the baby's name.
- *Be open and sincere.* "I'm sorry." "I can't imagine what you are going through." "I am here for you."
- *Avoid cliché.* "At least you have your other children." "God needed another angel." "You can have another." "It's God's will."
- *Offer keepsakes.* A lock of hair; foot and handprints; pictures.
- *Explain.* Share what will happen next (autopsy, funeral home, coroner's office).
- *Identify grief support resources.* This could include the hospital chaplain, First Candle's bereavement support services, or local support groups.

For physicians, this can also mean offering to review the infant's autopsy results and counseling the parents to look after themselves, so that they may continue to provide for each other and the rest of the family. This does not, however, mean pushing grief aside in order to appear strong, another area bereavement support can help both mothers and fathers address.

---

***“For physicians, this can also mean offering to review the infant's autopsy results and counseling the parents to look after themselves, so that they may continue to provide for each other and the rest of the family.”***

---

This last point also matters for professionals. We know from experience that when the intense daily focus is on saving babies' lives, and one is lost, there can be a debilitating emotional impact on providers, making it important for them to identify resources for their own support as well as for their patients.

As we discuss in our support programs, infant death can unleash a range of emotions:

- *Guilt.* Self-blame, founded or unfounded.
- *Anger.* Self-directed or at others.
- *Fear.* An overall sense of dread, which can affect daily living and interpersonal relationships.
- *Depression.* Episodes of fatigue, sadness, feelings of worthlessness.

All of these may present themselves in unique ways from individual to individual, and support services should work to give parents a caring hand in their pain and also help them to work their personal way through the grieving process and emerge into resolution and recovery. Grief is an intense, lonely and personal experience, and for parents, it can be further affected by whether this is their first experience with death, whether they have other children or may consider having them in the future, and how they will incorporate the memory of this infant in their lives going forward. The grief may be so intense that they find themselves struggling for ways to relate to each other as well as to their friends and relatives.

For health care professionals, it is the awareness that the families will need immediate attention to their grief and that they themselves may not be immune to the effects of infant loss.

All parties need to be caring for themselves.

Information on First Candle and its [bereavement support services](#) can be found on the [First Candle website](#). The Grief Support Line is 1-800-221-7437.

**References:**

1. *Surviving the Death of a Baby: Grief Resources from First Candle.* <https://firstcandle.org/wp-content/uploads/2018/04/Surviving-the-Death-of-a-Baby.pdf>

*Disclosure: The author is the Director of Education and Bereavement Services of First Candle, Inc., a Connecticut not for profit 501c3 corporation.*

**NT**

*Corresponding Author*



*Barb Himes, IBCLC  
Director of Education and Bereavement Services  
First Candle  
49 Locust Avenue, Suite 104  
New Canaan CT 06840  
Telephone: 1-203-966-1300  
For Grief Support: 1-800-221-7437  
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**Time is precious, just like your patients.**



*Through the darkness of my grief  
I light a candle to show the world  
my love for you.*

**At First Candle we  
provide bereavement  
support to the over  
27,000 families who  
will experience the loss  
of a baby every year.**

**We need your support.  
Click here to help.**



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# The Survey says RSV



What you need to know about RSV

**RSV** stands for **Respiratory Syncytial Virus**

RSV is a **Really Serious Virus**

**WHEN IS RSV SEASON?**

Typically RSV season runs from November - March. But it can begin as early as July in Florida and end as late as April in the West.

Protect babies and families this RSV season  
**Educate. Advocate. Integrate.**

National Perinatal Association

Consult the CDC's RSV Census Regional Trends to learn more [www.cdc.gov/rsv/census/regional-trends-surveillance.html](http://www.cdc.gov/rsv/census/regional-trends-surveillance.html)

[www.nationalperinatal.org](http://www.nationalperinatal.org)

## 5 THINGS

YOU CAN DO  
TO CELEBRATE



## NICU AWARENESS

1

### Educate Yourself

Did you know that more than half of the babies admitted to NICUs were not born prematurely? See our fact sheets.

2

### Post on Social Media

See examples at [nicuawareness.org](http://nicuawareness.org) and [nationalperinatal.org/NICU\\_Awareness](http://nationalperinatal.org/NICU_Awareness)

3

### Recognize NICU Staff

Let them know the difference they are making in our babies' lives. Write a note, send an email, or deliver a gift to show them that you appreciate them.

4

### Share Your Story

Most people have never heard of a NICU before. Let others know about the extraordinary care that NICUs provide.

5

### Join Our Community

Get involved. Become a member of our organizations and share your talents.

This project is a collaboration between



[www.nicuawareness.org](http://www.nicuawareness.org)

[www.nationalperinatal.org/NICU\\_Awareness](http://www.nationalperinatal.org/NICU_Awareness)





*In January, heaven gained a new angel - Laura Renc.*

*Laura was a SIDS mom and a guiding force at First Candle.*

*She worked tirelessly to end SIDS and was a source of comfort for many of our bereaved families.*

*Laura will be greatly missed.*

**first candle**

Saving babies. Supporting families

Babies are just tiny adults, right? So ... half?

Infants need drugs tested and approved just for them.

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# Still a Premie?

Some preemies are born months early, at extremely low birthweights. They fight for each breath and face nearly insurmountable health obstacles.

But that's not every preemie's story.

**Born between 34 and 36 weeks' gestation?** **STILL A PREMIE**

Just like preemies born much earlier, these "late preterm" infants can face:

- Jaundice
- Feeding issues
- Respiratory problems

And their parents, like all parents of preemies, are at risk for postpartum depression and PTSD.

**Born preterm at a "normal" weight?** **STILL A PREMIE**

Though these babies look healthy, they can still have complications and require NICU care.

But because some health plans determine coverage based on a preemie's weight, families of babies that weigh more may face access barriers and unmanageable medical bills.

**Born preterm but not admitted to the NICU?** **STILL A PREMIE**

Even if preterm babies don't require NICU care, they can still face health challenges.

Those challenges can extend through childhood, adolescence and even into adulthood.

Some Premies	All Premies
Will spend weeks in the hospital	Face health risks
Will have lifelong health problems	Deserve appropriate health coverage
Are disadvantaged from birth	Need access to proper health care

**NCJFH** National Coalition for Infant Health  
Protective Access for Premature Infants through Age Two  
[www.infanthealth.org](http://www.infanthealth.org)

# Raising Global Awareness of RSV

Global awareness about respiratory syncytial virus (RSV) is lacking. RSV is a relatively unknown virus that causes respiratory tract infections. It is currently the second leading cause of death – after malaria – during infancy in low- and middle-income countries.

The RSV Research Group from professor Louis Bont, pediatric infectious disease specialist in the University Medical Centre Utrecht, the Netherlands, has recently launched an RSV Mortality Awareness Campaign during the 5<sup>th</sup> RSV Vaccines for the World Conference in Accra, Ghana.

They have produced a personal video entitled “*Why we should all know about RSV*” about Simone van Wyck, a mother who lost her son due to RSV. The video is available at [www.rsvgold.com/awareness](http://www.rsvgold.com/awareness) and can also be watched using the QR code on this page. Please share the video with your colleagues, family, and friends to help raise awareness about this global health problem.



# Using Volume Guarantee (VG) to Achieve Ventilatory Efficiency in High-Frequency Oscillation (HFO)

Rob Graham, R.R.T./N.R.C.P.

1980s demonstrated the importance of this approach during HFO.

*I dedicate this column to the late Dr. Andrew (Andy) Shennan, the founder of the perinatal program at Women's College Hospital (now at Sunnybrook Health Sciences Centre). To my teacher, my mentor and the man I owe my career as it is to, thank you. You have earned your place where there are no hospitals and no NICUs, where all the babies do is laugh and giggle and sleep.*

Efficiency is the relationship between how much energy goes into a system and how much work comes out of it. Peak efficiency is the point at which maximum output is achieved with the least amount of energy consumed per unit. We usually think about efficiency when talking about electrical items like appliances, air conditioners, and so forth, or a vehicle's fuel economy, but the same concept applies to ventilation.

Optimum compliance is the point at which the lungs accept the most volume using the lowest ventilating pressure. As functional residual capacity decreases or increases compliance decreases as the lungs are no longer at the top of the compliance curve, more pressure must now be used to deliver the same volume. All modes of ventilation produce better results when optimum compliance is reached. As well, the lung is most protected when being ventilated at or near optimum compliance. Clinically we refer to this as the "open lung" approach. The infamous "HIFI" trial of the

***"With HFO, there is more to efficiency than compliance; regardless of compliance, there is a point at which settings can be adjusted to use less pressure (amplitude) to provide sufficient minute ventilation."***

With HFO, there is more to efficiency than compliance; regardless of compliance, there is a point at which settings can be adjusted to use less pressure (amplitude) to provide sufficient minute ventilation. Frequency (f) plays a large part here. Due to the fixed inspiratory to expiratory (I:E) ratio, increasing frequency gives less inspiratory time to get volume in, and less expiratory time to get it out. This may lead to gas trapping in and of itself, but since the only way to maintain volume when raising frequency is to use higher amplitude, the risk of creating pinch points also increases. Because amplitude is above and below the set mean airway pressure (MAP), higher amplitudes create larger troughs during the expiratory phase as well as higher peak pressure on inspiration. As end-expiratory pressure approaches critical closing pressures,

- PEEP/ $\overline{Paw}$  and the oscillatory pressure waveform must be raised to overcome gas trapping

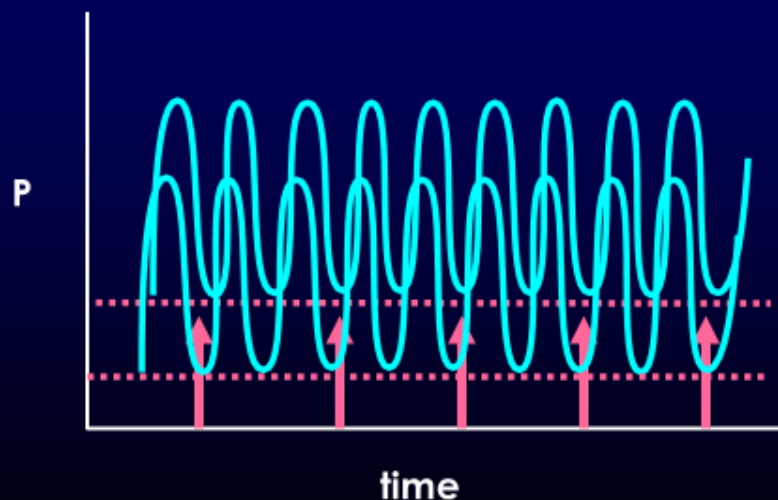


Figure 1: Oscillatory waveform above and below MAP. "PEEP" is the lowest point in the waveform (2)

- Back pressure (High PEEP/Paw) may splint open the airway and allow gas to exit

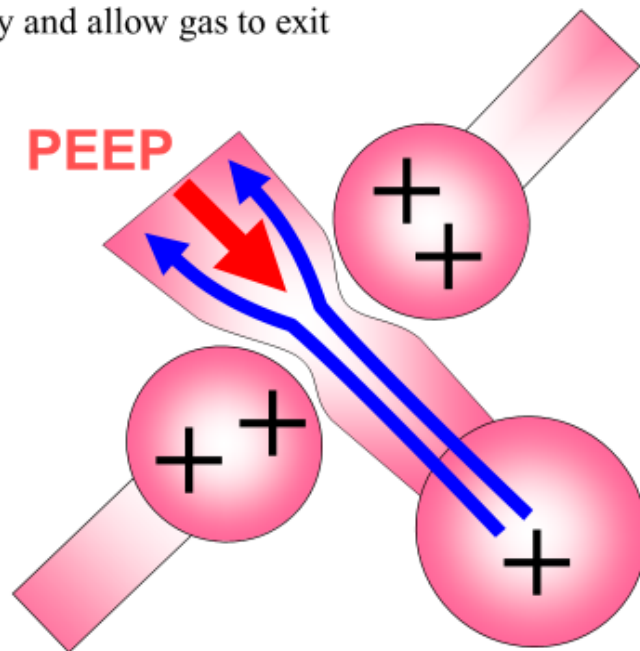


Figure 2: Pinch points occur when extraluminal pressure exceeds airway pressure during exhalation in HFO (2)

airway instability and micro-atelectasis may result. If expiratory pressure is low enough, "pinch points" occur in the conducting airways, preventing gas from exiting the lung.

Oscillators used in the U.S. to date pose a conundrum for clinicians since they do not provide enough information at the bedside. Amplitude is adjusted as "power," and while the amplitude is expressed as the pressure in cmH<sub>2</sub>O, no such measurement is available, and "chest wiggle" is the basis for amplitude adjustment. When dealing with smaller babies, there is another problem: the amplitude on these first-generation machines is too high at lower frequencies to be used safely. The workaround has been to use higher frequencies, but as time constants get longer, using higher frequency greatly increases the risk of gas trapping. As well, the higher amplitude necessitated with higher frequency may

result in alterations to flow characteristics, i.e., creating turbulent flow, which reduces efficiency.

---

*"The workaround has been to use higher frequencies, but as time constants get longer, using higher frequency greatly increases the risk of gas trapping. As well, the higher amplitude necessitated with higher frequency may result in alterations to flow characteristics, i.e., creating turbulent flow, which reduces efficiency."*

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The equation for CO<sub>2</sub> clearance during HFO is expressed as "DCO<sub>2</sub>".  $DCO_2 = f \cdot V_t^2$  where V<sub>t</sub> is HFO tidal volume. (2) In practice, this means that changes in frequency linearly alter CO<sub>2</sub> while

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changes in volume increase CO<sub>2</sub> exponentially. This is particularly true when using frequencies above 5 Hz. (2) (This is an excellent primer by Dr. Jane Pillow courtesy of Dräger). Clinically this means decreases in frequency can be compensated for by a small increase in Vt. In order to do that, however, it is helpful to know what that volume is. This is where VG comes into play.

Third generation oscillators soon to be available in the U.S. provide measurements for both Vt and minute volume and provide the option to set a target volume in HFO mode. Chest wiggle is no longer the indicator of how much ventilation a machine is providing since these machines not only tell us; they allow us to adjust the volume. In reality, what is altered to achieve a set target volume is amplitude.

Where does efficiency come into play? When decreasing frequency, we can now compensate for lost volume by simply increasing the target volume; adjustments are made in increments as small as 0.1 ml. Typical Vt during HFO is usually 1-2 ml/kg, and while higher volumes may be used, it stands to reason that using higher volumes during HFO may decrease the lung protectiveness of the mode. It is my practice not to exceed 3 ml/kg when using HFO with VG unless the amplitude necessary to deliver the volume is relatively low, or the larger volume is not required for a prolonged length of time.

In clinical practice, decreasing frequency while increasing VG may result in lower amplitude being used, sometimes as low as 5 cmH<sub>2</sub>O. This demonstrates increased efficiency and reduces the risk of gas trapping in two ways: lower amplitude decreases the risk of creating pinch points, and lower frequency gives more time for gas to escape. This, arguably, is a good thing. It is worth noting that while increasing frequency using VG increases CO<sub>2</sub> elimination linearly, this is only true if the increased frequency does not result in gas trapping and that the machine is able to provide enough amplitude to do so. Otherwise, CO<sub>2</sub> clearance may actually be impaired.

Resonance frequency also plays a role in CO<sub>2</sub> clearance. Ventilating with frequencies near pulmonary resonant frequency increases ventilatory efficiency. Resonance frequency decreases with increasing compliance (3) and varies depending on pathology and size. Rates used during high-frequency jet ventilation are closer to resonant frequency (4) than those typically used during HFO and are generally less than 10 Hz. Increasing frequency during HFO

---

***“It is worth noting that while increasing frequency using VG increases CO<sub>2</sub> elimination linearly, this is only true if the increased frequency does not result in gas trapping and that the machine is able to provide enough amplitude to do so. Otherwise, CO<sub>2</sub> clearance may actually be impaired.”***

---

may reduce any benefit derived from the resonant frequency.

Another benefit of the greater monitoring capability of these machines is the ability to monitor compliance in real-time. If an adjustment in MAP results in the machine using more amplitude to maintain volume, this reflects decreased compliance and tells us

the move is not a wise one. This is true of other modes of ventilation as well: if adjusting PEEP in a conventional mode or high-frequency jet ventilation necessitates using higher pressure to achieve the same results, the message is the same. An increase in oxygen requirements is another indicator, but derecruitment may show up as higher ventilating pressure before oxygen requirements change significantly. If the maximum amplitude is adjusted fairly closely to amplitude used, a clinician also is given an early warning of decreasing compliance when the machine gives an alarm that it cannot deliver set volume.

While HFO/VG represents a brand-new concept in HFO, it is important to note that this mode has been used outside the U.S. safely and with success, and the adjunct is now available from several manufacturers, including Dräger, Lowenstein Medical, and Maquet. As with any new modality, buy-in from clinicians has been mixed. In Canada, there seems to be a great divide; those west of Ontario appear not to use the adjunct frequently, if at all. Units in Toronto have embraced HFO/VG, and it is used extensively here, especially in the unit where I practice.

Finally, allow me to wish everyone a good summer. Stay healthy and stay safe during these trying times. As our mothers have told us, “this too shall pass.”

*.References:*

- 1 *Figures 1 and 2 courtesy of Bunnell Inc.*
- 2 <https://www.draeger.com/Library/Content/hfov-bk-9102693-en.pdf>
- 3 <https://link.springer.com/article/10.1007/BF02072632>
- 4 <https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1399-6576.1989.tb03006.x>

*Disclosures: The author receives compensation from Bunnell Inc for teaching and training users of the LifePulse HFJV in Canada. He is not involved in sales or marketing of the device nor does he receive more than per diem compensation. Also, while the author practices within Sunnybrook H.S.C. this paper should not be construed as Sunnybrook policy per se. This article contains elements considered “off label” as well as maneuvers, which may sometimes be very effective but come with inherent risks. As with any therapy, the risk-benefit ratio must be carefully considered before they are initiated.*

**NT**

*Corresponding Author*



*Rob Graham, R.R.T./N.R.C.P.  
Advanced Practice Neonatal RRT  
Sunnybrook Health Science Centre  
43 Wellesley St. East  
Toronto, ON  
Canada M4Y 1H1  
Email: Rob Graham <rcgnrcp57@yahoo.ca>  
Telephone: 416-967-8500*

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Protecting Access for Premature Infants through Age Two

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**The National Coalition for Infant Health advocates for:**

- **Access to an exclusive human milk diet** for premature infants
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May 10th - June 21st**

**#everybabycounts**

**Does running a marathon seem impossible? Here's an easy way to do it - over 6 weeks!**

**We're excited to announce our first Virtual Walk/Run Challenge! From Mother's Day - Father's Day sign up to walk or run 26 miles - less than 1 mile per day - and help raise fund to help parents who need our support after the loss of their precious baby.**

**You can join at any time during the 6 weeks and walk/run as much or as little as you'd like.**

**Sign up at [www.firstcandle.org](http://www.firstcandle.org)**



To every NICU nurse who has cared for these precious babies we say.....  
"Thank you."



**Did you know that premature and low birth weight babies have a 4x greater risk for SIDS?**

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*Thirteen-year-old Emily Rose Shane was tragically murdered on April 3, 2010 on Pacific Coast Highway in Malibu, CA. Our foundation exists to honor her memory.*

*In Loving Memory*

*August 9, 1996 - April 3, 2010*



Each year, the Emily Shane Foundation SEA(Successful Educational Achievement) Program provides academic and mentoring support to over 100 disadvantaged middle school students who risk failure and have no other recourse. We have served over 700 children across Los Angeles since our inception in the spring of 2012. Due to the COVID-19 outbreak, our work is in jeopardy, and the need for our work is greatly increased. The media has highlighted the dire impact online learning has caused for the very population we serve; those less fortunate. **We need your help now more than ever to ensure another child is not left behind.**

Make a Difference in the Life of a Student in Need Today!

Please visit [emilyshane.org](http://emilyshane.org)

### Sponsor a Child in the SEA Program

The average cost for the program to provide a mentor/ tutor for one child is listed below.



1 session_____	\$15
1 week _____	\$30
1 month_____	\$120
1 semester_____	\$540
1 year_____	\$1,080
Middle School_____	\$3,240

*The Emily Shane Foundation is a 501(c)3 nonprofit charity, Tax id # 27-3789582. Our flagship SEA (Successful Educational Achievement) Program is a unique educational initiative that provides essential mentoring/tutoring to disadvantaged middle school children across Los Angeles and Ventura counties. All proceeds directly fund the SEA Program, making a difference in the lives of the students we serve.*

# NPA Position Statement: Black Lives Matter

Jerasimos Ballas, MD, MPH, Viveka Prakash-Zawisza, MD, MS, MBA

*The National Perinatal Association (NPA) is an interdisciplinary organization that strives to be a leading voice for perinatal care in the United States. Our diverse membership is comprised of healthcare providers, parents & caregivers, educators, and service providers, all driven by their desire to give voice to and support babies and families at risk across the country.*

*Members of the NPA write a regular peer-reviewed column in Neonatology Today.*



Educate. Advocate. Integrate.

As a national organization dedicated to the advocacy and support of vulnerable babies, parents, and families, the National Perinatal Association stands in solidarity with the Black Lives Matter movement. The foundational principles of the movement help to inform NPA's mission and remind us that the work is not done. We pledge to better embody those principles in our own organizational structure and operations and have laid out our action plan in a statement reprinted here, originally released on June 4, 2020.

Viveka Prakash-Zawisza, MD, MS, MBA  
President-Elect

*Disclosure: The National Perinatal Association [www.nationalperinatal.org](http://www.nationalperinatal.org) is a 501c3 organization that provides education and advocacy around issues affecting the health of mothers, babies, and families.*

NT

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## BLACK LIVES MATTER



To all NPA members,

This is the time to stand together with our Black community and reaffirm our commitment to improving the lives of pregnant patients, their newborns, and their families.

This starts with confronting the systemic racism that pervades our social, political, and medical establishments, as well as the implicit biases we all carry within ourselves.

Our statement aims to not only bring attention to this issue, but to also to shine a light on actions we all can start taking right now to effect positive change.

Be well. Stay safe.

Jerasimos (Jerry) Ballas, MD, MPH  
Maternal-Fetal Medicine  
President, National Perinatal Association



Newly-Validated Online  
NICU Staff Education



Transform Your NICU

### Caring for Babies and their Families: Providing Psychosocial Support to NICU Parents

based on the "Interdisciplinary Recommendations for Psychosocial Support for NICU Parents."

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- Premie Parent Alliance



[www.mynicunetwork.com](http://www.mynicunetwork.com)

To the families of George Floyd, Breonna Taylor, and Ahmaud Arbery, the National Perinatal Association speaks their names and grieves with you. To all Black people who suffer under an unjust system devised to perpetuate oppression, we see you.

**We hear you. We stand with you.**

**We are long past the time for simply bearing witness to such injustice.**

As an organization devoted to caring for pregnant people, their newborns and their families, NPA is acutely aware of the **gross inequities and disparities** that pervade our society.

Black women die in pregnancy at three times the rate of their white counterparts, even when controlling for education and income.<sup>1</sup> They are 50% more likely to deliver prematurely.<sup>2</sup>

Their babies are twice as likely to die compared to their peers'.<sup>3</sup>

Despite every attempt to explain away these disparities through statistical modeling or medical deduction, they stubbornly persist. It is abundantly clear that when researchers cite “race” as a risk factor for poor health outcomes, what they are actually measuring is the **insidious effects of racism**. One needs to look no further than the current pandemic to see how racial inequities along social, medical, and economic fault lines have led to Black communities being disproportionately ravaged by Covid-19.<sup>4</sup>

This evidence alone should be a call to action for healthcare providers throughout the United States to address the rampant systemic racism in our communities and within our medical practices. As an organization, **NPA commits to doing better, to listening more actively, to facing ourselves, and to being anti-racist.**

**We all must act now to:**

- **Be actively anti-racist.** If we are going to end racism as a society, we first have to confront it in ourselves. Identify implicit biases in ourselves, our colleagues, and our practice and take the necessary and uncomfortable steps to address it.

- **Speak truth to power** that Black lives matter. Do not accept that healthcare professionals should “stay in their lanes” when it comes to social advocacy. In fact, our understanding of the social determinants of health positions us to be leaders in many of these fights.
- **Recognize and address racism – not race - as a risk factor for poor health outcomes.** This deceptively simple change in language is a powerful tool that can radically advance the way we approach the health of our Black communities.
- **Educate ourselves on how to be true allies.** Read. Research. Seek out resources created by Black voices such as [Ibram X. Kendi](#), [Rachel Cargle](#), and [Ijeoma Oluo](#). Don’t ask Black folks in our lives to carry the labor of educating us; take on the labor ourselves.
- **Listen to Black voices** without defending or centering ourselves. Create safe, inclusive medical practices. Fight against unjust legislation and racist policies.

None of these actions will be easy. It’s easier to deny the realities of racism if we haven’t been directly impacted. **Listen, pay attention, and believe the Black experience.** Sit with discomfort and use it to catalyze change. Take actions today to start saving Black lives.

In solidarity,

The National Perinatal Association

## References:

1. Petersen EE, Davis NL, Goodman D, et al. Racial/Ethnic Disparities in Pregnancy-Related Deaths — United States, 2007–2016. *MMWR Morb Mortal Wkly Rep* 2019;68:762–765. DOI: [https://www.cdc.gov/mmwr/volumes/68/wr/mm6835a3.htm?s\\_cid=mm6835a3\\_w](https://www.cdc.gov/mmwr/volumes/68/wr/mm6835a3.htm?s_cid=mm6835a3_w)
2. March of Dimes. Peristats. <https://www.marchofdimes.org/peristats/ViewData.aspx?reg=99&slev=4>
3. Ely DM, Driscoll AK. Infant Mortality in the United States, 2017: Data from the Period Linked Birth/Infant Death File. [National Vital Statistics Report 2019](#).
4. Yancy CW. [COVID-19 and African Americans](#). *JAMA*. 2020;323(19):1891–1892. doi:10.1001/jama.2020.6548

Corresponding Author



Viveka Zawisza, MD FACOG  
National Perinatal Association Board Member  
viveka.zawisza@gmail.com

Corresponding Author



Jeramos (Jerry) Ballas, MD, MPH, FACOG  
Assistant Professor of Obstetrics, Gynecology, and Reproductive Sciences  
University of California, San Diego  
President, National Perinatal Association  
jballas@nationalperinatal.org

# Postpartum Revolution

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NATIONAL PERINATAL ASSOCIATION

## CORONAVIRUS

COVID-19

RELIABLE RESOURCES:

- CDC: 2019 Novel Coronavirus
- The Lancet: COVID-19 and pregnancy
- MotherToBaby: Coronaviruses
- WHO: Emerging respiratory viruses

STAY INFORMED.



www.nationalperinatal.org




**CDH**  
International

*A global initiative to stop Congenital Diaphragmatic Hernia*



# SHARED DECISION-MAKING PROTECTS MOTHERS + INFANTS

DURING COVID-19

## KEEPING MOTHERS + INFANTS TOGETHER

Means balancing  
the risks of...

- **HORIZONTAL INFECTION**
- **SEPARATION AND TRAUMA**



## EVIDENCE

We encourage families and clinicians to remain diligent in learning **up-to-date evidence**.

## PARTNERSHIP

What is the best  
for this unique dyad?

### SHARED DECISION-MAKING

- S**EEK PARTICIPATION
- H**ELP EXPLORE OPTIONS
- A**SSASS PREFERENCES
- R**EACH A DECISION
- E**VALUATE THE DECISION



## TRAUMA-INFORMED

Both parents and providers  
are confronting significant...

- **FEAR**
- **GRIEF**
- **UNCERTAINTY**

## LONGITUDINAL DATA

We need to understand more about outcomes for mothers  
and infants exposed to COVID-19, with special attention to:

- **MENTAL HEALTH**
- **POSTPARTUM CARE DELIVERY**



NEW DATA EMERGE DAILY. NANN AND NPA ENCOURAGE PERINATAL CARE PROVIDERS TO ENGAGE IN CANDID CONVERSATIONS WITH PREGNANT PARENTS PRIOR TO DELIVERY REGARDING RISKS, BENEFITS, LIMITATIONS, AND REALISTIC EXPECTATIONS.

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National  
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Neonatal  
Nurses



# NICU Awareness

## Did You Know?

Most NICU babies have special needs that last longer than their NICU stay. Many will have special health and developmental needs that last a lifetime. But support is available.

Learn about the programs in your community. Seek out other families like yours. Then ask for help. Working together we can create a community where our children will grow and thrive.

### Special Health Needs

Babies who have had a NICU stay are more likely to need specialized care after they go home. **Timely follow-up care is important.**

NICU babies have a higher risk for re-hospitalization. So every medical appointment is important. Especially during cold and flu season when these babies are especially vulnerable to respiratory infections.

#### Who Can Help

- pediatricians
- neonatal therapists
- pulmonologists
- neurologists
- gastroenterologists
- cardiologists
- nutritionists
- CSHCN - Programs for Children with Special Health Care Needs

### Special Developmental Needs

**Any NICU stay can interrupt a baby's growth and development.**

Needing specialized medical care often means that they are separated from their parents and from normal nurturing.

While most NICU graduates will meet all their milestones in the expected developmental progression, it is typical for them to be delayed. This is especially true for preterm infants who are still "catching up" and should be understood to be developing at their "adjusted age."

#### Who Can Help

- IBCLCs and lactation consultants
- Early Childhood Interventionists
- developmental pediatricians
- occupational therapists (OTs)
- physical therapists (PTs)
- speech therapists (SLPs)
- WIC - Special Supplemental Nutrition Program for Women, Infants, and Children
- social workers and case managers

### Special Educational Needs

Every child has their own unique developmental needs and **every student has their own unique and special educational needs.**

Take advantage of the services and support that can meet your child where that are and help them reach their future educational goals.

Call your local school district to request a free educational evaluation. Learn about all the available programs and support.

#### Who Can Help

- Preschool Program for Children with Disabilities (PPCD)
- Special Education programs under the Individuals with Disabilities Education Act (IDEA)
- educational psychologists
- speech therapists (SLPs)
- occupational therapists (OTs)
- reading specialists



My NICU Network



National Perinatal  
Association



Patient+Family  
Care



NICU Parent  
Network

# Online NICU Staff Education Program

## Caring for Babies and their Families: Providing Psychosocial Support in the NICU

[WWW.MYNICUNETWORK.COM](http://WWW.MYNICUNETWORK.COM)



Looking to improve  
NICU staff skills in  
communicating with  
and supporting parents?

This educational  
program works!

Read the study by Hall  
et al in *Advances in  
Neonatal Care*,  
published online in  
2019.

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# CORONAVIRUS

COVID-19

## RELIABLE RESOURCES:

- **CDC:** 2019 Novel Coronavirus
- **The Lancet:** COVID-19 and pregnancy
- **MotherToBaby:** Coronaviruses
- **WHO:** Emerging respiratory viruses

STAY INFORMED.



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## PROTECT YOUR FAMILY FROM RESPIRATORY VIRUSES

flu

coronavirus

pertussis

RSV



SOAP

### WASH YOUR HANDS

often with soap and warm water.

### GET VACCINATED

for flu and pertussis. Ask about protective injections for RSV.



### COVER COUGHS AND SNEEZES.

Sneeze and cough into your elbow.

### USE AN ALCOHOL-BASED HAND SANITIZER.



### STAY AWAY FROM SICK PEOPLE

Avoid crowds. Protect vulnerable babies and children.

[www.nationalperinatal.org](http://www.nationalperinatal.org)





Join  NPA

[www.nationalperinatal.org/mental\\_health](http://www.nationalperinatal.org/mental_health)

# THE BRETT TASHMAN FOUNDATION

The Brett Tashman Foundation is a 501©(3) public charity. The mission of the Foundation is to find a cure for Desmoplastic Small Cell Round Tumors (DSRCT). DSRCT is an aggressive pediatric cancer for which there is no cure and no standard treatment. 100 percent of your gift will be used for research. There is no paid staff. To make your gift or for more information, go to [TheBrettTashmanFoundation.org](http://TheBrettTashmanFoundation.org) or phone (909) 981-1530.

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Transform Your NICU

# The Gap Baby: An RSV Story



A collaborative of professional, clinical, community health, and family support organizations improving the lives of premature infants and their families through education and advocacy.



## The National Coalition for Infant Health advocates for:

- **Access to an exclusive human milk diet** for premature infants
- **Increased emotional support resources** for parents and caregivers suffering from PTSD/PPD
- **Access to RSV preventive treatment** for all premature infants as indicated on the FDA label
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# COVID-19 Update: The Future of Vaccine Treatments for Infants and Children

Darby O'Donnell, JD and the AfPA Governmental Affairs Team  
Alliance for Patient Access (AfPA)

The Alliance for Patient Access ([allianceforpatientaccess.org](http://allianceforpatientaccess.org)), founded in 2006, is a national network of physicians dedicated to ensuring patient access to approved therapies and appropriate clinical care. AfPA accomplishes this mission by recruiting, training and mobilizing policy-minded physicians to be effective advocates for patient access. AfPA is organized as a non-profit 501(c)(4) corporation and headed by an independent board of directors. Its physician leadership is supported by policy advocacy management and public affairs consultants. In 2012, AfPA established the Institute for Patient Access (IfPA), a related 501(c)(3) non-profit corporation. In keeping with its mission to promote a better understanding of the benefits of the physician-patient relationship in the provision of quality healthcare, IfPA sponsors policy research and educational programming.



Since the rise of COVID-19 infections in the United States this past March, parents/guardians of children have faced a difficult number of questions regarding isolation versus socialization. For example: Is it safe to ... leave the house? Go to school? Play with other children? Visit elderly relatives?

In recent months, government entities and healthcare professional organizations have provided guidance for American families on mitigation of the virus, wellness, and safety. Even more, are being issued as the country returns to familiar social activities in the age of "social distancing."

During the stay at home orders, families have missed out on many scheduled events - including regular, well-care visits to the pediatrician focused on preventive treatments, such as vaccinations. In the midst of re-opening pediatric centers of care, children's hospitals, and other outpatient units, a heightened sensitivity has emerged for public safety and social distancing, in all public spaces. To coincide with these measures, however, doctors, health care professionals, and families are *also* beginning to focus on the issues of delayed care and missed health care appointments, and the implications it could have on patients and the public health in the future.

*“So, what is appropriate in this new environment with regard to wellness visits, existing vaccines, and other preventive treatments, in the form of neonatal and childhood immunization, administered based on well-established schedules for babies and children?”*

So, what is appropriate in this new environment with regard to wellness visits, existing vaccines, and other preventive treatments, in the form of neonatal and childhood immunization, administered based on well-established schedules for babies and children? Should families delay childhood immunizations for the sake of safety during the COVID-19 pandemic, perhaps until there is a vaccine for that illness? Finally, what happens to those best practices associated with immunization for the last few decades - particularly as young families contemplate the return to brick and mortar schools, if viable, in the fall?

## Societal Value Placed on Childhood Immunizations

Adult patients are deferring or delaying care because they lack access to open facilities, the financial strain of the cost of treatment, or for fear of being infected with COVID-19 through interactions with the public. For children, like adults, this delay of care encompasses preventive care - namely immunization.

As pediatricians and neonatologists are aware, [government entities and health professionals have collaborated](#) (1) to establish [birth through age 18 immunization schedule](#), (2) which the Centers for Disease Control and Prevention (CDC) publishes. The CDC estimates that for every \$1 invested in vaccines in the U.S., \$10.20 is saved in direct medical costs, according to the [American Academy of Family Physicians \(AAFP\)](#). (3)

Vaccines have been hotly debated by medical professionals, scientists, and American families for their usefulness and the possible consequences of administration. Without revisiting that debate, existing science and treatment outcomes support

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that vaccines have [eradicated serious illnesses](#) (4) through early intervention in American children - the most commonly known of these vaccinations being the polio vaccine.

For a more recent example, there was the measles outbreak in 2019. Measles is a highly contagious and serious disease that can be deadly. [Prior to the recent outbreak, measles cases were relatively low. According to the Centers for Disease Control and Prevention \(CDC\), the majority of cases in the 2019 outbreak were among people who did not get a measles vaccination.](#) (5)

Vaccines prevent disease. Some consider them *better than* a cure, and many researchers are in agreement that they are cost-effective. The [World Health Organization estimates that immunization currently prevents 2-3 million deaths every year](#), (6) and suggests that 1.5 million more deaths could be avoided if global vaccination coverage increases.

---

***“Vaccines prevent disease. Some consider them better than a cure, and many researchers are in agreement that they are cost-effective. The World Health Organization estimates that immunization currently prevents 2-3 million deaths every year, (6) and suggests that 1.5 million more deaths could be avoided if global vaccination coverage increases.”***

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**Recent AAP Guidance**

The American Academy of Pediatrics (AAP) put out "[Guidance on Providing Pediatric Well-Care During COVID-19](#)" (7) last month, recognizing the challenge when immunizations are missed. The Academy acknowledges that "concern exists that delays in vaccinations [since the onset of COVID-19], may result in secondary outbreaks with vaccine-preventable illnesses."

The advent of telehealth and the recent surge in telemedicine use

Babies are just tiny adults, right? So ... half?

Infants need drugs tested and approved just for them.

Coalition for Clinical Trials in Pediatrics **NCfIH** National Coalition for Infant Health  
Protecting Access for Premature Infants through Age Two  
[www.infanthealth.org](http://www.infanthealth.org)

# Still a Premie?

*Some preemies are born months early, at extremely low birthweights. They fight for each breath and face nearly insurmountable health obstacles.*

**But that's not every preemie's story.**

**Born between 34 and 36 weeks' gestation?**

**STILL A PREMIE**

*Just like preemies born much earlier, these "late preterm" infants can face:*

Jaundice      Feeding issues      Respiratory problems

And their parents, like all parents of preemies, are at **risk for postpartum depression and PTSD.**

**Born preterm at a "normal" weight?**

**STILL A PREMIE**

*Though these babies look healthy, they can still have complications and require NICU care.*

But because some health plans determine coverage based on a preemie's weight, **families of babies that weigh more may face access barriers and unmanageable medical bills.**

**Born preterm but not admitted to the NICU?**

**STILL A PREMIE**

*Even if preterm babies don't require NICU care, they can still face health challenges.*

Those challenges can extend through childhood, adolescence and even into adulthood.

**Some Premies**

- Will spend weeks in the hospital
- Will have lifelong health problems
- Are disadvantaged from birth

**All Premies**

- Face health risks
- Deserve appropriate health coverage
- Need access to proper health care

**NCfIH** National Coalition for Infant Health  
Protecting Access for Premature Infants through Age Two  
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- and modified health insurance coverage plans for it - has been a great improvement in allowing patients of all ages to continue their healthcare routine during the coronavirus outbreak. Yet, the current technology is not capable of administering childhood immunizations directly. That still [requires a physical location](#), (8) such as a parking lot staffed by health care professionals, as the stand-in for an in-person visit. However, technology may be imperative to documenting "state-based immunization information" to support pediatricians as they get their patients back on schedule, so to speak, according to the AAP.

The report goes on to provide suggestions to ensure safety for those in-person visits. AAP suggests measures such as scheduling well visits for children in one area of the facility of the clinic, or scheduling certain days of the week for alternating well patient visits with sick patients visits. Practically speaking, however, with family-centered care facilities and smaller, private clinics currently facing furloughs, layoffs, and other impacts on staff, this separation solution may prove difficult to execute. The AAP also suggests "collaborating with providers in the community to identify separate locations for providing well visits for children."

### Back to School & Daycare

Another pressing concern for the families of school-aged children: exposure to another child who has not been vaccinated or missed vaccinations during COVID-19. Parents may feel pressured to move quickly over the summer to catch up on the required vaccination schedule before the typical, August-September start of the school calendar.

State-based immunization laws inform school and daycare requirements and reflect guidance from [The Advisory Committee on Immunization Practices \(ACIP\)](#) (9) and their written recommendations on vaccine schedules, according to the [National Conference of State Legislators](#). (10) These state laws are subject to exemptions, such as an intervening medical reason to skip the immunization, however.

Of greater societal concern, families who are jobless due to the health pandemic or cannot afford wellness care visits for the family may struggle with access to get their child vaccinated. Fortunately, a roadmap exists to help those families. In 1994, the [Vaccines for Children program \(VFC\)](#) (11) was "[launched in direct response to a measles resurgence in the U.S. that caused tens of thousands of cases and over a hundred deaths, despite the availability of a measles vaccine since 1963.](#)" (12) The VFC program provides vaccines to children at no cost to families that might not otherwise get their child vaccinated based on affordability. There are also state programs that supplement the federal VFC fund. For more information on the VFC program statistics, see <https://www.cdc.gov/media/releases/2014/images/p0424-immunization-program.pdf> 913)

### Conclusion

The CDC estimates that vaccinations will prevent more than [21 million hospitalizations and 732,000 deaths among children born in the last 20 years](#). (14)

The COVID-19 pandemic has impacted the number of children getting vaccinated, but the recommended infant and childhood

vaccines still hold value - they have been proven to keep Americans safe and healthy. Hopefully, this delay in pediatric care will not be so great to overcome. Nevertheless, for the time being, it may prove to be yet another, unforeseen, trickle-down effect of the COVID-19 pandemic.

### References:

1. <https://www.aafp.org/patient-care/public-health/immunizations.html>
2. <https://www.aafp.org/patient-care/public-health/immunizations.html>
3. <https://www.aafp.org/patient-care/public-health/immunizations/schedules/child-schedule.html>
4. <https://www.aafp.org/patient-care/public-health/immunizations.html>
5. <https://www.cdc.gov/vaccines/parents/diseases/forgot-14-diseases.html>
6. <https://familydoctor.org/childhood-vaccines-what-they-are-and-why-your-child-needs-them/>
7. <https://www.who.int/news-room/facts-in-pictures/detail/immunization>
8. <https://services.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/guidance-on-providing-pediatric-well-care-during-covid-19/>
9. <https://www.aafp.org/news/health-of-the-public/20200323covidtelehealth.html>
10. <https://www.cdc.gov/vaccines/acip/recommendations.html>
11. <https://www.ncsl.org/research/health/immunizations-policy-issues-overview.aspx>
12. <https://www.cdc.gov/media/releases/2014/p0424-immunization-program.html>
13. <https://www.cdc.gov/media/releases/2014/images/p0424-immunization-program.pdf>
14. <https://www.ncsl.org/research/health/immunizations-policy-issues-overview.aspx>

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### Corresponding Author



Darby O'Donnell, JD  
Alliance for Patient Access (AfPA) Government Affairs Team  
1275 Pennsylvania Ave. NW, Suite 1100A Washington, DC  
20004-2417  
202-499-4114  
[info@allianceforpatientaccess.org](mailto:info@allianceforpatientaccess.org)

Respiratory Syncytial Virus is a

# Really Serious Virus

Here's what you need to watch for this RSV season

Coughing that gets worse and worse



Breathing that causes their ribcage to "cave-in"

Rapid breathing and wheezing



Bluish skin, lips, or fingertips

RSV can be deadly. If your baby has these symptoms, don't wait.

Call your doctor and meet them at the hospital.

If your baby isn't breathing call 911.



Thick yellow, green, or grey mucus



that clogs their nose and lungs, making it hard to breathe

Fever that is higher than 101° Fahrenheit



which is especially dangerous for babies younger than 3 months

 National Perinatal Association

[www.nationalperinatal.org/rsv](http://www.nationalperinatal.org/rsv)

PROTECT YOUR FAMILY FROM RESPIRATORY VIRUSES

flu

coronavirus

pertussis

RSV



SOAP

**WASH YOUR HANDS**

often with soap and warm water.

**GET VACCINATED**

for flu and pertussis. Ask about protective injections for RSV.



**COVER COUGHS AND SNEEZES.**

Sneeze and cough into your elbow.

**USE AN ALCOHOL-BASED HAND SANITIZER.**



**STAY AWAY FROM SICK PEOPLE**

Avoid crowds. Protect vulnerable babies and children.

[www.nationalperinatal.org](http://www.nationalperinatal.org)

 National Perinatal Association

# Respiratory Syncytial Virus:

## How you can advocate for babies this RSV season

Track national data and trends at the CDC's website [www.cdc.gov/rsv](http://www.cdc.gov/rsv)



Identify babies at greatest risk



including those with CLD, BPD, CF, and heart conditions

Teach families how to protect



their babies from respiratory infections

Advocate for insurance coverage for palivizumab prophylaxis so more babies can be protected \*



Use your best clinical judgement



when prescribing RSV prophylaxis

Tell insurers what families need



and provide the supporting evidence



\*See the NPA's evidence-based guidelines at [www.nationalperinatal.org/rsv](http://www.nationalperinatal.org/rsv)

## Survey Says: RSV

RESPIRATORY SYNCYTIAL VIRUS, or RSV, is a dangerous virus that can lead to:

- Hospitalization
- Lifelong health complications
- Death

for infants and young children



ACCORDING TO A NATIONAL SURVEY, *Specialty Health Care Providers say:*

- 80% They treat RSV as a priority, "often" or "always" evaluating their patients
- 77% RSV is the "most serious and dangerous" illness for children under four
- 77% Barriers to access and denials from insurance companies limit patients' ability to get preventive RSV treatment



*But Parents are Unprepared.*

- 18% Only 18% know "a lot" about RSV
- 22% Only 22% consider themselves "very well" prepared to prevent RSV



RSV EDUCATION & AWARENESS CAN HELP

After parents learned more about RSV, they were:

- 65% "More concerned" about their child contracting the disease
- 67% Likely to ask their doctor about RSV



NCJIH National Coalition for Infant Health  
Preventing RSV in Preterm Infant through Age Two

Learn More about RSV at [www.infanthealth.org/rsv](http://www.infanthealth.org/rsv)

# Preemie Parent Perspective: Addressing Health Equity and Cultural Competency in the NICU

Jenné Johns, MPH



In 2016, I published *Once Upon a Preemie*, a first-of-its-kind children's book written to comfort parents of premature infants during their journey through the Neonatal Intensive Care Unit (NICU). During my journey, I discovered that reading to my micropreemie was the one activity as a mother that I could offer my son that helped normalize my overwhelming and traumatic NICU experience. During our nearly three-month stay in the

NICU, I read to my son every day as research studies suggest that reading stimulates healthy brain development in preemies, and also helps to form a bond between parent and baby. Many of the bedtime stories that we read ended with a parent tucking the child into bed at home with Mommy and Daddy. That wasn't our reality for three months. There were no books about us.

Little did I know that in publishing my deepest emotions carried during and post NICU would lead me to become an author and speaker, but also an advocate and advisor for the needs of preemie parents, especially African Americans. As the mother of a micropreemie and miracle baby born at 26 weeks and weighing 1 lb 15.3 ounces, I found myself advocating for his needs as I knew his life depended on it. Despite my 10-year career working to eliminate racial and ethnic disparities in health care, nothing prepared me for the heart-wrenching experience of my son's premature birth. "Disparity" became real for me as my son joined the ranks of the nearly 500,000 premature babies born in the United States, nearly half to African American and Hispanic mothers. It was through this dual role that I experienced the NICU, one as a vulnerable micropreemie mother, and the other as a health equity professional.

***"My advocacy skills were tested daily, as his life depended on how well I could speak "neonatology" language, I had to be his voice and articulate his needs. This was challenging because, after all, "I'm just a Mom," an African American Mom, and not a doctor."***

At birth, my son required life-saving medical interventions; oxygen, phototherapy lights, feeding tubes, a heart monitor, medication, vitamins, and even caffeine. Over our nearly three-month stay in the NICU, I traveled through snowstorms and blizzards, to parent and nurture my baby. I only missed three days (two due to inclement weather and one self-care day). A typical day in the NICU lasted from 7 am until midnight, with many breaks to pump breastmilk. My lactation consultant promised that my breastmilk was liquid medicine. Midway through our NICU journey, I had to return to work, unlike many of my new NICU parent friends who were Caucasian. My advocacy skills were tested daily, as his life

*Jenné Johns, MPH is the mother of a micropreemie, author, speaker, advocate, and national senior health equity leader. As an advocate for reducing healthcare disparities, Jenné found herself advocating for the needs of her son, as his survival depended on it. She also learned the power of reading to her son daily. Jenné wrote, "Once Upon a Preemie," which is the first of its kind children's book written for the parents of preemies while they are in the NICU. This bedside companion seeks to motivate, encourage, and inspire preemie babies and families until they go home.*

*Her preemie parent contributions include consulting and blogging for fortune 500 companies on preemie parent needs from a cultural lens and reading as a tool for growth, development, and bonding. She serves on numerous advisory committees advocating for preemie babies and eliminating health disparities, including NICU Parent Network, The National Coalition on Infant Health, and March of Dimes Prematurity Prevention Collaborative." She has presented at numerous conferences as a preemie parent, including Congressional Black Caucus Annual Legislative Conference, National Neonatal Nurses Association Conference, National Perinatal Social Workers Congressional Briefing, Preemie Parent Alliance, and National Perinatal Association Annual Conference. Jenné was featured in the Baby First Blog, Preemie World, Heart and Soul Magazine, iHeart Radio, CBS Philly News Radio, Disruptive Women in Healthcare Blog, and Women of a New Sisterhood.*

*In her professional capacity, Jenné is a National Senior Health Equity Thought Leader. Most recently, Jenné served as Director of Quality Improvement and Health Equity at Blue Cross and Blue Shield, Illinois, where she was responsible for leading strategies to improve health outcomes, reduce cost, and reduce racial and ethnic healthcare disparities with a focus on maternal and child health innovations. She also co-chaired the enterprise-wide Equity Steering Committee. Prior to Blue Cross and Blue Shield Illinois, Jenné served as Director of Health Disparities at AmeriHealth Caritas. She led innovations to reduce healthcare inequities for 5 million lives in 19 states in the areas of maternal and child health, pediatric asthma, diabetes, and cardiovascular disease. Jenné has over a decade of experience advocating for policy, business, and community changes to improve health outcomes for low-income communities through her work with Policy Link, Summit Health Institute for Research and Education, Robert Wood Johnson Foundation, and the National Nursing Centers Consortium.*

*Jenné is a graduate of the Disparities Leadership Program led Harvard Medical School. Her advisory appointments included: Pennsylvania Office of Health Equity (Advisor); Mid-Atlantic Regional Health Equity Council (Co-Chair); Regional Cancer Disparities Initiative at Thomas Jefferson Hospital (Co-Chair); Board Member, Pebbles of Hope. Her awards include Certificate of Recognition from the Honorable Congresswoman Robin Kelly (D-IL), Chair Congressional Black Caucus Health Braintrust; 40 Under Forty 2018 Achievement Award (The Network Journal); Top 100 Diverse Leaders Under 50 (Diversity MBA Magazine); Certificate of Recognition for the President's Commission on White House Fellowships Program (Regional Finalist); Certificate of Commendation-HHS Office of Minority Health, and Philadelphia Leader on the Move-Philadelphia Business Journal.*



# ONCE UPON A PREEMIE ACADEMY



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depended on how well I could speak “neonatology” language, I had to be his voice and articulate his needs. This was challenging because, after all, “I’m just a Mom,” an African American Mom, and not a doctor.

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***“I now believe, that with trauma-informed and implicit bias training among hospital staff, the professional staff would have been better equipped to communicate and support my delicate and fragile nature.”***

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As a mother, my NICU journey was traumatic and filled with a sea of emotions, including fear, anxiety, helplessness, and isolation. Much of which NICU parents are facing due to the current COVID-19 pandemic. Many of my fears, concerns, and feelings of isolation were due to the NICU environment, which was not as culturally friendly and supportive, as I assumed it would be. I’m being generous by saying there was little cultural diversity; it was dismal at best. There were times when the lack of cultural sensitivity and bedside manner caused more pain than my son’s actual health status, and it made me very uncomfortable because as the end of each night, I had to trust my most prized possession with nurses and doctors who I did not always trust. Another challenge I faced as an African American preemie parent, was that although our larger hospital system had active and robust NICU parent support groups, these resources were not made available at the smaller hospital where I delivered my son. This hospital served more African American and lower-income families than the other hospitals. Many of the parents I developed a relationship with, felt as if our socio and emotional needs did not matter and were oftentimes dismissed because of this missing resource. Lastly, I experienced inconsistent positive communication and relationships with many of the NICU staff. Although I now believe that all of the members of my son’s care team, held his safety and the quality of care they delivered to him with the utmost regard, our daily communication and interaction lacked humility, respect, and sensitivity. I will admit, I was not always the easiest or most cheerful mother to deal with, I now believe, that with trauma-informed and implicit bias training among hospital staff, the professional staff would have been better equipped to communicate and support my delicate and fragile nature.

Overall, a good deal of our NICU experience was positive; some experiences left permanent and negative memories that, to this day, cannot be erased. As much as I tried checking my professional credentials at the door before entering the NICU, my interactions with the NICU staff begged, yelled, and warranted us to have those tough cultural sensitivity conversations. Not in a negative way, but as an opportunity for forming better communication, respect, and, most importantly, trust.

In my professional view, the NICU is a microcosm of the larger hospital system on steroids, particularly NICU’s serving low income and racially, ethnically, and linguistically diverse populations. Health disparities impacting the NICU are also a reflection of a larger hospital ecosystem. Below are my preemie parent and professional recommendations for integrating health equity and cultural competency in the NICU:

1. Prioritize health equity and cultural competency as strategic priorities and goals. Establishing opportunities for integrating and addressing health equity in short and long terms strate-

gies ensures layers of accountability, allocation of funding, measurement, and documentation of outcomes. One example of an important health equity priority includes staff diversity. Peer-reviewed studies have shown that cultural congruence among patients and providers yields better health outcomes, better communication, and trust.

2. Make health equity, cultural competency, and implicit bias training mandatory for all NICU Staff. Participating in an annual training program is a great start to begin addressing and delivering equitable care to all NICU families. However, one-time training is not sufficient. Integrating health equity and implicit bias content into clinical rounds, staff development, and training opportunities are critical to reducing racial and ethnic disparities in the NICU.
3. Communicating in lay terms should be standard in every NICU. Literacy and health literacy levels are important considerations for family-centered and culturally appropriate care in the NICU. Regardless of one’s educational level, the NICU terminology is overwhelming and confusing for a new parent entering the NICU. Literacy and health literacy considerations are also important factors for families who are limited or non-English speaking. Break the communication barriers by speaking the same language and utilizing interpreters even if everyone speaks English. I had a great deal of respect and appreciation for the NICU staff who used lay terms and avoided NICU jargon when communicating with me. In time, I began understanding the NICU language; however, that wasn’t my job as a preemie parent. Preemie parents should be made to feel as comfortable speaking and interacting with NICU staff regardless of their literacy and health literacy levels.
4. Partner with parents to address the cultural competency, spiritual diversity, and unconscious biases that exist in the NICU. Listen to the voices of parents with multicultural backgrounds to be more sensitive to racial, ethnic, language, income, education, transportation, and spiritual needs. Encourage preemie parents to speak up. Staff should value their input. Allow parents to give their insights on their baby’s health status, and any gut feelings they may have about a diagnosis or new development. This is extremely important for minority parents who assume their voice and parental role is undervalued.
5. Engage and establish culturally congruent NICU family supports. Many minority parents may not immediately express a need for mental or emotional help while in the NICU for fear of being labeled. Where and when possible, make culturally congruent resources available to support these parents, even if the supports are outside of the NICU.
6. Make digital technology and virtual solutions available to parents with transportation, competing work schedules, or other barriers to delivering care to their preemies. This is most critical during the current COVID season, where parental fears and social distancing may prohibit them from

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visiting their baby. Creating safe opportunities for parents to connect with their babies is vital bonding via smart devices or other safe technology solutions.

**“This November, as we go purple in recognition of Prematurity Awareness Month, we hope that you will join us as we launch the Once Upon A Premie Academy, a virtual health equity and cultural competency training program for preemie professionals and parents.”**

This November, as we go purple in recognition of Prematurity Awareness Month, we hope that you will join us as we launch the Once Upon A Premie Academy, a virtual health equity and cultural competency training program for preemie professionals and parents. For more information about the Once Upon A Premie Academy and for additional health equity and cultural competency resources, please join our listserv and visit these online resources:

1. Once Upon A Premie Academy Listserv: [www.onceuponapremie.com](http://www.onceuponapremie.com)
2. BabyFirst Blog Post: Culture Matters in the NICU <https://www.babyfirst.com/en/blog-posts-jenne-johns/culture-matters-in-the-nicu/>
3. BabyFirst Blog Post: The Importance of Reading to your Premie. <https://www.babyfirst.com/en/blog-posts-jenne-johns/the-importance-of-reading-to-your-preemie/>

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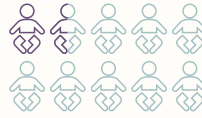
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Corresponding Author



Jenné Johns, MPH  
Mother of a micropreemie, author, speaker, advocate, and national senior health equity leader  
email [hi@onceuponapremie.com](mailto:hi@onceuponapremie.com)

## Why PREMATURE INFANTS Need Access to an EXCLUSIVE HUMAN MILK DIET



In the United States, more than **1 IN 10** BABIES ARE BORN PREMATURE. Micro preemies are born severely premature, weighing less than 1,250 grams.

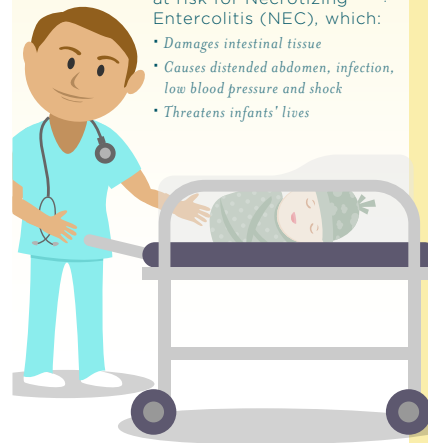
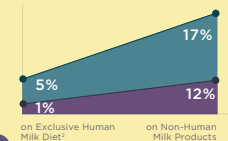


**MICRO PREMIES** are at risk for Necrotizing Enterocolitis (NEC), which:

- Damages intestinal tissue
- Causes distended abdomen, infection, low blood pressure and shock
- Threatens infants' lives

NEC occurrence increases when a preemie consumes non-human milk products.

When that happens:



30% of micro preemies needing surgery will die from NEC!

## HOW TO HELP PREVENT NEC: EXCLUSIVE HUMAN MILK DIET

What is an Exclusive Human Milk Diet?



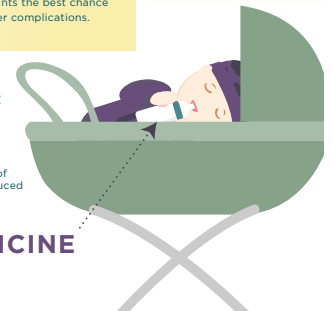
### Why Is An Exclusive Human Milk Diet Important?

An Exclusive Human Milk Diet gives vulnerable infants the best chance to be healthy and reduces the risk of NEC and other complications.

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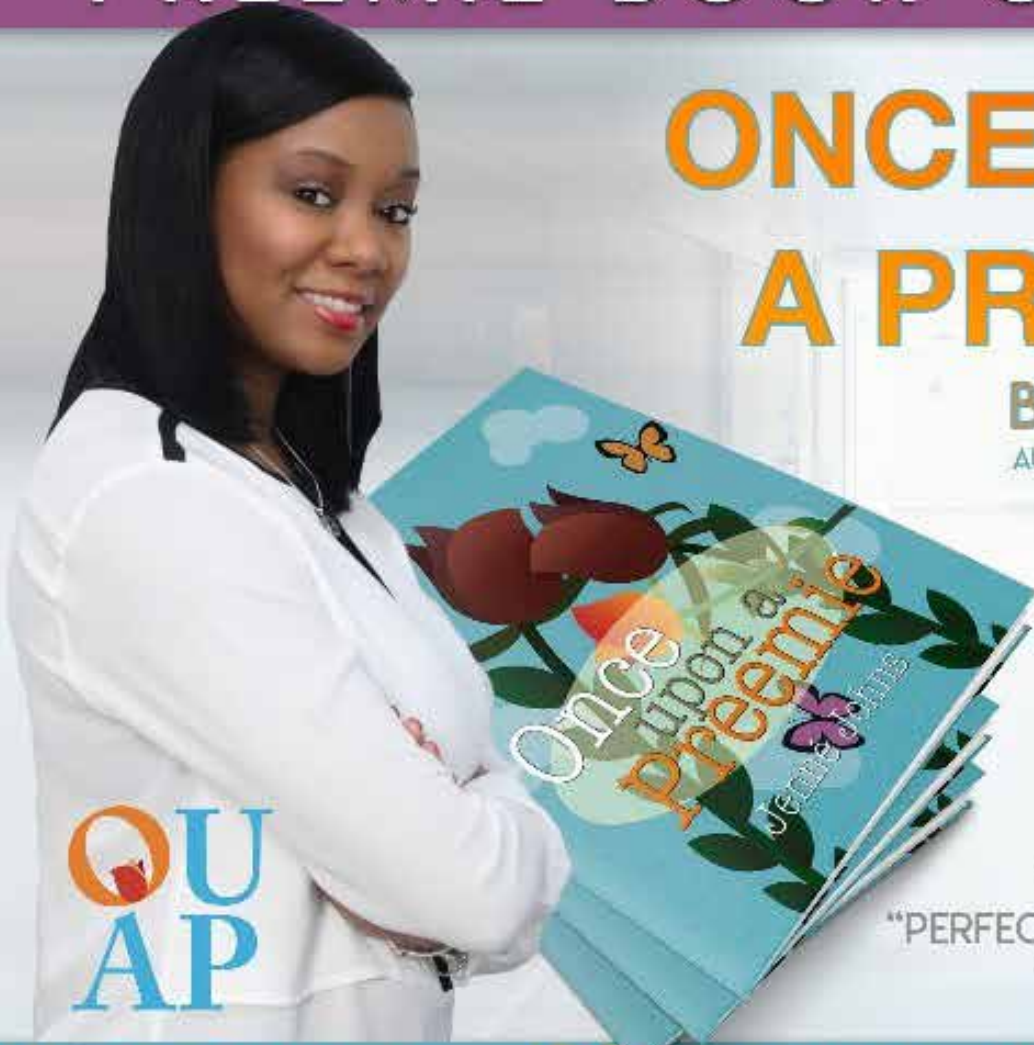
\* Hair AB, et al. "Beyond Necrotizing Enterocolitis Prevention: Improving Outcomes with an Exclusive Human Milk-Based Diet." *Breastfeeding Medicine* 10: 13-18 (2015). DOI: 10.1089/bfm.2015.0134  
\* Abrams SA, et al. "Greater Mortality and Morbidity in Extremely Preterm Infants Fed a Diet Containing Cow Milk Protein Products." *Breastfeeding Medicine* July/August 2014, 9(3): 281-285  
\* Hall MA et al. "Mortality and management of surgical necrotizing enterocolitis in very low birth weight neonates: a prospective cohort study." *J Am Coll Surg* 2014; Apr; 118(4): 56.  
\* Assaad M, Elliott MJ and Abraham JH. "Decreased cost and improved feeding tolerance in VLBW infants fed an exclusive human milk diet." *Journal of Perinatology* advance online publication 12 November 2015; DOI: 10.1098/p.2015.1188

# PREEMIE BOOK ON SALE

## ONCE UPON A PREEMIE

BY JENNÉ JOHNS

AUTHOR | SPEAKER | ADVOCATE



OU  
AP

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“PERFECT FOR PREEMIE FAMILIES”  
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# None Are Protected If All Are Not Protected

Julia Koehler, MD

The apparent on-camera murder by slow asphyxiation of George Floyd, arrested for an alleged \$20 forgery, drives ongoing protests throughout Massachusetts. Together with yet more shooting deaths of Black people in recent weeks, it highlights not only how [acceptance of police violence](#) against Black people was [written into law](#). It also comes at a time when the vastly disproportionate rates of COVID-19 [infection](#) and [death](#) in Massachusetts' Black and immigrant [communities](#) have risen into public awareness, even as our state's distinction of having the fourth-highest death rate in the country has not.

***“Together with yet more shooting deaths of Black people in recent weeks, it highlights not only how acceptance of police violence against Black people was written into law. It also comes at a time when the vastly disproportionate rates of COVID-19 infection and death in Massachusetts' Black and immigrant communities have risen into public awareness, even as our state's distinction of having the fourth highest death rate in the country has not.”***

We posit that devaluation of Black and immigrant lives is implicit in policies that accept [these infection and death rates](#) as inevitable and that successful control of the pandemic here in Massachusetts hinges on political decisions to proactively remedy the factors that render these communities so vulnerable. We call on elected officials at every level of our Commonwealth, starting with Governor Baker, to focus on these policies with maximal urgency as reopening is being advanced. This will require inviting representatives of these communities to the table, as the CEOs who currently populate the governor's reopening board lack the knowledge of their life circumstances that representatives like [Gladys Vega of the Chelsea Collaborative](#) and [Reverends Ray and Gloria Hammond](#) of Bethel AME Church can bring. It is the voices of the affected communities that can best clarify the realities excluded from Governor Baker's statement that safe reopening [hinges on personal responsibility](#). Black and immigrant individuals desire nothing more than to protect themselves but must place themselves into dangerous environments to put food on the table and keep a roof over their heads.

Three parts of daily life put Black and immigrant men and women

at stark risk of infection: work, transportation, and home. Workplaces of frontline low-income workers have been [unsafe](#) since the beginning of the epidemic. As some examples, grocery store cashiers long lacked sneeze guards and masks; hospital janitors, nursing home staff, as well as home care attendants, lacked training in the use of personal protective equipment (if they even had such equipment available); bus drivers lacked enclosures; and [food production workers](#) were closely crowded together. Current policies, in which detailed protective measures at each type of workplace are not mandated, still drive businesses to skirt safety measures, because the most conscientious businesses are financially penalized. [Occupational health experts](#), [workers' centers](#), and [unions](#) know the workplace realities on the ground to formulate needed detailed guidelines. Employees requesting adherence to guidelines must be protected from retaliation. In current circumstances, with [rampant food insecurity](#) and with the specter of an [employer calling ICE](#) to rid himself of a sick undocumented worker, employees are afraid to ask for adherence to workplace guidelines if they are not robustly shielded from dismissal or worse. Presumption of occupational exposure of COVID-19 [passed into law](#) or [ordered in 12 states](#), rewards businesses that protect their workers rather than punishing them for doing so, and enables employees to stay home as long as they are infectious.

Unsafe transportation endangers not only MBTA staff but also riders who must get to work. In fact the undocumented, who comprise a significant number of essential workers, still lack the right in our state to take a driving test and obtain a drivers' license; we call on the governor to endorse the [Work and Family Mobility Act](#) that would unite us with our neighbors Connecticut, New York and Vermont in disconnecting drivers' licenses from immigration status. Similarly, the [Safe Communities Act](#), delinking public safety policework, like traffic monitoring by State Police, from immigration enforcement, can help foster more trust of immigrant communities in state authorities. The absence of this trust currently makes effective COVID-19 contact tracing impossible. [Safe transport](#) will require constant monitoring of conditions on trains and buses and correction of deficits because it is the essential workers who cannot work from home.

Higher risks at home are the third arena in which Black and immigrant communities find themselves in harm's way from COVID-19. Our Commonwealth has tolerated [significantly higher levels of pollution](#) in their residential areas, increasing their risk for chronic lung conditions that contribute to more severe disease. Skyrocketing housing costs also force families to choose between intense crowding or homelessness. Families who now have no food are [even harder pressed for rent](#). An explosion of evictions, foreclosures, and family homelessness threatens to throw acceleration on the epidemic unless tenants, homeowners, and small landlords are further protected before the [current moratorium](#) expires.

A second wave of infections would be devastating not just for the health and life of all Massachusetts residents, including the residents of sheltered towns who count on the health of their nannies,

housecleaners, and food workers. (This was amply demonstrated by the [second surge in Singapore](#), driven by infections among low-income migrant workers.) It would also deeply disrupt the operations of small businesses, of the farms in the Western part of our state, the ability of daycare centers and schools to plan and to function, and hence the financial lifeblood of many people in our state. The idea that a second wave is inevitable is deeply harmful, as the [Massachusetts High Technology Council](#) has pointed out. Preventing more infections is not only right because every human life is precious. It is also critical for a strong economy.

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***“We can be hopeful that similarly beneficial outcomes result from our current COVID-19 pandemic, whether that be an acceleration of research into therapeutics and vaccines, or improved preparedness for the next pandemic yet to emerge.”***

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If our affirmation that Black lives matter and that we are a welcoming state is more than a beautiful sentiment but is meant to truly protect the lives of those who have already suffered so disproportionately in the epidemic, concrete steps are needed now. The voices and expertise of the most intensely impacted groups must be called on. For COVID-19, justice and science converge: none are protected if all are not protected.

Julia Koehler, MD  
Pediatric Infectious Diseases specialist and Assistant Professor of Pediatrics, Harvard Medical School

Robert Husson, MD  
Pediatric Infectious Diseases specialist and Professor of Pediatrics, Harvard Medical School

Regina LaRocque, MD MPH  
Adult Infectious Diseases specialist and Associate Professor of Medicine, Harvard Medical School

**References:**

1. [https://www.washingtonpost.com/politics/current-law-gives-police-wide-latitude-to-use-deadly-force/2014/08/28/768090c4-2d64-11e4-994d-202962a9150c\\_story.html](https://www.washingtonpost.com/politics/current-law-gives-police-wide-latitude-to-use-deadly-force/2014/08/28/768090c4-2d64-11e4-994d-202962a9150c_story.html)
2. <https://www.theatlantic.com/politics/archive/2019/08/how->

3. <https://www.nytimes.com/interactive/2020/us/massachusetts-coronavirus-cases.html>
4. <https://www.bostonglobe.com/2020/05/09/nation/disparities-push-coronavirus-death-rates-higher/>
5. <https://www.bostonmagazine.com/news/map-coronavirus-cases-by-county-massachusetts/>
6. <https://www.bostonglobe.com/2020/05/09/nation/disparities-push-coronavirus-death-rates-higher/>
7. <https://www.bostonglobe.com/2020/04/26/metro/saving-chelsea/>
8. <http://www.bethelame.org/our-pastors>
9. <https://www.boston.com/news/coronavirus/2020/05/18/charlie-baker-massachusetts-reopening-plan-livestream-video>
10. <http://www.masscosh.org/publications/featured-articles/comprehensive-information-covid-19>
11. <https://www.southcoasttoday.com/news/20200413/new-bedford-seafood-workers-report-overcrowding-poor-sanitation>
12. <http://www.masscosh.org/>
13. <https://www.masslegalservices.org/content/worker-centers-massachusetts>
14. <https://www.1199seiu.org/massachusetts>
15. [https://www.washingtonpost.com/national/in-an-immigrant-community-battling-coronavirus-essential-means-vulnerable/2020/05/08/c25cdb4e-8e1e-11ea-a9c0-73b93422d691\\_story.html](https://www.washingtonpost.com/national/in-an-immigrant-community-battling-coronavirus-essential-means-vulnerable/2020/05/08/c25cdb4e-8e1e-11ea-a9c0-73b93422d691_story.html)
16. <https://www.wbur.org/news/2017/05/17/ice-arrest-workers-comp>
17. <https://www.jdsupra.com/legalnews/illinois-legislature-passes-covid-19-78617/>
18. <https://www.ncsl.org/research/labor-and-employment/covid-19-workers-compensation.aspx>
19. <https://www.gazettenet.com/Bill-to-allow-undocumented-residents-drivers-licenses-reported-out-of-committee-32524158>
20. <https://www.miracoalition.org/our-work/safe-communities/>
21. <https://www.t4ma.org/covid-19>
22. <https://www.mass.gov/info-details/ago-environmental-justice-brief>
23. <http://www.clvu.org/covid19>
24. <https://www.bostonglobe.com/2020/04/20/business/baker-signs-bill-blocking-evictions-during-coronavirus/>
25. <https://www.bloomberg.com/news/articles/2020-04-28/virus-surge-in-southeast-asia-migrant-workers-serves-as-warning>
26. <http://www.mhtc.org/events/covid-19-response/>

The author has no conflicts to disclose

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Corresponding Author



Julia Koehler MD  
Specialist in Pediatric Infectious Disease  
Assistant Professor of Pediatrics,  
Harvard Medical School  
Boston, Massachusetts  
email: [decency.matters4us@gmail.com](mailto:decency.matters4us@gmail.com)

## OPIOIDS and NAS

When reporting on mothers, babies,  
and substance use

# LANGUAGE MATTERS



### I am not an addict.

I was exposed to substances in utero. I am not addicted. Addiction is a set of behaviors associated with having a Substance Use Disorder (SUD).



### I was exposed to opioids.

While I was in the womb my mother and I shared a blood supply. I was exposed to the medications and substances she used. I may have become physiologically dependent on some of those substances.



### NAS is a temporary and treatable condition.

There are evidence-based pharmacological and non-pharmacological treatments for Neonatal Abstinence Syndrome.



### My mother may have a SUD.

She might be receiving Medication-Assisted Treatment (MAT). My NAS may be a side effect of her appropriate medical care. It is not evidence of abuse or mistreatment.

### My potential is limitless.

I am so much more than my NAS diagnosis. My drug exposure will not determine my long-term outcomes. But how you treat me will. When you invest in my family's health and wellbeing by supporting Medicaid and Early Childhood Education you can expect that I will do as well as any of my peers!



Learn more about  
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The CE activity explains safe infant sleep recommendations from the American Academy of Pediatrics and is approved by the Maryland Nurses Association, an accredited approver of the American Nurses Credentialing Center's Commission on Accreditation.



Eunice Kennedy Shriver National Institute  
of Child Health and Human Development



# Medical News, Products & Information

Compiled and Reviewed by Mitchell Goldstein, MD Editor in Chief

## NIH-funded study to evaluate drugs prescribed to children with COVID-19

Researchers will assess dosage, metabolism and other properties not yet determined in children.

Wednesday, June 10, 2020

Researchers funded by the National Institutes of Health have launched an effort to evaluate drugs prescribed to treat COVID-19 in infants, children and adolescents across the country. The study leverages an existing clinical trial that examines drugs that are prescribed off-label to children for a variety of medical conditions. Because many drugs have not been tested specifically for use in children, physicians will often prescribe drugs off-label to children because they lack an alternative, approved treatment.

“As we search for safe and effective therapies for COVID-19, we want to make sure that we do not overlook the needs of our youngest patients who may respond differently to these drugs, compared to adults,” said Diana W. Bianchi, M.D., director of NIH’s Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), which oversees the project.

Researchers will investigate several drugs currently given to children diagnosed with COVID-19, including antiviral and anti-inflammatory drugs. Products will be added or removed from the list as researchers learn more about the treatment needs of patients with COVID-19. The study is not a clinical trial with a control group. Rather, healthcare providers who are already treating patients with drugs on the list may enroll patients whose parents or guardians have given their consent. The study is called [Pharmacokinetics of Understudied Drugs Administered to Children Per Standard of Care](#).

Researchers will analyze blood samples collected from routine medical procedures to understand how drugs move through the bodies of children, from newborns to adolescents under 21 years of age. They will also collect information on potential side effects and patient outcomes, such as the duration and type of respiratory support that may be needed and length of hospital stay. The study is designed to gather information to refine dosing and improve safety for infants, children and adolescents; it is not designed to evaluate which drug is the best treatment for COVID-19.

The study is being conducted in approximately 40 sites of the NICHD-funded [Pediatric Trials Network](#) (link is external). Importantly, many study sites are located near diverse communities, given reports that COVID-19 [disproportionately affects](#) (link is external) racial and ethnic minorities [across all ages](#) (link is external). The study also aims to analyze drug dosage and safety for special populations, including premature infants, critically ill children, children with Down syndrome and obese children.

The study is part of NICHD’s [Best Pharmaceuticals for Children Act](#) (BPCA) research program, which investigates drugs and therapies commonly prescribed to infants and children but not sufficiently tested in them. Data from BPCA studies are available to researchers through NICHD’s [Data and Specimen Hub](#) (DASH).

**About the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD):** NICHD leads research and training to understand human development, improve reproductive health, enhance the lives of children and adolescents, and optimize abilities for all. For more information, visit <https://www.nichd.nih.gov>.

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Contact  
[Linda Huynh or Robert Bock](#)  
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## The National Urea Cycle Disorders Foundation



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## American Academy of Pediatrics, Section on Advancement in Therapeutics and Technology

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Released: Thursday 12/13/2018 12:32 PM, updated Saturday 3/16/2019 08:38, and Sunday 11/17/2019 1020

The American Academy of Pediatrics' Section on Advances in Therapeutics and Technology (SOATT) invites you to join our ranks! SOATT creates a unique community of pediatric professionals who share a passion for optimizing the discovery, development and approval of high quality, evidence-based medical and surgical breakthroughs that will improve the health of children. You will receive many important benefits:

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- Receive the SOATT newsletter containing AAP and Section news.
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- Network with other pediatricians, pharmacists, and other health care providers to be stronger advocates for children.

- Invitation for special programming by the Section at the AAP's National Conference.
- Access to and ability to submit research abstracts related to advancing child health through innovations in pediatric drugs, devices, research, clinical trials and information technology; abstracts are published in Pediatrics.

AAP members can join SOATT for free. To activate your SOATT membership as an AAP member, please complete a short application at <http://membership.aap.org/Application/AddSectionChapterCouncil>.

The Section also accepts affiliate members (those holding masters or doctoral degrees or the equivalent in pharmacy or other health science concentrations that contribute toward the discovery and advancement of pediatrics and who do not otherwise qualify for membership in the AAP). Membership application for affiliates: <http://shop.aap.org/aap-membership/> then click on "Other Allied Health Providers" at the bottom of the page.

Thank you for all that you do on behalf of children. If you have any questions, please feel free to contact:

Mitchell Goldstein, MD, FAAP, Section Chairperson, [MGGoldstein@llu.edu](mailto:MGGoldstein@llu.edu) and

Christopher Rizzo, MD, FAAP, Membership Chairperson and Chair Elect, [crizo624@gmail.com](mailto:crizo624@gmail.com)

Jackie Burke

Sections Manager

AAP Division of Pediatric Practice

Department of Primary Care and Subspecialty Pediatrics

630.626.6759

[jburke@aap.org](mailto:jburke@aap.org)

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*The American Academy of Pediatrics is an organization of 67,000 primary care pediatricians, pediatric medical subspecialists and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents and young adults. For more information, visit [www.aap.org](http://www.aap.org). Reporters can access the meeting program and other relevant meeting information through the AAP meeting website at <http://www.aapexperience.org/>*

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## NIH researchers identify key genomic features that could differentiate SARS-CoV-2 from other coronaviruses that cause less severe disease

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*Genomic features that differentiate less*

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*severe forms of SARS-CoV-2 have been identified.*

Thursday, June 11, 2020

A team of researchers from the National Library of Medicine (NLM), part of the National Institutes of Health, identified genomic features of SARS-CoV-2, the virus that causes COVID-19, and other high-fatality coronaviruses that distinguish them from other members of the coronavirus family. This research could be a crucial step in helping scientists develop approaches to predict, by genome analysis alone, the severity of future coronavirus disease outbreaks and detect animal coronaviruses that have the potential to infect humans. The findings were published this week in the [Proceedings of the National Academy of Sciences](#) (link is external).

COVID-19, an unprecedented public health emergency, has now claimed more than 380,000 lives worldwide. This crisis prompts an urgent need to understand the evolutionary history and genomic features that contribute to the rampant spread of SARS-CoV-2.

"In this work, we set out to identify genomic features unique to those coronaviruses that cause severe disease in humans," said Dr. Eugene Koonin, an NIH Distinguished Investigator in the intramural research program of NLM's National Center for Biotechnology Information, and the lead author of the study. "We were able to identify several features that are not found in less virulent coronaviruses and that could be relevant for pathogenicity in humans. The actual demonstration of the relevance of these findings will come from direct experiments that are currently getting under way."

Using integrated comparative genomics and machine learning techniques, the researchers compared the genome of the SARS-CoV-2 virus against the genomes of other members of the coronavirus family and identified protein features

that are unique to SARS-CoV-2 and two other coronavirus strains with high fatality rates, SARS-CoV and MERS-CoV. The identified features correspond with the high fatality rate of these coronaviruses, as well as their ability to move from animal to human hosts.

These features include insertions of specific stretches of amino acids into two virus proteins, the nucleocapsid and the spike. These features are found in all three high-fatality coronaviruses and their closest relatives that infect animals, such as bats, but not in four other human coronaviruses that cause non-fatal disease. In particular, the insertions in the spike protein are predicted, from protein structure analysis, to facilitate the recognition of the coronavirus receptors on human cells and the subsequent penetration of the virus into those cells. Finding these features in animal coronavirus isolates could predict the jump to humans and the severity of disease caused by such isolates.

"This innovative research is critical to improve researchers' understanding of SARS-CoV-2 and aid in the response to COVID-19," said NLM Director Patricia Flatley Brennan, R.N., Ph.D. "Predictions made through this analysis can inform possible targets for diagnostics and interventions."

This press release describes a basic research finding. Basic research increases our understanding of human behavior and biology, which is foundational to advancing new and better ways to prevent, diagnose, and treat disease. Science is an unpredictable and incremental process — each research advance builds on past discoveries, often in unexpected ways. Most clinical advances would not be possible without the knowledge of fundamental basic research.

NLM, part of the NIH, is a leader in research in biomedical informatics and data science, and the world's largest biomedical library. NLM conducts and supports research in methods for recording, stor-

ing, retrieving, preserving, and communicating health information. It creates resources and tools that are used billions of times each year by millions of people to access and analyze molecular biology, biotechnology, toxicology, environmental health, and health services information. Additional information is available at [www.nlm.nih.gov](http://www.nlm.nih.gov).

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## NIH to test one-dose antibiotic for the prevention of maternal and infant sepsis

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*A potential novel therapy for prophylaxis of sepsis.*

Wednesday, June 3, 2020

Researchers supported by the National Institutes of Health and the Bill & Melinda Gates Foundation will assess whether a single oral dose of the antibiotic azithromycin during labor reduces the risk of maternal and infant bacterial infection and death in seven low- and middle-income countries.

“We urgently need effective interventions to reduce the death toll of pregnancy-related infections worldwide,” said Diana W. Bianchi, M.D., NICHD Director. “This study allows us to test a low-cost intervention that has shown promise in a smaller study.”

The clinical trial is funded by NIH’s Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) and the Gates Foundation. The trial will be conducted by researchers in NICHD’s Global Network for Women’s and Children’s Health Research, or NICHD Global Network.

Maternal death from sepsis — a system-wide reaction to bacterial and other infections — is higher in many low- and middle-income countries, compared to wealthy countries. This higher death rate results from a combination of factors, including a longer time to diagnosis, lack of access to timely drug treatment and chronic malnourishment. Infection during pregnancy and in the weeks after birth account for roughly 10% of maternal deaths worldwide, according to the World Health Organization. Infection accounts for 16% of newborn deaths worldwide.

Azithromycin, an antibiotic effective against a broad range of bacteria, has been shown (link is external) to protect against infection result-



## 8th World Congress of Pediatric Cardiology and Cardiac Surgery

SEPTEMBER 19-24, 2021 | WASHINGTON D.C.

ing from cesarean delivery. The drug is low-cost and can be kept at room temperature, which makes it suitable for parts of the world where refrigeration isn’t always available. An earlier study of more than 800 women in The Gambia found that administering azithromycin to pregnant women at the beginning of labor reduced maternal and infant infections, compared to a group that received a placebo. Azithromycin and other antibiotics are not effective against COVID-19 and other diseases caused by viruses.

The current study plans to enroll up to 34,000 women at NICHD Global Network sites in Bangladesh, the Democratic Republic of the Congo, Guatemala, India, Kenya, Pakistan and Zambia. Half of the women will receive a single 2-gram dose of oral azithromycin, and the other half will receive a placebo. The women and their infants will be monitored for fever and other signs of infection during their hospital stay and again at one week and six weeks after giving birth. The study will also include records of unscheduled visits to health facilities outside of the network sites.

“The NICHD Global Network provides the expertise and infrastructure needed to carry out this essential clinical trial,” said lead investigator Waldemar Carlo, M.D., of the Neonatology Division of the University of Alabama at Birmingham. “We anticipate that this study will provide important data to help us improve the standard of maternal care in low- and middle-income countries.”

The Foundation for the National Institutes of Health, a not-for-profit organization that manages alliances with public and private institutions in support of the NIH mission, provided funding for the study with a grant from the Gates Foundation.

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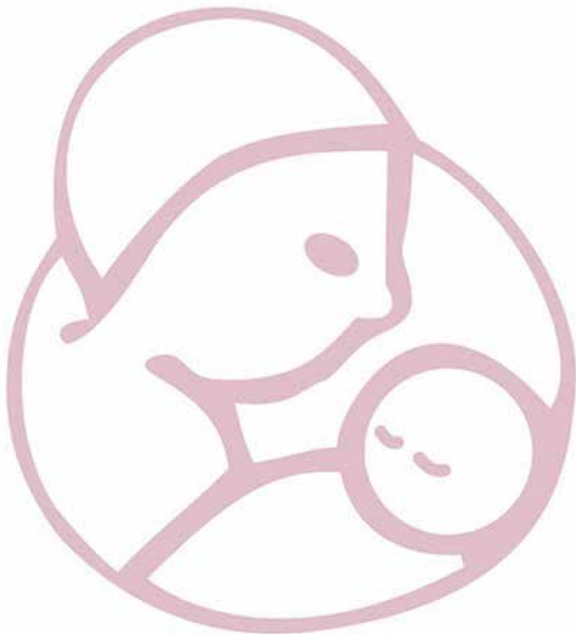
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#### References

*Azithromycin-Prevention in Labor Use Study (A-PLUS).* NICHD Global Network for Women's and Children's Health. <https://clinicaltrials.gov/ct2/show/NCT03871491>

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#### Institute/Center

[Eunice Kennedy Shriver National Institute of Child Health and Human Development \(NICHD\)](#)

#### Contact

[Robert Bock or Meredith Daly](#)  
301-496-5133

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## NIH-funded study to investigate pregnancy outcomes resulting from COVID-19 pandemic

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*Pregnancy outcomes during the pandemic*

Media Advisory

Tuesday, May 19, 2020

#### What

The National Institutes of Health has launched a multipronged study to understand the effects of the COVID-19 pandemic during and after pregnancy. Researchers will analyze the medical records of up to 21,000 women to evaluate whether changes to healthcare delivery that were implemented as a result of the pandemic have led to higher rates of pregnancy-related complications and cesarean delivery. They also seek to es-

tablish the risk of pregnant women with COVID-19 infection transmitting the virus to their fetus. Newborns will be monitored and assessed until they are discharged from the hospital.

In addition, the study will track more than 1,500 pregnant women confirmed with COVID-19 infection, monitoring their health for six weeks after childbirth.

The study will be conducted by researchers in the Maternal-Fetal Medicine Units (MFMU) Network, a group of 12 U.S. clinical centers funded by NIH's Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD). MFMU Network sites cover more than 160,000 deliveries a year, and their racial, ethnic, and geographic diversity allows researchers to generalize their study findings to the U.S. population.

MFMU Network investigators plan to contribute data collected from the current study to a larger registry to help inform future studies of how COVID-19 affects maternal health and pregnancy.

#### Who

NICHD Director Diana W. Bianchi, M.D., is available for comment.

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## Stop tobacco industry exploitation of children and young people

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*Exploitation of children by the tobacco industry remains a problem*

29 May 2020 News release

The World Health Organization is today launching a new kit for school students aged 13-17 to alert them to the tobacco industry tactics used to hook them to addictive products. Every year the tobacco industry invests more than USD 9 billion to advertise its products. Increasingly, it is targeting young people with nicotine and tobacco products in a bid to replace the 8 million people that its products kill every year.

This year's WHO's World No Tobacco Day campaign focuses on protecting children and young people from exploitation by the tobacco and related industry. The toolkit has a set of classroom activities including one that puts the students in the shoes of the tobacco industry to make them aware of how the industry tries to manipulate them into using deadly products. It also includes an educational video, myth-buster quiz, and homework assignments.

The toolkit exposes tactics such as parties and concerts hosted by the tobacco and related industries, e-cigarette flavours that attract youth like bubble-gum and candy, e-cigarette representatives presenting in schools, and product placement in popular youth streaming shows.

Even during a global pandemic, the tobacco and nicotine industry persist by pushing products that limit people's ability to fight coronavirus and recover from the disease. The industry has offered free branded masks and delivery to your door during quarantine and has lobbied for their products to be listed as 'essential'.

Smoking suffocates the lungs and other organs, starving them of the oxygen they need to develop and function properly. "Educating youth is vital because nearly 9 out of 10 smokers start before age 18. We want to provide young people with the knowledge to speak out against tobacco industry manipulation," said Ruediger Krech, Director for Health Promotion at WHO.

Over 40 million young people aged 13-15 have already started to use tobacco. To reach Generation Z, WHO launched a TikTok challenge #TobaccoExposed and welcomed social media partners like Pinterest, Tinder, YouTube and TikTok to amplify messaging.

WHO calls on all sectors to help stop marketing tactics of tobacco and related industries that prey on children and young people:

- Schools refuse any form of sponsorship and prohibit representatives from nicotine and tobacco companies from speaking to students
- Celebrities and influencers reject all offers of sponsorship
- Television and streaming services stop

showing tobacco or e-cigarette use on screen

- Social media platforms ban the marketing of tobacco and related products and prohibit influencer marketing
- Government and financial sector divest from tobacco and related industries
- Governments ban all forms of tobacco advertising, promotion and sponsorship

Countries can protect children from industry exploitation by putting in place strict tobacco control laws, including regulating products like e-cigarettes that have already begun to hook a new generation of young people.

**NT**

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## AAP Statement on Supreme Court Decision to Uphold Deferred Action for Childhood Arrivals Program

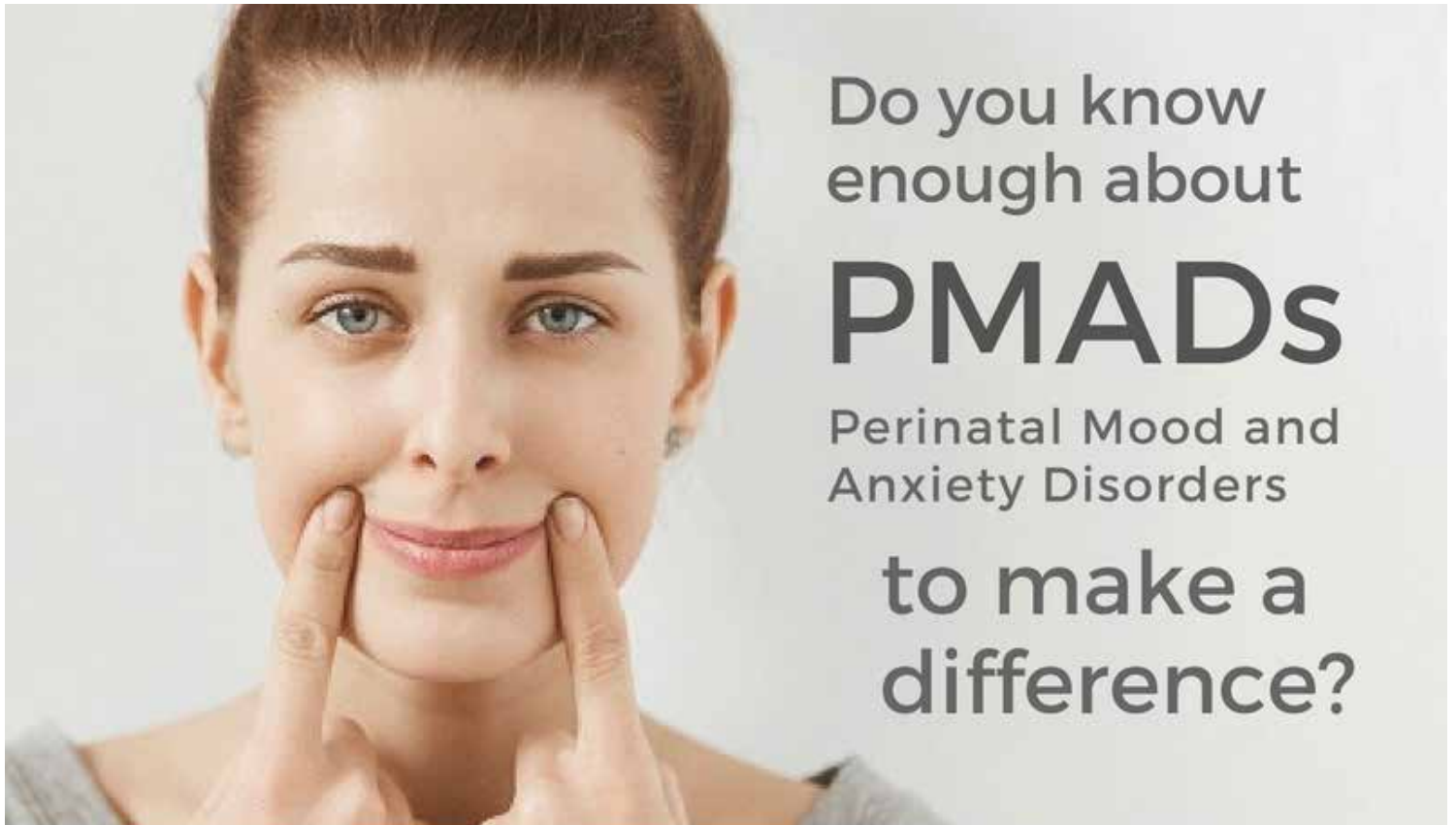
*AAP Statement on Supreme Court Decision to Uphold Deferred Action for Childhood Arrivals Program*

*For Release:  
6/18/2020*

By: Sally Goza, MD, FAAP, President, American Academy of Pediatrics

"The American Academy of Pediatrics applauds the U.S. Supreme Court's 5-4 decision rejecting the Trump Administration's attempt to end the Deferred Action for Childhood Arrivals (DACA) program. This ruling is a major victory for immigrant families and provides much-needed certainty to more than 700,000 young people whose futures have been on hold as they awaited a decision.

"DACA recipients enrich our communities. They are among our colleagues in medicine, working on the frontlines of the COVID-19 pandemic, they have served our country in uniform, and they are now parents raising children of their own. The Academy stands



Do you know enough about **PMADs** Perinatal Mood and Anxiety Disorders to make a difference?

Join  **NPA**

[nationalperinatal.org/mental\\_health](http://nationalperinatal.org/mental_health)

with them in celebration of today's momentous ruling.

"Research shows that protective immigration policies like DACA have positive health effects that are multigenerational. In our [brief](#) before the Supreme Court, the Academy argued that the unlawful termination of DACA put children's health at risk and threatened families' income and food security. Today's ruling is a step toward a more equitable system for children in immigrant families, but our work is far from finished.

"We must now make DACA's protections permanent, which we urge Congress to do right away. The Trump Administration must stop advancing policies that further jeopardize immigrant families' health and safety. And finally, racism and discrimination harm everyone, including children. As we celebrate today's ruling, we continue to fight all forms of racism and urge policymakers to do the same."

###

*The American Academy of Pediatrics is an organization of 67,000 primary care pediatricians, pediatric medical subspecialists and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents and young adults. For more information, visit [www.aap.org](http://www.aap.org) and follow us on Twitter @AmerAcadPeds*

Media Contact:  
Devin Miller  
202-347-8600  
[dmiller@aap.org](mailto:dmiller@aap.org)

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## American Academy of Pediatrics Condemns Racism, Offers Advice for Families for How to

## talk to their Children

*American Academy of Pediatrics Condemns Racism, Offers Advice for Families for How to talk to their Children*

For Release:  
6/1/2020

Itasca, Ill.—The killing of George Floyd and the subsequent protests across the country have laid bare the nation's legacy of racism and discrimination and the ways it harms all members of our communities. The American Academy of Pediatrics (AAP) condemns racism of all forms, and notes that even vicarious racism – witnessed through social media, conversations with friends or family, or media images – harms children's health.

"Racism harms children's health, starting from before they are born," said AAP President Sally Goza, MD, FAAP. "A growing body of research supports this, and we cannot ignore the impact."

The AAP recommends parents proactively engage their children around these traumatic events, taking into account their age and development.

"As a parent, you have to assume children of almost any age are hearing about what is happening in our nation today," said Nia Heard-Garris, MD, MSc, FAAP, chair of the AAP Section on Minority Health, Equity and Inclusion. "Ideally you can talk with your child first before they hear the news from other sources, and help to frame the events in an age-appropriate way. Parents should be having these conversations now."

Children may hear adult conversations, see a video on social media platforms, or watch news coverage of violent protests. Children may be fearful about their own safety or their family's safety, or have questions about what the protests mean, or why people have been killed by police.

Dr. Heard-Garris and Jacqueline Dougé, MD, MPH, FAAP, co-author of the AAP poli-

cy statement on racism, recommend:

Check in with your child. Ask what they know, what they've seen, and how they are feeling. Validate their feelings and reassure them it's normal to feel emotions. You know your child best and what information they can handle. For younger children, you can tell them what you are doing to keep your family safe. For pre-teens and older children, you can ask if they've experienced mistreatment or racism, or witnessed this happening.

Watch for changes in your child's behavior – some children may become more aggressive, while others will become withdrawn. If you are concerned about your child suffering more severe anxiety, fear or distress, reach out to your pediatrician or mental health provider for additional support.

Place limits on what your child sees in media. Do not leave the TV on in the background. With older children and teens, watch with them and discuss what you're seeing. Listen to their observations and share your own. You can use commercial breaks, or pausing, to have brief discussions. With younger children, limit their exposure to media, including TV, smartphones or tablets, and make sure media exposure occurs in a common area where parents can check in.

As an adult, tune into your own emotions and check that you are ok. If you are not, ask for help to deal with the trauma and emotional impact of these images. Create a list of your own coping strategies, and when you need to use them, tap into that list.

For all families, this is a teachable moment, when you can discuss the history of racism and discrimination in the U.S. and equip your children to make change.

If you struggle to find the "right" words, consider using books or other resources to share with your child. HealthyChildren.org offers some tips in this article. You can share with your children that no one is perfect, talk about what you are doing to be anti-racist, what you have learned, and how you as a family can step up.

"Parents can acknowledge that people are treated differently based on the color of their skin and where they live, and share examples of this happening," said Dr. Dougé.



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“Parents can also model how to make a positive difference. For example, perhaps your family can call your city council person or superintendent to advocate for issues faced by communities of color. Adults can also confront their own bias and model how they want their children to respond to others who may be different than them.”

The AAP holds that racism harms everyone, including children of all races and ethnicities. It is not a conversation that can be avoided, said Joseph Wright, MD, MPH, FAAP, a member of the AAP Board of Directors and past chair of the AAP Task Force on Addressing Bias and Discrimination.

“These are conversations African-American families have had to have for generations,” said Dr. Wright. “But if this is not something other families have discussed yet, what is happening right now is an essential and unavoidable, teachable moment. If we are to progress in this country, it’s going to be because we help our children, adolescents and young adults learn not just that racism exists, but that it is something all of us can work together to dismantle. Racism is not inexorable.”

In 2019, AAP published the policy statement, “Racism and Its Impact on Child and Adolescent Health.” In it the AAP lays out an agenda calling for equitable policies at the local, state and federal level to reduce disparities and advance social justice.

“Failure to address racism will undermine our progress toward health equity. As an organization dedicated to the health and well-being of children, adolescents and young adults, it is in our mission as the American Academy of Pediatrics to fight all forms of racism,” Dr. Goza said. “We must dismantle racism at every level, from individual to institutional to systemic. Our nation did not get here overnight, and the road to progress and healing will be long and difficult, but the work we have before us is essential. Our children’s future will be built on these moments of reckoning.”

###

*The American Academy of Pediatrics is an organization of 67,000 primary care pediatricians, pediatric medical subspecialists and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents and young adults. For more information, visit [www.aap.org](http://www.aap.org) and fol-*

*low us on Twitter @AmerAcadPeds*

For Release:  
6/1/2020

Media Contact:  
Lisa Black  
630-626-6084  
[lblack@aap.org](mailto:lblack@aap.org)

NT

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## AAP Statement on Withdrawal of U.S. from the World Health Organization

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*AAP Statement on Withdrawal of U.S. from the World Health Organization*

For Release:  
6/1/2020

By Mark Del Monte, JD, CEO/Executive Vice President of the American Academy of Pediatrics

“The World Health Organization (WHO) plays a leading role in protecting the health of children and families around the world. The agency has been on the frontlines of every global child health challenge over the last seven decades, successfully eradicating smallpox, vaccinating billions against measles, and cutting preventable child deaths by more than half since 1990.

“The Trump Administration’s decision to withdraw from the WHO carries grave risks for the world’s children during an unprecedented global health crisis. The decision to withdraw risks causing a surge in polio cases and an increase in deaths of children from malaria, and it will further delay life-saving vaccination campaigns.

“Withdrawing support from the WHO not only harms the global response against COVID-19 and prevents the United States from engaging the agency to enact meaningful reforms, but undermines the response to other major health threats impacting children. The American Academy of Pediatrics urges the administration to reconsider its position and

continue to work with the WHO to combat COVID-19 and promote the health of children globally.”

###

*The American Academy of Pediatrics is an organization of 67,000 primary care pediatricians, pediatric medical subspecialists and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents and young adults. For more information, visit [www.aap.org](http://www.aap.org) and follow us on Twitter @AmerAcadPeds*

Media Contact:  
Devin Miller  
202-724-3308  
[dmiller@aap.org](mailto:dmiller@aap.org)

NT

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## AAP Statement on New Data Showing Declines in Childhood Immunizations

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*AAP Statement on New Data Showing Declines in Childhood Immunizations*

For Release:  
5/8/2020

By: Sally Goza, MD, FAAP, president of the American Academy of Pediatrics

“Today the U.S. Centers for Disease Control & Prevention published [new data](#) that documents what pediatricians around the nation have been reporting for weeks: many, many



children have missed receiving important immunizations to protect them against diseases like measles, meningitis and whooping cough.

“As a pediatrician, this is incredibly worrisome. I remember treating children with these diseases as recently as the 1980s, and we do not want to return to a time when parents had to worry their infant could die of meningitis – especially when we have a vaccine to prevent it. The COVID-19 pandemic is giving all of us a real-time education in what this vulnerability feels like. Fortunately, we have vaccines to protect children and teens against 16 different diseases.

“Immunizing infants, children and adolescents is important, and should not be delayed. I’m also concerned that children who have missed vaccines, have also missed other health care that occurs during those visits, including physical exams, developmental screenings, and other important care that should not be delayed.

“We know parents are worried. We want to reassure all our families that pediatricians have innovated ways to make visits even safer, including setting different hours or locations for well and sick children, rigorous sanitation and cleaning practices, and conducting portions of visits by telehealth. The American Academy of Pediatrics urges all parents to contact their pediatrician to schedule a visit to catch up on vaccines or for a well-child check-up. AAP has published [new recommendations](#) today to guide pediatricians in managing visits safely and effectively.

“As social distancing restrictions begin to lift around the country and people begin to circulate, children and teens who are not vaccinated will be at higher risk for contracting a disease that could be prevented by a vaccine. While we wait for scientists and doctors to develop a vaccine for coronavirus, let’s work together to protect our children in every way that we can, today.”

###

The American Academy of Pediatrics is an organization of 67,000 primary care pediatricians, pediatric medical subspecialists and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents and young adults. For more information, visit [www.aap.org](http://www.aap.org) and follow us on Twitter @AmerAcadPeds

Media Contact:  
Lisa Black  
630-626-6084  
[lblack@aap.org](mailto:lblack@aap.org)

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## Maternal obesity linked to increased risk of early-onset neonatal sepsis

*Maternal intake may be related to sepsis risk.*

17-Jun-2020 12:45 PM EDT, by University of Michigan

ONewswise — The risk of early-onset neonatal bacterial sepsis in-

## Family Centered Care is trendy, but are providers really meeting parents needs in the NICU?

Consider the following:

Surveys show hospital support groups are being widely underutilized by parents.



And only 10% of NICUs surveyed connect parents with non-hospital support.

**Graham’s Foundation**, the global support organization for parents going through the journey of prematurity, set out to find the missing piece that would ensure all parents have real access to the support they need.

See what they found by emailing [info@grahamsfoundation.org](mailto:info@grahamsfoundation.org) to request a free copy of the 2017 whitepaper, “Reaching Premie Parents Today” (*Heather McKinnis, Director, Premie Parent Mentor Program, Graham’s Foundation*).

You may be surprised to see what NICUs are doing right and where their efforts are clearly falling short.

Graham’s Foundation empowers parents of premature babies through support, advocacy and research to improve outcomes for their preemies and themselves.



Visit [www.GrahamsFoundation.org](http://www.GrahamsFoundation.org) to learn more.

creases with maternal obesity, according to a new study of University of Michigan and the Karolinska Institute in Sweden.

Lead researcher Eduardo Villamor, a professor of epidemiology at U-M’s School of Public Health, said the study builds on previous research into exposure to motherly obesity and health risks to the baby.

The study has been published in *Clinical Infectious Diseases*.

"We had found that maternal obesity is related to adverse pregnancy outcomes and to some adverse developmental outcomes for the children, such as cerebral palsy and epilepsy," Villamor said. "Now we found that maternal obesity is also related to increased risk of early-onset neonatal bacterial sepsis."

"Sepsis, popularly known as blood poisoning, is a generalized bacterial infection that can be fatal, and even in children who survive it can have long-lasting consequences, especially in terms of neurodevelopment."

Villamor and colleagues used a nationwide population-based retrospective cohort of about 1.9 million live singleton infants born in Sweden between 1997 and 2016.

The infants were followed through their first three days of life for a culture-confirmed sepsis diagnosis. Mothers were categorized per weight (BMI). The researchers also considered co-variables such as maternal age, country of origin, education level, cohabitation with a partner, smoking during pregnancy and year of delivery.

Villamor said sibling comparisons offered a unique opportunity to enhance causal inference by controlling associations for confounders shared within families.

"By making comparisons within the family, between full siblings with the same mother and father, you are basically controlling for everything that does not change over time, like genetics, and some predisposing characteristics," he said. "If you find that the association is the same in the within-family comparison as it is in the conventional comparison of children independent of kinship, that enhances your ability to say there may be a causal link here."

"In the comparison among siblings, we found that when a child had had sepsis, the mother had a higher BMI before pregnancy than when she gave birth to the baby that did not have sepsis. One extra BMI unit between pregnancies, which is equivalent to about 6 pounds for a woman of average height and weight in this population, would translate into an 8% increase in risk of sepsis for the baby."

Villamor said they were able to map out how the risk process might lead from the mother having obesity to the child having sepsis. Maternal obesity increases the risk of preeclampsia, which leads to an emergency cesarean section. Often, preeclampsia happens before term.

"If you have a combination of these events, that could explain about 50% of the potential effect of maternal obesity on sepsis," Villamor said. "The babies of preeclamptic mothers have fewer bacteria-fighting cells in their blood, so they might be more likely to get infected."

"If they're born before term, their immune system might be immature because it didn't have time to develop in utero. And if the mother undergoes emergency C-section, that also puts them at a higher risk of infection because it is an emergency surgical procedure."

Villamor said the research may also point to a clinical solution to prevent sepsis among newborns: when mothers with obesity need an emergency C-section, they might benefit from a higher dose of pro-

## PROTECT YOUR FAMILY FROM RESPIRATORY VIRUSES

flu

coronavirus

pertussis

RSV



### WASH YOUR HANDS

often with soap and warm water.

### GET VACCINATED

for flu and pertussis. Ask about protective injections for RSV.



### COVER COUGHS AND SNEEZES.

Sneeze and cough into your elbow.

### USE AN ALCOHOL-BASED HAND SANITIZER.



### STAY AWAY FROM SICK PEOPLE

Avoid crowds. Protect vulnerable babies and children.

[www.nationalperinatal.org](http://www.nationalperinatal.org)

 National Perinatal Association



phylactic antibiotics than what is usually prescribed.

"Until now, there was not a clear clinical reason to do it, but it was a practice based on lab studies that showed that due to the obesity the antibiotics might not reach the concentration needed to be effective," he said. "This work contributes strong evidence as to why doctors should really consider increasing the antibiotic dose when they have to do preoperative prophylaxis on a mother with obesity."

In addition to Villamor, authors included Mikael Norman, Stefan Johansson and Sven Cnattingius, all of the Karolinska Institute.

Study: [Maternal obesity and risk of early-onset neonatal bacterial sepsis](#)

[Eduardo Villamor](#)

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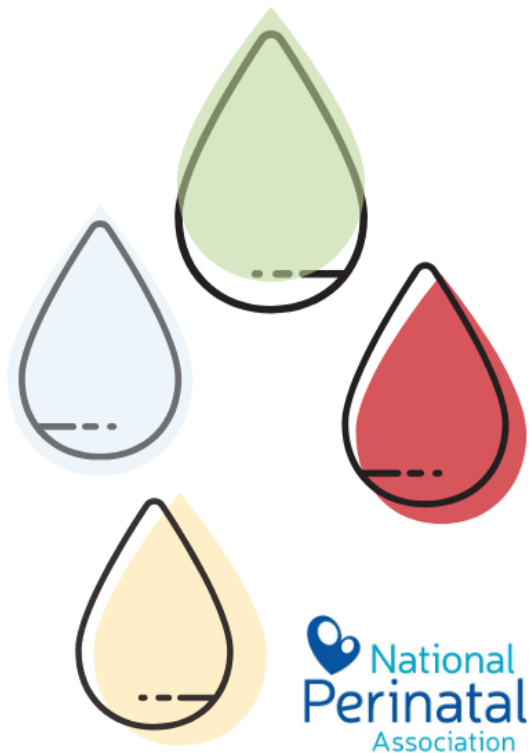
## NATIONAL PERINATAL ASSOCIATION

# Update: CORONAVIRUS COVID-19

According to the data in The Lancet, even when mothers were infected

**No virus was detected in:**

- NASOPHARYNGEAL SWABS OF THE BABY
- AMNIOTIC FLUID
- CORD BLOOD
- BREASTMILK



[www.nationalperinatal.org](http://www.nationalperinatal.org)

# Neonatology Solutions NICU Directory: The Directory is finally completed!

Scott Snyder, MD



Now that the Neonatology Solutions U.S. NICU Directory is complete, we have assembled State Summary Pages for each state to provide additional resources and information to our users. These summaries include total bed numbers per state, broken down by Level. Additionally, Neonatology Group data, Fellowship Program information, Job Postings, Conferences, and state-based neonatal resources such as hospital associations and March of Dimes Chapters links are all included.

***“Additionally, Neonatology Group data, Fellowship Program information, Job Postings, Conferences, and state-based neonatal resources such as hospital associations and March of Dimes Chapters links are all included.”***

Our goal continues to be able to provide the most comprehensive, accessible, up-to-date, and free web source for all professionals providing care to neonates.

Suggestions for additional content can be sent via the easy-to-

NATIONAL PERINATAL ASSOCIATION

Update: **CORONAVIRUS**  
COVID-19

According to data published in The Lancet

Because of the risk of developing severe pneumonia, pregnant women and newborn babies should be considered key at-risk populations.

National Perinatal Association

www.nationalperinatal.org

***“We would like to provide a humble ‘thank you!’ to the 5,368 new users of Neonatology Solutions since our inception just 10 months ago!”***

use links on the website or email me directly at [Scott@NeonatologySolutions.com](mailto:Scott@NeonatologySolutions.com).

<https://neonatologysolutions.com/state-summary/>

We would like to provide a humble 'thank you!' to the 5,368 new users of Neonatology Solutions since our inception just 10 months ago!

Stay healthy!"

Thank you!!

References:

1. <https://neonatologysolutions.com/explore-nicus-and-programs/>

The author is a principal of Neonatology Solutions, LLC.

**NT**

Corresponding Author



Scott Snyder, MD, FAAP  
System Medical Director  
St. Luke's Neonatology  
Founder  
Neonatology Solutions, LLC  
Scott Snyder [Scott@neonatologysolutions.com](mailto:Scott@neonatologysolutions.com)

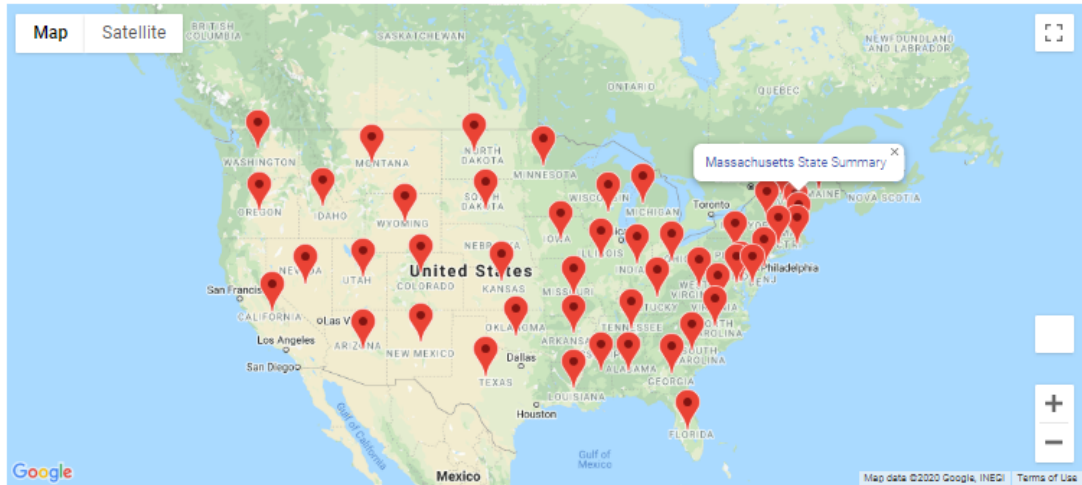
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## NICUs by State Summary

Access the NICU State Summary by clicking on the map marker for the state of interest. Please note, not all states have a completed summary, but we are currently working to get them all done.



Dedicated to providing a single-source home for resources on career planning, practice development, and clinical guidelines for neonatologists.

### Company

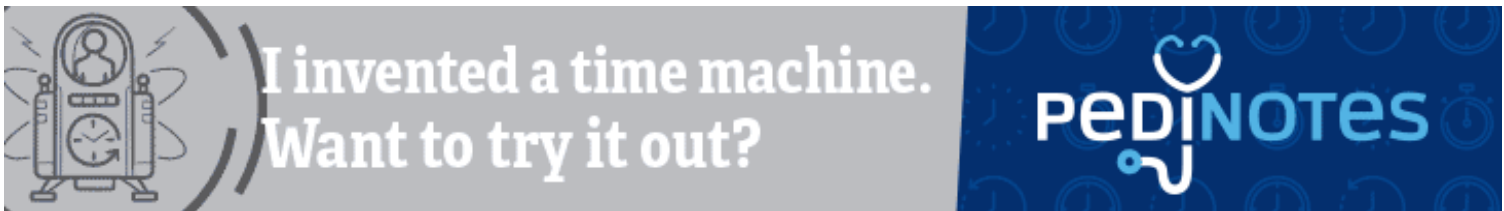
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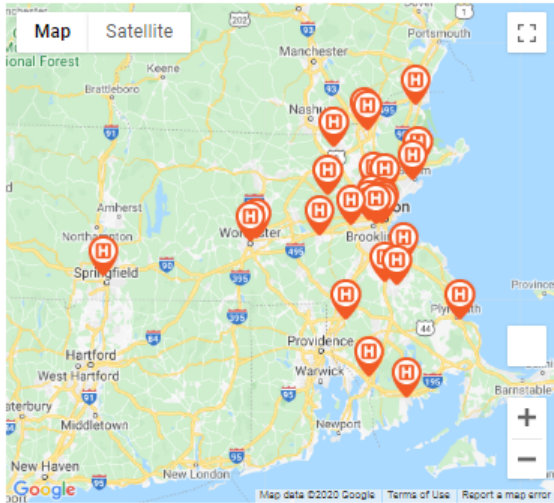
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**Massachusetts**



**29 NICUs**

**534+ Beds**

Level IV

**0**

Level III

**10**

Level II

**19**

Neonatology Groups

**12**

Neonatal-Perinatal Fellowship Programs

**3**

Vermont Oxford Members

**10**

Job Postings = **5 positions**

Skip To: [Neonatology Groups](#) [Fellowship Programs](#) [Job Postings](#) [Upcoming Conferences](#) [VON Members](#) [Helpful Resources](#)

NICUs (grouped by level and then listed alphabetically)

<a href="#">Baystate Medical Center</a>	Level III	55 Beds
<a href="#">Beth Israel Deaconess Medical Center</a>	Level III	48 Beds
<a href="#">Boston Children's Hospital</a>	Level III	24 Beds
<a href="#">Boston Medical Center</a>	Level III	15 Beds
<a href="#">Brigham and Women's Hospital</a>	Level III	48 Beds
<a href="#">Massachusetts General Hospital</a>	Level III	31 Beds
<a href="#">South Shore Hospital</a>	Level III	15 Beds
<a href="#">St. Elizabeth's Medical Center</a>	Level III	18 Beds
<a href="#">Tufts Medical Center</a>	Level III	40 Beds
<a href="#">UMass Memorial</a>	Level III	49 Beds



**Did you know that premature and low birth weight babies have a 4x greater risk for SIDS?**

At First Candle we're educating parents, grandparents and caregivers about safer sleep to make sure all babies reach their first birthday. Learn more at [firstcandle.org](http://firstcandle.org)

### Neonatology Fellowship Programs

<a href="#">University of Massachusetts</a>	2 Fellows	1 Training Site
<a href="#">Tufts Medical Center</a>	8 Fellows	1 Training Site
<a href="#">Boston Children's Hospital</a>	22 Fellows	4 Training Sites

### Job Postings

<a href="#">Baystate Medical Center</a>	Level III	55 Beds
<a href="#">Beth Israel Deaconess Medical Center</a>	Level III	48 Beds
<a href="#">Charlton Memorial Hospital</a>	Level III	_ Beds
<a href="#">South Shore Hospital</a>	Level III	15 Beds
<a href="#">St. Luke's Hospital</a>	Level III	8 Beds
<a href="#">UMass Memorial</a>	Level III	49 Beds
<a href="#">Holy Family</a>	Level II	10 Beds
<a href="#">Good Samaritan</a>	Level II	10 Beds

### Upcoming Conferences

<a href="#">Annual Pediatrics and Neonatology Summit (November 2020)</a>	United Scientific Group	Boston, Massachusetts
--------------------------------------------------------------------------	-------------------------	-----------------------

### Vermont Oxford Network (VON) Members

<a href="#">Baystate Medical Center</a>	Level III	55 Beds
<a href="#">Beth Israel Deaconess Medical Center</a>	Level III	48 Beds
<a href="#">Beverly Hospital</a>	Level III	12 Beds
<a href="#">Boston Medical Center</a>	Level III	15 Beds
<a href="#">Brigham and Women's Hospital</a>	Level III	48 Beds
<a href="#">Massachusetts General Hospital</a>	Level III	31 Beds
<a href="#">South Shore Hospital</a>	Level III	15 Beds
<a href="#">St. Elizabeth's Medical Center</a>	Level III	18 Beds
<a href="#">Tufts Medical Center</a>	Level III	40 Beds
<a href="#">UMass Memorial</a>	Level III	49 Beds

### Helpful Resources

- [March of Dimes Report Card - Massachusetts](#)
- [Massachusetts Chapter of the American Academy of Pediatrics](#)
- [Massachusetts Health & Hospital Association](#)
- [Massachusetts Perinatal Quality Collaborative](#)
- [Massachusetts Medical Society](#)



## Search Open Positions

Now its time to see what is out there. The following jobs have been sourced from various online job boards and are updated daily.

Use the following search feature to filter and look for specific types of jobs and open positions.

NICU Level <input type="text" value="Select One"/>	Practice Type <input type="text" value="Select One"/>	Group Size (Neos) <input type="text" value="Select One"/>	Corporate Company <input type="text" value="Select One"/>
State <input type="text" value="Select One"/>	AAP District <a href="#">(View map here)</a> <input type="text" value="Select One"/>	City Size <input type="text" value="Select One"/>	Children's Hospital <input type="text" value="Select One"/>

Hospital  

 Leadership Positions

**RESET**

RESULTS: 151 NICUs

Click on map marker for NICU information.



[Wentworth-Douglass Hospital](#)  
789 Central Ave  
Dover, NH 03820



[Kaweah Delta Medical Center](#)  
400 W Mineral King Ave  
Visalia, CA 93291



[Henry Mayo Newhall Hospital](#)  
23845 McBean Pkwy  
Valencia, CA 91355

A collaborative of professional, clinical, community health, and family support organizations improving the lives of premature infants and their families through education and advocacy.



**The National Coalition for Infant Health advocates for:**

- **Access to an exclusive human milk diet** for premature infants
- **Increased emotional support resources** for parents and caregivers suffering from PTSD/PPD
- **Access to RSV preventive treatment** for all premature infants as indicated on the FDA label
- **Clear, science-based nutrition guidelines** for pregnant and breastfeeding mothers
- **Safe, accurate medical devices** and products designed for the special needs of NICU patients

[www.infanthealth.org](http://www.infanthealth.org)

*Why* **PREMATURE INFANTS** *Need Access to an* **EXCLUSIVE HUMAN MILK DIET**

In the United States, more than **1 IN 10 BABIES ARE BORN PREMATURE**. Very low birthweight babies are born severely premature, weighing less than 1,250 grams.

**VERY LOW BIRTHWEIGHT BABIES** are at risk for Necrotizing Enterocolitis (NEC), which:

- Damages intestinal tissue
- Causes distended abdomen, infection, low blood pressure and shock
- Threatens infants' lives

NEC occurrence increases when a premature consumes non-human milk products.

When that happens:

5%	17%
1%	12%

Very low birthweight babies who get NEC

Very low birthweight babies requiring surgery to treat NEC

30% of very low birthweight babies requiring surgery will die from NEC

**HOW TO HELP PREVENT NEC: EXCLUSIVE HUMAN MILK DIET**

What is an Exclusive Human Milk Diet?

NO cow's milk NO sheep's milk NO goat's milk NO formula

✓ mother's milk  
✓ human donor milk  
✓ human milk-based fortifier

Why is An Exclusive Human Milk Diet important?

An Exclusive Human Milk Diet gives vulnerable infants the best chance to be healthy and reduces the risk of NEC and other complications.

When a very low birthweight baby can access an EXCLUSIVE HUMAN MILK DIET:

Mortality is reduced by **36%**

Feeding intolerance decreases

Chances of NEC are reduced by **37%**

**HUMAN MILK = MEDICINE**

NEC is a life-threatening condition that can be prevented in many cases. If you are a parent of a premature baby, talk to your care team about your baby's specific human milk needs and support resources to help you achieve your goals.

**LEARN MORE**

# Kabuki Syndrome in a Newborn with a Complex Left-Sided Cardiac Lesion and Persistent Hypoglycemia due to Hyperinsulinism

Subhadra Ramanathan MS, MSc, Robin Dawn Clark MD

## Case History:

A genetics consult was requested for a 6-week old term female infant for suspected Kabuki syndrome because of persistent hypoglycemia and presumed hyperinsulinism. This infant had Shone's Complex, severe hypoplastic transverse arch, and coarctation of the aorta. Her heart defect had been detected prenatally on fetal ultrasound. The pregnancy was complicated by polyhydramnios in the third trimester. The baby was born at term to a 31-year old G4P2112 mother with these growth parameters:

Birth weight: 2965 g (6 lb 8.6 oz) (21.97<sup>th</sup> percentile)  
 Birth length: 49.5 cm (19.49") (39.05<sup>th</sup> percentile)  
 Birth head circumference: 34 cm (13.39") (50.01<sup>st</sup> percentile)

Her heart defect was the initial focus of medical attention, and she had cardiac surgery at one week of age: modified Norwood procedure, open atrial septectomy, right modified Blalock-Taussig shunt, and PDA ligation. Her postoperative course was complicated by two further aortic arch reconstruction procedures, plication of the right hemidiaphragm, and gastrostomy tube placement. Hypothyroidism was treated with Synthroid. Chromosome microarray analysis was normal.

***“Her postoperative course was complicated by two further aortic arch reconstruction procedures, plication of the right hemidiaphragm, and gastrostomy tube placement. Hypothyroidism was treated with Synthroid. Chromosome microarray analysis was normal.”***

Although early glucose levels were stable at 50-70 until ten days of age, by postoperative day 2, she had hypoglycemia (glucose 29), treated with D25 bolus x1. By one month of age, she had persistent hypoglycemia. She required progressively more glucose to stabilize her: first D10 bolus x5, then continuous IV D15 and, subsequently, D30. She had been weaned to D25 at the time of the Genetics consultation. She had detectable levels of insulin during her hypoglycemic episodes, which, with a low beta-hydroxybutyrate level, suggested hyperinsulinism. Subsequently, she had a trial of Diazoxide, which was discontinued in favor of octreotide. Currently, at 12 weeks of age, her glucose levels are normal without treatment.

## Genetics Evaluation:

Because of restrictions due to the coronavirus pandemic, this evaluation was done at a distance. The infant was in the cardiac intensive care unit at the time of consult. Video examination of the infant was facilitated by unit staff. The examination revealed a dysmorphic infant with microcephaly and hypotonia. She had long palpebral fissures that were everted laterally and faint eyebrows. She had prominent fetal pads on all fingertips.

Her clinical features, including the cardiac defect, hypoglycemia, facial features, and fetal finger pads, suggested Kabuki syndrome (KS) to the care team, and the genetic consultant agreed. Genetic testing was ordered for the causative genes, KMT2D and KDM6A, which detected a pathogenic variant in KMT2D: c.15250del, confirming the clinical diagnosis. This novel variant is predicted to result in a frameshift and premature protein termination: p.Leu5084Cysfs\*6.

***“The cardinal signs of Kabuki syndrome (KS) make it possible to recognize in the newborn period, although it is often not diagnosed until later in infancy or childhood.”***

## Discussion and counseling:

The cardinal signs of Kabuki syndrome (KS) make it possible to recognize in the newborn period, although it is often not diagnosed until later in infancy or childhood. There are characteristic dysmorphic facial features with long palpebral fissures and lateral eversion of the lower lid. This appearance evoked the dramatic makeup used by traditional Kabuki actors, which is how the syndrome got its name. Eyebrows are arched and sparse laterally. The palate may be a cleft palate. Skeletal anomalies include brachydactyly,

rib and vertebral anomalies, and hip dislocation. The prominent fetal pads persist in almost all affected infants. There is mild to moderate intellectual disability and postnatal growth deficiency. About 70% of patients with KS have a congenital heart defect, most commonly left-sided obstructive lesions.

The composite face in Figure 1 is a visualization of the KS phenotype in an infant that was generated by





Face2Gene. This resource for phenotype matching is available at <https://app.face2gene.com> (and at the App store). This HIPAA compliant app can be used to upload and analyze patient photographs. Facial measurements and clinical features are used to match patient phenotypes with known genetic syndromes.

Transient hypoglycemia is common in all neonates. When it persists, it can be due to dysregulated insulin secretion by the pancreatic  $\beta$ -cells, with the high insulin level causing recurrent episodes of hypoglycemia. About 8-10% of patients with KS have neonatal or infantile hypoglycemia. Although hypoglycemia in response to hyperinsulinism (HI) was considered rare, occurring in less than 1% of newborns with KS, this is the second affected patient seen in our institution, which is why the cardiac care team queried the diagnosis of KS. In their review of 10 patients with Kabuki syndrome, Yap et al. noted that patients with HI do not necessarily present with high insulin levels, but they have inappropriate levels of insulin for their glucose measurements. Nine of the ten children with KI and hyperinsulinism reported by Yap responded to diazoxide therapy alone, but one did not, and that child required a partial pancreatectomy. These authors note that about 1% of neonates with HI have Kabuki syndrome. The underlying mechanism for the transient hyperinsulinism in KS is yet to be discerned. Growth hormone deficiency and adrenal insufficiency have been proposed as possible contributing factors.

Patients with Kabuki syndrome also have other endocrine perturbances, such as early breast development in girls, precocious puberty, growth hormone (GH) deficiency, hypothyroidism, and diabetes insipidus; abnormal pituitary findings on magnetic resonance imaging have been rarely reported, with GH deficiency being the most common finding. Ongoing surveillance for endocrine dysfunction is recommended in patients in KS.

#### Practical applications:

1. Consider Kabuki syndrome in infants with long palpebral fissures and multiple congenital anomalies, especially those with left-sided cardiac lesions, with or without persistent hypoglycemia.
2. Investigate persistent hypoglycemia with insulin levels to document inappropriate or elevated insulin levels associated with hyperinsulinism.
3. Utilize phenotype-matching resources such as Face2Gene: <https://app.face2gene.com>
4. Confirm the clinical diagnosis of a genetic disorder with genetic testing whenever possible. This informs short-term management, long-term surveillance and ends the diagnostic odyssey for families and clinicians alike.

#### References:

1. Niikawa N, Kuroki Y, Kajii T, et al. Kabuki makeup (Niikawa-Kuroki) syndrome: a study of 62 patients. *Am J Med Genet.* 1988;31(3):565-589. PMID: 3067577
2. Yap KL, Johnson AEK, Fischer D, et al. Congenital hyperinsulinism as the presenting feature of Kabuki syndrome: clinical and molecular characterization of 9 affected individuals. *Genet Med.* 2019 Jan;21(1):233-242. Erratum in: *Genet Med.* 2018 Aug 11. PMID: 29907798.
3. <https://app.face2gene.com>

The authors have no relevant disclosures.

**NT**

#### Corresponding Author



Subhadra (Subha) Ramanathan, M.Sc., M.S.  
Licensed and Certified Genetic Counselor  
Assistant Professor, Pediatrics  
Loma Linda University Health  
2195 Club Center Drive, Ste A  
San Bernardino, CA 92408  
[SRamanathan@llu.edu](mailto:SRamanathan@llu.edu)



Robin Clark, MD  
Professor, Pediatrics  
Loma Linda University School of Medicine  
Division of Genetics  
Department of Pediatrics  
[rclark@llu.edu](mailto:rclark@llu.edu)



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## Why PREMATURE INFANTS Need Access to an EXCLUSIVE HUMAN MILK DIET



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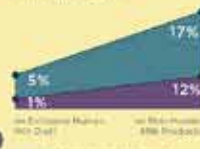


**VERY LOW BIRTHWEIGHT BABIES** are at risk for Necrotizing Enterocolitis (NEC), which:

- Damages intestinal tissue
- Causes distended abdomen, infection, low blood pressure and shock
- Threatens infants' lives

NEC occurrence increases when a preemie consumes non-human milk products.

When that happens:



Very low birthweight babies who get NEC

Very low birthweight babies requiring surgery to treat NEC

30% of very low birthweight babies requiring surgery will die from NEC



## HOW TO HELP PREVENT NEC: EXCLUSIVE HUMAN MILK DIET

What is an Exclusive Human Milk Diet?



- ✓ mother's milk
- ✓ human donor milk
- ✓ human milk-based fortifier

Why is An Exclusive Human Milk Diet Important?

An Exclusive Human Milk Diet gives vulnerable infants the best choice to be healthy and reduces the risk of NEC and other complications.

When a very low birthweight baby can access an EXCLUSIVE HUMAN MILK DIET:

- Mortality is reduced by **76%**
- Feeding intolerance decreases
- Chances of NEC are reduced by **77%**

**HUMAN MILK = MEDICINE**

NEC is more often a fatal diagnosis, so the American Head Start program. Any amount of human milk your baby receives is beneficial. Talk to your care team about your baby's specific nutrition needs and research options to help you achieve your goals.

LEARN MORE ▶



**NCJIH** National Coalition for Infant Health

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# Your Pregnancy and Substance Use

4 Things you can do to improve your health and lower your risk for complications

## Get Prenatal Care



Start early. Go to all your visits. Empower yourself with information so you can make smart decisions. Build relationships with providers who understand Substance Use Disorders (SUDs) and know how to help. Partner with them to reach your goals. But remember, you do not need to be abstinent from substance use to get care. Go now.

## Reduce Your Use

There are simple things you can do to limit the harm substances might do.

- Use fewer substances
- Use smaller amounts
- Use less often
- Learn how to use safer



Reducing or quitting smoking is a good place to start. Set your goals, then ask for help. One of the best things you can do is to stop using alcohol. We know that even small amounts are risky. And when combined with benzos and opioids, alcohol can kill.

## Use Opioid Agonist Therapy (OAT)

if you are opioid dependent



Methadone and Buprenorphine (Subutex® or Suboxone®) are the "Standard of Care" during pregnancy because they:

- Eliminate the risks of illicit use
- Reduce your risk for relapse
- Can be a positive step towards recovery



## Take Good Care of Yourself

You deserve a healthy pregnancy & childbirth.

- Eat healthy and take your prenatal vitamins
- Find the right balance of rest and exercise
- Surround yourself with people who care



## Your Health Matters



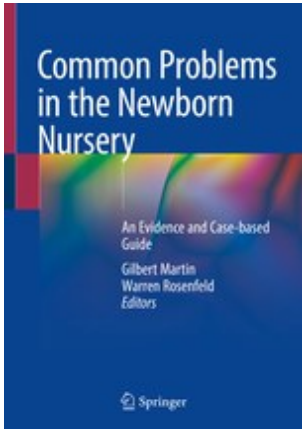
Academy of Perinatal Harm Reduction

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- Written by experts in the field in a clear, easy-to-use format
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Written by experts in their fields, each chapter begins with a clinical case presentation, followed by a discussion of potential treatment and management decisions and various differential diagnosis. Correct responses will then be explained and supported by evidence-based literature, teaching readers how to make decisions concerning diagnosis encountered on a daily basis.

While this guide is directed towards health care providers such as pediatricians, primary care physicians, and nurse practitioners who treat newborns, this book will also serve as a useful resource for anyone interested in working with this vulnerable patient population, from nursing and medical students, to nurses and residents in pediatrics or family practice.

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## 40% of Babies Denied Preventive Treatment by Insurers

Susan Hepworth, Mitchell Goldstein, MD



*The National Coalition for Infant Health is a collaborative of more than 180 professional, clinical, community health, and family support organizations focused on improving the lives of premature infants through age two and their families. NCfIH's mission is to promote lifelong clinical, health, education, and supportive services needed by premature infants and their families. NCfIH prioritizes safety of this vulnerable population and access to approved therapies.*

Dr. Parents of premature babies face enough challenges. Trying to access medication that could keep their baby safe from respiratory syncytial virus, a potentially deadly disease, shouldn't be one of them. But new national data shows that's the case.

A recently released Institute for Patient Access report card examines insurance claims for palivizumab, the preventive treatment that protects premature infants from RSV. The report card summarizes claims from January through December 2019, including data from both commercial plans and Medicaid.

- Key Findings
- “Gap” Babies

Premature infants born between 29 and 36 weeks gestation are subject to high rates of denial.

- 40% denied by commercial plans
- 25% denied by Medicaid

These infants are sometimes called “gap” babies because they fall into an insurance coverage gap. They have a higher gestational age than severely premature infants, who are generally covered by insurance policies, and a lower gestational age than term babies, who may not need palivizumab.

Health plans regularly deny coverage for preventive RSV treatment for infants born 29-36 weeks gestation based on 2014 clinical guidelines suggesting that only severely premature infants needed protection. This recommendation has the effect of keeping babies from getting the preventive treatment their health care providers have prescribed.





# National Statistics

## Respiratory Syncytial Virus



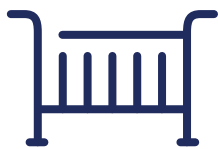
### About Respiratory Syncytial Virus

Respiratory syncytial virus, or RSV, is a contagious seasonal respiratory virus that can cause bronchiolitis and pneumonia. It is also the leading cause of hospitalization in babies less than one year old.<sup>1</sup> RSV can be deadly for premature infants and at-risk infants with congenital heart disease or chronic lung disease.

Preventive treatment called palivizumab can protect infants from RSV, but national claims data shows certain babies aren't getting access to this FDA-indicated therapy.

### National Health Plan Coverage & Access

A national data supplier provided palivizumab claims for Medicaid and commercial health plans across the nation from January 2019 through December 2019.



#### "Gap" Babies

Commercial Plans Denied

**40%**

Medicaid: **25%**

Health plans deny 40% of palivizumab prescriptions for premature infants born between 29 and 36 weeks gestation.



#### "In-Guidance" Babies

Commercial Plans Denied

**25%**

Medicaid: **14%**

One in every four prescriptions is denied for infants who should qualify for coverage under standard insurance policies.

This includes severely premature infants born before 29 weeks gestation, babies born before 32 weeks gestation who have chronic lung disease, and babies born with congenital heart disease.



### “In-Guidance” Babies

Even one in four high-risk babies typically covered by insurance policies is going without the preventive RSV treatment their health care provider prescribed.

- 25% denied by commercial plans
- 14% denied by Medicaid

These “in-guidance” babies are severely premature babies born before 29 weeks gestation, babies born before 32 weeks gestation with chronic lung disease, and babies born with congenital heart disease.

**“Those faced with the challenge of bringing home a preemie or at-risk infant have enough on their mind. They shouldn’t have to fight their insurance company for a medication that can protect their baby from complications of infectious disease.”**

### Reactions

The rejection of prescriptions for at risk infants concerns infant health providers. Just ask National Coalition for Infant Health Medical Director Mitchell Goldstein, MD.

“Now more than ever, we’re aware of the importance of preventing infectious disease,” Dr. Goldstein said. “Those faced with the challenge of bringing home a preemie or at-risk infant have enough on their mind. They shouldn’t have to fight their insurance company for a medication that can protect their baby from complications of infectious disease.”

Suzanne Staebler, DNP, noted that the issue is not a new one. “This data confirms what we’ve been seeing for years,” Staebler explained, “that misguided policies are putting fragile babies at unnecessary risk. Clinicians prescribe this preventive treatment to vulnerable infants because they need it.”

### Preventing RSV

While most children get RSV before the age of two, the virus can be deadly for premature infants with underdeveloped lungs and immature immune systems. RSV is the leading cause of hospitalization for children under age one.

Palivizumab is FDA approved for all premature infants, all infants with congenital heart disease and infants born before 32 weeks with chronic lung disease. The preventive medication reduces RSV infections and decreases hospitalizations by 55%.

### References:

1. Nair H, Nokes DJ, Gessner BD, et al. Global burden of acute lower respiratory infections due to respiratory syncytial virus in young children: a systematic review and meta-analysis. *Lancet* May 1 2015; 375(9725):1545- 55.
2. The Impact-RSV Study Group. Palivizumab, a humanized respiratory syncytial virus monoclonal antibody, reduces hospitalization from respiratory syncytial virus infection in high-risk infants. *Pediatrics* Sep 1998; 102(3 Pt 1):531-7.
3. Kong AM, Krilov LR, Fergie J, et al. The 2014-2015 National Impact of the 2014 American Academy of Pediatrics Guidance for Respiratory Syncytial Virus Immunoprophylaxis on Preterm Infants Born in the United States. *Am J Perinatol*. 2018 Jan;35(2):192-200.

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**NT**

### Corresponding Author



Susan Hepworth  
Director  
National Coalition for Infant Health  
1275 Pennsylvania Ave. NW, Suite 1100A  
Washington, DC 20004  
[info@infanthealth.org](mailto:info@infanthealth.org)



Mitchell Goldstein, MD  
Professor of Pediatrics  
Loma Linda University School of Medicine  
Division of Neonatology  
Department of Pediatrics  
[mgoldstein@llu.edu](mailto:mgoldstein@llu.edu)

## National Coalition for Infant Health Values (SANE)

**Safety.** Premature infants are born vulnerable. Products, treatments and related public policies should prioritize these fragile infants' safety.

**Access.** Budget-driven health care policies should not preclude premature infants' access to preventative or necessary therapies.

**Nutrition.** Proper nutrition and full access to health care keep premature infants healthy after discharge from the NICU.

**Equality.** Prematurity and related vulnerabilities disproportionately impact minority and economically disadvantaged families. Restrictions on care and treatment should not worsen inherent disparities.

## OPIOIDS and NAS

When reporting on mothers, babies, and substance use

## LANGUAGE MATTERS



### I am not an addict.

I was exposed to substances in utero. I am not addicted. Addiction is a set of behaviors associated with having a Substance Use Disorder (SUD).



### I was exposed to opioids.

While I was in the womb my mother and I shared a blood supply. I was exposed to the medications and substances she used. I may have become physiologically dependent on some of those substances.



### NAS is a temporary and treatable condition.

There are evidence-based pharmacological and non-pharmacological treatments for Neonatal Abstinence Syndrome.



### My mother may have a SUD.

She might be receiving Medication-Assisted Treatment (MAT). My NAS may be a side effect of her appropriate medical care. It is not evidence of abuse or mistreatment.



### My potential is limitless.

I am so much more than my NAS diagnosis. My drug exposure will not determine my long-term outcomes. But how you treat me will. When you invest in my family's health and wellbeing by supporting Medicaid and Early Childhood Education you can expect that I will do as well as any of my peers!

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Neonatal Abstinence Syndrome  
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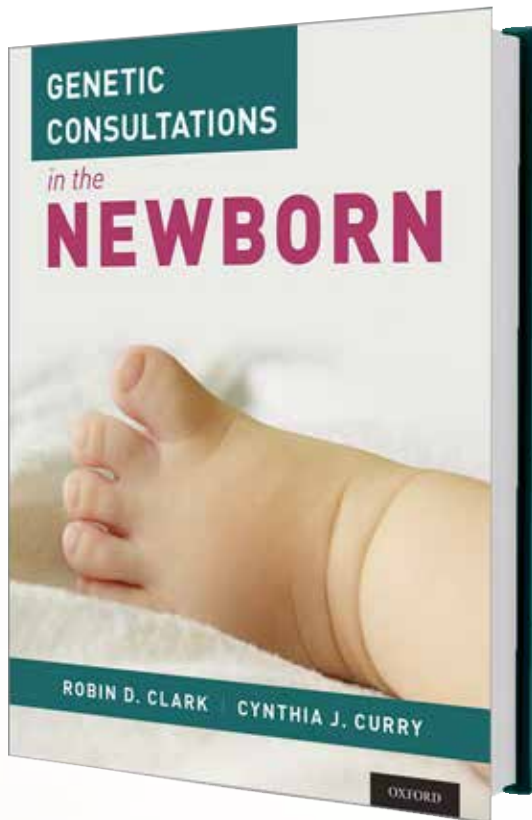


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# From The National Perinatal Information Center: Making the Case: Accuracy of Race and Ethnicity Data Reporting

Elizabeth Rochin, PhD, RN, NE-BC

The National Perinatal Information Center (NPIC) is driven by data, collaboration and research to strengthen, connect and empower our shared purpose of improving patient care.

For over 30 years, NPIC has worked with hospitals, public and private entities, patient safety organizations, insurers and researchers to collect and interpret the data that drives better outcomes for mothers and newborns.



National Perinatal Information Center

On July 2017, National Public Radio and ProPublica launched the Lost Mothers series. This was a turning point in the national conversation for maternal mortality; however, it created frustration and concern for those national organizations and hospitals who had been sounding the alarm of maternal mortality for years prior to this catalyst.

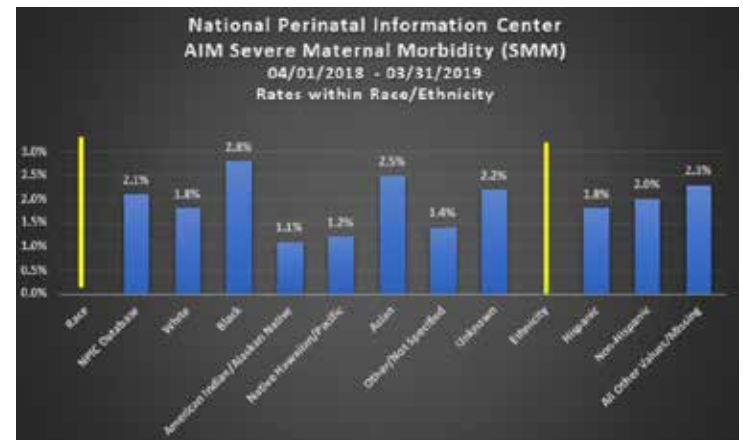
With the recent events surrounding racial inequality and injustice that have again surfaced throughout the United States, bringing data to this discussion continues to be a critical element to supporting hospitals, perinatal and neonatal units with their disparities reduction efforts. It is important to note that within this discussion, the race is not a risk factor, and should never be considered as such.

The National Perinatal Information Center provided an overview of Racial and Ethnic Disparities data to its members in the fall of 2019. This information was offered to serve as an additional adjunct to disparity work already underway at many organizations across the United States. However, the large part of the following discussion revolves around two unique attributes of race and ethnicity reporting: outcome disparities for Black women, and completion of data elements in the electronic medical record, particularly racial and ethnicity data reporting. In 2009, the National Academies of Sciences, Engineering, and Medicine (formerly the Institute of Medicine) published Race, Ethnicity, and Language Data: Standardization for Health Care Quality Improvement. This document highlighted a number of recommendations for racial and ethnicity data reporting; how-

ever, these recommendations show a wide variation on acceptance and implementation. To further illustrate the use of "unknown" or "other," specifically highlighted are Severe Maternal Morbidity (SMM), Severe Maternal Morbidity (SMM) among Hemorrhage Cases, and Neonatal birth weights of < 2500 grams and < 1500 grams, respectively.

## AIM Severe Maternal Morbidity (SMM):

The National Perinatal Information Center provides Alliance for the Innovation of Maternal Health (AIM, <https://safehealthcareforeverywoman.org/aim-data>) comparisons that can provide comparisons for the organization, as well as an overall benchmarked rate. During the period 04/01/2018 – 03/31/2019, the following trends were noted:

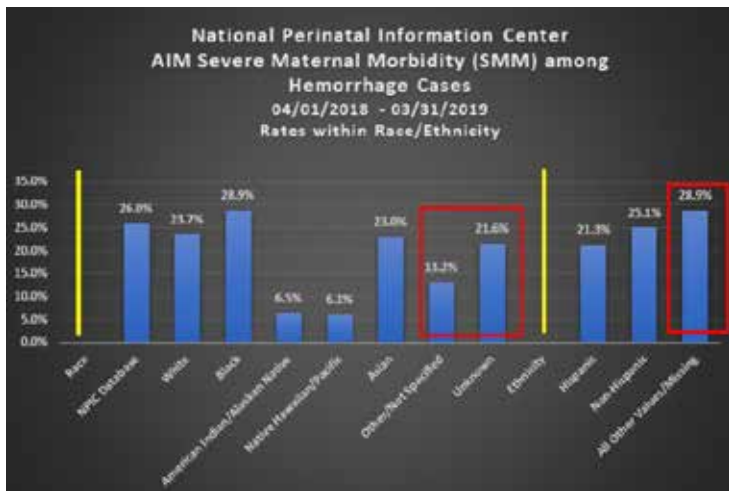


## AIM Severe Maternal Morbidity among Hemorrhage Cases

Again, Black women reveal the highest rate within races of SMM among hemorrhage cases; however, there is an important facet of this data that cannot be overlooked. "Other" and "Unknown" are 13.2% and 21.6% within the cases, respectively. In addition, within ethnicity, 28.9% of hemorrhage cases are other or missing. The ability to track and identify racial and ethnic disparities within organizations and communities relies on accurate reporting of race and ethnicity at the time of admission as well as at discharge and processing of the medical record. This information highlights an important element of data collection that must be a priority for organizations that are intent on reviewing and acting upon disparities.

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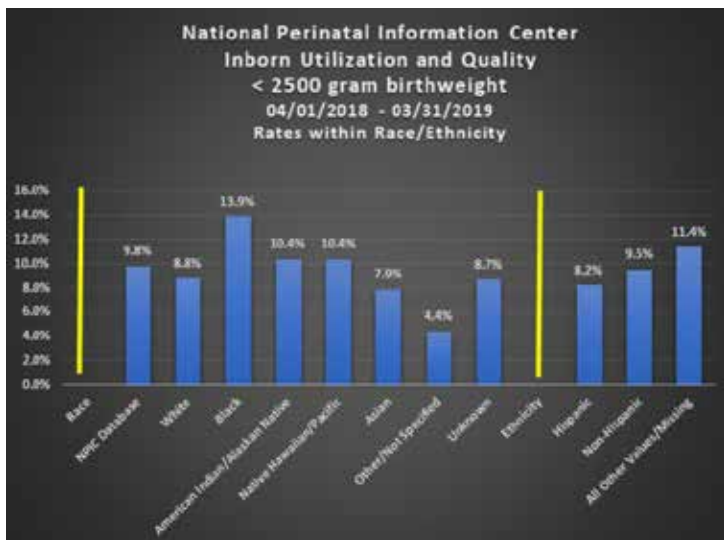
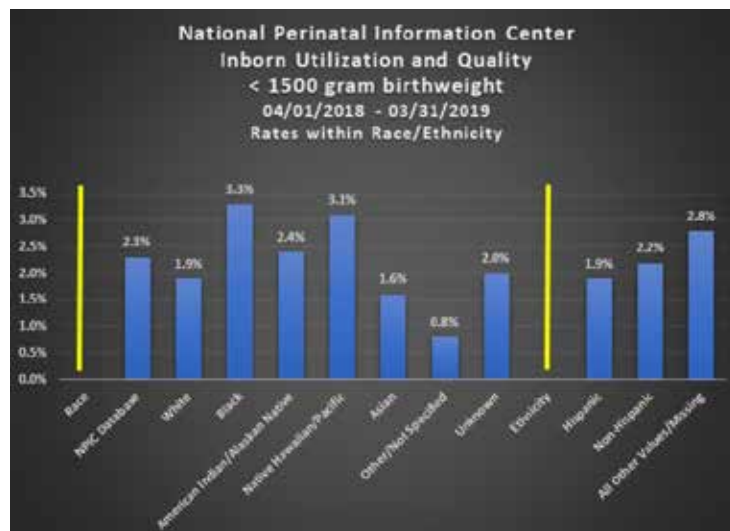


## Very Low Birthweight (< 1500 grams)

Premature birth is a significant cause of infant and child morbidity and mortality (Glass et al., 2009). Babies weighing less than 1500 grams at birth can experience significant challenges to multisystem organ involvement, including high resource utilization and long NICU stays, which can compound challenges to parental involvement, particularly for those with socioeconomic challenges and other family responsibilities. Based upon several studies reviewing racial and ethnic disparity in the NICU environment, Black women are more likely to have more perceived stress, more depressive symptoms, and less social support than white women, regardless of income (Grobman et al., 2018). However, in this particular metric, "Other" and "unknown" data are much lower than the other metrics described, which again could reflect multidisciplinary care teams' documentation processes.

## Low Birth Weight (< 2500 grams)

One of the most widely studied birth outcomes is birthweight, which is affected by conditions before and during pregnancy that can have an impact on intrauterine growth as well as gestational age (Ro, Goldberg & Kane, 2019). Infant birth weight is a common measure of infant and maternal health and well-being (Department of Health and Human Services, 2020). Infants weighing less than 2500 grams may experience significant cost and health problems that can exacerbate short and long-term costs of care. Within races, Black women have the highest rate of low birth weight babies within the NPIC Perinatal Center Database for this specific time period. Studies continue to support the finding that non-Hispanic Black women have the highest risk of low birthweight newborns, related to social determinants of health (SDOH) and "weathering," described in 1996 within a study of African American maternal age and birth weight as the "erosion of health of African American women as a result of social inequity" (Geronimus, 1996). It is important to note that race is not being described here as a risk factor. The rate of "Other" or "Unknown" within races, as well as "Missing" within ethnicity, is reduced for this data point, which may reflect both perinatal and neonatal documentation teams for racial and ethnicity reporting.



## Discussion and Recommendations:

Based upon the NAESM/IOM Race, Ethnicity, and Language Data: Standardization for Health Care Quality Improvement subcommittee report, here are several of the standardized recommendations for enhancing and improving race and ethnicity reporting:

- 1) Self-Reporting: The opportunity for patients to directly self-report their race and ethnicity into an electronic health record with the expectation of privacy and confidentiality cannot be overstated. According to Polubriaginof and colleagues (2019), when patients directly recorded their race and ethnicity, 86% provided clinically meaningful information, and 66% of patients reported information that was discrepant with the electronic health record.
- 2) Training for frontline teams responsible for race and ethnicity reporting: According to the Subcommittee literature review, the comfort level of clinical teams and admissions/intake personnel was varied, and depending upon that comfort level, data may have been assumed and entered without expressly engaging with the patient. This discomfort was found to occur broadly and was not exclusive to one race of clinicians. Assuring adequate training of the importance of data reporting, as well as recognition of im-

licit bias, provides a foundation for data reporting process improvement.

- 3) Interoperability of Electronic Health Records and data reporting: Organizations attempt to refine and build racial and ethnic reporting matrices that meet their own individual and system needs, but may create challenges when attempting to compare themselves to others throughout the US. OMB standards for data reporting may afford consistency in not only monitoring data within a hospital or system but also may be beneficial in benchmarking disparity improvement processes across organizations and nationally.

**References:**

Department of Health and Human Services. (2020). Medicaid. Live births under 2,500 grams. <https://www.medicaid.gov/state-overviews/scorecard/live-births-weighing-less-than-2500-grams/index.html>

Geronimus, A. T. (1996). Black white differences in the relationship of maternal age to birthweight: A population-based test of the weathering hypothesis. *Social Sciences Medicine*, 42(4), 589-97.

Glass, H.C., Costarino, A. T., Stayer, S.A., Brett, C. Cladis, F. & Davis, P. J. (2015). Outcomes for extremely premature infants. *Anesthesia & Analgesia*, 1337-1351.

Grobman, W. A., Parker, C.B., Willinger, M...Reddy, U.M. (2018). Racial disparities in adverse pregnancy outcomes and psychosocial stress. *Obstetrics & Gynecology*, 131(2), 328-335.

Institute of Medicine. 2009. *Race, Ethnicity, and Language Data: Standardization for Health Care Quality Improvement*. Washington, DC: The National Academies Press.

Ro, A., Goldberg, R. E. & Kane, J.B. (2018). Racial and ethnic patterning of low birth weight, normal birth weight and macrosomia. *Preventive Medicine*, 118, 196-204.

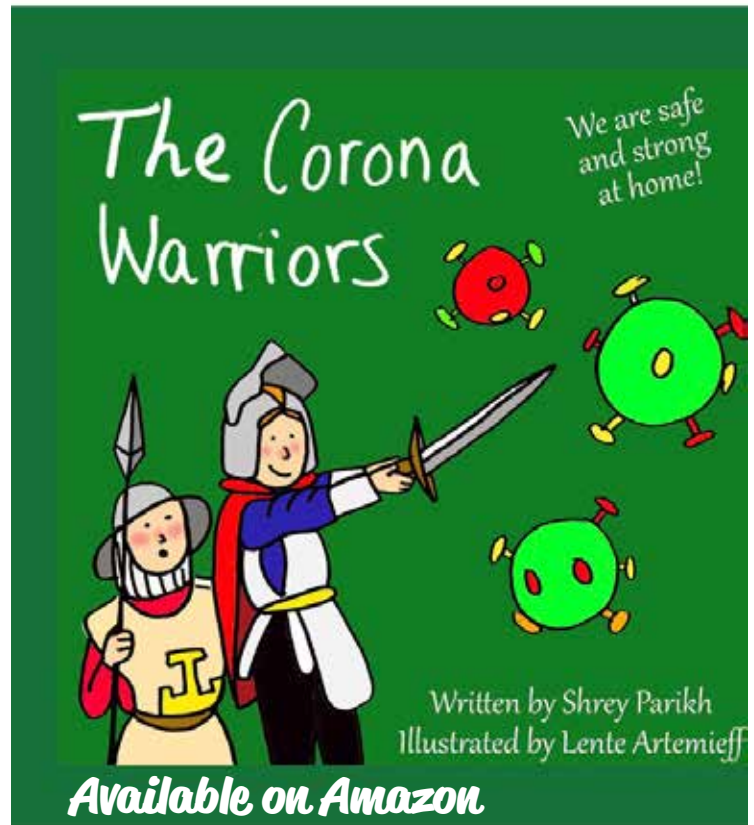
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**NT**

Corresponding Author:



Elizabeth Rochin, PhD, RN, NE-BC  
President  
National Perinatal Information Center  
225 Chapman St. Suite 200  
Providence, RI 02905  
401-274-0650  
[inquiry@npic.org](mailto:inquiry@npic.org)



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# RSV AWARENESS:

## *A National Poll of Parents & Health Care Providers*

Respiratory syncytial virus, or RSV, is far from the common cold. It can lead to hospitalization, lifelong health complications or even death for infants and young children. **In fact, it is the leading cause of hospitalization in children younger than one.**

Yet a national poll of parents and specialty health care providers reveals a startling divide in attitudes toward the virus. While both groups acknowledge RSV as a significant concern, the two populations vary widely in their reported ability to meet RSV's threat head-on. Health care providers vigilantly

monitor for the virus, which they report seeing regularly in their practices. Parents, however, feel unequipped to protect their young children.

Meanwhile, specialty health care providers overwhelmingly report that health plan rules and insurance denials block vulnerable infants' access to preventive RSV treatment. Such barriers can put unprepared parents at a double disadvantage. The survey does suggest, however, that education can embolden parents to seek more information about RSV and take steps to protect their children.

## KEY FINDINGS

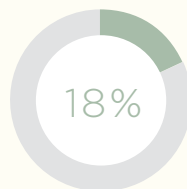
### *Preparedness*

Parents of children age four and under report that understanding of RSV is lacking. That leaves them less than fully prepared to prevent their young children from catching the virus.

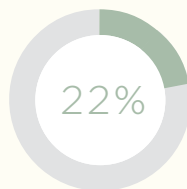
Specialty health care providers reiterated these concerns; 70% agreed that parents of their patients have a low awareness of RSV. Meanwhile, specialty health care providers themselves actively monitor for RSV. They reported that:

#### PARENTS

**Only 18% said parents know “a lot” about RSV,** reflecting an awareness level that's roughly half that of the flu

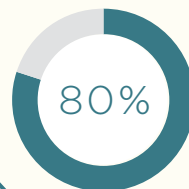


**Only 22% of parents consider themselves “very well prepared” to prevent RSV.**

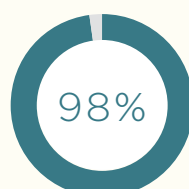


#### SPECIALTY HEALTH CARE PROVIDERS

**They treat RSV as a priority,** “often” or “always” evaluating their patients (80% doctors; 78% nurses)



**During RSV season, they are especially vigilant** about monitoring patients for symptoms or risk factors for RSV (98%).



# Clinical Pearl:

## Aspects of Care of Newborns Born to Mothers with Suspected/Confirmed Coronavirus-19 (COVID-19) Disease

Joseph R. Hageman, MD

In our May issue, a number of clinically helpful articles were presented, including a practical guide for the neonatologist by Smith and Sharma (1-4). I presented a summary of some very recent data about moms and their newborns (2), and Liu and Stovall presented a premature infant who acquired COVID-19 nosocomially in the neonatal intensive care unit (NICU) (3). Ma, Zhu, and Du reviewed aspects of neonatal management in China, including a clinical summary of 6 term neonates with confirmed COVID-19 disease, all of whom had a relatively mild illness, did not require intubation and fully recovered (Table) (4). Levine and Goldstein further updated some of the recommendations for the management of mothers and their newborns in the delivery room, mother-baby unit, and the NICU (5). To further update our readers, I will try to answer some questions about the clinical aspects of COVID-19 infection in pregnant women and newborns.

### How common is COVID-19 infection in asymptomatic pregnant women presenting to Labor and delivery for childbirth?

Earlier in the pandemic in New York City (March 22-April 4, 2020), 13.7% of 210 women who presented for childbirth with universal

***“In contrast, from April 2-April 29, 2020, all patients admitted for childbirth to 3 Yale-New Haven hospitals in southern Connecticut without a COVID-19 infection diagnosis were also screened, first with clinical questions, then with np swabs and PCR testing (7).”***

screening with nasopharyngeal swabs (np) and quantitative polymerase-chain-reaction tests (PCR) (6). In contrast, from April 2-April 29, 2020, all patients admitted for childbirth to 3 Yale-New Haven hospitals in southern Connecticut without a COVID-19 infection diagnosis were also screened, first with clinical questions, then with np swabs and PCR testing (7). In this series of 365 asymptomatic patients from April 2-15, 2 (0.5%) were positive; 20/405 (4.9%) were positive from April 16-29, 2020 (7). In a personal communication from Dr. Allison Bartlett, Hospital Epidemiologist and pediatric infectious disease specialist

TABLE. Clinical Characteristics of 6 Covid-19 Neonatal Cases in China

PATIENT/CITY	AGE	CLINICAL PRESENTATIONS <sup>a</sup>	MOTHER SARS-COV-2RNA RESULT	HEST RADIOGRAPH/CT SCAN	PHARYNGEAL/RECTAL SWAB FOR SARS-COV-2	GESTATION	OUTCOME
1/Wuhan <sup>b,c</sup>	30 h	Poor feeding, fever, vomiting	+	-/-	+/-	Term	Full recovery
2/Wuhan <sup>b</sup>	18 d	Vomiting, lethargy	-(with typical clinical and CT findings)	-/-	+/-	Term	Full recovery
3/Wuhan <sup>b</sup>	12 d	Sneezing (mild), vomiting, diarrhea	+	-/nonspecific lung markings	+/+	Term	Full recovery
4/Wuhan <sup>b</sup>	3 d	Fever, lethargy	+	-/nonspecific lung markings	+/-	Term	Full recovery
5/Wuhan <sup>b</sup>	36 h	Poor feeding, lethargy	+	Pneumonia/GGO	+/-	Term	Full recovery
6/Xinyang <sup>d</sup>	5 d	Fever	+	-/not done	+/-not done	Term	Full recovery

CT=computed tomography; GGO=ground glass opacity; plus (+) sign=positive; minus (-) sign=negative.

<sup>a</sup>None of the patients required intubation.

<sup>b</sup>From Xiaoyuan et al. (9)

<sup>c</sup>From Wang et al. (10)

<sup>d</sup>From news media of hospital report.

Table from Ma X., Zhu J, Du L. Neonatal management during the Coronavirus disease COVID-19 outbreak: The Chinese experience. *NeoReviews* 2020;21(5): e293-e297, with permission

at Comer Children's Hospital at the University of Chicago, she reports that ~10% of asymptomatic pregnant women presenting for childbirth were COVID-19 + at the height of the peak (April 15-May 15). However, the rate has been 0 since May 24, 2020. The universal COVID-19 screening recommendation is from the Illinois Department of Public Health Perinatal Advisory Committee as universal COVID-19 testing is left to the discretion of the individual institutions. This morning I found another update by Rasmussen and Jamieson in JAMA, which outlines suggested management of pregnant women with suspected/confirmed COVID-19 and their newborn infants (8). These recommendations are based on the information and expert opinion from the American Academy of Pediatrics (AAP) (8,9), Centers for Disease Control and Prevention (CDC) (8,10), and the American College of Obstetrics and Gynecology (ACOG) (8,9).

**Is there any new evidence for vertical transmission of COVID-19 from Mother to Infant? How about COVID-19 (SARS-CoV-2) virus in maternal breast milk?**

In a paper by Kirtsman and colleagues, a 40-year-old woman with familial neutropenia and confirmed COVID-19 infection delivered an infant at 35 weeks 5 days by cesarean section with intact membranes. There was no delayed cord clamping, skin-to-skin contact, and the infant was taken to a resuscitator 2 meters away in the same room, did not require resuscitation, and had Apgar scores of 9 and 9 at one and five minutes of age. A nasopharyngeal swab from the neonate obtained on the day of birth was positive by reverse transcription-polymerase chain reaction (RT-PCR) prior to any contact with the mother (11). The clinical course of the mother is detailed as well as samples from the placenta, serial nasopharyngeal samples, and a blood and stool sample from the infant, which were also positive for COVID-19 (SARS-CoV-2) (11). This case is labeled as a probable congenital SARS-CoV-2 infection because of the lack of detection of the SARS-CoV-2 gene targets in the umbilical cord tissue and the lack of availability of cord blood for SARS-CoV-2 testing (11). Also, of note, the mother's breast milk was positive, but the baby's nasopharyngeal swab was obtained prior to breastfeeding contact (11), and contamination of the breast milk cannot be ruled out, although breast hygiene was and cleaning was utilized (11). Gross and colleagues report evidence of SARS-CoV-2 by RT-PCR in the breast milk of 2 mothers with SARS-CoV-2 infection post-delivery (12).

**References**

1. Smith AG, Sharma AM. Fellow column: Clinical quick guide for the neonatologist. *Neonatology Today* 2020; 15(5): 16-20.
2. Hageman JR. Clinical Pearl: COVID-19 pandemic: Mothers and infants. *Neonatology Today* 2020; 15(5): 92-93.
3. Liu W, Stovall S. Case of a Preterm Newborn with the Nosocomial Acquisition of COVID-19 Infection in the Neonatal Intensive Care Unit and Contact Tracing. *Neonatology Today* 2020; 15(5): 13-17.
4. Ma X., Zhu J, Du L. Neonatal management during the Coronavirus disease (COVID-19) outbreak: The Chinese experience. *NeoReviews* 2020;21(5): e293-e297.
5. Levine G, Goldstein M. Letter to the editor: The coronavirus outbreak: The current state. *Neonatology Today* 2020; 15(5): 99-100.
6. Sutton D, Fuchs K, D'Alton M, Goffman D. Universal screening for SARS-CoV-2 in women admitted for delivery.

*New Engl J Med* 2020; 382(22): 2163-2164.

7. Campbell KH, Tornatore JM, Lawrence KE et al. Prevalence of SARS-CoV-2 among patients admitted for childbirth in Southern Connecticut. *JAMA* 2020; published online May 26, 2020.
8. Rasmussen SA, Jamieson DJ. Caring for women who are planning a pregnancy, pregnant or postpartum during the COVID-19 pandemic. *JAMA*. Published online June 5, 2020.
9. <https://www.aappublications.org/news/2020/05/21/covid19newborn052120>
10. <https://www.cdc.gov/coronavirus/2019-nCoV/hcp/index.html>
11. Kirtsman M, Diambomba Y, Poutanen SM et al. Probable congenital SARS-CoV-2 infection in a neonate born to a woman with active SARS-CoV-2 infection. *CMAJ* 2020.doi: 10.1503/cmaj.200821;early-released May 14, 2020.
12. Gross R, Conzelmann C, Muller JA et al. Detection of SARS-CoV-2 in human breastmilk. *Lancet* published online May 21, 2020 [https://doi.org/10.1016/S0140-6736\(2031181-8](https://doi.org/10.1016/S0140-6736(2031181-8).

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**NT**

**Corresponding Author**



Joseph R. Hageman, MD  
Senior Clinician Educator  
Pritzker School of Medicine  
University of Chicago  
MC6060  
5841 S. Maryland Ave.  
Chicago, IL 60637  
Phone: 773-702-7794  
Fax: 773-732-0764  
[jhageman@peds.bsd.uchicago.edu](mailto:jhageman@peds.bsd.uchicago.edu)

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Submission guidelines for "Clinical Pearls":  
1250 word limit not including references or title page.  
May begin with a brief case summary or example.  
Summarize the pearl for emphasis.  
No more than 7 references.  
Please send your submissions to:  
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## Insurance Denials of NICU Hospital Claims

Eugene L. Mahmoud, MD

With regards to the defined principles of Medical Necessity and Standards of Medical Care, there have been significant differences among those who are primarily involved in patient care among patients, physicians, insurance payers, and hospital administrations. In general, the concepts of experimental care and investigational care are concluded to be the opposite of Medical Necessity and Standards of Care. As it relates to Neonatology, preterm birth and low birthweight birth exert significant, medical, social, and economic costs on affected families and the United States healthcare system. Preterm birth is the leading cause of neonatal mortality and is a significant cause of both short and long-term morbidity and disability. While the least mature newborns have the highest average per individual medical expenditures, data from 2017 showed newborns born at 26 weeks gestational age represent 4% of all preterm birth with the medical expenditure of 22.5%. But the more mature infants (at 33-36 weeks gestational age) as a cohort representing approximately 80% of all preterm births have higher total expenditures at 38%. In addition, these data do not include mature term gestation newborns with complex congenital heart conditions or other complex conditions noted at birth.

***“The physician's decision of when to discharge an infant from the hospital after a stay in the Neonatal Intensive Care Unit (NICU) is complex.”***

The physician's decision of when to discharge an infant from the hospital after a stay in the Neonatal Intensive Care Unit (NICU) is complex. This decision is made primarily on the basis of the infant's medical status, and whether the specifically indicated care needs may only be accomplished at the acute hospital level of care or if the care needs may be achieved at a lower level of care – Normal Nursery, a rehabilitation facility, or care at home with care by parents and other health care professionals (nurses, therapists). Also, NICU Hospital Discharge is complicated by the readiness of families for discharge and pressures to contain hospital costs by shortening the length of stay. Insofar as possible, the determination of the readiness for discharge should be based on current peer-reviewed scientific evidence. Historically, preterm infants were discharged only when they achieved a certain weight, typically 2250 grams (5 pounds). Currently, randomized clinical trials have shown that earlier discharge is possible without adverse health effects when preterm infants are discharged on the basis of physiologic criteria rather than body weight. The three physiologic competencies that are generally recognized as essential before hospital discharge of the preterm infant are 1. Oral feeding sufficient to support appropriate growth. 2. The ability to maintain a normal body temperature in a home environment. 3. Sufficient mature respiratory control. These competencies are achieved by most preterm infants between 36 and 37 weeks' postmenstrual age. However, maturation to the point that allows safe discharge may take longer, occasionally up to 44 weeks' postmenstrual age. Although interrelated, not all competencies are achieved by the same postnatal age in a given infant. The pace of maturation is influenced by the birth weight, the gestational age at birth, and the degree and chro-

nicity of neonatal illnesses. Infants born earlier in gestation and with more complicated medical courses tend to take longer to achieve these physiologic competencies.

The American Academy of Pediatrics (AAP) Private Payer Advocacy Advisory Committee (PPAAC) identifies opportunities to engage private payers on pediatric issues, coverage and payment within the limits of antitrust regulations <http://bit.ly/AA-PHassleFactorForm>. Several AAP chapters also have formed pediatric councils to meet with local payers on pediatric issues.

To ensure that carriers consider the unique aspects of pediatrics when making coverage determinations, the Academy has implemented a process with Anthem, United Health Corporation, and the Blue Cross Blue Shield Association in which pediatricians review medical policies that impact children. Such a review does not imply AAP endorsement of a carrier's policy but advises the carrier on how the policy impacts pediatrics and pediatricians and advocates for appropriate benefits coverage.

***“To ensure that carriers consider the unique aspects of pediatrics when making coverage determinations, the Academy has implemented a process with Anthem, United Health Corporation, and the Blue Cross Blue Shield Association in which pediatricians review medical policies that impact children.”***

A study by the Government Accountability Office found that many denials can be traced to largely trivial bureaucratic issues, such as a missing form or an incorrect billing code. The study found that when patients challenged the insurers' denials, about half of the rejected claims ended up being covered.

Insurers employ warehouses full of claims adjusters who, as a primary function, scrutinize claims for pretexts of lack of documentation to deny care, saying it is 'experimental,' 'must abide by third party insurance decision guidelines,' or 'not medically necessary' even when the medical treatment, prescription medication, diagnostic procedure or referral to a specialist is recommended by doctors.

Informed health care leads to the best patient outcomes, avoid-





ing underuse or overuse of medical resources. Evidence-based care guidelines from Milliman Care Guidelines and InterQual Guidelines help providers, and health plans drive informed care in their own work and through the conversations that connect them. Sometimes, there can be confusion when some insurance carriers adopt Milliman Care Guidelines, and others adopt InterQual Guidelines. Because when the two guidelines do not match exactly, the approval for the NICU level of care can be difficult to interpret. Each care guideline recognizes the four NICU levels of care, which include prematurity, severe conditions, mild instabilities, and routine newborn care. However, high flow nasal cannula systems (HFNC) deliver oxygen via a system that heats, humidifies, and then delivers a 24-100% (0.24-1.0) ViO<sub>2</sub> at body temperature through nasal cannula prongs, HFNC is used to provide a high flow without causing barotrauma. It appears to have similar clinical efficacy and safety to nasal continuous positive airway pressure (CPAP) as a mode of noninvasive respiratory support. For infants up to 12 months of age, HFNC may be administered at rates as high five (5) liters per minute (LPM). So, some insurance carriers may accept HFNC for the highest level of medically necessary care who adopt the InterQual Guidelines, when those insurance carriers who adopt the only the Milliman Care Guidelines may not accept HFNC for newborns requiring the highest level of medically necessary care. As the Milliman Care Guideline is frequently updated, it is hoped that newborns receiving HFNC will be included with those at the highest levels of NICU care.

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***“ So, some insurance carriers may accept HFNC for the highest level of medically necessary care who adopt the InterQual Guidelines, when those insurance carriers who adopt the only the Milliman Care Guidelines may not accept HFNC for newborns requiring the highest level of medically necessary care.”***

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For lack of documentation and coding of health care, the insurers are justified to deny care. However, these are rare circumstances. When taking care of extremely sick patients in the NICU and Pediatric Intensive Care Unit (PICU) meticulous documenting the complexity of care is reflected in detailed progress reports and input from specialist consultation. Medical necessity means health care services that a physician, exercising prudent clinical judgment, would provide to a patient. The service must be for the purpose of evaluating, diagnosing, or treating an illness, injury, disease, or its symptoms. In the treatment of severely ill patients, the physicians employ therapy based on current on peer-reviewed scientific evidence with the Food and Drug Administration (FDA) support in accordance with the standard of care.

By means of careful preparation, Neonatologists can minimize potential audits and defend against inappropriate payer denials and repayment demands. Since the introduction of health maintenance organizations (HMOs) and other managed care organizations that perform utilization review, there has been public concern that decisions about insurance coverage for diagnostic and therapeutic services might be based on the cost to the insurer rather than the clinical appropriateness. HMOs

since 1975 are required to provide an internal grievance process, in which an enrollee who was denied coverage of the desired treatment could appeal the decision. In response to additional appeals to health care organizations, the HMOs insurer payers provide an additional external independent medical review (IRO) for coverage denials. In the external review process, health plans, patients, providers, and medical institutions take their disagreements to a regulatory board. Within this process, requests for the involvement of reviewing physicians with the same qualifications as those caring for the patient in question aids in getting a just resolution.

**References:**

1. *Policy Statement: Hospital discharge of the high-risk neonate. Pediatrics. 2008;122(5):1119–1126. Available at: <http://pediatrics.aappublications.org/content/122/5/1119>. Reaffirmed November 2018*
2. *Heated, Humidified High-Flow Nasal Cannula Versus Nasal CPAP for Respiratory Support in Neonates Yoder BA, Stoddard RA, Li M, King J, Dirnberger DR, Abbas Si Pediatrics, May 2013, 131 (5) e1482-e1490*
3. *Estimates of Healthcare Spending for Preterm and Low-birthweight Infants in a Commercially Insured Population: 2008-2016 Beam AL, Fried I, Palmer N, Agniel D, Brat G, Fox K, Kohane I, Sinaiko A, Zupancic AF, Armstrong J Journal of Perinatology (2020)*
4. *Independent Medical Review of Health Plan Coverage Denials: Early Trends Chuang K, Aubry WM, Adams Dudley R Health Affairs Volume 23, Number 6, pp. 163-169*
5. *Subspecialists Benefit from AAP Private Payer Policy Lander et al., AAP News, 2017*
6. *AAP continues to resolve issues with health insurance companies Kressly SA, AAP News, 2019*
7. *Milliman Care Guidelines MCGTM General Recovery Care 17th Edition Introduction to Neonatal Levels of Care InterQual 2017 Acute Pediatric Criteria- Nursery*
8. *Guide to Clinical Practice Guidelines: the Current State of Play Kredon T, Berhardsson S, Shingai Machingaidze, Young T, Louw Q, Ochodo E, and Grimmer K Int J Qual Health Care. 2016 Feb; 28(1): 122–128.*
10. *Miles, A., Loughlin M. Models in the balance: evidence-based medicine versus evidence-informed individuals*



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**NT**

Corresponding Author:



Eugene L. Mahmoud, MD  
Medical Reviewer- American Health Health Holding, Advanced Medical Reviews, Dane Street, Medical Board of California  
Past Staff Neonatologist- UCI Medical Center, Orange, CA and Parkview Hospital Medical Center, Riverside, CA  
Cell: (949)-683-0672  
Fax: (626)-365-1344  
Email: [emahmoudsr@yahoo.com](mailto:emahmoudsr@yahoo.com) or [eugene.mahmoud@gmail.com](mailto:eugene.mahmoud@gmail.com)  
Mailing address- 360 South Los Robles Avenue, Unit#- 11, Pasadena, CA 91101



Did you know that  
**PMAD**  
related suicides  
account for  
**20%**  
of Postpartum  
Maternal Deaths?

Join NPA

[nationalperinatal.org/mental\\_health](http://nationalperinatal.org/mental_health)



### Why PREMATURE INFANTS Need Access to an EXCLUSIVE HUMAN MILK DIET

In the United States, more than **1 IN 10 BABIES ARE BORN PREMATURE.** Very low birthweight babies are born severely premature, weighing less than 1,250 grams.

**VERY LOW BIRTHWEIGHT BABIES** are at risk for Necrotizing Enterocolitis (NEC), which:

- Damages intestinal tissue
- Causes distended abdomen, infection, low blood pressure and shock
- Threatens infants' lives

NEC occurrence increases when a premature consumes non-human milk products.

When that happens:

Category	Percentage
Very low birthweight babies who get NEC	17%
Very low birthweight babies requiring surgery to treat NEC	12%
Very low birthweight babies requiring surgery to treat NEC (total)	30%

**HOW TO HELP PREVENT NEC: EXCLUSIVE HUMAN MILK DIET**

What is an Exclusive Human Milk Diet?

- NO cow's milk
- NO sheep's milk
- NO goat's milk
- NO formula

✓ mother's milk  
✓ human donor milk  
✓ human milk-based fortifier

Why is An Exclusive Human Milk Diet important?

An Exclusive Human Milk Diet gives vulnerable infants the best chance to be healthy and reduces the risk of NEC and other complications.

When a very low birthweight baby can access an EXCLUSIVE HUMAN MILK DIET:

- Mortality is reduced by **36%**
- Feeding intolerance decreases
- Chances of NEC are reduced by **37%**

**HUMAN MILK = MEDICINE**

NEC is a life-threatening disease that can be prevented. If the appropriate food babies need. Any amount of human milk your baby receives is beneficial. Talk to your care team about your baby's specific human milk needs and request assistance to find your healthy baby.

**LEARN MORE**

**NCJH** National Coalition for Infant Health  
National Coalition for Infant Health  
www.nicuhq.org

Will your **PRETERM INFANT** need  
**EARLY INTERVENTION** services?

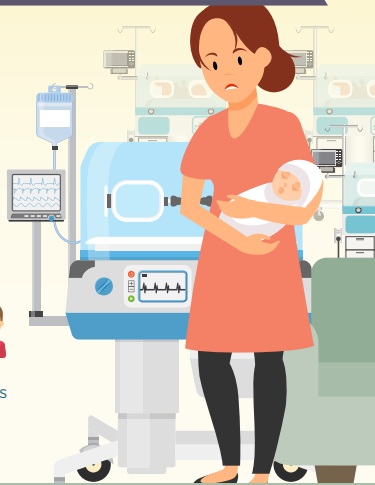
Preterm infants are:

**2x** more likely to have developmental delays

**5x** more likely to have learning challenges



**1 in 3** preterm infants will require support services at school



Early intervention can help preterm infants:



Enhance language and communication skills



Build more effective learning techniques



Process social and emotional situations



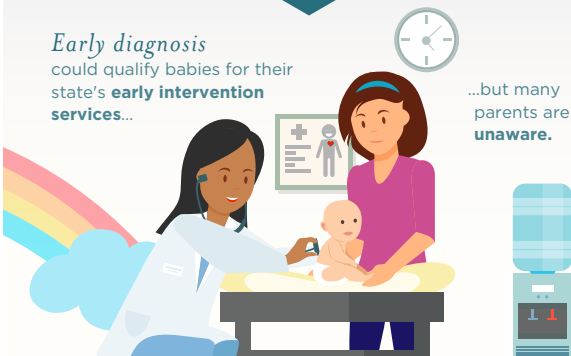
Address physical challenges



Prevent mild difficulties from developing into major problems

Early diagnosis could qualify babies for their state's **early intervention services**...

...but many parents are **unaware**.



*NICU staff, nurses, pediatricians and social workers should talk* with NICU families about the challenges their baby may face.

Awareness, referral & timely enrollment in early intervention programs can help **infants thrive** and grow.



**NCfIH** National Coalition for Infant Health  
Protecting Access for Premature Infants through Age Two  
[www.infanthealth.org](http://www.infanthealth.org)

Visit [CDC.gov](http://CDC.gov) to find contact information for your state's early intervention program.

Survey Says: **RSV**

**RESPIRATORY SYNCYTIAL VIRUS, or RSV,** is a dangerous virus that can lead to:

- Hospitalization
- Lifelong health complications
- Death

for infants and young children.



ACCORDING TO A NATIONAL SURVEY, *Specialty Health Care Providers say:*

**80%** They treat RSV as a priority, "often" or "always" evaluating their patients

**77%** RSV is the "most serious and dangerous" illness for children under four

**77%** Barriers to access and denials from insurance companies **limit** patients' ability to get preventive RSV treatment



*But Parents are Unprepared.*

**18%** Only 18% know "a lot" about RSV

**22%** Only 22% consider themselves "very well" prepared to prevent RSV



**RSV EDUCATION & AWARENESS CAN HELP**

*After parents learned more about RSV, they were:*

**65%** "More concerned" about their child contracting the disease

**67%** Likely to ask their doctor about RSV



**NCfIH** National Coalition for Infant Health  
Protecting Access for Premature Infants through Age Two

Learn More about RSV at [www.infanthealth.org/RSV](http://www.infanthealth.org/RSV)

## OPIOIDS and NAS

When reporting on mothers, babies, and substance use

# LANGUAGE MATTERS



### I am not an addict.

I was exposed to substances in utero. I am not addicted. Addiction is a set of behaviors associated with having a Substance Use Disorder (SUD).



### I was exposed to opioids.

While I was in the womb my mother and I shared a blood supply. I was exposed to the medications and substances she used. I may have become physiologically dependent on some of those substances.



### NAS is a temporary and treatable condition.

There are evidence-based pharmacological and non-pharmacological treatments for Neonatal Abstinence Syndrome.



### My mother may have a SUD.

She might be receiving Medication-Assisted Treatment (MAT). My NAS may be a side effect of her appropriate medical care. It is not evidence of abuse or mistreatment.

### My potential is limitless.

I am so much more than my NAS diagnosis. My drug exposure will not determine my long-term outcomes. But how you treat me will. When you

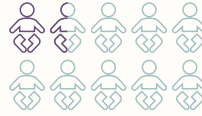
invest in my family's health and wellbeing by supporting Medicaid and Early Childhood Education you can expect that I will do as well as any of my peers!



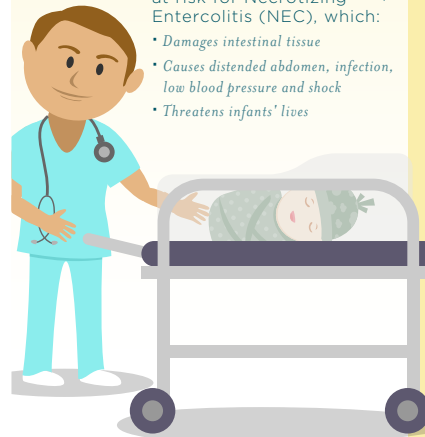
Learn more about Neonatal Abstinence Syndrome at [www.nationalperinatal.org](http://www.nationalperinatal.org)



## Why PREMATURE INFANTS Need Access to an EXCLUSIVE HUMAN MILK DIET



In the United States, more than **1 IN 10 BABIES ARE BORN PREMATURE**. Micro preemies are born severely premature, weighing less than 1,250 grams.

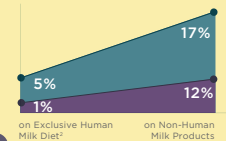


**MICRO PREMIES** are at risk for Necrotizing Enterocolitis (NEC), which:

- Damages intestinal tissue
- Causes distended abdomen, infection, low blood pressure and shock
- Threatens infants' lives

NEC occurrence increases when a preemie consumes non-human milk products.

When that happens:



30% of micro preemies needing surgery will die from NEC†

## HOW TO HELP PREVENT NEC: EXCLUSIVE HUMAN MILK DIET

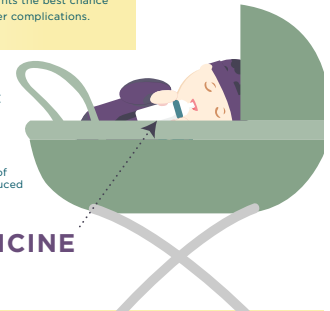
What is an Exclusive Human Milk Diet?



### Why Is An Exclusive Human Milk Diet Important?

An Exclusive Human Milk Diet gives vulnerable infants the best chance to be healthy and reduces the risk of NEC and other complications.

When a micro preemie can access an EXCLUSIVE HUMAN MILK DIET:



HUMAN MILK = MEDICINE

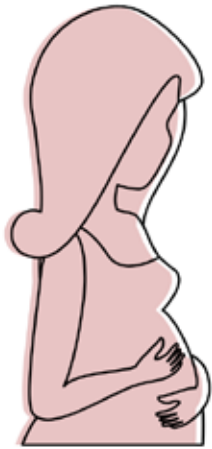
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NCFIH National Coalition for Infant Health  
Promoting the best for Perinatal Infants Through Age 100

\* Hair AB, et al. "Beyond Necrotizing Enterocolitis Prevention: Improving Outcomes with an Exclusive Human Milk-Based Diet." *Breastfeeding Medicine* 2015; 10:108-116. DOI: 10.1089/bfm.2015.0124  
† Abrams SA, et al. "Greater Mortality and Morbidity in Extremely Premature Infants Fed a Diet Containing Cow Milk Protein Products." *Breastfeeding Medicine* July/August 2014; 9(6): 281-285  
‡ Hall SK, et al. "Mortality and management of surgical necrotizing enterocolitis in very low birth weight neonates: a prospective cohort study." *J Am Coll Surg*. 2014 Jun;218(6):1148-55.  
§ Assad M, Elliott MJ and Abraham JK. "Decreased cost and improved feeding tolerance in VLBW infants fed an exclusive human milk diet." *Journal of Perinatology* advance online publication 12 November 2015; DOI: 10.1098/jp.2015.168

NATIONAL PERINATAL ASSOCIATION

Update: **CORONAVIRUS**  
COVID-19



According to data published in The Lancet

Pregnancy and the risk of  
**VERTICAL TRANSMISSION**

**LOW**



[www.nationalperinatal.org](http://www.nationalperinatal.org)

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## DID YOU KNOW?

Postpartum depression affects

# 10%

of fathers

Join  **NPA**

[www.nationalperinatal.org/mental\\_health](http://www.nationalperinatal.org/mental_health)

**Time is precious, just like your patients.**

 **PedNOTES**

# SAVE YOUR LIFE:

## Get Care for These POST-BIRTH Warning Signs

Most women who give birth recover without problems. But any woman can have complications after the birth of a baby. Learning to recognize these POST-BIRTH warning signs and knowing what to do can save your life.



<p><b>Call 911</b> if you have:</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Pain in chest</b></li> <li><input type="checkbox"/> <b>Obstructed breathing or shortness of breath</b></li> <li><input type="checkbox"/> <b>Seizures</b></li> <li><input type="checkbox"/> <b>Thoughts of hurting yourself or your baby</b></li> </ul>
<p><b>Call your healthcare provider</b> if you have:</p> <p>(If you can't reach your healthcare provider, call 911 or go to an emergency room)</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Bleeding, soaking through one pad/hour, or blood clots, the size of an egg or bigger</b></li> <li><input type="checkbox"/> <b>Incision that is not healing</b></li> <li><input type="checkbox"/> <b>Red or swollen leg, that is painful or warm to touch</b></li> <li><input type="checkbox"/> <b>Temperature of 100.4°F or higher</b></li> <li><input type="checkbox"/> <b>Headache that does not get better, even after taking medicine, or bad headache with vision changes</b></li> </ul>



**Tell 911 or your healthcare provider:**

"I had a baby on \_\_\_\_\_ and  
(Date)  
 I am having \_\_\_\_\_."  
(Specific warning signs)

**These post-birth warning signs can become life-threatening if you don't receive medical care right away because:**

- Pain in chest, obstructed breathing or shortness of breath (trouble catching your breath) may mean you have a blood clot in your lung or a heart problem
- Seizures may mean you have a condition called eclampsia
- Thoughts or feelings of wanting to hurt yourself or your baby may mean you have postpartum depression
- Bleeding (heavy), soaking more than one pad in an hour or passing an egg-sized clot or bigger may mean you have an obstetric hemorrhage
- Incision that is not healing, increased redness or any pus from episiotomy or C-section site may mean you have an infection
- Redness, swelling, warmth, or pain in the calf area of your leg may mean you have a blood clot
- Temperature of 100.4°F or higher, bad smelling vaginal blood or discharge may mean you have an infection
- Headache (very painful), vision changes, or pain in the upper right area of your belly may mean you have high blood pressure or post birth preeclampsia

**GET HELP** My Healthcare Provider/Clinic: \_\_\_\_\_ Phone Number: \_\_\_\_\_  
 Hospital Closest To Me: \_\_\_\_\_



This program is supported by funding from Merck, through Merck for Mothers, the company's 10-year, \$500 million initiative to help create a world where no woman dies giving life. Merck for Mothers is known as MSD for Mothers outside the United States and Canada.

16003  
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## Why Pregnant and Nursing Women Need Clear Guidance on THE NET BENEFITS OF EATING FISH

**2 to 3** servings per week of properly cooked fish can provide health benefits for pregnant women and babies alike:



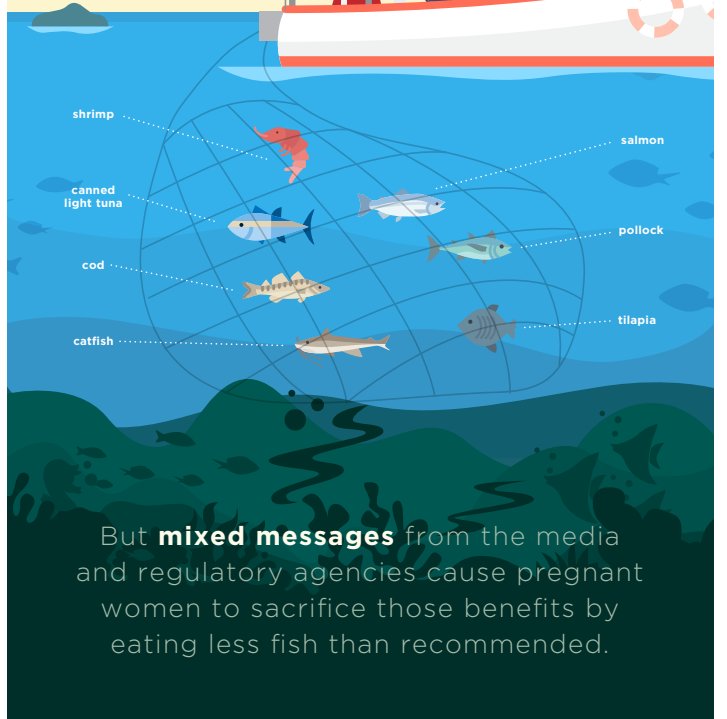
Iron



Omega 3 fatty acids



Earlier Milestones for Babies



But **mixed messages** from the media and regulatory agencies cause pregnant women to sacrifice those benefits by eating less fish than recommended.



Did you know that  
**PMAD**  
related suicides  
account for

**20%**

of Postpartum  
Maternal Deaths?

Join  **NPA**

[nationalperinatal.org/mental\\_health](http://nationalperinatal.org/mental_health)

**Support the  
Open Letter**



**Breastfeeding  
Innovations  
Team**



**GET THE FACTS**  
ON FISH CONSUMPTION  
FOR PREGNANT  
WOMEN, INFANTS,  
AND NURSING MOMS.

**NCfIH** National Coalition  
for Infant Health

Protecting Access for Premature Infants through Age Two

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# Letters to the Editor

## Failing Jet Ventilator in A Small Premature Infant

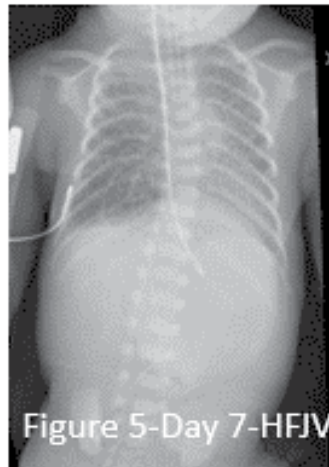
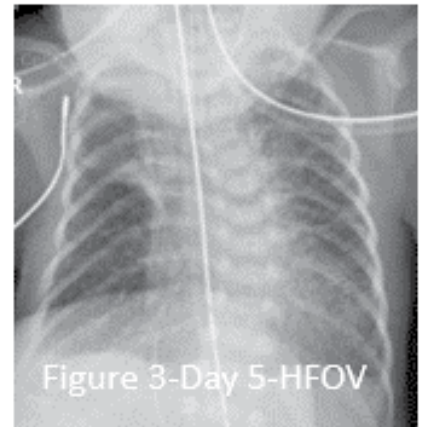
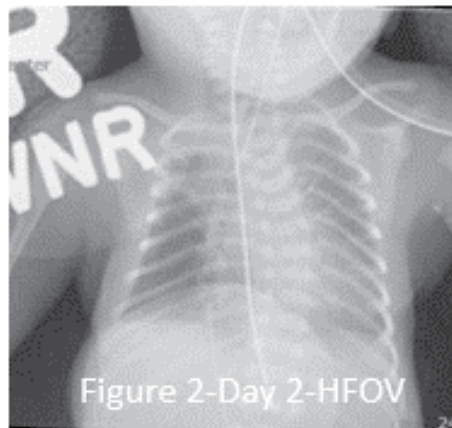
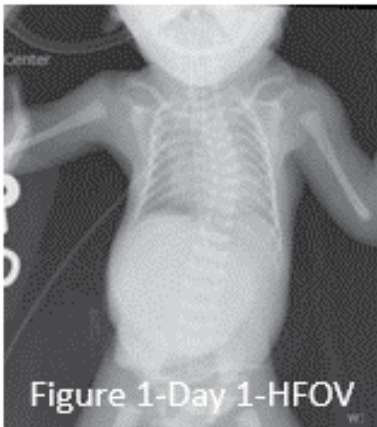
A male infant was born at 26 5/7 weeks gestation to a 29-year-old G2P0010. The dates were confirmed with an 8wk ultrasound. Pregnancy was complicated by class B diabetes. The fetal US showed omphalocele and 2 vessel cord. Amniocentesis was negative for FISH and Microarray tests. Due to short cervix, a cerclage was placed. She was started on antibiotics, steroids, and magnesium. While under observation, the fetal heel was found to be protruding from the cervix, so an urgent C-section was performed.

At delivery, the infant was immediately intubated, omphalocele was covered with sterile gauze, and the infant was then transported to the NICU, where she was placed on HFOV. Physical exam

showed a weight of 995 grams, head circumference of 24 cm, and length of 34.5 cm. The infant was vibrating well on HFOV. A large omphalocele was noted. There was no heart murmur. Back showed thoracic scoliosis. No other congenital anomalies were noted. Pediatric surgery, due to the large mass and prematurity, decided to manage conservatively.

The infant was placed on HFOV with settings of MAP 12, amplitude of 30, 15 Hz and IT 33%. He received surfactant twice. On day 4, he was noted to have an increased oxygen requirement. A trial of rescue inhaled nitric oxide was started with minimal benefits. Chest x-ray (CXR) showed persistent right upper lobe atelectasis (Figure 3). On day 7, a decision was made to try HFJV.

A CXR soon after starting Jet showed expansion up to 11 ribs with a resolution of RUL atelectasis (Figure 5). Initial settings were JET: PIP = 18, rate 420, IT 0.02 secs, I:E 1:6.1, CMV: rate 3,



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PEEP 7, PC 10, IT 0.35. Blood gas 20 minutes after placing on these settings was 7.28/PCO<sub>2</sub> 63/PaO<sub>2</sub> 91.

Follow up blood gases showed respiratory acidosis with CO<sub>2</sub> retention. CXR showed RUL atelectasis again (Figure 6). ETT was adjusted with no benefits. A trial of higher exhalation time on Jet (rate 360, I:E 1:7.3) was unsuccessful. Servo pressure remained stable at 2. The infant remained on 100% Oxygen with sats of 94-95%. The infant was then switched back to previous HFOV with the resolution of respiratory acidosis. The infant is currently stable on HFOV.

The questions for experts are (where we went wrong with HFJV):

With expansion up to 11 ribs (Figure 5), should we have tried higher PIP or PEEP? If yes, what is the risk?

Would a higher rate on JET have made a difference?

Should we have tried CPAP on CMV (0 rates)?  
Any other suggestions?

Sincerely,  
Shabih Manzar, MD  
Associate Professor  
Department of Pediatrics, College of Medicine  
Louisiana State University of Health Sciences  
1501 Kings Highway  
Shreveport, LA 71130  
Telephone: 318-626- 1623  
Fax: 318-698-4305  
Email: smanza@lsuhsc.edu

Dear Dr. Manzar:

Thank you for sending this interesting case for analysis. The transition from one mode of ventilation to another mode is challenging. Although it appears that the presence of non-uniform lung disease and hyperexpansion on the chest radiograph would favor the transition from HFOV to HFJV, the patient did not have a favorable result and was transitioned back to HFOV.

First, let us discuss the HFOV strategy using HFJV physiology arguments. With a mean airway pressure of 12 cm H<sub>2</sub>O and amplitude 30 cm H<sub>2</sub>O, the patient is at risk for airway collapse or "pinch" during exhalation. Remember, during HFOV, exhalation is active, not passive. Amplitude of 30 exceeds the mean airway pressure of 12 H<sub>2</sub>O by 18 cm H<sub>2</sub>O. Although the point at which the process becomes a concern is a matter of debate, at greater than twice the mean airway pressure, both airway pressure and flow can become negative at the wye. Increased airway resistance prevents alveolar collapse, but the premature compliant airways are prone

to collapse. This may subsequently lead to alveolar collapse, as noted in the right upper lobe, the most "dependent" lobe, as well as generalized hyperinflation, as the inspiratory flow is trapped by the "pinched" airway. Instead of going to HFJV, an alternative strategy on HFOV might have included "paradoxically" increasing the mean airway pressure to insufflate the airway and prevent negative flow and pressure at the wye, decreasing the amplitude, and proning the patient.

When transitioning to HFJV, one has to remember that the HFJV amplitude is approximately half that of HFOV at similar delta P because the HFOV deflection is both negative and positive. If 7 H<sub>2</sub>O is subtracted from 18 H<sub>2</sub>O, the HFJV amplitude is 11 cm H<sub>2</sub>O; with the correction applied – that is, 30 x 2 = 60 peak amplitude negative to positive for HFOV, the relative amplitude supplied by HFJV is approximately one-sixth of HFOV. Although the elimination of active exhalation resolved the right upper lobe atelectasis, there was just not enough delta P to achieve appropriate ventilation. A jet PIP of 40 would have been more appropriate. More time, as opposed to lower or higher mean airway pressure, would have helped the hyperexpansion. CMV is often a surrogate for mean airway pressure in HFJV. A CMV of 0 would not have helped this situation, but in the long term would have exposed the patient to less barotrauma. The jet rate change may not have produced a significant effect in this patient.

Although HFJV can be challenging, a successful application of its strategies can lead to substantive improvements in ventilation. Conversely, HFOV physiology favors higher mean airway pressures, lower amplitudes, and in some cases pronating the patient when atelectasis and hyperinflation are present.

Sincerely,



Mitchell Goldstein, MD  
Editor in Chief

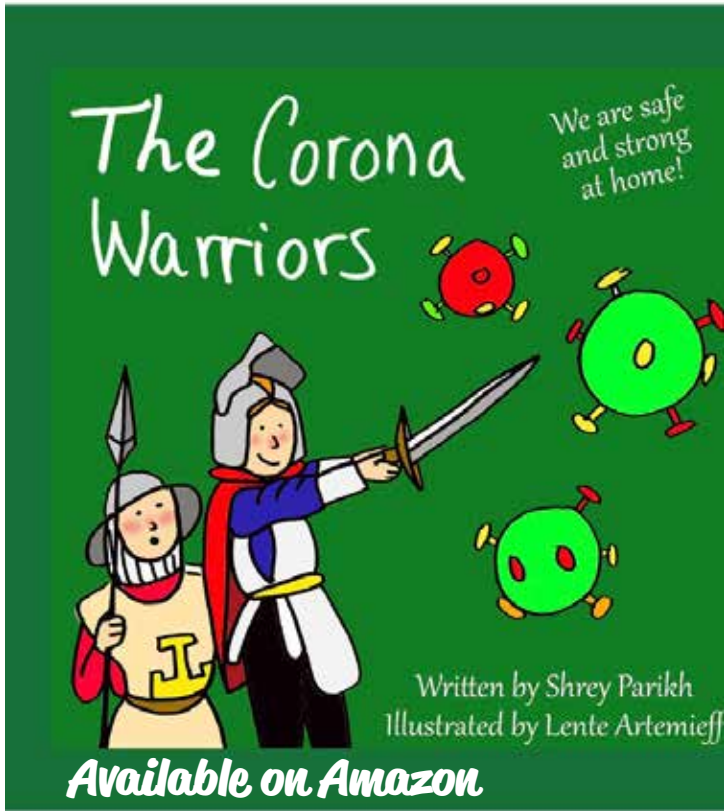
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Tel: +1 (302) 313-9984  
[LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com)

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**Erratum (Neonatology Today May, 2020)**

Neonatology Today has identified no erratum affecting the May, 2020 edition.

Corrections can be sent directly to [LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com). The most recent edition of Neonatology Today including any previously identified erratum may be downloaded from [www.neonatologytoday.net](http://www.neonatologytoday.net).

NT

## Which Infants are More Vulnerable to Respiratory Syncytial Virus?

RSV is a respiratory virus with cold-like symptoms that causes 90,000 hospitalizations and 4,500 deaths per year in children 5 and younger. It's 10 times more deadly than the flu. For premature babies with fragile immune systems and underdeveloped lungs, RSV proves especially dangerous.

But risk factors associated with RSV don't touch all infants equally.\*

\*Source: Respirator Syncytial Virus and African Americans

Caucasian Babies	Risk Factor	African American Babies
11.6%	Prematurity	18.3%
58.1%	Breastfeeding	50.2%
7.3%	Low Birth Weight	11.8%
60.1%	Siblings	71.6%
1%	Crowded Living Conditions	3%



AFRICAN AMERICAN BABIES bear the brunt of RSV. Yet the American Academy of Pediatrics' restrictive new guidelines limit their access to RSV preventative treatment, increasing these babies' risk.

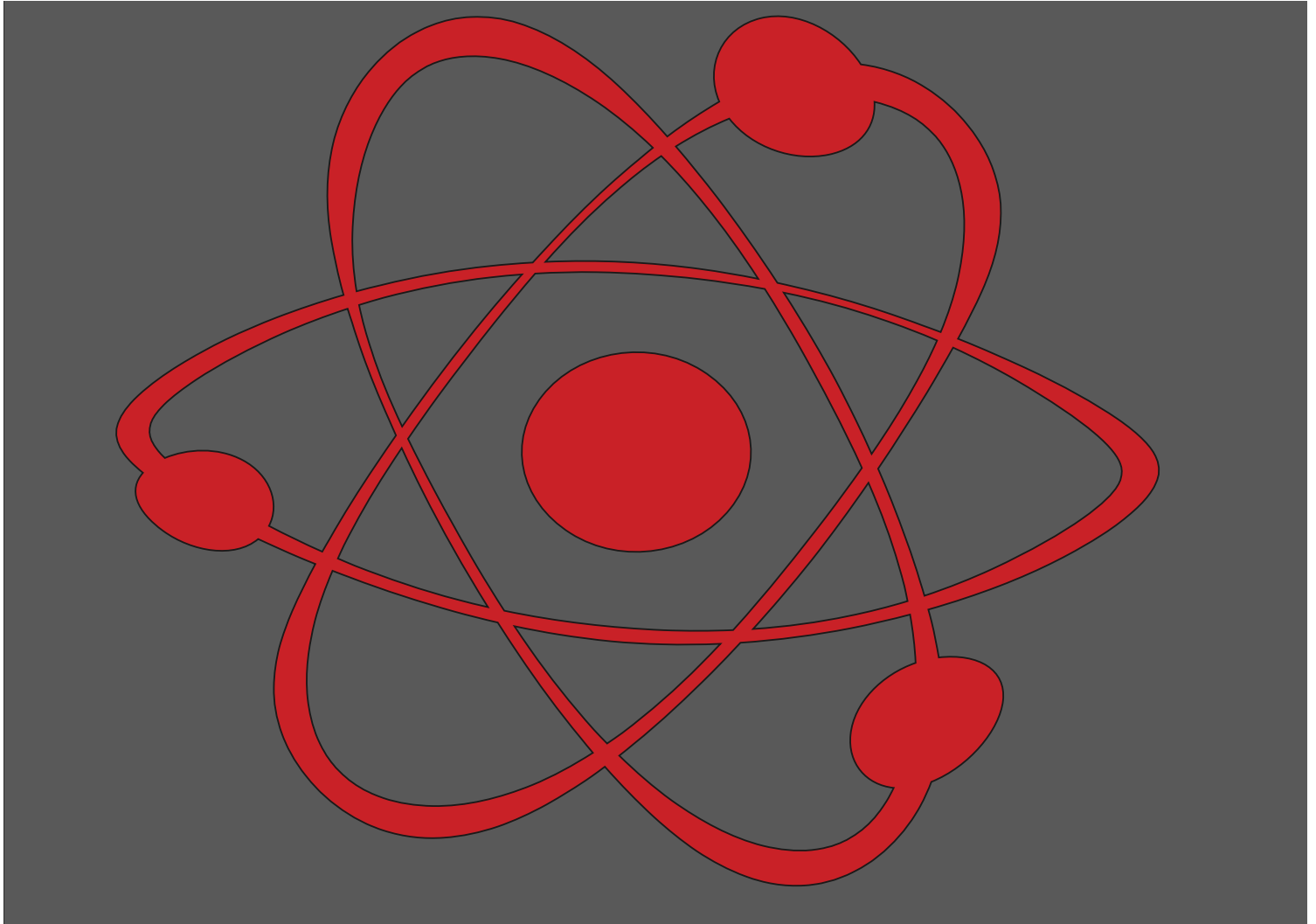


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Will your **PRETERM INFANT** need **EARLY INTERVENTION** services?

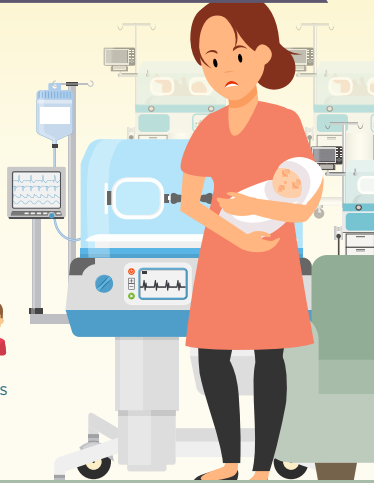
Preterm infants are:

**2x** more likely to have developmental delays

**5x** more likely to have learning challenges



**1 in 3** preterm infants will require support services at school



Early intervention can help preterm infants:



Enhance language and communication skills



Build more effective learning techniques



Process social and emotional situations



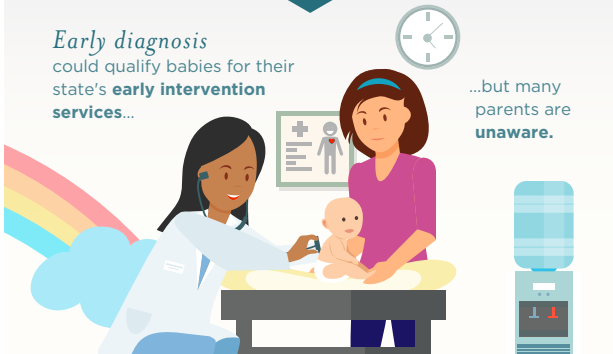
Address physical challenges



Prevent mild difficulties from developing into major problems

Early diagnosis could qualify babies for their state's **early intervention services**...

...but many parents are **unaware**.



**NICU staff, nurses, pediatricians and social workers should talk** with NICU families about the challenges their baby may face.

Awareness, referral & timely enrollment in early intervention programs can help **infants thrive** and grow.



**NCFIH** National Coalition for Infant Health  
Protecting Access for Premature Infants through Age Two  
[www.infanthealth.org](http://www.infanthealth.org)

Visit [CDC.gov](http://CDC.gov) to find contact information for your state's early intervention program.

Las nuevas mamás necesitan acceso a la detección y tratamiento para **LA DEPRESIÓN POSPARTO**



**1 DE CADA 7** MADRES AFRONTA LA DEPRESIÓN POSPARTO, experimentando



Sin embargo, sólo el **15%** recibe tratamiento!

LA DEPRESIÓN POSTPARTO **NO TRATADA PUEDE AFECTAR:**

El sueño, la alimentación y el comportamiento del bebé a medida que crece?



La salud de la madre

La capacidad para cuidar de un bebé y sus hermanos

PARA AYUDAR A LAS MADRES A ENFRENTAR LA DEPRESIÓN POSPARTO



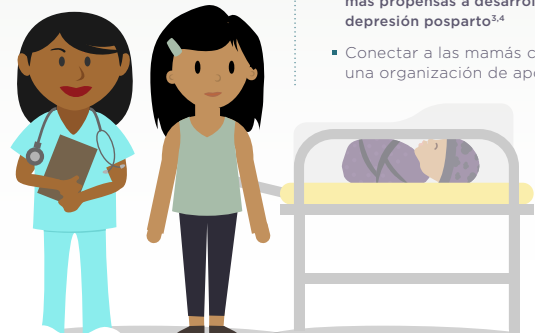
**LOS ENCARGADOS DE FORMULAR POLÍTICAS PUEDEN:**

- Financiar los esfuerzos de despistaje y diagnóstico
- Proteger el acceso al tratamiento



**LOS HOSPITALES PUEDEN:**

- Capacitar a los profesionales de la salud para proporcionar apoyo psicosocial a las familias... **Especialmente aquellas con bebés prematuros, que son 40% más propensas a desarrollar depresión posparto**<sup>3,4</sup>
- Conectar a las mamás con una organización de apoyo



**NCFIH** National Coalition for Infant Health  
Protecting Access for Premature Infants through Age Two  
[www.infanthealth.org](http://www.infanthealth.org)

<sup>1</sup> American Psychological Association. Accessed on: <http://www.apa.org/women/resources/reports/postpartum-depression.aspx>

<sup>2</sup> National Institute of Mental Health. Accessed on: <http://www.nimh.nih.gov/health/publications/postpartum-depression-facts/index.shtml>

<sup>3</sup> Journal of Perinatology (2015) 35, 529–536. doi:10.1097/JP.0000000000000147

<sup>4</sup> Prevalence and risk factors for postpartum depression among women with problem and low-birth-weight infants: a systematic review. Vigod SN, Villiger L, Dennis CL, Ross LE BJOG. 2010 Apr; 117(5):540-50.

## Upcoming Medical Meetings

**19<sup>th</sup> Annual World Congress on Neonatology**  
July 20 - 21, 2020

Location: Vancouver, British Columbia  
<https://neonatal.conferenceseries.com/>

**Innovations in Neonatal Care**  
August 10 - 12, 2020  
Mednax  
Austin, Texas

<http://www.innovationsconference.com/>

**9<sup>th</sup> ICCN International Conference on Clinical Neonatology**  
September 3 - 4, 2020  
Turin, Italy  
<https://www.mcscientificevents.eu/iccn/>

**8<sup>th</sup> Annual Fall Conference on Current Concepts in Neonatal Care**  
September 23 - 26, 2020  
Napa, California  
<https://www.emedevents.com/c/medical-conferences-2020/8th-annual-fall-conference-on-current-concepts-in-neonatal-care>

**PDA Symposium 2020**  
October 9 - 10, 2020  
Location: Las Vegas, NV  
<https://pdasymposium.org/>

**AAP National Conference & Exhibition**  
October 18 - 20, 2020  
American Academy of Pediatrics  
San Diego, California  
<https://aapexperience.org/>

**4<sup>th</sup> Annual NeoHeart**  
October 28 - 30, 2020  
New York, New York  
<https://neoheartsociety.org/conference2020/>

**International Conference on Neonatology and Perinatology**  
November 5 - 6, 2020  
Cape Town, South Africa  
<https://waset.org/neonatology-and-perinatology-conference-in-november-2020-in-cape-town>

**Miami Neonatology 2020: 44<sup>th</sup> International Conference**  
November 15 - 18, 2020  
University of Miami Miller School of Medicine  
Miami Beach, Florida  
<http://pediatrics.med.miami.edu/neonatology/international-neonatal-conference/>

**Perinatal Care and the 4<sup>th</sup> Trimester: Redefining Care**  
National Perinatal Association  
Aurora, Colorado  
<http://www.nationalperinatal.org/2020conference>

**Hot Topics in Neonatology**  
December 6 - 9, 2020  
Organization: Nemours  
National Harbor, Maryland  
<http://www.hottopicinneonatology.org/>

*For up to date Meeting Information, visit [NeonatologyToday.net](http://www.NeonatologyToday.net) and click on the events tab.*

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Mitchell Goldstein, MD  
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## Academic Neonatologist Opportunity in Southern California

Loma Linda University Faculty Medical Group, Department of Pediatrics, Division of Neonatology, is seeking board certified or board eligible Neonatologists to join their team.

The Neonatal Intensive Care Unit (NICU) at Loma Linda University Children's Hospital is committed to providing the highest quality of family-centered medical care with our skilled, multi-disciplinary neonatal team. Our unit has 84 licensed beds for the most critically ill babies. As one of the few level 4 tertiary centers in Southern California, we are equipped to provide the highest level of care for newborns with the most complex disorders. Our facility has the largest Level IV NICU in California, serving approximately 25 percent of the state.

We have subspecialists in all medical and surgical areas that are available at all times and are supported by hospital staff with technical, laboratory, and service expertise. Pediatric neurologists work together with us in our NeuroNICU to diagnose, treat and monitor babies with neurologic injury or illness and we focus on providing neuroprotective, developmentally appropriate care for all babies in the NICU. Very specialized care is given in our Small Baby Unit to babies born at less than 30 weeks gestation. Babies at risk for developmental delay are followed up to 3 years in our High-Risk Infant Follow-up Clinic. Genetics specialists are available for evaluation and consultation.

Our Children's Hospital is designated as a Baby Friendly Hospital that supports breastmilk feeding for both term and preterm babies. Neonatal Social Workers and Child Life Specialists are important members of our team. It is our goal to support babies and families in culturally sensitive ways as our patients come from many different ethnic and religious backgrounds.

Loma Linda is located in the center of Southern California. A sunny climate augments the cultural benefits of Los Angeles and Palm Springs and the year-round recreational opportunities of nearby mountains, deserts and beaches.

This opportunity is not eligible for a J1 Waiver.



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For more information please contact:

Elba Fayard, MD  
Division Chief of Pediatric Neonatology  
efayard@llu.edu

Kelly Swensen  
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The Neonatal Intensive Care Unit (NICU) at Loma Linda University Children's Hospital is committed to providing high-quality, family-centered care with our highly skilled, multi-disciplinary neonatal team. Our unit has 84 licensed beds for the most critically ill infants and a new Tiny Baby Program focusing on improving survival and outcomes of extremely low birth weight infants (<1000g at birth). As one of the only level 3 tertiary centers in Southern California, we are equipped to provide the highest level of care for the most complex disorders. We have subspecialists in all medical and surgical areas that are available at all times and are supported by hospital staff with technical, laboratory, and service expertise.

At Loma Linda University Health, we combine the healing power of faith with the practices of modern medicine. We consist of a University, a Medical Center with four hospitals, and a Physicians Group. These resources have helped us become one of the best health systems in the nation.

## Contact Us

Please visit our website <http://careers.llu.edu> or contact Jeannine Sharkey, Director of Advanced Practice Services at [jsharkey@llu.edu](mailto:jsharkey@llu.edu) or (909) 558-4486.

If you are an individual who understands and embraces the mission and purpose of Loma Linda University and its entities as premier Seventh-day Adventist Christian institutions, please visit our website or call 1-800-722-2770. EOE/AA/M/F/D/V



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[MGoldstein@llu.edu](mailto:MGoldstein@llu.edu)  
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Loma Linda University School of Medicine  
Division of Neonatology, Department of Pediatrics  
Loma Linda University Children's Hospital



T. Allen Merritt, MD - Senior Associate Editor for  
Contributions & Reviews  
[AllenMerritt.md@gmail.com](mailto:AllenMerritt.md@gmail.com)  
Professor of Pediatrics  
Loma Linda University School of Medicine  
Division of Neonatology, Department of Pediatrics  
Loma Linda University Children's Hospital



Larry Tinsley, MD - Senior Managing Editor  
[LTinsley@llu.edu](mailto:LTinsley@llu.edu)  
Associate Professor of Pediatrics  
Division of Neonatology-Perinatal Medicine  
Loma Linda University Children's Hospital



Elba Fayard, MD - Interim Fellowship Editor  
[Efayard@llu.edu](mailto:Efayard@llu.edu)  
Professor of Pediatrics  
Division Chair  
Division of Neonatology-Perinatal Medicine  
Loma Linda University Children's Hospital



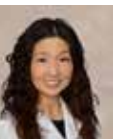
Munaf Kadri, MD - International Editor  
[MKadri@llu.edu](mailto:MKadri@llu.edu)  
Executive Board  
UMMA Clinic  
Los Angeles, CA  
Assistant Professor Loma Linda  
Loma Linda University Children's Hospital



Michael Narvey, MD - Canada Editor  
[MNarvey@exchange.hsc.mb.ca](mailto:MNarvey@exchange.hsc.mb.ca)  
Section Head of Neonatology  
Children's Hospital Research Institute of Manitoba



Joseph R. Hageman, MD - Clinical Pearls Editor  
[jhageman@peds.bsd.uchicago.edu](mailto:jhageman@peds.bsd.uchicago.edu)  
Senior Clinician Educator  
Pritzker School of Medicine  
University of Chicago



Clara Song, MD - Social Media Editor  
[clara-song@ouhsc.edu](mailto:clara-song@ouhsc.edu)  
Assistant Professor of Pediatrics, Children's Hospital at  
OU Medical Center  
University of Oklahoma Health Sciences Center



Thomas A Clarke, MD - Western Europe Editor  
[tclarke347@gmail.com](mailto:tclarke347@gmail.com)  
Emeritus Consultant in Neonatology  
The Rotunda Hospital,  
Dublin, Ireland



Jan Mazela, MD - Central Europe Editor  
[janco@pol-med.com.pl](mailto:janco@pol-med.com.pl)  
Associate Professor  
Poznan University of Medical Sciences  
Poznan, Greater Poland District, Poland



Stefan Johansson, MD PhD - Scandinavian Editor  
[stefan.johansson@99nicu.org](mailto:stefan.johansson@99nicu.org)  
Consultant Neonatologist, Sachs' Childrens Hospital  
Associate Professor, Karolinska Institutet  
Stockholm, Sweden



Francesco Cardona, MD - European Editor at Large  
[francesco@99nicu.org](mailto:francesco@99nicu.org)  
Consultant, Medical University of Vienna  
Department of Paediatrics and Adolescent Medicine  
Vienna, Austria



Arun Pramanick, MD - India Editor  
[aprama@lsuhsc.edu](mailto:aprama@lsuhsc.edu)  
Professor, Pediatrics,  
Louisiana State University School of Medicine,  
Shreveport, LA



Andrea Schwartz Goodman, MSW, MPH  
Senior Editorial Project Director  
[Andrea.SchwartzGoodman@NeonatologyToday.net](mailto:Andrea.SchwartzGoodman@NeonatologyToday.net)  
Washington, D.C.



Herbert Vasquez, MD - Arts Editor  
[VasquezH1@gmail.com](mailto:VasquezH1@gmail.com)  
Associate Neonatologist  
Citrus Valley Medical Center, Queen of the Valley  
Campus, West Covina, CA



Giang Truong, MD - QI/QA Editor  
[GTruong@llu.edu](mailto:GTruong@llu.edu)  
Associate Professor of Pediatrics  
Division of Neonatology-Perinatal Medicine  
Loma Linda University Children's Hospital



Jerassimos Ballas, MD, MPH - Perinatology Editor  
[jballas@ucsd.edu](mailto:jballas@ucsd.edu)  
Associate Professor of Obstetrics and Gynecology  
University of California, San Diego



Maha Amr, MD - Academic Affairs Editor  
[maha.amr@neonatologytoday.net](mailto:maha.amr@neonatologytoday.net)  
 Assistant Professor of Pediatrics  
 Division of Neonatology-Perinatal Medicine  
 Loma Linda University Children's Hospital

Dilip R. Bhatt, MD - Kaiser Fontana, Fontana, CA  
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## Neonatology and the Arts

This section focuses on artistic work which is by those with an interest in Neonatology and Perinatology. The topics may be varied, but preference will be given to those works that focus on topics that are related to the fields of Neonatology, Pediatrics, and Perinatology. Contributions may include drawings, paintings, sketches, and other digital renderings. Photographs and video shorts may also be submitted. In order for the work to be considered, you must have the consent of any person whose photograph appears in the submission.

Works that have been published in another format are eligible for consideration as long as the contributor either owns the copyright or has secured copyright release prior to submission.

Logos and trademarks will usually not qualify for publication.

This month we announce an expanded presence of the arts within Neonatology Today. We will feature artistic works created by our readers on one page as well as photographs of birds on another. This month's original artwork is from Paula Whiteman, MD who has graced Neonatology Today with an amazing rendition of the Floxglove plant in bloom. Our bird of the month is provided by Douglas Deming, MD,



Herbert Vasquez, MD, Associate Neonatologist, Queen of the Valley Campus Emanate Health, West Covina, CA

[VasquezH1@gmail.com](mailto:VasquezH1@gmail.com)

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2. All material should be emailed to: [LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com) in a Microsoft Word, Open Office, or XML format for the textual material and separate files (tif, eps, jpg, gif, ai, psd, or pdf) for each figure. Preferred formats are ai, psd, or pdf. tif and jpg images should have sufficient resolution so as not to have visible pixilation for the intended dimension. In general, if acceptable for publication, submissions will be published within 3 months.

3. There is no charge for submission, publication (regardless of number of graphics and charts), use of color, or length. Published content will be freely available after publication (i.e., open access). There is no charge for your manuscript to be published under open access

4. The title page should contain a brief title and full names of all authors, their professional degrees, their institutional affiliations, and any conflict of interest relevant to the manuscript. The principal author should be identified as the first author. Contact information for the principal author including phone number, fax number, e-mail address, and mailing address should be included.

5. A brief biographical sketch (very short paragraph) of the principal author including current position and academic titles as well as fellowship status in professional societies should be included. A picture of the principal (corresponding) author and supporting authors should be submitted if available.

6. An abstract may be submitted.

7. The main text of the article should be written in formal style using correct English. The length may be up to 10,000 words. Abbreviations which are commonplace in neonatology or in the lay literature may be used.

8. References should be included in standard "NLM" format (APA 7<sup>th</sup> may also be used). Bibliography Software should be used to facilitate formatting and to ensure that the correct formatting and abbreviations are used for references.

9. Figures should be submitted separately as individual separate electronic files. Numbered figure captions should be included in the main file after the references. Captions should be brief.

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