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# Does Maternal COVID-19 Infection Offer Protection to her Newborn? Will Maternal Immunization for COVID-19 Do the Same? Unresolved Questions, Awaiting Answers

*T. Allen Merritt, M.D. MHA, Mitchell Goldstein, M.D., Mikko Hallman, M.D., Ph.D., Jan Mazela, M.D.*

In the October 2020 Neonatology Today commentary, data were high-lighted from the American Academy of Pediatrics Perinatal COVID-19 Registry of more than 3000 deliveries that found about 2% of infants born to women with SARS-CoV-2 positive tests also tested positive within four days of birth, reflecting very infrequent vertical transmission (1). Thus the vast majority of newborns who are symptomatic shortly after birth are unlikely to have had a vertical transmission of the virus (2,3). Maternal-Fetal Medicine physicians and Neonatologists are now in an era when the vaccination of pregnant women and others with SARS-CoV 2 vaccines occurs under emergency use authorized vaccine deployment for the high-risk groups. With guidance from the US Centers for Disease Control, the Prevention Advisory Committee on Immunization Practices, and the American College of Obstetricians and Gynecology, pregnant women are encouraged to receive vaccination using one of the authorized vaccines (4-8). Detection of maternal infection and neonatal infection or immunity from transplacental acquired maternal antibody after maternal COVID-19 infection is essential for evaluating infant protection or attribution to SARS-CoV-2 infection.

***“Detection of maternal infection and neonatal infection or immunity from transplacental acquired maternal antibody after maternal COVID-19 infection is essential for evaluating infant protection or attribution to SARS-CoV-2 infection.”***

Flannery et al. report that among 1714 pregnant women who delivered newborns in the early stages of the COVID-19 pandemic (April to August 2020 (9) using maternal and cord blood sera from 1471 eligible mother-infant dyads. They measured IgG and IgM antibodies to the receptor-binding domain of the SARS-CoV-2 spike protein using enzyme-linked immunosorbent assays to assess maternal antibody concentrations and transplacental transfer to infant cord blood. These data were analyzed to assess the potential for determining "levels of protection" for infants during the newborn period. Eighty-three women (8%) of the study population had detectable IgG and/or IgM antibodies at delivery, with 87% of infants born to seropositive mothers having detectable IgG at birth. IgG transplacental transfer rates were >1.0. There was a positive correlation between maternal and infant antibody titers. However, infants born to mothers with very low IgG levels had undetectable IgG levels at birth. They noted that transplacental transfer was efficient regardless of maternal severity symptoms or illness from COVID-19. Most seropositive women (60%) were asymptomatic. Mothers with moderate or severe COVID-19 infec-

tions may have had a higher RBD receptor-binding domain. This domain is the part of the antibody to the spike protein that directly binds to the receptor in concentrations potentially high enough to transfer protection to the newborn. This latter group of mothers and infants should further be evaluated as no definitive answer can be gleaned from this report.

The timing of the transfer of antibodies was also evaluated by Flannery et al., who determined that placental transfer ratios increased when the time between maternal infection and delivery was longer. This finding is similar to the report by Madhi and co-workers (10) on Respiratory Syncytial Virus vaccination during the last trimester of pregnancy (maternal RSV F protein nanoparticle vaccination) who found higher antibody transfer when >30 days elapsed between maternal immunization and significantly lower respiratory tract infections or infants with severe hypoxemia in the first 90 days after birth.

***“The timing of the transfer of antibodies was also evaluated by Flannery et al., who determined that placental transfer ratios increased when the time between maternal infection and delivery was longer.”***

Flannery and coworkers report that the transfer ratio of SARS-CoV-2 antibodies was not affected by premature delivery; however, in their study, a few extremely low birth weight or very low gestational age were included (lowest gestational age 31 weeks). Protection of prematurely born infants may be affected by placental function and a shorter time for placental-fetal transfer of antibody. The transplacental transfer was selective for IgG, and IgM antibodies in the cord blood were not found. Neonatologists are more familiar with both antibodies' patterns to be found when an intrauterine viral infection has occurred or when the virus is isolated from sera or cerebrospinal fluid of newborns. These investigators found that infants whose mothers had only IgM detected, but not IgG, were seronegative at birth, and these infants may have been unprotected despite documentation of maternal infection. Atyeo and colleagues (10) report using systems serology to characterize the Fc profile of influenza, pertussis, and SARS-CoV-2 specific antibodies transferred across the placenta. While influenza and pertussis specific antibodies were actively transferred, SARS-CoV-2 specific antibody transfer was significantly reduced compared to influenza and pertussis antibodies, and cord blood titers and functional activity were lower than in maternal plasma. This effect was noted only when COVID infection during the third trimester. Edlow et al. studied 127 pregnant women, 64 of whom were RT-PCR positive for SARS-CoV-2, and 63 were negative. Women with COVID-19 infections ranged from 36% being asymp-

tomatic, 34% with mild, 11% with moderate, 16% with severe disease, and 3% with critical disease. In viral load analyses among 107 women, there was no detectable viremia in maternal or cord blood and no evidence of vertical transmission. Maternal to the neonatal transfer of SARS-CoV-2 antibodies were significantly lower than the transfer of hemagglutinin A antibodies to influenza. They concluded that transplacental transfer of SARS-CoV-2 antibodies is "inefficient." (11). Although these studies confirm very low vertical transmission, the infants' degree of protection seems to be consistent. The question of how well antibodies capable to "neutralize" the coronavirus rather than total IgG requires further study.

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***“Although these studies confirm very low vertical transmission, the infants' degree of protection seems to be consistent. The question of how well antibodies capable to "neutralize" the coronavirus rather than total IgG requires further study.”***

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Maternal infection shortly before or after delivery where sufficient IgG antibody is not available for transplacental transfer leaves newborns unprotected if exposed to their mother whether she is symptomatic or asymptomatic and to others. Pace and coworkers analyzed breast milk and breast cultures from 37 COVID-19 positive mothers (12) and found SARS-CoV-2 RNA from breast skin swabs but none in breast milk samples. All milk contained SARS-CoV-2 specific IgA and IgG, and levels of IgA correlated with SARS-CoV-2 neutralization. Centeno-Tablante et al. (13) performed a systematic review of transmission of SARS-CoV-2 through breastfeeding and breast milk. They report that 9 of 68 breast milk samples analyzed from women with COVID were positive for SARS-CoV-2 RNA, and of the exposed infants, four were positive, and two were negative for COVID 19. They concluded there is "no evidence" of SARS-CoV-2 transmission through breast milk."

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***“They concluded there is "no evidence" of SARS-CoV-2 transmission through breast milk.”***

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While transplacental transfer ratios may vary, it is reassuring that maternal infection (symptomatic or asymptomatic) results in sufficient antibody production for an efficient transfer to the newborns delivered of mothers with prior infection earlier in pregnancy. Whether or not maternal vaccination to COVID-19 will provide similar protection is unknown. These unanswered questions regarding the timing of maternal immunization, vaccine type, number of doses, the elapsed time between immunization and birth may be critical for neonatal protection since the transplacental transfer of antibodies begins with about 10% of maternal antibody transferred by 17-27 weeks gestation that increases as gestation

progresses (14,15). Whether maternal vaccination starting in the early second trimester of pregnancy might be optimal to achieve the highest levels of maternal IgG antibodies passively transferred to the fetus and thereby the cord blood is unknown. Whether the kinetics and duration of maternally derived antibodies and their neutralizing capacity correlate with other recommended vaccinations (e.g., pertussis and influenza) during pregnancy are similar among women immunized against COVID-19 protects their infants against SARS-CoV-2, and whether the duration of effective antibody concentrations in newborns over the first months of after birth will be protective is unknown. This question will require further studies with each of emergency use authorized vaccines. Different vaccines administered at different times during pregnancy and in different dosing strategies undoubtedly influence their immunogenicity and potential for maternal transplacental IgG transfer to the fetus and newborns. Mutant viruses may or may not be neutralized by current vaccines. As of January 24, 2021, 8,633 women were vaccinated with the Pfizer=BioNTech and 6498 with the Moderna vaccine (16). Dr. Anthony Fauci noted on February 1, 2021, that about 10,000 pregnant women in the U.S. had been vaccinated since the Food and Drug Administration authorized two vaccines, and so far, there have been "no red flags" (17). The CDC Vaccine Safety Team has created a registry of pregnant women receiving the vaccine. Both CDC and the Advisory Committee on Immunization Practices (ACIP) have endorsed immunization against during pregnancy in the U.S. Vaccinations during pregnancy has yet to be recommended during pregnancy in some European countries as of December 2020. (18) Furthermore, the United Kingdom National Health Service advises against vaccination during pregnancy until there are "high risk" conditions on January 29, 2021, and immunization while breastfeeding requires consultation with a physician (19). Finland has taken the position that the decision to immunize should be made on an individual basis after a discussion between the pregnant woman and her obstetrician (20).

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***“Pregnant women were not part of the safety and efficacy trials. Those who were immunized may have received the vaccine before their confirmation of pregnancy. Focused trials on sufficient numbers of pregnant women will be necessary to address these questions. ”***

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Pregnant women were not part of the safety and efficacy trials. Those who were immunized may have received the vaccine before their confirmation of pregnancy. Focused trials on sufficient numbers of pregnant women will be necessary to address these questions. Such trials will be a challenge, but not an insurmountable one. Neonatologists should focus on the measurement of SARS-CoV-2 IgG and neutralizing antibody or RBD IgG levels in cord blood as an indicator for intrauterine infection. Regardless of maternal status, except when mothers are critically ill, encouraging breastfeeding affords additional protection for the infant.

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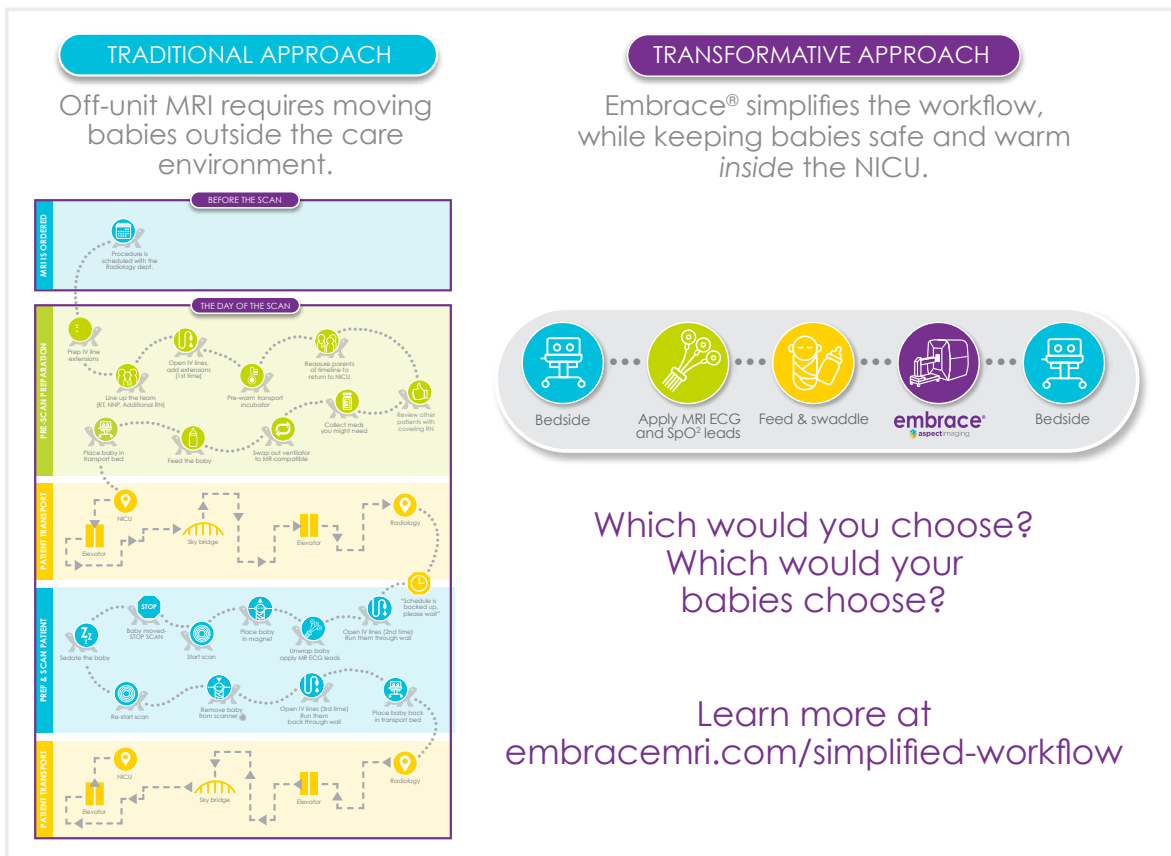
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# The Impact of Maternal Obesity on Maternal and Fetal Health

Japmeet Sandhu, OMS III

The average person today eats more and moves less. The worldwide prevalence of obesity has increased over the past few decades. According to the CDC, in the US alone, 42.4% of adults are obese. Obesity is a significant public health concern that can lead to severe heart disease or diabetes. Obesity not only affects the mother, but as the rates of maternal obesity increase, it affects the fetus as well.

Obesity during pregnancy can have fatal consequences, with more than 50% of mortality cases during pregnancy, childbirth, or puerperium in women who are overweight or obese. Over 50% of women of childbearing age are overweight (BMI 25-29.9) or obese (BMI >30). 15% of women start pregnancy obese, while 20-40% suffer from excessive weight gain during pregnancy. (1). Risks for both the mother and baby increase linearly with BMI. Risks for the mother include gestational diabetes, preeclampsia, postpartum endometritis, laceration episiotomy infection, cesarean delivery, postpartum hemorrhage, and the development of heart disease, diabetes or hypertension later on in life. Risks for the baby include stillbirth, congenital abnormalities, preterm birth, macrosomia, spontaneous abortion, and the development of obesity, diabetes, or heart disease later on in life. (2)

***“PRAMS is the Pregnancy Risk Assessment Monitoring System, and it is an ongoing population-based surveillance system that examines trends in pre-pregnancy obesity by maternal demographics and behavioral characteristics.”***

PRAMS is the Pregnancy Risk Assessment Monitoring System, and it is an ongoing population-based surveillance system that examines trends in pre-pregnancy obesity by maternal demographics and behavioral characteristics. They collect self-reported data from maternal questionnaires on behaviors associated with pregnancy. Patterns reported from a 2003 study show that only 1 in 3 women had weight gain consistent with the Institute of Medicine recommendations and demonstrate trends in racial factors affecting weight gain. For instance, African American women are more likely to be overweight prior to pregnancy and more likely to gain weight above IOM guidelines. White females were more likely to

report target weight gain, while Hispanic women were less likely to report target weight gains. Asian women were more likely to gain less than the recommended weight. (3). Another study brought in socioeconomic factors as well. They found that mothers who attended college were more likely to have normal pre-pregnancy BMI than those who did not. Also, mothers who had less money had a higher percentage of being obese pre-pregnancy. (4).

## Recommendations for Weight Gain in Pregnancy

Body Mass Index	Recommended Weight Gain
18.5–24.9 kg/m <sup>2</sup> (normal weight)	25–35 lb (11.2–15.9 kg)
25–29.9 kg/m <sup>2</sup> (overweight)	15–25 lb (6.8–11.2 kg)
> 30 kg/m <sup>2</sup> (obese)	15 lb (6.8 kg)

*The impact of maternal obesity on maternal and fetal health. (3)*

***“Normal weight and obese women tend to gain the same amount of fat during pregnancy; however, fat in a normal weight woman accumulates in the peripheral body while fat in an obese woman accumulates in the abdominal area, liver, and placenta.”***

Less gestational weight gain (GWG) is recommended as the BMI increases. Studies showed that in obese women, less GWG is associated with an increased risk of preterm birth and having a small for gestational age (SGA) infant; however, less GWG does reduce the risk of macrosomia, hypertensive diseases of pregnancy, and cesarean delivery. (5) Guidelines today state that if obese women gain less weight than the IOM recommends but fetal growth is adequate, they do not need to increase their weight gain. It is all about finding a happy medium regarding GWG. However, if a woman has excessive GWG, then it is associated with an increased risk of obesity for the neonate later on in life. The risk for this is highest in the first trimester of pregnancy. Excessive weight gain in the second or third trimester is more associated with an increased risk of having a large for gestational age infant. (6).

Normal weight and obese women tend to gain the same amount of fat during pregnancy; however, fat in a normal weight woman accumulates in the peripheral body while fat in an obese woman accumulates in the abdominal area, liver, and placenta. Body fat

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distribution in obese women favors lipotoxicity and metabolic dysfunctions that expose the fetus to glucose and fat overload. This excess increases fetal size, fat mass and causes inflammation and metabolic dysfunction. (6). Obese women also have nutritional deficits caused by low-quality diets or dietary behavior. An imbalance of prenatal micronutrients increases the risk of delayed neurodevelopment. One study even showed that maternal pre-pregnancy obesity was associated with lower child IQ than the IQ of children born to normal-weight moms. (7).

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***“Obese women have increased risks of complications at the time of labor and delivery. The rate of successful vaginal delivery decreases as maternal BMI increases.”***

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Obese women have increased risks of complications at the time of labor and delivery. The rate of successful vaginal delivery decreases as maternal BMI increases. The C section delivery rate for women < 200 lbs was 18% compared to 39.6% in women > 200 lbs. (3) Not only are obese women more likely to have a C section, but they are also more likely to have a lower success rate of attempted vaginal birth after cesarean (VBAC). The VBAC success rate in women < 200 lbs was 81.8%, 57.1% in women 200-300 lbs but only 13.3% in women > 300 lbs. (3).

The risk for obesity in offspring starts with obesity at conception. Animal studies showed that offspring born from gametes of obese mothers and fathers that were fertilized in vitro and implanted in non-obese surrogates still had a higher risk of developing obesity and insulin resistance later in life. (6). Thus, not only does obesity affect the mother, but the fetus as well. Evidence suggests that genes and the environment both play a role in developing obesity. The first effects of the environment take place in the womb, where the fetus is entirely dependent on the mother, with the placenta and amniotic fluid being a source of microbial transmission from the mother's microbiome. Interestingly, maternal gut microbiota varies between normal weight and obese pregnant women. Obese women have an increase in Staphylococcus and E. Coli, increasing placental inflammation and insulin resistance in the fetus. (6). Obese women are also in a chronic state of inflammation with changes in the homeostasis of cytokines and adiponectin. Adiponectin allows for the placental transfer of nutrients and placental insulin-stimulated amino acid uptake. Obese women have low levels of adiponectin, which leads to changes in placental function and increased fetal growth. In addition, obese women have high plasma levels of glucose and free fatty acids, increasing the placental transfer of metabolites stored as fetal fat deposits. Maternal obesity also causes a reduction in placental villous proliferation and apoptosis, leading to an increase in stillbirths and a decrease in birth weight and neonatal survival. (1)

Maternal obesity is associated with abnormal fetal growth. Heavy women are less likely to have a pregnancy complicated by SGA or IUGR, but this protective effect disappears once maternal BMI > 30. (3). There is no direct association between obesity and preterm birth. There is a slightly reduced risk of preterm birth in obese

women because they exhibit less uterine activity than normal. However, obese women do have an increased overall preterm delivery rate due to medical complications that rise as BMI rises. (1). While obesity is generally associated with prolonged pregnancy, there is an increase in spontaneous extremely preterm labor (<28 weeks gestation) due to the increased risks of intrauterine bacterial infection, chorioamnionitis, and increased inflammatory markers. (5). On the other side, obese women have an 18-26% increased chance of delivering LGA infants, even if maternal diabetes is under control. (3). Excess fetal growth comes with more severe risks. These infants have a higher chance of unexplained intrauterine fetal death. They have an increased risk of shoulder dystocia or brachial plexus injury and a higher risk for fetal hypoxemia. Infants born to obese mothers usually have lower APGAR scores and an increase in NICU admission with complications such as neonatal trauma or incubator requirement. (3)

One of the most severe consequences of maternal obesity is a stillbirth. There is a consistent increase in the risk of stillbirth among obese women of all gestational ages. However, stillbirth and other complications can be reduced by timing the delivery. The lowest rates of neonatal death and cerebral palsy are associated with delivery at 39 weeks. The lowest rates of intrauterine demise and brachial plexus injury are by delivering even earlier. It is actually suggested that the optimal gestation age of delivery for obese women may be 39 weeks. Inducing labor at 39 weeks decreases the risk of C section in obese women without increasing the risk of adverse outcomes such as operative vaginal delivery, lacerations, and neonatal RDS. For appropriate candidates, labor induction at 38-39 weeks is currently preferred to elective C section. (5).

---

***“If an obese woman does become pregnant, a physician must carefully screen for maternal and fetal complications. They should recognize the increased risk of stillbirths and consider the risks and benefits of labor induction at 38-39 weeks.”***

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Another way to decrease risks is bariatric surgery. If before a planned pregnancy, it can reduce obesity-related complications for both the mother and child. Children born to a mother after bariatric surgery have a less chance of developing obesity than their siblings born prior to the surgery. Women are also less likely to develop GDM, hypertensive diseases of pregnancy, postpartum hemorrhage, and fetal macrosomia. However, the risks of preterm birth and SGA of the newborn are increased; thus, the current recommendations are waiting 12-24 months after surgery before conceiving. (5). Another beneficial action for obese mothers is breastfeeding. Breastfeeding is associated with improved cardiovascular risk, reduced risk of future DM2, and decreased visceral adiposity later in life. However, women with obesity are less likely to breastfeed. They have a delayed onset of milk production, a higher prevalence of insufficient breast glandular tissue, and reduced breastfeeding confidence. (5) It is important to not only pro-

mote breastfeeding but help obese women feel confident and able to breastfeed.

With obesity on the rise, physicians need to discuss pregnancy plans with obese women well in advance of conception to ensure that medical comorbidities and medications are under control and optimized. Physicians should promote weight management to improve maternal and fetal health. If an obese woman does become pregnant, a physician must carefully screen for maternal and fetal complications. They should recognize the increased risk of stillbirths and consider the risks and benefits of labor induction at 38-39 weeks. Even after pregnancy, physicians should encourage obese women to reduce postpartum weight retention. As the incidence of maternal obesity increases, physicians must intervene and help prevent these sometimes fatal consequences.

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# COVID-19

## STOP THE SPREAD AT HOME

What to do when you or a loved one is infected.

### HYGIENE TIPS

- MOUTH**
  - Wear a face mask or face shield.
  - If in car, wear mask & put windows down.
  - NO cloth face masks for children younger than 2yrs.
  - Avoid kissing.
- EYES**
  - Wear protective eye gear (glasses)
- HANDS**
  - ALWAYS wash your hands.
- CLOTHING**
  - Wear a jacket when dealing with infected.
  - DO NOT share clothing, sheets, or pillows.

### SELF ISOLATION

- Sick should be separate from household.
- Room with window preferred.
- Aerate room 3x day.
- Create a room divider with sheet.
- Keep water and sanitation liquids near room.
- Don't cuddle with pets.



Practice social distancing

### KITCHEN

- Use SEPARATE utensils.
- Clean utensils separately.
- If sick avoid the kitchen.



#STOPTHESPREAD

### BATHROOM

- Sanitize EVERYTHING.
- Clean after every use.
- Patient gargle Listerine every morning & night.



### PROTECT

- If infected, notify everyone in contact from the past 10 days.
- Ask Dept. of Health for further assistance.
- Call 211 for FREE delivery services.



If you are feeling sicker, DON'T WAIT. Call your doctor immediately.

## Miora

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# COVID-19

## DETENER LA PROPAGACION EN CASA

Qué hacer cuando usted o un ser querido está infectado.

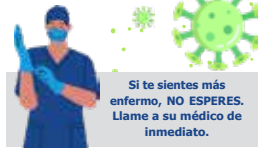
### CONSEJOS DE HIGIENE

- BOCA**
  - Use equipo de protección para los ojos (lentes)
  - Si está en el automóvil, use una máscara y baje las ventanas.
  - NO mascarillas de tela para niños menores de 2 años.
  - Evitar besos
- OJOS**
  - Use equipo de protección para los ojos (lentes)
- MANOS**
  - SIEMPRE lávate las manos
- ROPA**
  - Use una chaqueta cuando se trata de infectados.
  - NO comparta ropa, sábanas o almohadas.



### PROTEGER

- Si está infectado, notifique a todos los contactos de los últimos 10 días.
- Pídale al Departamento de Salud por más ayuda.
- Llame al 211 para obtener servicios de entrega GRATUITOS.



Si te sientes más enfermo, NO ESPERES. Llame a su médico de inmediato.

### ASLAMIENTO

- Los enfermos deben estar separados del hogar.
- Habitación con ventana preferida
- Alinea la habitación 3x al día
- Cre un separador de ambientes con sábanas.
- Mantener agua y líquidos de saneamiento cerca
- Mantenga una bolsa de basura en la habitación.



Practica el distanciamiento social

### COCINA

- Use utensilios SEPARADOS.
- Limpie los utensilios por separado.
- Si está enfermo, evite la cocina.



#STOPTHESPREAD

## Miora

Tráido por Miora en asociación con United2Care



## Ways to Manage Covid 19 @ Home

### Household

- Stay 6 feet apart from others at all times.
- Wear protective covering over mouth and eyes (mask AND shield/goggles/glasses) when near others. (Do not put masks on children under 2 years old)
- Gargle with antiseptic mouthwash in the morning and evening.
- Wash hands 10-12x a day, before each meal for at least 20 seconds.
- Keep good ventilation throughout home. (open windows/doors) where possible
- Do not share towels, blankets, pillows with sick.
- Call 211 for assistance/free delivery of services.
- Wear protective clothing (jacket, gloves, mask) that can be removed after being around infected.

### Sick

- Self-isolate by staying in separate room with separate bathroom where possible. Don't go into shared spaces.
- Create a room divider with sheet, if shared space is unavoidable.
- Ventilate room with fresh air at least 3x per day.
- Keep water and sanitation products in room.
- Keep plastic garbage bag in room.
- Protect pets - don't cuddle.
- Notify contacts in last 10 days.
- Don't wait! Call doctor if symptoms get worse.

Stop the Spread at HOME

Miora



## Maneras de manejar COVID-19 en casa

### Hogar

- Manténgase 6 pies de distancia de los demás en todo momento. Use una cubierta protectora sobre la boca y la máscara para los ojos y el protector / gafas / anteojos cuando esté cerca de otras personas. No ponga máscaras a niños menores de 2 años.
- Hacer gárgaras todas las mañanas y noches con productos de enjuague bucal antiséptico que contienen alcohol.
- Lavé la manos 10-11 veces al día, y antes de cada comida por lo menos 20 segundos.
- Manténgase Buena ventilación en toda la casa. Abra las ventanas y puertas cuando sea posible.
- No compartá toallas, cobijas, y almohadas con personas que estén infectados.
- Llame al 211 para obtener servicios de entrega gratuitos.
- Use ropa protectora, chaqueta, guantes, máscara que se pueda quitar después de estar cerca de infectados.

### Enfermo

- Aíslase permaneciendo en una habitación separada con baño separado. No vayas a espacios compartidos
- Si no se puede aislarse crea un separador de ambiente con una sábana.
- Ventile la habitación con aire fresco por lo menos 3 veces al día.
- Mantenga agua y productos de saneamiento en la habitación.
- Mantenga una bolsa de basura en la habitación.
- Proteja a las mascotas, no las abrace.
- Notifique a todos los contactos de los últimos 10 días.
- No espere! Si se siente peor llame a su médico.

Detén la propagacion en CASA

Miora



## Virtual 37th Annual Conference Advances In Therapeutics And Technology: Critical Care Of Neonates, Children And Adults

March 24, 2021-March 26, 2021 At 8:00am

Registration Link: <https://www.Eventbrite.com/E/Virtual-37th-Annual-Conference-Advances-In-Therapeutics-And-Technology-Cri-Tickets-132360811751>

For More Details And Accommodation Information, Please Go To [www.Paclac.org/Advances-In-Care-Conference/](http://www.Paclac.org/Advances-In-Care-Conference/).

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of Neonatology Grand  
Rounds webinars!**

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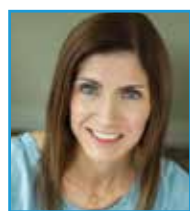
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## **Mark your calendar for the 2021 Neonatology Grand Rounds Series!**

**Monthly webinars are held the first Wednesday of the month at 4:00pm EST.**



### **Congenital Orthopedic Anomalies**

Pamela Sherman, M.D.

**Wednesday, January 6, 2021**

**4:00pm EST**



### **Management of Post-Hemorrhagic Hydrocephalus**

Mohamed El-Dib, M.D., FAAP

**Wednesday, February 3, 2021**

**4:00pm EST**

Webinar topics and speakers subject to change.

**Register at [mednax.com/NEOGR2020](https://mednax.com/NEOGR2020)**

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The conference  
for neonatology

## **NEO: The Conference for Neonatology | February 15-19, 2021**

While you're planning for 2021, don't forget to save the date for NEO: The Conference for Neonatology! We're going virtual this February to bring critical topics that influence the practice of neonatal medicine presented by leading experts in the field.

**Register now!**

## 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)



# SHARED DECISION-MAKING PROTECTS MOTHERS + INFANTS DURING COVID-19

## KEEPING MOTHERS + INFANTS TOGETHER

Means balancing...



## EVIDENCE

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

## PARTNERSHIP SHARED DECISION-MAKING

What is the best for this unique dyad?

- SEEK PARTICIPATION
- HELP EXPLORE OPTIONS
- ASSESS PREFERENCES
- REACH A DECISION
- EVALUATE 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.

Partnering for patient-centered care when it matters most.



National Association of Neonatal Nurses

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



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

# PROTECT YOUR FAMILY FROM RESPIRATORY VIRUSES

flu

coronavirus

pertussis

RSV



## WASH YOUR HANDS

often with soap and warm water.

SOAP

## 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

## NICU-NET

NICU-NET is a private and moderated forum for neonatology professionals. Membership is available to physicians, nurses, and other caregivers in neonatal and perinatal medicine. Conference announcements and other news of interest to members may be posted here. Please do not post messages with identifiable patient information of any kind. Vendor posts and messages of a commercial nature will be deleted.

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# Health Equity Column: Advancing Health Equity Through the Political Determinants of Health and the Health Equity Tracker

Jenné Johns, MPH



In honor of Black History Month, it is my honor to introduce readers of Neonatology Today to my colleague and friend, Daniel Dawes, Director of the Satcher Health Leadership Institute. Daniel is the author, innovator, and founder of the Political Determinants of Health, a health equity framework, and has dedicated his career to the one-day elimination of inequities in healthcare. Through our interview, I

welcome readers to learn about a new, innovative, and powerful health equity data tracker that seeks to close racial and ethnic gaps in COVID-19 testing and vaccination tracking, monitoring, reporting, and in the near future, maternal and neonatal health outcomes. As you learn more about the various equity-focused initiatives led by Daniel and leaders at the Satcher Health Leadership Institute, I encourage you to leverage these resources within your respective institutions and to support the closing of racial and ethnic disparities in perinatal and neonatal health outcomes based on the political determinant of health framework.

***“As you learn more about the various equity-focused initiatives led by Daniel and leaders at the Satcher Health Leadership Institute, I encourage you to leverage these resources within your respective institutions and to support the closing of racial and ethnic disparities in perinatal and neonatal health outcomes based on the political determinant of health framework.”***

## What is your definition of health equity?

Thank you for this opportunity. Equity has been defined broadly to help each individual and each population group realize their optimal health or give them a fair opportunity to reach their full potential. Oftentimes, we see this confusion regarding equality, which is what we have been pushing as a nation for decades. Still, to get to equality, we actually have to achieve equity first. So equity, to me, is giving people what they need when they need it and in the amount that they need to reach their full potential. Whereas, equality is giving everyone the same thing regardless of whether they need it. Therefore, equity is a targeted approach to helping every individual achieve their best health.

In terms of the Political Determinants of Health (PDOH), I can

argue that we haven't been as strategic as we should when it comes to addressing the determinants or drivers of inequities in our society. Many public health researchers have helped us understand, since 1984, that there are multiple intersecting determinants of health. Whether it is environmental or social and behavioral health, I argue that undergirding each of these determinants that we flushed out over time is a political determinant. It is the “causes of the causes” of these inequities. If we really think about it and look at the social determinants, these are structural conditions that we live in, are born into, raised in, work in, and die in. If you think about Black and Brown communities in America, oftentimes, what you see when you're going through these neighborhoods is a major highway cutting right through the neighborhood. You'll also see bus depots being disproportionately located in these communities of color. You may even see toxic waste sites, factories, and other toxic infrastructures that hurt our health. This is what public health researchers have put in context and helped us understand why we may see inequities such as higher asthma rates in Black and Brown children. Now, we've been able to tie it to these structural conditions and social determinants of health as a whole. According to researchers, about 40% impacts our overall health [social determinants of health]. If that's the case and they do play an outsized role in our overall health and well-being, then we need to stop and ask ourselves how did those structural conditions get there in the first place. They didn't just magically appear! It was because of an act of law or policy enacted at all levels of our government that are oftentimes working in concert with one another.

***“As I continue to think about what the true instigator of these health inequities is and why it feels like we're still just merely nibbling around the edges of the problem of health inequities in America, I realize it's always been because we've been afraid to confront policy and politics that are at the heart of all of this.”***

As I continue to think about what the true instigator of these health inequities is and why it feels like we're still just merely nibbling around the edges of the problem of health inequities in America,

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I realize it's always been because we've been afraid to confront policy and politics that are at the heart of all of this. I've defined the PDOH as the involvement of the systematic process of structuring relationships, distributing resources, and administering power because they operate simultaneously and mutually reinforce one another in ways that will either help us to realize health equity or hinder health equity.

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***“So, what does that look like? What does structuring relationships look like? We have seen the process, and when you think about redistricting, gerrymandering, distributing resources, we realize how difficult it is to get resources into minority communities, especially in a pandemic.”***

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So, what does that look like? What does structuring relationships look like? We have seen the process, and when you think about redistricting, gerrymandering, distributing resources, we realize how difficult it is to get resources into minority communities, especially in a pandemic. However, we are raising our hands and want to provide testing to communities of color. Still, they have a very difficult time accessing resources because resources are being steered to the same affluent white communities. That was extremely troubling to us. You also see the same disparities when you think about the usage of ventilators for those who found themselves needing that to breathe. We see the same thing happening with vaccines because the equitable distribution of vaccines is not being realized. Cases like these were reported in the Los Angeles Times as a case study. Of all the places that should get equity right, it should be California because they have been leaders in this space. However, we see the same trends in South Los Angeles, where the government is not setting up vaccine sites in those Black and Brown communities.

A case for us to think about is the power structure. Even though we have increased our US Congress's diversity over time, we've not seen an increase in equity-focused policies. All of this to say that I've created this framework called the political determinants of health by looking back at public health frameworks, political science legal and historical lenses to understand what evidence there is, what policies levers have been pushed and pulled to effectuate changes, elevate equity, and what has been tried or tested in terms of hindering health equity in this country. This was my best attempt at putting these together in a framework that folks can use and leverage to create equity in their communities.

**What are your organizational priorities for addressing health and racial equity in neonatal care?**

At the Satcher Health Leadership Institute at Morehouse School of Medicine, we were founded by Dr. David Satcher, the 16th US Surgeon General. He is this gentle giant who really cared deeply about racial equity. He devoted his career and life to pushing this

agenda at all levels in this country and internationally. Dr. David Satcher was never afraid to push the racial equity agenda, and he used his platforms to do just that. We know that there was an attempt in 1990 to create the first Minority Health Bill, which was successful post-reconstruction. It was led by Louis Stokes, Ted Kennedy, and Louis Sullivan, who founded the Morehouse School of Medicine. The bill was called the Disadvantaged Minority Health Improvement Act. This bill, along with Healthy People 2000, stated for the first time in US history that reducing racial and ethnic health disparities was a priority for the federal government. While laudable, it set up this separate and unequal standard based on your race and ethnicity. For example, let's say that the infant mortality rate was at 10% for Blacks, 8% for Hispanics, 3% for Whites, and 4% for Asian Americans. The bill's goals would be to lower the infant mortality rate by 2%, meaning cutting off 2% from every racial group. However, this does not eliminate the disparity. So, Dr. Satcher decided that is unacceptable. As Surgeon General, he wanted to create legislation that will help us to eliminate disparities and implement it in the Healthy People 2010 agenda. This was really bold, and he did receive negative feedback, but he kept pushing this agenda. Once he left public service and returned to the Morehouse School of Medicine, he decided to continue this great work and push for health policy issues that were underrated and treated as secondary priorities or not at all. This prompted him to create the Satcher Health Leadership Institute, which would continue to address these issues that the rest of America was too afraid to at the time.

Now Dr. Satcher has passed the baton on to me and asked what we can do to elevate equity in this country and use it as a foundation to advance and create health equity in communities across the world. Our mission is about creating systemic change at the intersection of policy and equity. This is our niche. We have identified three priority areas to do just that: Mental and Behavioral Health, Health System Transformation, which encompasses maternal and child health, and Political Determinants of Health. We will engage and translate this into success through the development of policies, evaluating various policies, and engaging and working with our community. We are now realizing that health equity is acknowledging that this pandemic is negatively impacting communities of color, especially given our history. We've known that every time a pandemic strikes the United States, it negatively impacts the same group of people who are on the downside of advantage and opportunity. These include racial and ethnic minorities, immigrant communities, people with disabilities, and lower socioeconomic statuses. So, as we were delving deeper into the research and understanding why this is happening and why we have never realized an equitable political response during a pandemic, we pinpointed one that we thought could stem the tide of this, and give Black and Brown folks the chance to survive and thrive moving forward. This could surely be achievable with all of the technological capability and knowledge that we've gained with over 7,000 peer review Journal articles on health disparities.

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***“So, the idea that we found was that there was always an issue with data, and I argue that data is a major political determinant of health.”***

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So, the idea that we found was that there was always an issue with data, and I argue that data is a major political determinant of health. It has long been an issue, and we've been trying to bolster our data collection reporting processes. However, folks would say, at the time, that you're five or ten years ahead, and then five or ten years pass, and I'm looking back and thinking, well, it's happened, so why don't we have the data? Then, 15 years pass, and it's like are you kidding? When will it ever happen? Is it ever going to happen in our lifetime? This is unacceptable!

You and I, (Jenné Johns) and other colleagues got really concerned that we could not get the data early on during this pandemic. Our hypothesis was that communities of color were going to be disproportionately impacted. Still, without the data and without the evidence, we can't make that case for aligning resources with the greatest need. Then, it dawned on us that we need to create a data tracker, and we need to start tracking health inequities in America. With your organization (Once Upon A Premie, Inc), GOOGLE, Gilead Sciences, The CDC Foundation, HHS, and others, we are creating a comprehensive health equity tracker. We are going to look at the inequities relative to COVID as our first phase and priority. This priority will enable us to look at issues regarding testing, ventilators, accessing hospitals, and getting the vaccine.

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***“Moving beyond that, we can start to look at comorbidities, maternal child health outcomes, infant mortality, maternal mortality, obesity, HIV/AIDS, lupus, sickle cell anemia, cancers, and how all of these impact communities of color disproportionately.”***

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Moving beyond that, we can start to look at comorbidities, maternal child health outcomes, infant mortality, maternal mortality, obesity, HIV/AIDS, lupus, sickle cell anemia, cancers, and how all of these impact communities of color disproportionately. For example, we know that diabetes, heart disease, and asthma disadvantage communities of color. We also want to track mental and behavioral health inequities such as depression, anxiety, addiction, suicidality, and Alzheimer's. We also want to make sure that we keep these issues together because they have been siloed before, especially diseases of the brain, and look at the bigger picture. In addition to that, and to not make this a health disparities or health inequities tracker, we want to overlay the social determinants of health factors on top of it. Once that is in place, we will be working with a group of legal epidemiologists to overlay data regarding the political determinants of health and figure out which of those we should be measuring and monitoring.

For this reason, we have created a health equity task force, which you are a part of (Jenné Johns), to help us think through how we can actually do this because this is a daunting project. I can even see the anxiety being elevated within the group of engineers we have gathered to help overlay all of this data. The amazing part is that this has never been done before, and that is why we are doing it! So, this is why we need it, and this time, we will be going

after the highest hanging fruit. With your help and others' help in your field and arena, we can make sure that we are getting it right, pulling from the right data sources, and finding the best ways to track this information. Once we get this information, we will upload and populate the tracker with the information that will be democratized. Researchers, policymakers, community leaders, and everyone else will be able to download the data. We also might have a dashboard with our own analysis that folks can pull from so that it's bi-directional.

We've also received a \$40 million grant from the HHS to create a national resiliency. Even though this amount of money is a drop in the bucket when it comes to this work, we will be creating a national COVID-19 resiliency network with it. We have 16 partners from around the country, including Unidos US, the National Hispanic Medical Association, 100 Black Men, the Divine Nine, Black fraternities and sororities, the NAACP, The National Council of Urban Indian Health, Indian Health Service at the US Department of Health and Human Services, CDC, the CDC Foundation, among others. This great group of folks will help us build out something that will apply to those at the grassroots level. The health equity tracker that I just spoke about is geared more towards policy influencers and policymakers trying to leverage the data to change policies or enact new policies. This new resource will be used at the grassroots level to know where to go to get health services, social services, behavioral services, and a COVID test or vaccine. We currently have a group of individuals at the Institute working to make this happen. We are also working with the Healthy Start group out of Saint Petersburg in Tampa, Florida, incubating the PDOH framework for about a year. What we are working on is taking this framework and amplifying it nationally. We have created a Black Health Equity Alliance because all the groups have been disproportionately impacted; black folks in this country have died at a much higher rate than every other group. So, we have been intentional about understanding what is going on within the Black community and working to ensure that they have the facts they need regarding the vaccine and the pandemic, in general. There is a lot of miss information going on right now, including the anti-vax movement. Beyond that, that has caused a lot of confusion. We are trying to correct this as best as we can. As I said, some team members are working now to figure out how we can create this informational pipeline for communities of color, especially Black leaders. Of course, we have the pipeline of information to our Hispanic, Native American groups, and other communities through the NCRN, but we felt it was especially necessary to create one focused on the Black community.

Finally, in addition to that, we have also finished helping create the fourth edition of a Maternal and Child Health textbook and applying what we have been doing at the Institute to that work, and it's pretty exciting! I hope that future professionals in the health space will read it and leverage it to create systemic changes that we need in this country.

**What personal and professional experiences led you to focus on health equity in neonatal care?**

I will say that from an early era, it was the experience I had growing up. I am half Black and half White, and it was always interesting to see that they were really old on the white side of my family. They got into their 90s; however, my family's Black side died rather young and barely making it out of their 60s or even 50s. I have

lost several relatives in their 50s from diabetes, heart disease, and other illnesses. Asthma also runs severely in the Black side of my family, but in my family's white side, they seemed very healthy. Growing up, I always wondered why this was happening, and the response I would get was: it's genetics. We always assumed that the Black side of my family had these particular genes. So, something about it didn't sit well with me, and it kept on gnawing at me. Coupling these experiences with what I saw beyond my family and in the community, I realized the same things were happening to other black communities. One day you'd see Sister such and such looking healthy, and then, a month later, you hear Sister such and such died. So, I started noticing that their life spans were much shorter. They were prematurely dying at higher rates of chronic diseases. This didn't sit very well with me, so one day, I decided that it was a healthcare system fueling these disparities with my own narrow framework.

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***“I decided that I would become a hospital administrator, and I was going to go in and make sure these hospitals and clinics were treating Black and brown folks with respect and dignity. Much of this stems from what I saw with my grandmother on the Black side of my family, who suffered terribly from these ailments and was treated terribly.”***

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I decided that I would become a hospital administrator, and I was going to go in and make sure these hospitals and clinics were treating Black and brown folks with respect and dignity. Much of this stems from what I saw with my grandmother on the Black side of my family, who suffered terribly from these ailments and was treated terribly. This also brings up issues of privilege. My light-skinned privilege versus my grandmother, who was much darker, not as educated, and who may not have spoken as articulately as we can, was one of the brightest people I knew. She was full of wisdom and knowledge from her experiences, and to see people mistreat her and think she was just some ignorant old woman rubbed me the wrong way. These experiences convinced me that the issue was the healthcare system. I was saying that black people could not go in and be treated properly with respect and dignity. In addition to that, many of my family members were locked out of employment opportunities where the bulk of us get our insurance. So, my family had to work in jobs that provided commission, and that's how they sustained our family. However, as a result, they do not have access to health insurance coverage, which then made them scared because they couldn't afford healthcare. This is really problematic from a preventive services perspective, which led me to speak to the leadership at a safety net hospital in South Florida. I said to the CEO that I would love to gain an understanding of their system. In turn, they wanted to build a hospital and leverage me as someone in support of this new establishment, as someone from the community. He allowed me to do this and set me up with the Director of Community Relations. The next thing they did was put me in the emergency department to rotate. When I got there, I saw this Black woman from

Haiti and only spoke Haitian Creole, and was having a hard time being understood by the staff. I observed a white triage nurse from the Midwest trying to talk to her. Still, the communication barrier was immense, so she called over to another black nurse. I noticed the black nurse and the patient talked for a minute or two before the nurse came right back over to the triage nurse, and then an argument ensued. The black nurse explained that she did not understand the patient because she is not from Haiti; she was from Jamaica, where they speak English! You could see the frustration on her face. I understood this because growing up in this melting pot of different cultures and languages, I had picked up on accents very easily. At the time, I did judge the triage nurse from the Midwest because I didn't understand how she did not know that your own nurse was from a different country that spoke a different language than the patient. At that moment, it really dawned on me just how difficult it can be to provide health services in a very diverse society but also how challenging, frustrating, and frightening it can be for individuals trying to see care in our health system.

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***“At that moment, it really dawned on me just how difficult it can be to provide health services in a very diverse society but also how challenging, frustrating, and frightening it can be for individuals trying to see care in our health system.”***

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I figured that it could not just be happening here, but rather it was happening everywhere, and so I started doing my own research. I wanted to know if anybody else was looking at this issue, and there was. This is when I saw the effort by Dr. Sacher on his racial disparities initiative, and I said, “this guy gets it!” I had never heard of Dr. Sacher before this, but I thought it was really interesting. Then, over the years, I saw that the Institute of Medicine published a report on, “Unequal Treatment”, and the AHRQ did a, “National Health Care Disparities Report”. I thought the people were finally starting to get it! I wanted to find a health system that would allow me to implement these new ideas. So, I started reaching out to other health systems in Florida. There was one system in Orlando that had a leadership development program. So, I went there, and I said I wanted to work with them on a new project. The majority of the leaders, who are white, were uncomfortable with my approach and almost offended. Although I didn't say they were discriminating, I showed them reports that served as evidence of rampant disparities in our societies and in healthcare, particularly. It was then that I connected with a Vietnamese American who is sensitive to the issue and managed the leadership development program who told me that I needed to adopt their vocabulary [hospital leadership] and state my arguments in a way that would resonate with them. So, I put my more conservative head on to think using the economic argument. Finally, I convinced the leadership, but they did put me on a short leash to implement these new ideas. I created a cultural competency toolkit that we used to scale-up to the other hospitals affiliated with them. During this experience, I received pushback from the lawyers, and I realized they were very annoying people to work with. I also didn't realize how much power they had to stop this kind of work. I thought it was frustrating because it didn't make sense that the law wanted to prevent me

from implementing programs that would strive to eliminate disparities. This is what pushed me to go to law school instead of seeking an MBA or MPA. I thought I needed to immerse myself in these laws to learn what is on the books to use that and push back on any lawyer who tries this foolishness again with me in the future!

While in law school, a friend told me about this great fellowship opportunity with the Congressional Black Caucus. He said that I have been talking about disparities for as long as he knew me. Although I had no intention of ever going to DC, I found myself heading there and getting to work on these policies. I was born in Lincoln, Nebraska, and raised there until my family moved to Miami, FL. I figured that after law school, I would head back to Florida, but in DC, I got to work on the new ideas I learned there and have been wanting to implement. While in DC, I worked on something near and dear to my heart now, the Affordable Care Act. I worked with an incredible group of people from 300 national organizations representing virtually every stakeholder in this country. We spoke about maternal and child health and data collection, which were major priorities for us. Sixty two provisions got into the law, and we fought to get them in and keep them in the bill. Although some were struck out right before it was voted on, we fought to make sure that they were implemented and enforced. What motivates me now is knowing that although the forces of racism can be such an abstract notion, I've been given the privilege to be able to go back and study those events and opportunities that health equity leaders had in the past to realize more equity-focused policies. Although there is a dearth of them, how did you manage to get them on the books, and why is there only a dearth of policies focused on health equity? My work allowed me to work with congresswoman Donna Christiansen, Congress, and Louis Stokes, one of the 13 original founders of the Congressional Black Caucus, and Ted Kennedy, who were all major health equity leaders. While I worked with them, I kept on asking what had been tried and tested in the past, but many of them could not recall or could only tell me what they remembered from their tenure as lawmakers. I thought this is very concerning because there was no benchmark from which we could use. There was no guidance to help us understand some of the strategies and tactics that have been employed to undermine these health equity efforts in the past. I wondered how they overcame them? This led me to a journey of researching even more and creating my first book, "150 Years Of Obamacare" <https://www.danieledawes.com/>, to tell our people and understand why it is important to understand our history, power structures, and how to leverage them, and affect changes for our communities. This, then, led me to work on the, "Political Determinants of Health" <https://www.danieledawes.com/> book.

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***“Unfortunately, we have seen the pendulum swing even harder from the opposition. It has unraveled many of the gains that have taken decades to realize.”***

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**What is your call to action for the industry as we seek to eliminate health and racial inequities in neonatal care?**

I know that this health equity work is disruptive and exhausting.

In the past, every time we were making progress, the opposition would ramp up their efforts. Health equity leaders would lose the political will to keep pushing back. We know that the pendulum swings every so often. Unfortunately, we have seen the pendulum swing even harder from the opposition. It has unraveled many of the gains that have taken decades to realize. I just hope that we will continue to muster the energy to continually engage. If we don't, we could lose this opportunity to advance health equity. I've also started to think about how people cry to return to normal. Still, I don't want to get back to normal because what does normal mean pre-pandemic or pre-Trump? The status quo has kept, fueled, and driven the same results that we are now experiencing today. We need to leverage the crisis that we're in and understand that rarely do we have an opportunity to affect systemic change in this country except during a crisis that affects every individual and attracts attention from the entire nation. However, we know that the window of opportunity always closes, and it will close. Still, we can leverage the moment that we have to try to move the needle forward. I will end now with a quote from Dr. Sacher, "what we need now more than ever are leaders who care enough." You have to care enough about these communities and the issues that stem from them. You have to put your heart and soul into it because it's exhausting, and people who do not care can easily give up. You have to know enough about the drivers of inequities and study what created the mess that we're in today that continues to perpetuate and exacerbate health problems and health inequities. You've got to persevere, and it is so easy to give up, but this is not a movement for the faint of heart. This is a movement for folks to believe that time is so precious and life is so short. We've got to persevere until the job is done and be courageous. I'll end with the fact that we need courageous leadership because we have witnessed over the last year, especially during this quadruple pandemic, that the forces of racism, sexism, homophobia, etc. work overtime and do not sleep, so we need to be courageous, push-back back, and say enough is enough. We do not want to return to the status quo. We do not want to return to a society that discriminates against black and brown folks unfairly. It is unjustified, and so if we are truly now moving from equity to justice, it means we're going to have to take all four of those elements to heart. I'll leave by saying that our healthcare leaders have tremendous privilege in power. Many of their predecessors created the mess that we are in today, so it is incumbent upon them to use that power and privilege to push back and change things to chip away at these concretized inequities in our society.

To learn more about the Health Equity Tracker at Satcher Health Leadership Institute, please visit: <https://satcherinstitute.org/>

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1. <https://www.danieledawes.com/>
2. <https://satcherinstitute.org/>

**Disclosure:** The author has no disclosures.

**NT**

**About the Author: Daniel E. Dawes, J.D.:**



Daniel E. Dawes, J.D., a widely respected scholar, researcher, educator, and leader in the health equity, health reform, and mental health movements, is director of the Satcher Health Leadership Institute at Morehouse School of Medicine and a professor of health law, policy, and management. He is the co-founder of the Health Equity Leadership and Exchange Network (HELEN), a nationwide network of governmental and non-governmental leaders, researchers, and scholars focused on bolstering leadership and the exchange of research, information, and solutions to advance evidence-based health equity-focused policies and programs.

Dawes's research focuses on the drivers of health inequities among under-resourced, vulnerable, and marginalized communities and is the pioneer of a new approach to examining inequities, the political determinants of health. He brings a forward-thinking, inclusive, and multidisciplinary approach to health policy, authoring two groundbreaking books, 150 Years of ObamaCare and The Political Determinants of Health, published by Johns Hopkins University Press.

**About the Author: Jenné Johns, MPH:**



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Jenné Johns, MPH is President of Once Upon A Premie, Founder of Once Upon A Premie Academy, mother of a micropreemie, author, speaker, advocate, and national senior health equity leader. Once Upon A Premie is a non-profit organization with a two-part mission: 1.) to donate Once Upon A Premie books to NICU families in under resourced communities, and 2.) lead virtual health and racial ethnic training programs and solutions to the neonatal and perinatal community through the Once Upon A Premie Academy. Jenné provides speaking, strategic planning and consultation services for fortune 500 companies focused on preemie parent needs from a cultural lens and reading as a tool for growth, development, and bonding. Jenné is also a national senior health equity thought leader and has led solutions-oriented health equity and quality improvement portfolios for the nations' largest health insurance and managed care companies.



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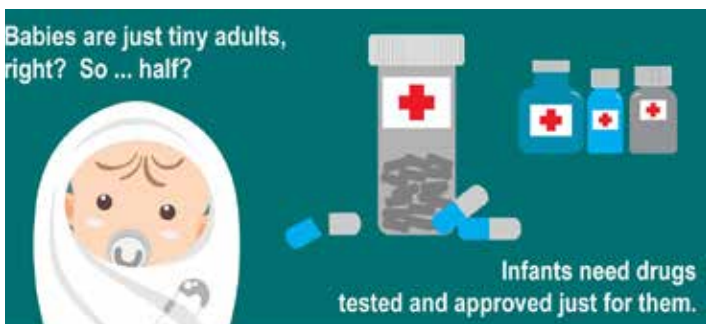
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Full Program Agenda Coming Soon



# From The National Perinatal Information Center: Respectful Care in the Neonatal Intensive Care Unit

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.



*“Last fall, this column introduced the importance of the Alliance for Innovation on Maternal Health (AIM) and the critical contributions that neonatologists and those in the neonatal space can make to improve maternal and neonatal outcomes”*

Last fall, this column introduced the importance of the Alliance for Innovation on Maternal Health (AIM) and the critical contributions that neonatologists and those in the neonatal space can make to improve maternal and neonatal outcomes. In review, the following bundle elements were discussed:

- ✓ Readiness
- ✓ Recognition
- ✓ Response
- ✓ Reporting/Systems Learning

In 2021, a 5<sup>th</sup> bundle element will be incorporated into the AIM patient care bundles, **Respectful Care**. Understanding the value and importance of respectful Care in the neonatal care setting is and will be an essential conversation to engage. Respectful Ma-

ternity Care (RMC) is defined as the preservation of a birthing person’s dignity, choices, and preferences during birth and during the postpartum period<sup>1-2</sup>. Respectful Care has been and continues to be a priority for maternal and neonatal outcomes, particularly with the continued disparities described throughout the literature, including significant outcome disparities found within Black and Brown birthing persons, particularly maternal care<sup>3-5</sup> and NICU care<sup>6-8</sup>. While the Respectful Care model typically focuses on the mother/birthing person, these elements must be applied to the supportive Care of the mother/birthing person and newborn dyad in the Neonatal Intensive Care Unit. Several of these elements are described below:

*“While the Respectful Care model typically focuses on the mother/birthing person, these elements must be applied to the supportive Care of the mother/birthing person and newborn dyad in the Neonatal Intensive Care Unit.”*

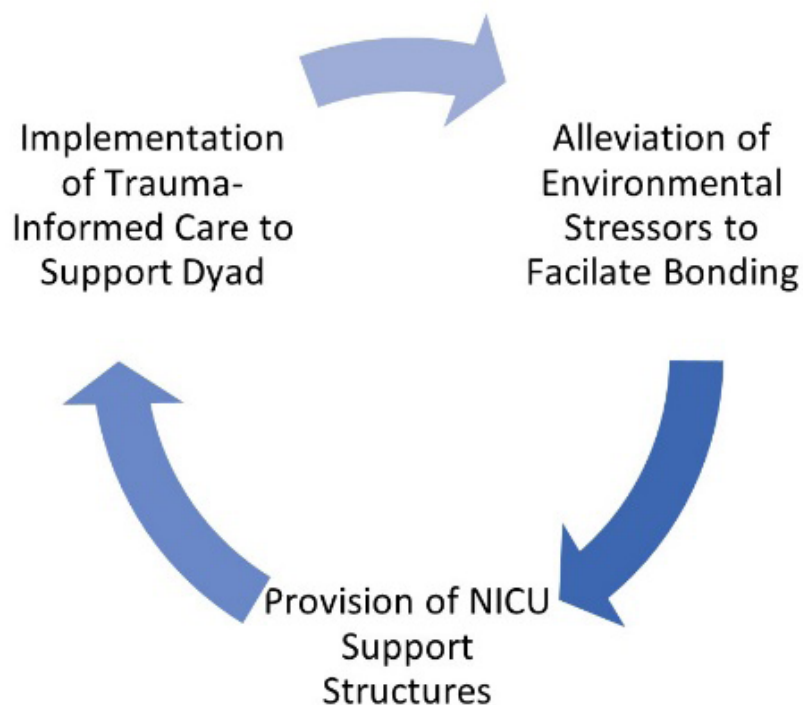
- **Alleviation of Environmental Stressors:** Providing support to the mother/birthing person to assure opportunities for bonding and care provision are essential. Transportation, food security, and the Care of other dependent children as needed for frequent visitation to the NICU provide stability. Financial challenges compound these issues and further accelerate the disparities that are found within neonatal Care. The National Perinatal Information Center provides a Race and Ethnicity Dashboard Report for all member hospitals. The NPIC database during the period 7/01/2019 – 6/30/2020 ( $n = 322,592$ ) discerned the same socioeconomic findings (Table 1) found in contemporary disparities literature,<sup>9-10</sup> including the length of stay and payer mix. These findings continue to support social determinants of health discussions and speak to the promotion of dignity, autonomy, and the ability to care for their newborn amid turmoil, such as an unexpected admission to the NICU.
- **Provision of a NICU Family Navigator/Support Structures:** The ability for a mother/birthing person to achieve the highest levels of autonomy during a NICU stay relies on the ability to comprehend and understand the course of Care fully. A NICU Family Navigator or NICU Family Support Program can facilitate communication and ensure that every newborn and family are assured the same level of Care and

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	Discharges/%	ALOS	% Medicaid
<b>NPIC Database</b>	322,592	4.36	37.6%
<b>Race</b>			
<b>Asian</b>	18,778 (6%)	3.76	19.8%
<b>Black</b>	60,234 (19%)	5.56	59.5%
<b>AI/AN</b>	1,633 (1%)	5.67	58.4%
<b>PI</b>	934 (0.8%)	3.61	45.0%
<b>White</b>	152,738 (47%)	4.18	28.8%
<b>Other</b>	21,185 (7%)	3.92	52.0%
<b>Unknown</b>	67,090 (21%)	3.99	37.7%
<b>Ethnicity</b>	Discharges/%	ALOS	% Medicaid
<b>Hispanic</b>	66,310 (21%)	3.96	54.6%
<b>Non-Hispanic</b>	239,910 (74%)	4.50	32.6%
<b>Other</b>	16,372 (5%)	4.02	42.8%

**Table 1.** NPIC Medicaid Payer Analysis, Metrics for Neonatal Discharges (7/1/19 – 6/30/20)



**Figure 1.** Respectful Care Continuum in the Neonatal Intensive Care Unit

discharge planning<sup>11</sup>. Lake and colleagues described disparities in NICU outcomes related to race, and failure to offer the same level of discharge care to all families is antithetical to the Respectful Care model. Any differences in Care, specifically racial and/or ethnic outcomes discovered during inpatient care or the discharge process, should be immediately evaluated. The inclusion of postpartum doulas to offer support for the woman/birthing person during the NICU stay should be encouraged.

- **Trauma-Informed Care:** Trauma-informed Care is an essential principle of the Respectful Care model. Facets of trauma-informed Care, such as previous experiences of trauma and subsequent response and reducing the impact of a current trauma<sup>12</sup> (such as an unexpected admission to the NICU), provide a meaningful foundation to the Care of mothers/birthing people during a stay in the NICU. Maternal/newborn separation can exacerbate trauma, and facilitation of visitation and information is key. Again, identification of environmental and social/structural determinants of health and their mitigation can ease the impact of further trauma on a family unit. These elements are cyclical, and all serve as conduits within a Respectful Care paradigm.

The Black Mamas Matter Alliance<sup>13</sup> describes best practices for holistic maternal and neonatal Care:

- Addresses gaps in Care and ensures continuity of Care
- Affordable and accessible Care
- Ensures informed consent
- Confidential, safe, and trauma-informed
- Provides wraparound services and connections to social services

Achieving a care model that not only supports but promotes and sustains Respectful Care should be considered requisite for any facility caring for women/birthing people and their newborns. Strategic planning should include a focus on equity and include the voices of those most impacted by disparate outcomes. Continuous quality improvement through an equity lens and self-reflection performed by individuals, departments, and organizations is fundamental to the continued evolution of a robust and holistic care program. Respectful Care in maternal and neonatal settings will be critical to elevating both short and long-term outcomes and supporting a strong foundation for autonomy, dignity, and a well-defined transition to home and access to community resources.

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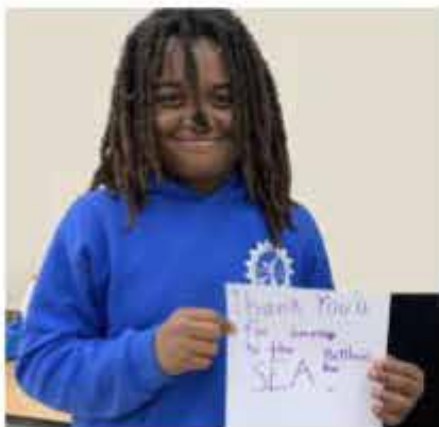
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# Shiny WebApp - The Basics

*Fu-Sheng Chou, MD, PhD*

This month, we will start the journey into Shiny WebApp development using R and the RStudio integrated development environment. I hope you have had R and RStudio installed or that you could register for an account at RStudio Cloud to get started. Now, let us open RStudio to get started (you do not have to open R).

In order to create shiny apps, you will need to install the package:

```
> install.packages("shiny")
```

After installation, you will be able to create a new Shiny WebApp file by clicking on File > New File > Shiny Web App... (Figure 1). A dialogue pops up asking for the Application name (I called it NAS) and the directory (I have it under R/Projects/) where the application will reside (Figure 2). After hitting Create, a Shiny WebApp file with template codes will show up on the left panel (Figure 3). The tab says "app.R", which is the name of the Shiny WebApp code file. Note the right lower panel with the tab Files showing a folder named "NAS" was automatically created (Figure 3 green circle).

---

*“Briefly speaking, a WebApp contains a user interface to interact with the user, a background server that takes the input values from the user interface for computation, followed by outputting the computed values back to the user interface.”*

---

Inside the "NAS" folder is the file app.R which was opened on the left side.

The code structure for a Shiny WebApp has two parts:

1. The user interface: **ui <- fluidPage()**
2. The server: **server <- function(input, output) {}**

At the end of the template is a function **ShinyApp()** with two arguments (ui, server) that is used to run the Shiny WebApp.

Briefly speaking, a WebApp contains a user interface to interact with the user, a background server that takes the input values from the user interface for computation, followed by outputting the computed values back to the user interface. The input and output arguments in the server function are actually two "containers" that store the widgets to interact with the user (Figure 4).

Now, hit Run App (Figure 3 red circle) and see what happens. Compare the WebApp and the code:

1. **Code:** There is a `titlePanel()` function with a title in the character data type (flanked by double quotations).

**App:** The title is displayed in the left upper corner.

2. **Code:** The `sidebarLayout()` function allows you to build the WebApp with a two-column layout: a sidebar on the left and a main display area on the right. Correspondingly, you see that, inside the `sidebarLayout()` function, there are two functions: `sidebarPanel()` and `mainPanel()` that are used to build the widgets and to display the output.

1. `sidebarPanel()`: Inside this function is a widget function called `sliderInput()`, with various arguments in it, as listed in Table 1:

2. `mainPanel()`: Inside this function is an output function for plot called `plotOutput()`. There is only one argument: the unique character id "distPlot" assigned, so R knows to refer to this specific output.

**App:** The left column has a slider with the corresponding label; the minimum number is 1, and the maximum number is 50, and the default value is 30. The right side is a plot.

---

*“There are three major types of layout that Shiny supports: plain layout, the sidebar layout, and the dashboard layout.”*

---

Now let us play with the slider left or right to see what happens to the plot on the right. When you move the slider, the bin number of the histogram on the right changes accordingly!

## User Interface

There are three major types of layout that Shiny supports: plain layout, the sidebar layout, and the dashboard layout.

The structure of a plain layout (Figure 5A) is as follow:

```
ui <- fluidPage(
  titlePanel(),
  input widgets and output elements
)
```

A title and a body

The structure of a sidebar layout<sup>1</sup> (Figure 5B) is as follow:

```
ui <- fluidPage(
```

```

titlePanel(),
sidebarPanel(input and output widgets, width =
4),
mainPanel(input and output widgets, width = 8),
position = c("left", "right")
)

```

A title, a sidebar panel, and the main panel

The position argument is used to determine the sidedness of the sidebar. The default is *left*, which is the first element of the vector. Any given webpage is divided into 12 invisible vertical strips with equal width, and the default widths for the side panel and the main panel are 4 and 8 strips, respectively. You can change that by changing the width argument inside the sidebarPanel() and mainPanel() functions.

The structure of a dashboard layout<sup>2</sup> (Figure 5C) is as follow:

```

ui <- dashboardPage(
  dashboardHeader(),
  dashboardSidebar(),
  dashboardBody()
)

```

A header, a sidebar, and a body

---

***“You may play with the widget in the gallery to get an idea of the value corresponding to user action.”***

---

Note that the *shinydashboard* package needs to be installed [by typing `install.packages("shinydashboard")` in the console] and loaded [by typing `library(shinydashboard)` in the console] before you can use a dashboard layout.

Inside each panel are input widgets and output elements. The basic shiny widget gallery is available in Ref 3. You may play with the widget in the gallery to get an idea of the value corresponding to user action. The values are stored inside the input container. As in the above example, the slider value is stored in `input$bins`. In the server function, the values resulting from user action are retrieved by accessing the input container's bins compartment (hence `input$bins`, please refer to the January 2021 column article for details).

For output, in addition to `plotOutput()` mentioned above, some additional examples of the common output types are listed in Table 2.

Can the output be input widgets? Absolutely! Use `uiOutput()` to generate new input widgets based on the value obtained from an input widget.

## Server Function

An important concept in Shiny WebApp is **reactivity** (Figure 4). That is, when the user changes the input value(s), the server repeats the computation based on the new value(s) and updates the output(s). With regards to the NAS WebApp we are going to develop, upon *entering the NAS score for each item, the total NAS score is updated correspondingly and immediately*.

Okay, so how is the histogram (or the output in general) generated? To answer this question, we have to turn our attention to the server function. The server object has a function with two arguments called input and output. The structure is as such:

```

server <- function(input, output) {
  compute and send the results to the
  output
}

```

We will not go into details about how to plot a histogram now. I just want to point out how to send the computed results to the output. If you remember from above, inside the mainPanel() function, which stores all the information for the right column, there is a plotOutput() function with a single argument "distPlot" for the output id. We also said that input and output are containers. Now, inside the server function, you see a structure like this:

```

output$distPlot <- renderPlot({codes to generate the
plot})

```

This code means that the renderPlot() function contains a bunch of computation work inside the curly brackets, and the results from the computation (in this case, plotting a histogram) will be inside the *distPlot* compartment of the *output* container.

plotOutput() in the *user interface* and renderPlot() in the *server function* have to match each other; otherwise, the communication will result in an error message. Some examples are listed in Table 2.

---

***“Next month, we will discuss the detailed web page layout and various elements (widgets, text, lines, space, etc.) that are available to you in designing your user interface.”***

---

To summarize, we discussed the code structure for a shiny app: the **user interface** and the **server function**. There are input and output in the user interface, which are containers to store values from the corresponding input widgets and computation results for display, respectively. In the server function, computation occurs based on input values, and the results are presented to the output elements. The NAS WebApp codes are available here (<https://neonatologytoday.org/datascience/NAS.html>) for those readers who would like to apply what we learned here to a real-life Neonatology-relevant example. Next month, we will discuss the detailed web page layout and various elements (widgets, text, lines, space, etc.) that are available to you in designing your user interface.

Figure 1

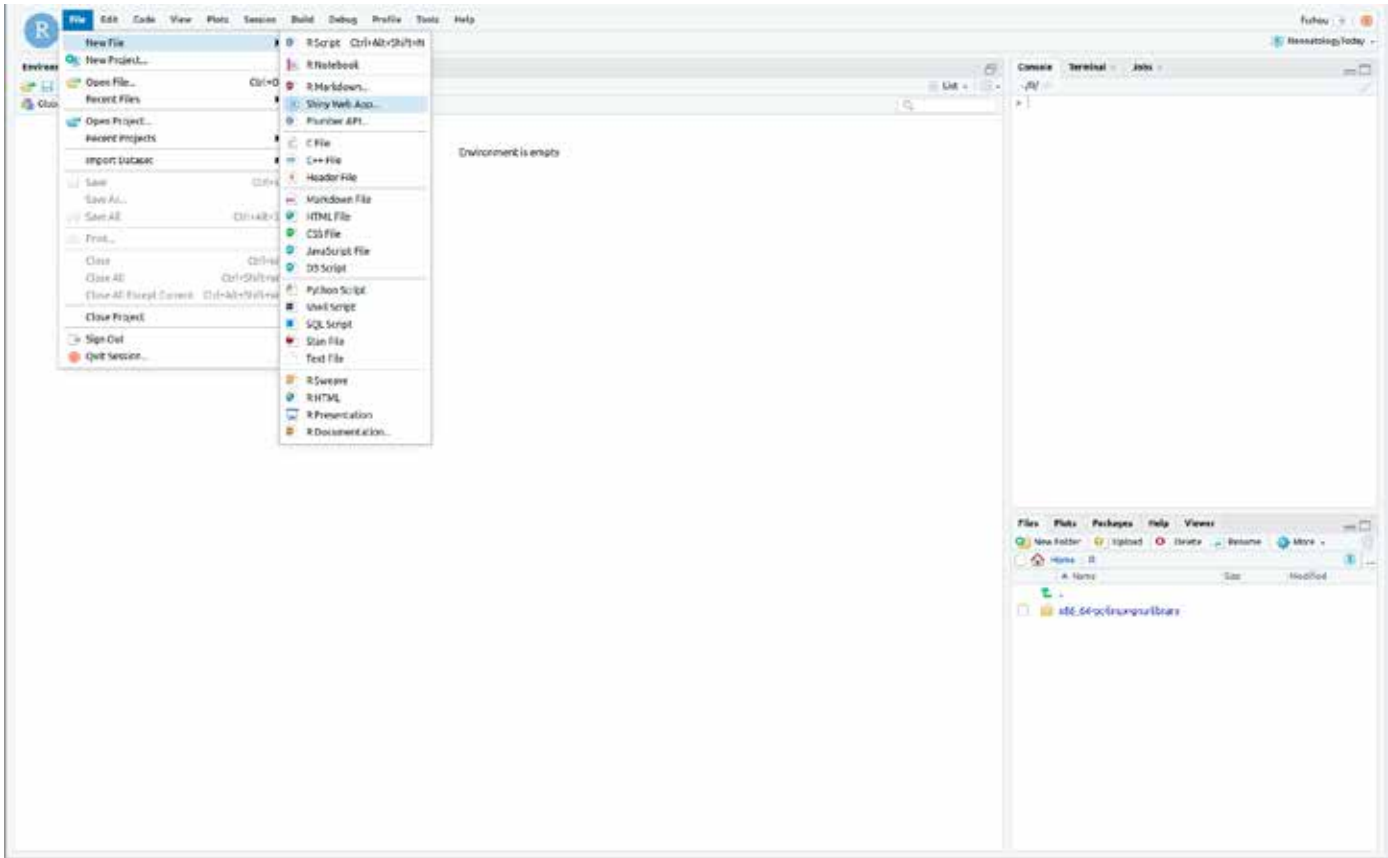


Figure 2

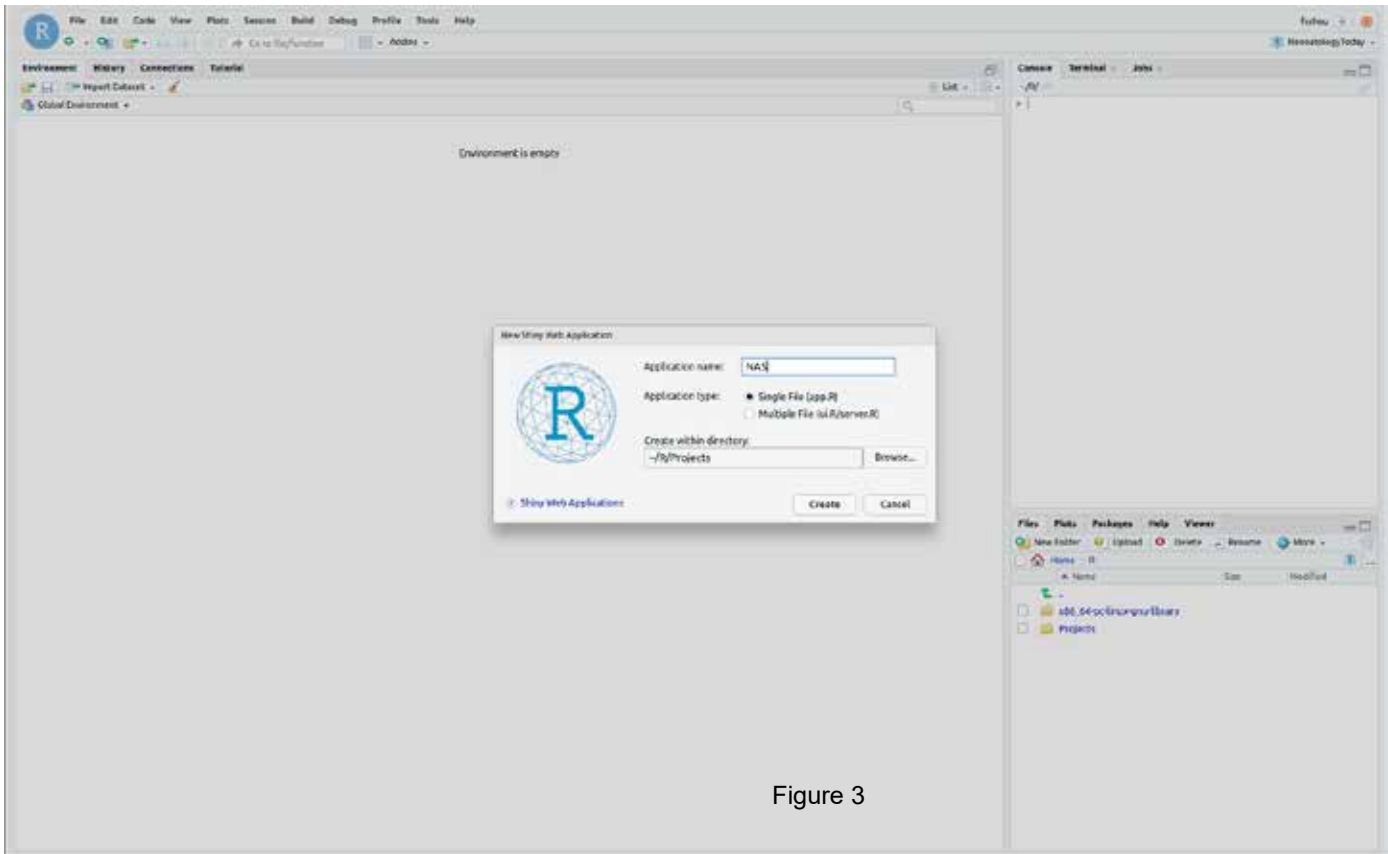


Figure 3



figure 3

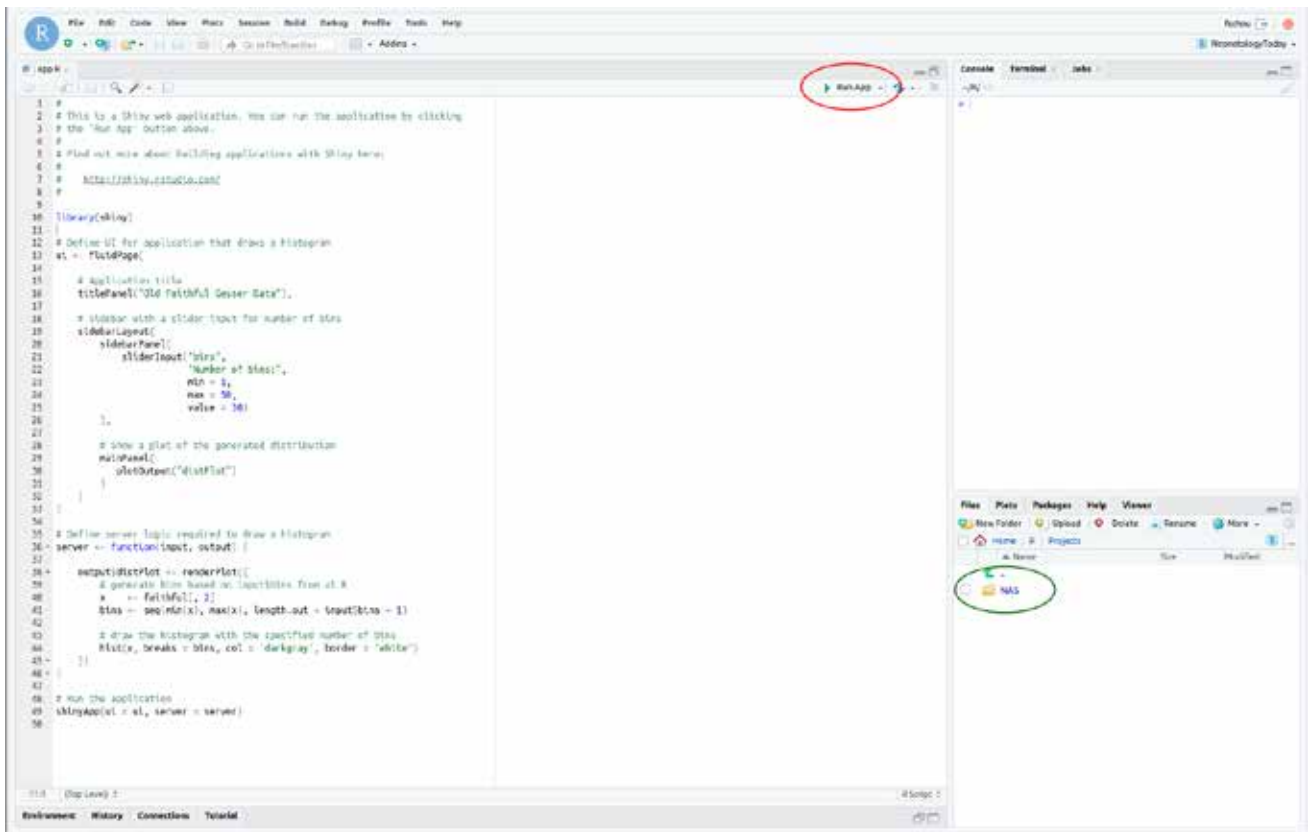
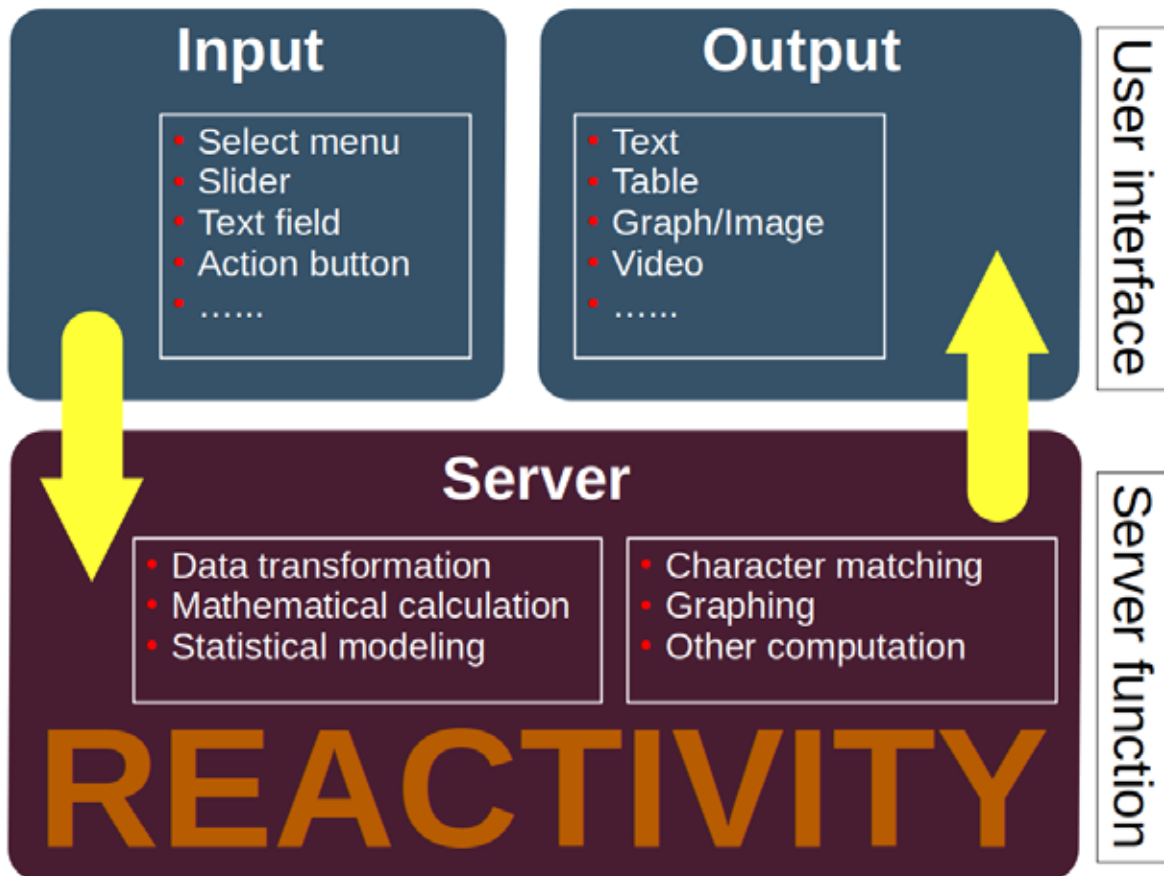


Figure 4



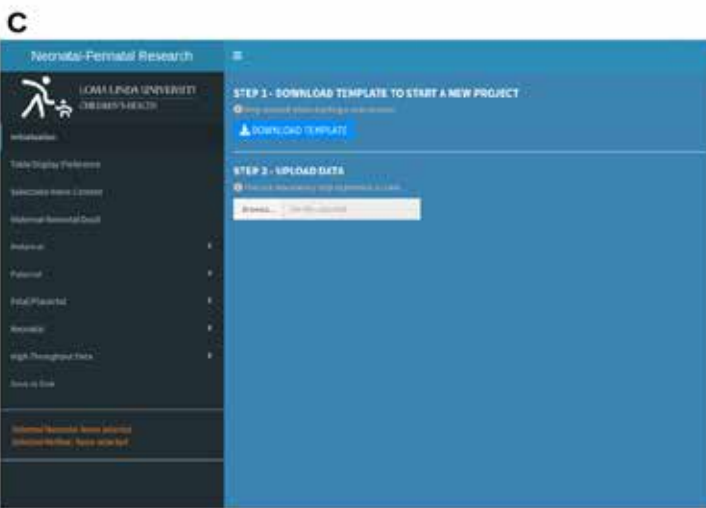
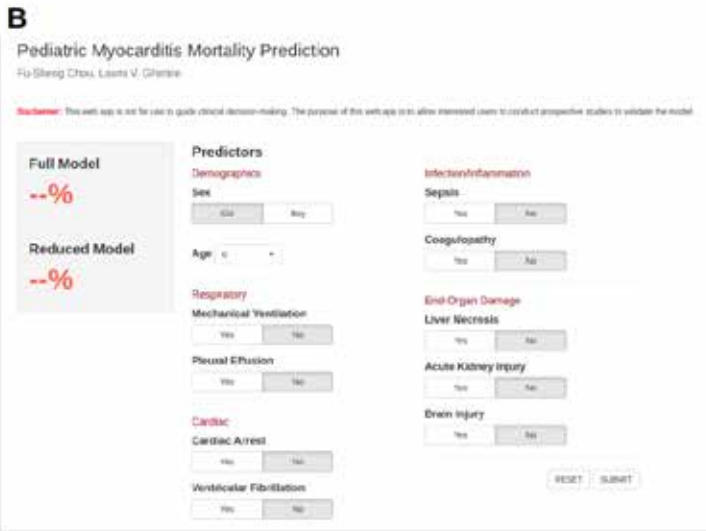


Table 1: Arguments for the sliderInput() example.

Argument	Meaning
inputId = "bins"	a unique character id for R to refer to the widget
label = "Number of bins:"	the label of the widget displayed on the web page
min = 1	minimum number on the slider
max = 50	maximum number on the slider
value = 30	default value when the app is started

Table 2: Corresponding output and render functions.

output function	render function
plotOutput()	renderPlot()
tableOutput()	renderTable()
textOutput()	renderText()
imageOutput()	renderImage()
uiOutput()	renderUI()

**References:**

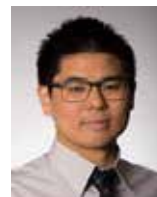
1. <https://shiny.rstudio.com/reference/shiny/latest/sidebar-Layout.html>
2. [https://rstudio.github.io/shinydashboard/get\\_started.html](https://rstudio.github.io/shinydashboard/get_started.html)
3. <https://shiny.rstudio.com/gallery/widget-gallery.html>

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As we indicated last month, we look forward to a number of new features as well.

1. An online submission portal: Submitting a manuscript online will be easier than before. Rather than submitting by email, we will have a devoted online submission portal that will have the ability to handle any size manuscript and any number of graphics and other support files. We will have an online tracking system that will make it easier to track manuscripts in terms of where they are in the review process.
2. Reviewers will be able to review the manuscript online. This portal will shorten the time from receipt of review to getting feedback to the submitting authors.
3. An archive search will be available for journals older than 2012.
4. A new section called news and views will enable the submission of commentary on publications from other journals or news sources. We anticipate that this will be available as soon as the site completes the beta phase
5. Sponsors will be able to sign up directly on the website and submit content for both the digital and PDF issues of Neonatology Today.

Neonatology Today will continue to promote our Academic True Open Model (ATOM), never a charge to publish and never a charge to subscribe.

If there are any questions about the new website, please email Dr. Chou directly at:

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## SHARED DECISION-MAKING PROTECTS MOTHERS + INFANTS DURING COVID-19

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### PARTNERSHIP

SHARED DECISION-MAKING

What is the best for this unique dyad?

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



### TRAUMA-INFORMED

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

### LONGITUDINAL DATA

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# The Village Son



## A Life's Journey

Iranian village to a university professor in the United States of America in this memoir. As a boy, his unruly behavior was sedated by scholastic challenges as a remedy. At age twelve, he left home for junior high school in a provincial capital. At first, a lack of self-esteem led him to stumble, but he soon found the courage to tackle his subjects with vigor. He became more curious about the world around him and began to yearn for a new life despite his financial limitations. Against all odds, he became one of the top students in Iran and earned a scholarship to study medicine in Europe. Even though he was culturally and socially naïve by European standards, an Italian family in Rome helped him thrive. The author never shied away from the challenges of learning Italian, and the generosity of Italy and its people became part and parcel of his formative years. By the time he left for the United States of America, he knew he could accomplish whatever he imagined.

Houchang D. Modanlou

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## Fellow Column: Catheter-Related Ascites in a Preterm Infant

Shachi B. Patel, MD, Nitan Walyat, MD, Shabih Manzar, MD

### Abstract:

We are reporting a case of neonatal ascites secondary to misplacement of umbilical venous catheter. The case is supported by the literature review.

### Case:

A female infant was delivered via cesarean section at 25 weeks of gestation (25 (0/7)) to a 33-year-old G2 P1011 (Gravida 2, Para 1, Term 0, Preterm 1, Abortion 1, Living 1) female. Obstetric history was significant for short cervix and previous classical c-section. At birth, the Apgar score was 1 and 6 at 1 and 5 minutes respectively. Infant was intubated in the delivery room and surfactant was given. On arrival to the NICU, she was placed on High-Frequency Oscillatory Ventilator (HFOV) with FiO<sub>2</sub> of 0.4. The birth weight was 640 grams. Umbilical lines were placed. A 3.5 Fr Umbilical Arterial Catheter (UAC) was placed at 11 cm, and a double-lumen 5 Fr Umbilical Venous Catheter (UVC) was placed at 5.5 cm. A chest/abdomen x-ray was obtained, documenting the UAC tip at the level of T6 vertebrae and the tip of the UVC just inferior to the diaphragm (Figure 1A-B). Total parenteral nutrition (TPN) was started on day 1 of life at 80ml/kg/day. Ampicillin at 50 mg/kg every 12 hours and Gentamicin at 5 mg/kg every 48 hours was started along with prophylactic Fluconazole (3mg/kg) as per unit policy.

On admission to NICU, the vital signs were stable with a temperature of 96.8F, heart rate ranging from 150-160/min, mean blood

pressure ranged from 27-29 mm Hg. Initial blood glucose was 54 mg/dl. The respiratory exam was significant for mild subcostal/intercostal retractions with spontaneous respiratory effort. The abdominal exam was insignificant with a flat abdomen, normal bowel sounds in all four quadrants, and no organomegaly.

On day 2 of life, the infant was started on phototherapy for bilirubin of 5.2. The infant remained NPO on TPN. On day 3, the infant was extubated to NIMV. Packed red cell transfusion was provided for hemoglobin of 10.5 g/dL. On examination, the abdomen was noted to be distended (Figure 2 A). The infant was made NPO. An X-ray showed a gasless abdomen (Figure 3 A). Blood culture was obtained, and the infant was started on vancomycin and piperacillin-tazobactam. The infant was intubated and placed back to HFOV. On x-ray (Figure 3 A), due to concerns of low UVC, the line was removed, and a PICC was placed. Head ultrasound showed mild grade 2 IVH. An echocardiogram was significant for PDA. A significant amount of fluid under the diaphragm and around the liver was noted, which was confirmed by the abdominal US (Figure 4).

The infant underwent exploratory laparotomy. A large amount of yellow/purulent fluid was obtained. No bowel necrosis was identified in the small intestine, and no perforation was seen. The right colon appeared to have adhered to the abdominal wall, suspected of isolated walled-off colonic perforation. As the gut looked healthy, no ostomy was performed, but an abdominal drain was placed (Figure 2B and 3C). Peritoneal fluid was sent for culture. On post-operative day 2, the infant was successfully extubated. At the time of this report, the infant remained stable on non-invasive

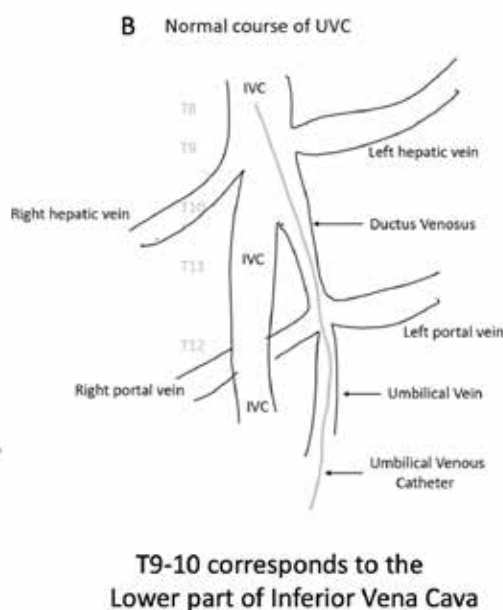
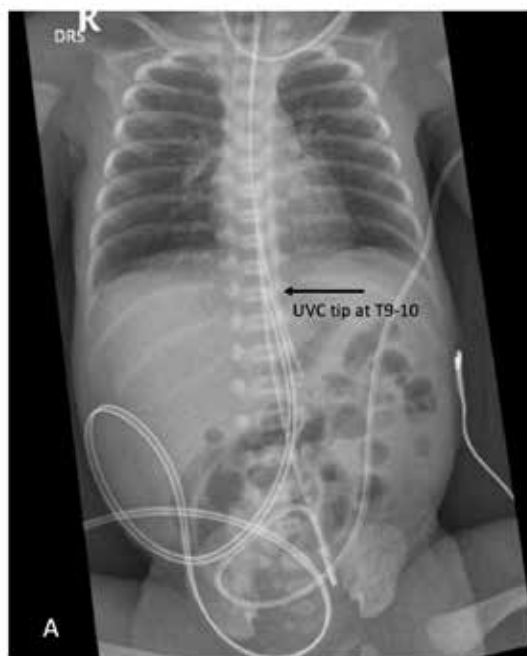


Figure 1-A : X-ray showing the tip of Umbilical Venous Catheter (UVC) at T9-10.

Figure 1-B : Animation showing the course of Umbilical Venous Catheter (UVC).



Figure 2-A : Distended shining abdomen, suspicious of ileus / peritonitis/ ascites (Pre-op picture)

Figure 2-B : Resolved abdominal distension (Post-op picture)

respiratory support.

**“ As noted in the case description, no definite perforation was found. Also, the peritoneal fluid did not grow any organism.”**

**Discussion:**

As noted in the case description, no definite perforation was found. Also, the peritoneal fluid did not grow any organism. By 48 hours, the neonatal gut is colonized with bacteria. Thus, having a sterile fluid excluded the intestinal perforation as a cause of infective ascites or peritonitis. We did not have a fluid analysis report to know if it was exudate or transudate. However, abdominal US confirmed the diagnosis of intraabdominal fluid (Figure 4). As depicted in Figure 3 B, the UVC was noted to have moved down to T11. We speculated that as a cause for ascites.

The possible mechanism of ascites secondary to malpositioned

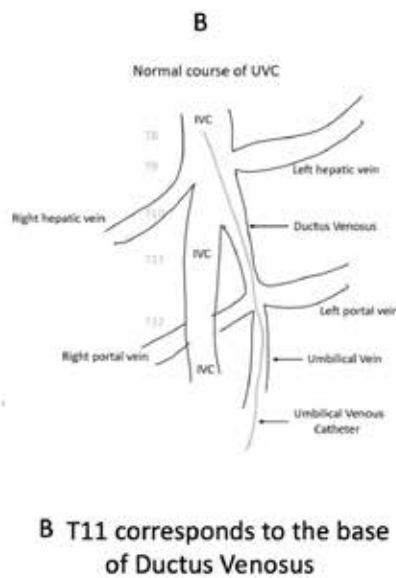
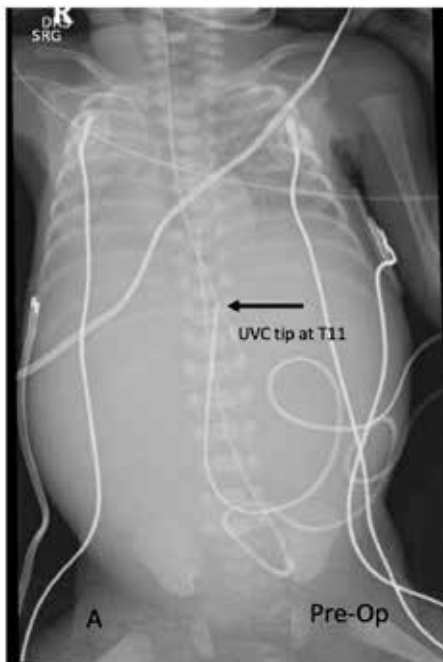


Figure 3-A : Gasless abdomen, suspicious of ileus / peritonitis/ ascites (Pre-op film)

Figure 3-B : Animation showing the course of Umbilical Venous Catheter (UVC).



Figure 4 : Liver Ultrasound showing fluid under the diaphragm

UVC could be explained by the findings of Hargitai et al.(1) They suggested the wedged UVC caused the micro injury to the vessel wall within the ductus venosus. As depicted in Figure 3 B, the UVC tip corresponds to the base of ductus venosus.

As noted in the case description, the infant required two back-to-back blood transfusions. Therefore another possibility could be the perforation of peritoneum and intra-abdominal hemorrhage, as described by Kanto et al.(2) However, operative findings of yellow fluid rejected the perforation and bleeding as the cause of ascites.

---

***“The other possible mechanism of ascites is explained by Pegu et al.(3) They suggested intraperitoneal spillage and ascites from TPN extravasation secondary to hyperosmolar characteristics of the infused fluid.”***

---

The other possible mechanism of ascites is explained by Pegu et al.(3) They suggested intraperitoneal spillage and ascites from TPN extravasation secondary to hyperosmolar characteristics of the infused fluid. In the case described, the infant did receive TPN from the UVC. Similar cases have been reported by Shareena et al. (4) and Panetta et al. (5)

Liver necrosis and renal failure have been reported in association with neonatal ascites with the malposition of UVC. (6-8) Fortunately, no liver necrosis was noted as liver US and liver enzymes, AST and ALT, were normal. Also, the infant had good urine output, and serum creatinine was normal.

In conclusion, whenever there is acute abdominal distension with an umbilical catheter in place, catheter-related complications must be considered. A lateral x-ray film should be obtained whenever there is a doubt about the position of the catheter. An urgent removal of the catheter is warranted.

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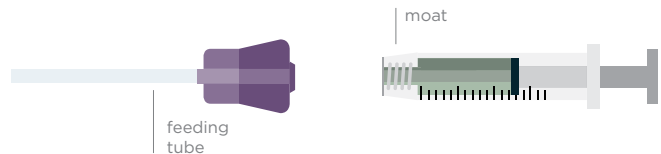


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## SAFETY IN THE NICU

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**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

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Pamela Sherman, M.D.

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Mohamed El-Dib, M.D., FAAP

**Wednesday, February 3, 2021**

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# The Important Role of Building Provider-Patient Trust in Improving Maternal and Infant Health Outcomes

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.*

*“One of the concerns voiced by parents about Sudden Infant Death Syndrome (SIDS) is how to prevent the occurrence of something whose cause is unknown and the worry that even if they do everything right, there is a chance the baby may die.”*

One of the concerns voiced by parents about Sudden Infant Death Syndrome (SIDS) is how to prevent the occurrence of something whose cause is unknown and the worry that even if they do everything right, there is a chance the baby may die.

The possible causes of SIDS continue to be researched, and risk factors may include brain defects, underdevelopment of automatic processes stemming from premature birth, and respiratory infections, among others. Although the underlying cause of death may

not be determined, the rate of SIDS still remains low and has declined in the U.S. from 130.27 deaths per 100,000 live births in 1990 to 35.18 in 2018. (1)

This decline in part has been attributed to the 1994-launched Back to Sleep (now Safe to Sleep®) public health campaign, which advances guidelines (including supine position, firm mattress, no bedding, no bed-sharing, breastfeeding, and maternal health care) developed by the American Academy of Pediatrics (AAP)—taking precautions matters.

Another reason for preventive measures is that over time the SIDS classification system has expanded into Sudden Unexplained Infant Death (SUID), which includes SIDS and Accidental Suffocation and Strangulation in Bed (ASSB). This has allowed other preventable causes that might have been previously identified as SIDS to be more correctly identified and has underscored the value of infant safe sleep planning.

## If Parents Are Considering Sleep Aids

We know from our work in the field training health care providers in infant safe sleep practices and talking with parents that helping an infant fall asleep and stay asleep are key issues, both for the health of the baby and to enable parents to try and get sufficient sleep themselves.

This can lead to consumer interest in commercial products such as inclined sleepers, but thousands of these have been recalled; they have been called “deadly” by the AAP. The angle of incline can cause airway blockage and suffocation as the infant’s head shifts during sleep, or the baby shifts position. This risk also holds true for other positioners that feature nesting or bolsters. These products run counter to the AAP guidelines and should not be used.

Another category is weighted blankets or swaddles. Weighted blankets may be filled with beads or pellets and are believed to provide a tactile sensory pressure that may induce a calming sensation. Studies using weighted blankets have been conducted on children with autism and attention deficit hyperactivity disorder (ADHD) with varying results, ranging from no statistically significant changes to a three-hour increase in sleep time.(2) However, it is important to remember that weighted blankets are still bedding and not to be used during the infant’s first year of life.



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)

## Swaddles as NAS Therapy

On a related note, a recent pilot study, led by Virginia Summe, RN, of Good Samaritan Hospital in Cincinnati, has focused on the effects of weighted blankets on infants with neonatal abstinence syndrome (NAS), the rates of which have increased in part due to maternal opioid use. (3) The Healthcare Cost and Utilization Report indicates that in 2016 seven NAS births were diagnosed for every 1,000 hospital stays. (4)

NAS affects the nervous system, and symptoms may include hyperactivity, jitters, irritability, poor sleep and feeding, increased respiratory rates, tremors, and vomiting. NAS can also put infants at greater risk of SIDS, so there is value in exploring methods that may be added to the non-pharmacological interventions (quiet environments, rocking, breastfeeding, swaddling, swaying) used to alleviate symptoms, and the recourse to drug therapy if they do not.

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***“NAS can also put infants at greater risk of SIDS, so there is value in exploring methods that may be added to the non-pharmacological interventions (quiet environments, rocking, breastfeeding, swaddling, swaying) used to alleviate symptoms, and the recourse to drug therapy if they do not.”***

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During the study, infants meeting the study criteria in a level III NICU were randomly placed into one of two groups, either receiving weighted blankets or non-weighted first. The infants were placed supine and swaddled and covered (not wrapped) with a weighted blanket of 1 lb. from their shoulders to their feet for 30 minutes. Heart and respiratory rates and temperature were monitored.

Effectiveness was measured by data on heart rate, respiratory rate, and NAS symptoms through the Modified Finnegan Neonatal Abstinence Scoring Tool. During the seven-month study period, 16 infants, the majority receiving drug therapy, were enrolled, with no adverse events or infant distress.

The results indicated a significant decrease (seven beats per minute) in heart rate when a weighted vs. non-weighted blanket was used. Furthermore, although there was no significant difference in respiratory rate, there was a significant decrease in the Finnegan scores during the weighted blanket's use. The study also reported missing temperature data from some of the sample because although the infants' baseline temperatures were taken, their post-blanket readings were not; they were asleep, and the nurses did not want to wake them.

These findings from a limited study raise the possibility that a larger study could yield more data toward determining the efficacy of weighted blankets in helping NAS infants recover and in exploring protocols for their effective use in clinical settings.

Further research could also help inform the effects of weighted blankets and swaddles on the larger infant population, with regard to falling and staying asleep, again keeping in mind that blankets are bedding and cannot be used for safe infant sleep. Although there are a variety of weighted swaddle products on the market, and the pilot study authors have conferred with a commercial firm to develop a weighted sleep sack for use in potential future infant NAS studies, at this time, there is no research evidence to support the use of weighted sleep sacks without doctor recommendation and supervision.

So, to sleep or not to sleep, the quest for sleep for both infants and parents will continue, as will the need to find methods that may offer remedies without compromising safe infant sleep.

---

***“So, to sleep or not to sleep, the quest for sleep for both infants and parents will continue, as will the need to find methods that may offer remedies without compromising safe infant sleep.”***

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*Disclosure: The author is the Executive Director and Chief Executive Officer of First Candle, Inc., a Connecticut not for profit 501c3 corporation.*

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### About First Candle

First Candle, based in New Canaan, CT, is a 501c (3) committed to eliminating Sudden Infant Death Syndrome and other sleep-related infant deaths while providing bereavement support for families who have suffered a loss. Sudden unexpected infant death (SUID), which includes SIDS and accidental suffocation and strangulation in bed (ASSB), remains the leading cause of death for babies one month to one year of age, resulting in 3,600 infant deaths nationwide per year.

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

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

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## 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



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

# 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.





# The First Ten Minutes

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

*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.*

*"We are accustomed to referring to the first hour of a baby's life as "the golden hour." If the first hour is golden, then the first ten minutes of that hour are platinum."*

We are accustomed to referring to the first hour of a baby's life as "the golden hour." If the first hour is golden, then the first ten minutes of that hour are platinum.

It is well known that the lungs are most prone to damage during recruitment. This is doubly so with the extremely premature infant since their lungs are so fragile and prone to airway and alveolar duct damage. Standard practices may not be appropriate with these infants; bag/mask ventilation pressures are typically higher than estimated even when delivered by an experienced, seasoned provider. Various factors affect delivered pressures. The leak around the face mask can be considerable(1), and end-expiratory pressures (PEEP) can be very difficult to provide consistently. In my experience, more recent flow inflating bags with an adjustable leak dial to provide PEEP are prone to either under or over providing PEEP. This is especially true when used with an endotracheal tube (ETT). A T-piece resuscitation device may provide more consistent peak inspiratory pressure (PIP)(2). It has been my experience that stable PEEP is also difficult to maintain with these devices.

With the advent of CO<sub>2</sub> detectors, there is no excuse for assessing ETT placement by bagging with a high enough pressure to auscultate air entry. Manual bag ventilation should be avoided with an ETT in situ at all costs. Between flow graphics and adjustable manual inspiration pressures available on modern ventilators, this

practice is technically archaic. It has long been suspected that the first few manual breaths given to a premature baby to assess ETT placement set that baby up for chronic lung disease (CLD) later.

I reported last month (The Iowa Way) on practice by Dr. Klein and the outcomes of extremely premature infants in his NICU. In addition to using HFJV with this patient population, he aims to provide HFJV within 10 minutes of birth. This makes sense. Minimizing bag/mask ventilation and providing HFJV as quickly as possible may mitigate lung injury so commonly produced during initial resuscitation. The inflammatory response initiated at this point in conjunction with inflammatory factors associated with preterm birth may lead to CLD later. (4) We, I think, can all relate to the infant who cruises along splendidly on minimal ventilator settings and oxygen only to have everything escalate after about a week. This is the harvest of what has all too often been sown during those first 10 minutes.

*"We, I think, can all relate to the infant who cruises along splendidly on minimal ventilator settings and oxygen only to have everything escalate after about a week. This is the harvest of what has all too often been sown during those first 10 minutes."*

Proper nasal ETT placement can be estimated at six-plus double the weight in kg. Oral tubes may be estimated at six plus the weight in kg, although this formula is less precise than the one for nasal ETT placement. Newer formulae for oral ETT placement have been suggested as more reliable, such as four plus the birth weight in kg plus 0.05 times gestational age in weeks, but this requires further validation. (3) It is a commonplace in the unit in which I practice to administer surfactant when required based on these formulae and without radiographic verification of ETT placement.

Anecdotally, chronic lung disease (CLD) rates dropped in the unit where I practice when we connected babies to the ventilator immediately after intubation. The manual breath button was used in concert with flow graphics to assess ETT placement. With the addition of a CO<sub>2</sub> detector, this method is almost foolproof and reduces the potentially damaging effects of manual ventilation with

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a resuscitation bag. Also, the ventilator provides stable, accurate PEEP and peak inspiratory pressures (PIP), unlike the manual resuscitation bag. Personal practice is to use HFO/VG at 10 Hz with VG set at 2 mL/kg and manual inspiration set to 20 cmH<sub>2</sub>O pressure as initial settings. Pressing the manual breath button until a blip appears on the flow graphic indicates flow, and colour change on the CO<sub>2</sub> detector indicates that flow is into the baby's lungs. While flow sensors are not used when providing high-frequency jet ventilation (HFJV), the CO<sub>2</sub> detector still confirms ETT placement.

---

***“While flow sensors are not used when providing high-frequency jet ventilation (HFJV), the CO<sub>2</sub> detector still confirms ETT placement.”***

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While on the topic of targeted volumes, it is important to note that in order to be lung-protective, the lung must be recruited. A dialed-in target of 4 mL/kg is actually 8 mL/kg if the lung is only half recruited, provides a false sense of security and little to no lung protection.

The cost of CLD is well known, not just while in hospital but post-discharge. Home oxygen, ventilation, and tracheostomy come with considerable costs. Whether born by a national health program or private insurance, this is money that could be much better spent. Here an ounce of prevention is indeed worth a pound of cure. Using CO<sub>2</sub> detectors does involve the cost of the detector, about \$10. This is a small price to pay if the usage thereof decreases the rate of CLD. Of course, using the ventilator as quickly as possible has no associated costs above normal management whatsoever, and the potential savings are hardly insignificant. Newer ventilators also provide more stable CPAP when used in non-invasive mode.

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***“The use of rapid sequence induction (RSI) has been shown to decrease cerebral blood flow changes with the associated risk of brain bleeds.”***

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The use of rapid sequence induction (RSI) has been shown to decrease cerebral blood flow changes with the associated risk of brain bleeds. It also increases the chance of successful intubation regardless of the skill of the clinician. (5) Wherever possible, RSI should be used during intubation, including during initial resuscitation (6). The skill and speed of the clinician charged with inserting umbilical lines can directly impact the timing of RSI, and it may not be possible to provide RSI in an emergent situation. A “flat” infant clearly requires immediate action. It is common practice to insert umbilical venous and arterial lines at the same time. It is typically much easier and quicker to place an umbilical venous line than an umbilical arterial line. Perhaps the umbilical venous line should be inserted first, and the arterial line placed after RSI intubation. The added time to split line placement into two procedures is short as re-prepping takes little time, and the person placing lines could,

staff permitting, step back and remain sterile.

Early administration of surfactant may mitigate lung injury by reducing the inflammatory response. (7) This comes with its own problem: the rapid changes in compliance associated with surfactant administration. This change in compliance results in larger tidal volumes being delivered at a given pressure, regardless of the mode of ventilation used. This can result in very rapid changes in PaCO<sub>2</sub> with resulting changes in cerebral vasculature tone and increases stretch injury to the lungs. While targeted volumes reduce the risk of stretch injury and hyperventilation post-surfactant, blood gas values must be carefully monitored during the first hour. Here, point of care testing is invaluable as turnaround time for laboratory-processed blood gases can be agonizingly long. A great deal can change in 30 minutes! I firmly believe that point of care testing for blood gas values (or a blood gas machine and personnel trained in its usage) should be available and **mandatory** in the resuscitation room. Unfortunately, this is not always the case.

---

***“Beyond the associated pulmonary sequelae, there are neurological consequences associated with the “golden hour.” We know the premature infant is particularly susceptible to noxious stimuli, including pain, noise, and touch.”***

---

Beyond the associated pulmonary sequelae, there are neurological consequences associated with the “golden hour.” We know the premature infant is particularly susceptible to noxious stimuli, including pain, noise, and touch.

Most resuscitation rooms are much too loud. The noise monitor where I practice is all too often displaying red, indicating too much noise. The more people in the room, the louder it gets. Anyone not directly involved in resuscitation should, quite frankly, not be in the room, save a designated person for documentation. Necessary personnel should communicate as quietly as is practically possible. Light in the resuscitation room can be very high. Efforts should be made to shield the infant's eyes from strong light sources.

We strive for minimal handling during the first 72 hours of a micro-premature infant's life. Given this, it makes sense to begin those 72 hours immediately. For instance, Infant length and head circumference do not need to be measured immediately although many clinicians seem compelled to do so. While not investigated, polyethylene occlusive wraps may reduce initial handling while reducing hypothermia. (8)

When it comes to the first hour, and especially the first 10 minutes, we should all be practicing with a Midas touch!

#### **Clarification**

In last month's column (“The Iowa Way”) the BPD/CLD rate in the sub-24 week gestation group was reported as 11%. This is using the Jensen et al. definition of BPD, staged into 3 stratas (9), not

the Shennan definition of BPD as requirement of supplemental oxygen at 36 weeks postmenstrual age. (10) By this definition the grade III BPD rate in the sub-24 week gestation group was approximately 11% in the 2016 – 2019 inborn cohort who received HFJV as first intention. Survival at 22 weeks is reported at 58% and 74% at 23 weeks gestation, relatively high for this cohort. Survival rates of 25-50% have been reported elsewhere in the 22 week strata (11) and 50% in the 23 week strata. (12)

I thank Dr. Klein for this clarification and apologize for any misinterpretation that may have arisen.

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12. <https://healthydebate.ca/2019/06/topic/babies-born-23-weeks-preterm>

**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

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NCJIH National Coalition for Infant Health  
 Promoting Science and Evidence-Based Care Through All Ages



*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.*

# National Perinatal Association Annual Conference 2020 – Innovative Poster Session

Jerry Ballas, MD, MPH

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*.



***“This year the chosen theme focused on the 4th Trimester and the various areas of vulnerability for parents and infants during this time, as well as the resources available for support.”***

Every year, the poster session at the National Perinatal Association annual conference proves to be one of the best op-



portunities to network with colleagues from across the nation. From longtime members highlighting their ongoing work to first-time attendees presenting unique research, the poster session has always been a source for advocates and innovators to exchange ideas and contact information. In that regard, this year was no different.

In every other way, however, this year's poster session was like no other.

With NPA's annual conference going virtual for 2020, the traditional poster session had to be re-imagined in a way that would allow presenters to display their work and connect with attendees. The first step was creating a virtual space to display their work, created by NPA's own Director of Communications, Erika Goyer. All posters can still be accessed at <https://www.npa-conference.org/posters>.

The next step was offering presenters the option of converting an otherwise static poster traditionally on display at our in-person meeting to an audio-guided presentation of their work. Everyone did an amazing job pivoting to the new format, once again proving the versatility and adaptability of NPA members, attendees, and presenters.

And finally, each presentation had a direct link to either send a message or schedule a

time to meet virtually, all in the spirit of networking and exchanging ideas that any traditional poster session was designed to do.

Two posters are typically awarded top honors, one for Original Research and another for Innovative Models of Care. This year, there was a tie for best Original Research poster between Social Work Ph.D. candidate Molly Gebler's "[Babywearing in the NICU: An intervention with NAS](#)" and Fourth Year Medical Student Sneha Rajendran's "[The impact of sociodemographic characteristics on postpartum depression in Hispanic women](#)."

For the Innovative Models of Care, the top honor went to Ryan Nicoll, MSW, LISW-S, for her work in implementing an amazing program at Nationwide Children's Hospital entitled "[Neonatal Social Work Care Coordination in the NICU & NICU follow-up](#)."

***“Everyone did an amazing job pivoting to the new format, once again proving the versatility and adaptability of NPA members, attendees, and presenters.”***

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## WELCOME

# POSTER PRESENTATIONS



We are grateful to our presenters for sharing their research. Please take a moment to show your appreciation and share your insights. You may find a new partner and ally.

# Innovative Models of Care: Essential Knowledge and Competencies for Psychologists Working in Neonatal Intensive Care Units (NICUs)



Tiffany Willis, PsyD



Make an appointment to meet online.

## AWARD WINNER Research



### The Impact of Sociodemographic Characteristics on Postpartum Depression in Hispanic Women



Make an appointment to meet online.

AWARD WINNER

Innovative Models of Care



### "Babywearing" in the NICU: An intervention for infants with Neonatal Abstinence Syndrome



Molly Gebler  
LMSW - PhD Student



Make an appointment to meet online.

While the hope is for NPA to return to an in-person format for this year's conference in December 2021, our 2020 virtual poster conference's success has opened new potential avenues for ongoing innovation. By leveraging technology while committing to networking and creating connections, future poster sessions will likely become multimodal, multimedia events that will combine the

best attributes of in-person presentations and virtual platforms to achieve wider, more diverse participation.

Keep an eye out for NPA's 2021 Conference Announcement coming soon and see how you may be able to participate as either an attendee or presenter and prepare to make some invaluable

AWARD WINNER

Research



### Neonatal Social Work Care Coordination in the NICU and NICU Follow-Up



Ryan Nicoll,  
MSW, LISW-S



Make an appointment to meet online.

connections.

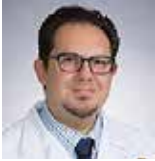
**References:**

1. <https://www.npaconference.org/posters>
2. <https://www.youtube.com/watch?v=uA1WFSrneg&featu re=youtu.be>
3. <https://youtu.be/FHHPuaAJUG0>
4. <https://youtu.be/3btIQ-sa4Ms>

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.

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 March 24 – September 30, 2021: On-demand  
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Provided by:



For more information, contact the meeting planner at [nrose@usf.edu](mailto:nrose@usf.edu)



TAKE THE NECESSARY STEPS TO  
**ELIMINATE INEQUITIES**

- Make **health equity** and **implicit bias** training mandatory.
- Prioritize health + racial equity as a goal.
- Communicate with parents using **plain language**.
- Partner with **Black parents** to deliver bias free care.
- Hire, retain, or partner with **Black Premie family support groups + professionals** to fill diversity gaps.
- Make **digital + virtual resources** available.
- Encourage **reading to Premie babies** while bedside.



[ONCEUPONAPREEMIEACADEMY.COM](http://ONCEUPONAPREEMIEACADEMY.COM)

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**NCfIH** National Coalition for Infant Health  
*Protecting Science for Premature Infants through Age Two*

NATIONAL PERINATAL ASSOCIATION

Update: **CORONAVIRUS COVID-19**



According to the CDC  
**Breast milk provides protection against many illnesses.**

**KEEP GIVING YOUR BABY YOUR MILK** even if you're sick.

THERE ARE RARE EXCEPTIONS. ASK YOUR HEALTHCARE TEAM.



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# 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**SSESS 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.

Partnering for patient-centered care  
when it matters most.

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



National  
Association of  
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



## Coding Forum: A Timely Scenario (Spring 1986)

Gilbert Martin, MD

### Funding for Neonatology

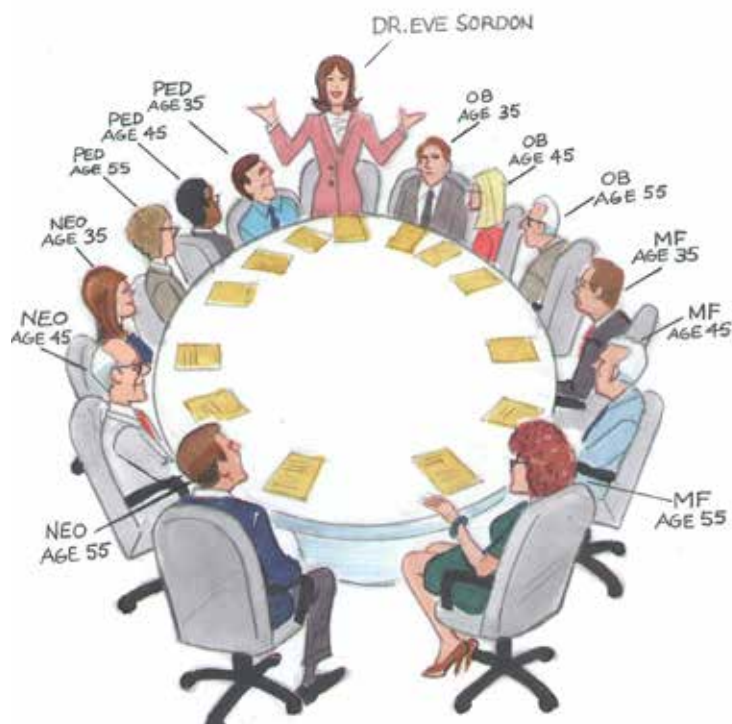
*The following scenario was written in 1986. Although tongue-in-cheek, and imaginative some of the principles regarding the need for Federal and State Funding to support perinatal research, remuneration for hospitals and personnel remain cogent today. The bottom line is always "money." In today's world (2021), healthcare workers, administrators, and legislators understand the challenge and principles of funding for perinatal and neonatal issues. The song at the end of this scenario has been recorded on a CD. If you would like a copy, email me at [gimartinmd@yahoo.com](mailto:gimartinmd@yahoo.com), and I will send you one.*

***“Although farming, education, and social security programs were axed initially, the health care industry was now feeling the crunch. For the first time in the decade, the fetal and neonatal mortality figures were rising, for there was not enough money to pay for either personnel or needed equipment. Research was not funded, scientists were leaving the medical profession in droves, and the gloom and doom attitude was now a reality.”***

The news was not good. The government, facing an even larger deficit in 1994 than expected, was recommending another “austerity program.” The expansion of the “Star Wars” defense system and the continual threat from orbiting “Galactic Foreign Plopdos” allowed the administration to triple the defense budget at the expense of other programs. Although farming, education, and social security programs were axed initially, the health care industry was now feeling the crunch. For the first time in the decade, the fetal and neonatal mortality figures were rising, for there was not enough money to pay for either personnel or needed equipment. Research was not funded, scientists were leaving the

medical profession in droves, and the gloom and doom attitude was now a reality.

In August, I was asked to join a select panel of Neonatologists from the Perinatal Section of the American Academy of Pediatrics. A meeting was held in Washington, D.C., and I noted that the American College of Obstetrics and Gynecology had sent delegates as well. After initial informal introductions and renewed hellos, we were asked to sit around an oblong table in a stately room near the Capital. The twelve of us were an interesting bunch, I mused. Three pediatricians, three neonatologists, three obstetricians, and three perinatologists. I noted, too, that not only were the seating arrangements such that the specialties were kept together but within each group of three, there were well-defined age categories. It seemed that there was one physician in the 30-40 age category, one 41-50, and one other in the 51-60 range. Probably a coincidence, I thought...but...I wonder.....



“Ladies and Gentlemen, I wonder if we might get down to business,” began Dr. Eve Sordon, the President of the National Perinatal Coalition. “As you well know, Congress is about to pass the Kennedy-Glenn Bill, which will literally cut off federal funds for perinatal research, tighten the DRGs for perinatal medicine, and only allow tertiary or quaternary centers to operate. Since so many of the old primary hospital centers closed in 1991 and 1992, much of the rural American population has been left without hospitals to care for both mother and infant, and inappropriate and unexpected home deliveries have increased. The rest you know about. First, fetal and neonatal mortality increased. In the last six

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months, both maternal morbidity and mortality have also risen. The bottom line is money. We need to raise 100 million dollars quickly to infuse into the system.”

An immediate low-pitched buzzing was heard as the physicians reacted to Dr. Sordon’s statement.

“Eve,” began Phil Gurman, one of the neonatologists. “Isn’t this a bit out of our league?” We are physicians, not fundraisers or legislators. I am sure that Polly and Saul would also agree.”

“Hold on a minute, Phil. Look around the room at the other people that are on this committee. All of you have something in common. You were not only chosen because of your expertise in your particular field, but every person in this room has a secondary interest which can be used to help raise the money.”

I looked around again. No oil money here, I thought. I don’t see any fancy jewelry, and I can’t remember limousines downstairs. Ordinary dress with gray slacks and blue blazers...no Bijan silk suits here. Now in.....

Eve motioned for quiet again.

“It’s time to explain. Each of you has been either professional athletes, musicians, actors, or actresses before becoming physicians. Since all the “big money” today resides in these three fields, we felt that we would like to set up a big athletic event, like a super-super bowl. At half-time, a large number of famous people would come on to the field, join hands, and sing a song, which then would be flashed on the screen and sung by everybody. The song would be so full of nationalism and feeling that it would then be recorded, sold in the stores, and the profits from the game and the records would make up the deficit.”

Everyone thought of the same thing. In 1984, “We are the Children” made millions for the people in Africa. In 1986, “Hands Across American” sold 18 million records and was worth 80 million dollars.

The buzz returned.

There was great excitement in the room. Dates, times, places, and ideas were all thrown out for discussion and either discarded or agreed upon. The final questions dealt with who should write and record the song. The older group wanted Sinatra or Streisand. The middle group opted for Manilow or Diamond. The younger group only wanted Springsteen, The Boss.

Finally, Eve called for attention.

“Please, please,” she began. “All this arguing over who and how will do us no good. We have among us someone who has experience in the recording business and who would be perfect.”

Her gaze turned to me, and all eyes followed.

“Perry, you write and record the song.”

On October 15, 1994, the event was held in the new 180,000-seat American Stadium. The song, *Let Our Babies Grow* brought tears to the eyes of all people everywhere. During the first 12 weeks of production, the song written and performed by Perry Nate was at the top of all Billboard charts.

The rest.....is history.

*“Let Our Babies Grow”*

Words and music by Perry Nate

### Verse

### Verse

In this day and age  
Knowledge, care, and money

We often wonder why.

Will help our babies ‘cause

Seems there is no greater sound,  
Stand up tall—ask for all,

A newborn baby’s cry.  
Break down these closed doors.

It means an early start,  
Don’t allow a very few

Which hopefully will last.

To spoil it for the rest

The cry looks to be the future  
America must take the step,

And wipes away the past

Its kids deserve the best.

### Chorus

### Chorus

Give us the heart and hope

Give us the heart and hope

To let our babies grow.

To let our babies grow.

Make sure the care is such,  
Make sure the care is such,

So we are in the know.

So we are in the know.

Let our babies grow with love,

Let our babies grow with love,

Allow them all this chance,  
Allow them all this chance,

Watch them coo, and talk, and walk,  
Watch them coo, and talk, and walk,

Watch them run and dance.

Watch them run and dance.

The author has no conflicts of interests to disclose.

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Patient+Family  
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# 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
- **Clear, science-based nutrition guidelines** for pregnant and breastfeeding mothers
- **Safe, accurate medical devices** and products designed for the special needs of NICU patients

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# Access to Care is More Than “Having Insurance”

Michelle Winokur, DrPH, 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.



Upward of 15 million uninsured people will soon be eligible to sign up for private coverage during the federal insurance marketplace's special enrollment period. President Joe Biden ordered the reopening from February 15 to May 15 so more Americans could enroll in a plan of their choice.

“As we continue to battle COVID-19, it is even more critical that Americans have meaningful access to health care,” President Biden declared when signing the executive order authorizing the exchanges to reopen.

**“As we continue to battle COVID-19, it is even more critical that Americans have meaningful access to health care,” President Biden declared when signing the executive order authorizing the exchanges to reopen.”**

However, having insurance coverage is not the same as having access to care. Insured patients, even neonates, still face barriers that keep them from optimal health care. Among them:

- High out-of-pocket costs. The monthly premium patients pay to maintain their insurance coverage is just one of many costs. Patients incur additional costs, including the annual deductible they must meet, before reaping the full benefit of their insurance. Plans with low premiums often have a high deductible, which can keep patients from seeking care. Even once the deductible is met, patients still face co-pays and, in some instances, co-insurance. The variable nature of these expenses makes them difficult to predict, deterring parents from seeking care or filling prescriptions for themselves or their children.
- Unnecessary non-medical switching. Insurers may push patients to take the medication that's least expensive or most profitable for the insurer. To encourage the switch, the insurance company may stop covering a patient's current medication or may move the medication to a specialty tier, which drives up the cost for patients. Patients are left to face the potential health effects of abrupt or inappropriate medication changes.
- Burdensome step therapy. Insurers may require patients to “fail first” on an insurer-preferred medication before gaining access to their physician-prescribed medication. Again, the insurer generally prefers medications that cost them less. Forcing patients to step through one therapy before moving on allows the insurer to delay as long as possible, paying for the expensive medication the patient needs. Meanwhile, patients are strapped with unnecessary costs. And the time it takes to go through the steps allows their condition to worsen, which can impact the overall health of a new baby.
- Excessive use of prior authorization. While patients who primarily feel the pain of the first three barriers mentioned, health care providers are also wringing their hands over exorbitant prior authorization. They and their staff must spend hours completing forms and submitting records to prove their patients should get the medication or procedure prescribed. Insurers are known for denying initial requests, sending health care providers through the appeals process, all while patients suffer in waiting.



Allowing more individuals and families the ability to sign up for insurance during this special enrollment period is positive news. Policymakers should complement improved access to coverage with improved access to prescribed treatment and appropriate clinical care. Most parents find themselves juggling their job, the needs of their newborn, and possibly other children, too. They do not have the time or energy to fight it out with their insurance company.

**“Insurers are known for denying initial requests, sending health care providers through the appeals process, all while patients suffer in waiting.”**

Federal and state governments who oversee insurance companies would do well to adjust insurance plan provisions that prevent patient-centered care. Only then will patients truly have meaningful access.

*Michelle Winokur, DrPH, is the Policy Communications Director for the Alliance for Patient Access.*

Disclosures: none

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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.

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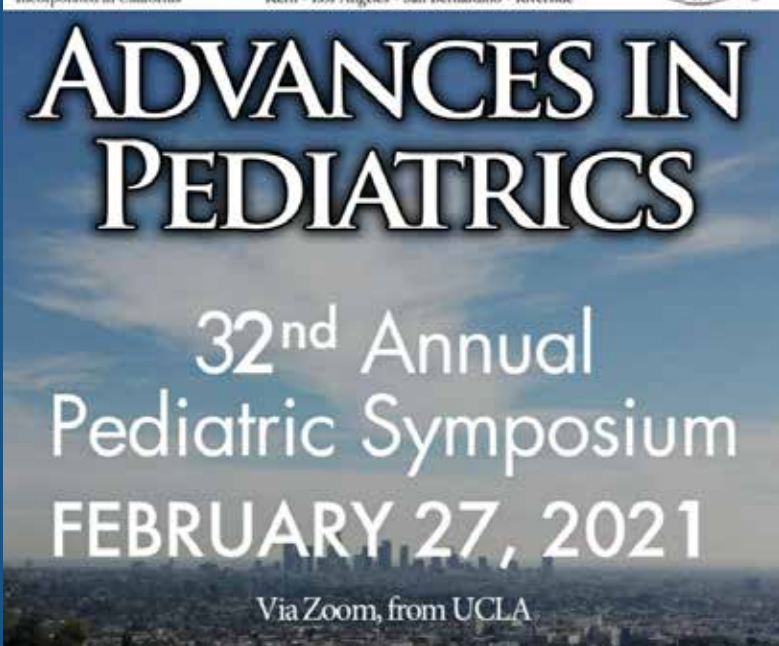


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FACULTY

**NIRMALA MURTHY, MD, FAAP**

- Diplomate American Board of Pediatrics
- Teacher of meditation techniques in the Art of Living Foundation
- Has taught Living Well - Healing Breath Program for health care Professionals for 5 years



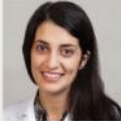
**Paul A. Offit, MD**

- Co-inventor of a rotavirus vaccine
- Director of **The Vaccine Education Center** at Children's Hospital of Philadelphia (CHOP)
- Member of National Institutes of Health (NIH) working group on vaccines



**Nava Yeganeh, MD, MPH, FAAP**

- Visiting Assistant Professor in the Department of Pediatrics, Division of Infectious Diseases at the David Geffen School of Medicine
- Physician at Mattel Children's Hospital
- Co-chair of the AAP-CA2 School Health Committee



**Edward Tagge, MD, FAAP**

- Professor of Surgery, Loma Linda University School of Medicine
- Appointed to the American Academy of Pediatrics Section on Complementary and Integrative Medicine
- Research passion: studying the Mind-Body relationship and Integrative Medicine as it applies to Pediatric Surgery



**Wendy De La Pena, MD**

- Division Chief of Pediatric Rheumatology, medical director of LLUCH specialty teams centers
- Medical director of the LLUCH infusion center and associate program director of the LLUCH pediatric residency program.
- Completed Pediatric Rheumatology Fellowship at CHLA



**Christopher J. Russell, MD, MS**

- Academic pediatric hospitalist at Children's Hospital Los Angeles (CHLA)
- Assistant Director, CHLA Office of Diversity, Equity and Inclusion
- Co-director of the Academic Pediatric Association's New Century Scholars Resident Mentoring Program



**Jonathan Warus, MD, FAAP**

- Adolescent medicine physician who specializes in care for transgender and gender-nonconforming youth, HIV prevention for adolescents and young adults, and LGBTQ health for youth
- Assistant Professor of Clinical Pediatrics at Children's Hospital Los Angeles (CHLA)
- USC Faculty Member



AGENDA

7:00 am – 7:45 am	SELF CARE - WELL BEING OF HEALTHCARE PROFESSIONALS Nirmala Murthy, MD, FAAP
8:00 am - 8:10 am	WELCOME
8:10 am – 8:50 am	KEYNOTE LECTURE Paul A. Offit, MD <i>Developing a SARS-CoV-2 Vaccine at Warp Speed</i> <b>S. Michael Marcy, MD Memorial Lecture</b>
8:50 am – 8:55 am	5 - MINUTE TRANSITION
8:55 am – 9:35 am	COVID IN SCHOOLS Nava Yeganeh, MD, MPH, FAAP
9:35 am – 9:40 am	5 - MINUTE TRANSITION
9:40 am – 10:20 am	COMMON GENERAL SURGICAL CONSIDERATIONS Edward Tagge, MD, FAAP
10:20 am – 11:00 am	<b>BREAK</b> VIRTUAL Exhibits   Research Posters   Breakout Networking Rooms
11:00 am – 11:40 am	COMMON CAUSES OF ARTHRALGIAS Wendy De La Pena, MD
11:40 am – 11:45 am	5 - MINUTE TRANSITION
11:45 am – 12:20 pm	ADDRESSING BIAS AND MICROAGGRESSIONS IN THE CLINICAL ENVIRONMENT Christopher J. Russell, MD, MS
12:20 pm – 12:25 pm	5 - MINUTE TRANSITION
12:25 pm – 1:00 pm	BUSINESS MEETING
1:00 pm – 1:30 pm	<b>BREAK</b> VIRTUAL Exhibits   Research Posters   Breakout Networking Rooms
1:30 pm – 2:15 pm	RESIDENT RESEARCH AWARDS AND PRESENTATION Speaker TBD <i>Awards -5 min   Presentation - 30 min, 10 min Q&amp;A</i>
2:15 pm – 2:20 pm	5 - MINUTE TRANSITION
2:20pm – 3:00 pm	TEENAGE SUICIDALITY Jonathan Warus, MD, FAAP
3:00 pm – 3:05 pm	ADJOURN & CLOSING REMARKS

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# The 2021 iCAN Advocacy and Research Summit

Amy Ohmer



*“Founded in 2014 by Dr. Charlie Thompson, iCAN, a registered 501(c)3, has grown to represent children ages 8-18 on four continents in over 29 (including one virtual) chapters. This unprecedented growth results from the strong partnerships between the American Academy of Pediatrics, Georgia Tech, other academic institutions, and a large number of hospitals and other committed stakeholders.”*

## Greetings from iCAN -

No matter where kids reside within the world, iCAN offers an opportunity for kids to share their voices through our new ‘Virtual’ iCAN Chapter. As a member of iCAN, kids are invited to participate in science, innovation, and medicine. In partnership with community organizations like the American Academy of Pediatrics and the Food and Drug Administration, kids are getting fantastic opportunities to learn from field experts. To share global learnings and to answer kid questions directly, youth members are invited to

participate in iCAN’s unique series called “Ask the Experts”, hosted by Dr. Anthony Chang of AI Med, CHOC, iSPI. In March, our event will focus on understanding Clinical Research Terminology and later in April, Dr. Chang and iCAN special guest, Paula Garcia Todd, from Dupont, will focus on sharing a better understanding of polymers to help explain what is in a pill. In addition, KidsX, a partnership of startups designed to create innovation in pediatric medicine has opened several new participatory activities to kids that would like to share their voice to new AI Med channels. Kids and community members are also invited to share their unique research perspectives through a poster session to be held during the Annual iCAN Research and Advocacy Summit from July 12-16th, 2021. Posters are due by June 1st, 2021. To learn more, visit [icanresearch.org](http://icanresearch.org) or send an email to [info@iCANResearch.org](mailto:info@iCANResearch.org). #iCANMakeADifference #iCAN

*“Kids and community members are also invited to share their unique research perspectives through a poster session to be held during the Annual iCAN Research and Advocacy Summit from July 12-16th, 2021.”*

#iCANMakeADifference #2021iCANSummit #iCAN

The author has no conflicts of interests to disclose.

NT



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Phone: (+1)7345452831



## 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!



Support the  
Open Letter



Breastfeeding  
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Team

Learn more about  
Neonatal Abstinence Syndrome  
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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.

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# The Art of Neonatology, the Art of High Reliability as a Response to COVID-19

Daved van Stralen, MD, FAAP, Thomas A. Mercer, RAdm, USN

## Medicine / Neonatology as Art

Historically, art is the skill in scholarship gained by learning or practice, evident today as a Bachelor of Arts degree or study in the liberal arts. By the 17<sup>th</sup> century, art became associated with painting and sculpture. Art, in this usage, reflects the creativity and aesthetic intention (1). Neonatology, as a specialty in medicine, “is an art, based to an increasing extent on the medical sciences, but comprising much that still remains outside the realm of any science” (2). Because both uses of the term “art” have a common root, we find the “art as creativity and aesthetic intention” can inform the “art as practice” of neonatology.

***“Because both uses of the term “art” have a common root, we find the “art as creativity and aesthetic intention” can inform the “art as practice” of neonatology.”***

As aesthetic intention within the affective domain, art is both a part of the world and apart from the world. Independent of Knowledge, art produces feelings, which constitutes art’s importance (3). This affective quality of art drives actions that Knowledge alone cannot, capable of generating an aesthetic experience similar to John Dewey’s description of the experience: complete, unified experiences of how things appear to us that are controlled by the things (4).

For Dewey, aesthetics, as the combination of mind, emotions, and judgments, begins with what interests the individual. The resulting absorption creates artistic engagement in the activity, whether as a mechanic or as a physician in practice. Lack of such engagement encourages low-quality work (5). The affective drive to experience artistic engagement occurs at the level of the individual who seeks Knowledge through experience but also acquires Knowledge from others. James Spradley (6) describes culture as the “acquired knowledge people use to interpret experience and generate behavior.” Learning to engage “the particular” under the guidance of elders for the greater good not only produces “practical wisdom,” described by Aristotle (7), but develops the culture ethic for the “art of practice.” For Spradley (6), rather than answering the questions asked by executives or outsiders, we learn more

about a culture from how the individual uses Knowledge and what interests the individual.

What does a person need to know to feel the aesthetic drive for artistic engagement? We must acquire Knowledge for the art of practice, but it is aesthetic engagement that generates our professional behavior. Then, a culture of the practice is how acquired Knowledge guides our interpretation of experience, helping us develop the cultural aesthetic drive that generates artistic engagement behaviors. The study of culture in this manner comes from the participants’ interests, particularly the hidden voices, rather than the interest of executives from the dominant account (6) (8). What drives artistic engagement will reveal more about culture change than following the executive’s interests.

Science, the systematic Knowledge of truth and facts often understood as objective and dispassionate, primarily organizes Knowledge for understanding and prediction. As its original structure, art consists of the Knowledge obtained through experience and is, therefore, contextual, subjective, and organized for practical use. The normative, decontextualized structure of the science of medicine risks an impersonal relationship with the patient. The pragmatic and contextual nature of the art of medicine, on the other hand, engenders personal relationships. As (2) Peabody stated for the physician, failure to develop “the intimate personal relationship between physician and patient accounts for much of his ineffectiveness in the care of patients.”

Contextualization of the patient creates a clinical picture, described by Peabody (2) as “not just a photograph of a man sick in bed; it is an impressionistic painting of the patient surrounded by his home, his work, his relations, his friends, his joys, sorrows, hopes, and fears.” Here, we share Peabody’s embodiment of the creative, aesthetic arts into the Art of Neonatology as practice, discussed later in this article.

***“Contextualization of the patient creates a clinical picture, described by Peabody (2) as “not just a photograph of a man sick in bed; it is an impressionistic painting of the patient surrounded by his home, his work, his relations, his friends, his joys, sorrows, hopes, and fears.”***

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Reliability in medical care, particularly during the uncertainty due to COVID-19, is more assured when practical aesthetic engagement dominates, that is, when the practice of medical care adjusts to the context and flux of the patient's circumstances. As a subjective contextualized pragmatic stance for medical practice, the art of medicine aligns with affective judgment and practical rationality (9). The art of medicine becomes more than a metaphor.

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We differentiate the affective processes that incorporate induction as “learning through observation” from cognition that relies on deduction to “confirm through observation.” Judgment, unfortunately, has developed a poor reputation. We do not always trust others’ judgment, and our own judgment can fool us because we use our judgment to judge our judgment. Tim Watson, a pediatrician and former K-12 educator advocates *discernment* as the cognitive skill distinguishing between categories. Through the art of medicine, the physician then places contextual value on the information identified; judgment becomes an effective *process*.

“And he shows me carefully, the valley where the two mountains of reason and emotion meet and twine their efforts together in winding streams that quietly defy your logic” (10). Vivienne, the author of that description, vividly describes the blending of facts and feelings generated when we encounter a threat within a complex situation. As medical scientists, we prefer to believe that scientific logic will protect us from false reasoning. However, even mild stress from the novelty, uncertainty, or uncontrollability of a complex situation impairs our brain’s executive functions (11, 12). Threat provokes fear, the emotion that drives us to maintain a safe distance by taking offensive or defensive actions (11, 13). We experience these evolving events as a series of short intervals or static snapshots. What we observe and what we can describe quietly eludes and defies our logic.

This does not mean we diminish the objective, normative science of medicine nor do we strongly focus on the subjective, pragmatic practice of medicine. Reliability in medical care is more assured when practical engagement dominates as practice adjusts to the flux of the patient’s circumstances (9). “The practice of medicine in its broadest sense includes the whole relationship of the physician with his patient. It is an art” (2). As a subjective, contextualized pragmatic stance for medical practice, the art of medicine aligns with affective judgment and practical rationality (9). The art of medicine is more than a metaphor.

In *Nicomachean Ethics*, Aristotle (7) described five virtues of thought: *technê*, *epistêmê*, *phronêsis*, *sophia*, and *nous*. These virtues distinguish between Knowledge and wisdom and between the theoretical and the practical. *Epistêmê* (theoretical Knowledge) and *technê* (practical Knowledge) are familiar to us as

science and technology, respectively (14). *Phronêsis* (practical wisdom) describes rational thinking capability that accounts for context and contingent facts, thus taking in “the particular.” One places value on information that may change with events. Aristotle considered *phronêsis* the first of the four cardinal virtues because ethics guides the individual to place the community’s good ahead of the individual’s good. Phronesis is acquired through practice and observation: practice creates the experience while observing elders who model this virtue leads one to phronesis (15). Providence of foresight is the source for our word “prudence”; the Romans translated phronesis as “prudence.” Phronesis is now more commonly translated as “practical wisdom.”

These two meanings of art overlap through observation, which is all we have when we identify the exigent discrepancy or disruption (9). We find meaning in what we see, which we communicate to another person. This concept is an art as a practice and as a representation of the world. Techniques from the visual arts (negative space), literary arts (narrative, mystery, or suspense stories), and performing arts (story versus scene) can better inform our descriptions and communications.

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***“Is there practicality in describing neonatology’s art or practice through aesthetics, contextualization, affect, virtue, or observation? Dispassionate scientific theory guides diagnosis and treatment.”***

---

Is there practicality in describing neonatology’s art or practice through aesthetics, contextualization, affect, virtue, or observation? Dispassionate scientific theory guides diagnosis and treatment. Scientific rationality ensures scientific theory’s integrity by isolating theory *from* practice and context (16, 17). But neonatologists operate through contextual relations entwined with people and work, building into routine operations their own logic of practice (16). This gap between theory and practice cannot be closed by merely borrowing a little from each. Engagement brings theory into the practical world and can close the gap (17); there is little discussion on how to engage or what drives engagement.

The Art of Neonatology emerges when practical engagement combines the science and practice of medicine. This coupling is more than taking a little from each as circumstances arise. In 1951 after 30 years of attempts, the science of high altitude climbing and the practice of high altitude climbing were each sufficiently developed to reach the summit of Mount Everest. But neither the domain of science or climbing could individually or in combination support a successful summit climb. Instead, it was a climbing scientist, Gifford Pugh, who melded the two into a single entity that enabled climbers to *gain altitude* (8).

Affect, rather than cognition, drives engagement, and it is contextual engagement that generates learning through practice (5). An essential quality of the physician is interest in humanity (2), the virtue of practical wisdom. “The secret of the care of the patient is

in caring for the patient (2). Through the art of climbing, mountaineers gained altitude. Through the Art of Neonatology, neonatologists care for their patients and *gain life*.

---

**“Through the Art of Neonatology, neonatologists care for their patients and gain life.”**

---

### Art as a representation of the world

Initially, observation is all we have. Our engagement of a situation starts with our first look when we let our looking teach us. Collaboration in a situation begins with accurate and meaningful description. With experience, we can gain the “art of describing in darkness and through the fog.” These are the visual arts.

### Visual Arts: Art as a rendering of the world

#### *To see the detail: Prehistoric art and Muybridge*

Accurate observation and the rendering of action may reflect close and continued contact between the action and the artist observer. For example, cave paintings by upper paleolithic humans depicted walking quadrupeds with greater accuracy than paintings by modern artists. Not until Eadweard Muybridge’s serial photographs of walking quadrupeds in the 1880s did contemporary artists depict quadruped walking with accuracy. Perhaps the more accurate observation and rendering by paleolithic humans came about because these were the animals they had intimate contact with (18). This realization demonstrates the possibility that an involved observer can accurately observe and communicate complex observations.

The skills of observation are portable. Louis Pasteur identified right-handed, left-handed, and symmetrical mirror-images of crystalline tartrates, marking the discovery of chemical enantiomers. The asymmetry of the facets is nearly unnoticeable. In his youth, Pasteur painted and drew, developing an eye for detail. Perhaps Pasteur’s perception of detail, developed through his artwork, contributed to this identification (19).

A paramedic’s poor documentation led him to meet alone with one of the authors (DvS), his EMS provider’s medical director. Sensing resistance from the paramedic, the author asked about the paramedic’s hobbies, surfing. The author inquired how the height of a shore wave is measured from the front or the back. The paramedic spontaneously presented a wave’s characteristics – speed, height, momentum, how to get on and off the wave, etc. After he finished, the author asked why he couldn’t describe a patient with that detail. He was met with silence. Several months later, the author received notification of an incident involving the paramedic. On scene at a traffic collision, three senior paramedics and the base hospital physician-approved transport of a patient to the local emergency department. The paramedic, junior to the others, called the physician to describe the patient. The physician upgraded the patient to a trauma response with transport to a trauma center where surgeons reduced a rapidly evolving tension pneumothorax.

### Perspective

As a term in art, Linear perspective makes possible the depiction of three-dimensional objects in a two-dimensional space. This perspective allows for more abstract thinking about volumes and shapes without losing their concreteness, enabling mental calculation and communication. This abstraction is objective and guides information. Perspective as the psychological term, rather than the art term, refers to personal views and facts known to the individual who is subjective and influences perception.

The vanishing point in art marks the convergence of the lines that represent parallel lines in three-dimensional space. This convergence brings direction to the artwork in a similar manner; it can bring direction and coordination to the practice of medicine.

### Negative Space

The environment carries information. Though the HRO engages the embedded problem (9), we cannot clearly identify the problem’s boundaries or the environment. The environment carries information; the environment can direct meaning and relevance to different aspects of the problem. In this manner, the environment has a role similar to negative space in the visual arts.

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**“Negative space is the space in a painting intentionally left empty to bring attention to the subject, the subject being the positive space.”**

---

Negative space is the space in a painting intentionally left empty to bring attention to the subject, the subject being the positive space. If we were to look at a portrait with flowering bushes in the background, we would likely be unable to fully identify the painting’s subject – the person or the flowers. Adding a shaft of sunlight or creating a clearing behind the portrait brings attention to the subject. In sculpture, negative space is the stone that is carved away to focus attention on the subject.

The use of negative space aids in describing and understanding situations. For example, if we look *between* the positive spaces—those parts that attract our attention—we see things we would have missed. In discussions with the authors, a *plein-air* artist uses negative space to shape the painting, and a hunter looks for horizontal lines of the prey species in the negative space between the vertical, horizontal space of the trees. This space does not refer to seeing the forest for the trees; it sees *between* the trees. Negative space forces a shift from the verbal left-side of the brain that processes familiarity to the brain’s spatial right-side where novelty is processed.

We can see this effect when we draw a picture of something or someone right-side-up versus upside down. Because we cannot categorize when we use the upside-down approach, we often find that this kind of drawing produces a more accurate representation. We can also see the effect of negative space on comprehension when we draw a picture of our hand and then draw a separate picture of what we see between our fingers and around our hand. Drawing what appears around our hand gives a more

accurate likeness (20).

The use of negative space as a description can aid staff in describing confusing or complex situations. Negative space describes what makes the situation important rather than stating what is not present. Describing a neonate by the amount of supplemental oxygen provided, the positive space, carries less information than providing the level of minimal titratable oxygen. The former tells us what the neonate is receiving; the latter tells us what is necessary for the neonate.

---

***“Perception may seem dependent on definitions, but definitions come up short in the turmoil of the liminal space. Descriptions of how something is used, an action performed, or a situation experienced all carry meaning.”***

---

A group of respiratory care practitioners (RCP) in a subacute facility will call a consulting physician or intensivist early during the medical deterioration of a ventilator-dependent child. With little information available, they will use negative space to describe the child's condition and what treatments did not work. This representation gives meaning and interpretation to the positive space otherwise limited to physical examination and vital signs. This negative space presentation acts as negative feedback to ensure safety (21) or reciprocal feedback to modify plans (8). However, the RCPs report the frustration some physicians have when the physician is accustomed to ordering treatments, then waiting for the results before making further inquiry (personal communication to DvS).

Other examples of the use of negative space are descriptions of children as not small adults or premature neonates as not term infants. Rather than stating what they are, we state what they are not. Describing a child or premature neonate by negative space, such as the medical and environmental support necessary for incompletely developed or developing organs, can help the learner identify which previously learned information does not apply, building on the person's Knowledge.

#### *Color within context*

Painters use color beyond, ROYGBIV the constrained basic colors of the rainbow. For example, green is not a compromise between blue and yellow; it is a collaboration with varying amounts of each used depending on placement within the painting. Context chang-

es the perceptions of color. For example, the same hue for yellow-green leaves on a tree partially in front of a dark cloud changes the perception of the leaves when painted against darker clouds compared to a sunnier sky. This albedo effect can be noticed in a movie theater with a white screen. The projector cannot transmit black, yet night scenes show a dark sky on a white screen.

#### *Genres of painting*

The purpose of a painting may be to document, influence, or describe. One author (DvS) used various genres of artwork to help residents form their descriptions. Medical students and residents feel the essential tension between thorough and detailed presentations – too much and not enough but never right. To reduce this tension when presenting to the attending physician, the author offered different presentation styles based on some basic genres: Dutch still life, Hudson River School, Impressionism, and Cubism.

Dutch still-life paintings. These are known for having insects within the flowers. There are times we want an accurate and detailed presentation of a portion of the history and physical examination.

Hudson River School. These describe a grander but realistic contextual view of the patient yet retaining the details.

Impressionism. The artist uses brush strokes, rather than lines and contours, to provide an impression of the scene. If you happen to observe an artist painting an impressionist master in a museum, observe the number of brushstrokes the student and the master use. As the residents focus on giving an impression, their words (“brush strokes”) become fewer yet carry more information. Contextualization of the patient to create a clinical picture, described by Peabody (2) “not just a photograph of a man sick in bed; it is an impressionistic painting of the patient surrounded by his home, his work, his relations, his friends, his joys, sorrows, hopes, and fears.”

Cubism. Minimalism can carry more information than we think. Geometric shapes depict the human form. When we look at a set of circles, triangles, and rectangles, we do not “see” a human, but we think of a human. When reporting disconfirming information to an intimidating attending, this method was favored by residents – they do not say the disconfirming information; they make the attending think of it.

Examining an infant admitted for apnea in the Emergency Department after hospital discharge that morning, one author (DvS) obtained a history of apnea after feeding and observed Sandifer Syndrome. The residents were hesitant to re-admit the child with the diagnosis of reflux because the discharging attending had stated firmly that, following the results of a radiologic study that morning, there was no reflux. The author presented the infant's history as a Dutch Still Life, an Impressionist painting, and a “Picasso” Cubist painting. The residents chose to go with Picasso.

#### *Interpretation and art*

Methods of interpreting art help healthcare professionals receive information from the patient, environment, and each other. The critical interpretation of art follows describing, analyzing, interpreting, and judging. The viewer wants to perceive and find meaning, and the artist wants to help. When we cannot make sense of the artwork, we adjust our understanding while the artist makes



known the aesthetic intention (22). Interpretation, perception, and meaning work both ways between artist and viewer. This interaction parallels communications from individuals within a liminal event and the attending some distance from the event (11). The team within the event and the attending work together to ensure reliable and accurate information flow.

We can readily identify the utility of Barrett's (22) definitions:

Description of the object is without value judgments, analysis, or interpretation; answering the question, "What do you see?"

Analysis determines what the features suggest, deciding why the artist used certain features to convey specific ideas; answering the question, "How did the artist do it?"

Interpretation establishes the broader context for this type of art, answering the question, "Why did the artist create it, and what does it mean?"

Judgment of work means giving it rank to other works and its originality, answering the question "Is it a good artwork?"

One author (DvS) routinely describes the various roles an individual has in communication (23): Identify, interpret, and translate. The individual identifies the salient aspects of the problem, interprets their relevance, and translates to give meaning to specific participants. During a resuscitation, information is translated to give meaning to the roles other team members have.

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***"The individual identifies the salient aspects of the problem, interprets their relevance, and translates to give meaning to specific participants. During a resuscitation, information is translated to give meaning to the roles other team members have."***

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Barrett (22) recognizes the multiple interpretations for artwork yet without the goal to arrive at a single interpretation. This focus is the purpose of translation but also the benefit of a "requisite diversity" of views. Interpretation is not specific, whereas translation is specific to the receiver. Constraining the range of possible interpretations increases the efficiency of information flow. The leader contributes by giving meaning to the interpretation, guiding the team's psychological response toward allostasis (11, 24). Interpretations will seldom be fully correct, but they can be reasonable and informative.

#### *Descriptions*

When one of the authors (DvS) became a paramedic, the Los Angeles County program was about six-years-old. Ambulance attendants and firefighters were unaccustomed to the use of medical terminology. Emergency physicians were not familiar with the equipment and abilities of paramedics. This inability to communicate contributed to such teaching moments as not telling the phy-

sician the patient was "under arrest" as that statement would be followed with drugs for cardiac arrest. "The patient is in custody" became more readily used by a paramedic after a single event. Testing for the Babinski Reflex led to lessons learned on both sides of the radio conversation after an unconscious patient's audiotape was widely circulated in training classes. The radio nurse asked the paramedic if he had tried the Babinski. In the background, the paramedic is heard yelling, "Babinski! Babinski!" followed by "No, he doesn't respond to Babinski, either."

These problems led Ron Stewart, the physician in charge of paramedic training, to focus on accurate medical descriptions rather than medical terminology and included the patient's immediate environment. The goal was for the physician to understand the conditions of the patient and scene. More significantly, when paramedics received a questionable order, they would change their description of the patient to become more accurate or include the missing information. Persuasion or any type of manipulation in the description of the patient was not allowed. The paramedics also would precisely explain what equipment and drugs they had on hand relevant to the call. After hundreds of radio contacts with physicians, this became routine in medical care for the author (DvS).

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***"The goal was for the physician to understand the conditions of the patient and scene. More significantly, when paramedics received a questionable order, they would change their description of the patient to become more accurate or include the missing information."***

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Early in his ambulance career, before paramedics responded to "heart attack" calls, one author (DvS) learned to identify the "look of death" in patients with myocardial infarction. Though the patient would be talking to the family in the home, the ambulance attendants knew the patient would die on the way to the hospital. The author taught this to paramedics in local programs. During After Action interviews following a terrorist shooting, several paramedics mentioned they used that exact approach for part of their triage of shooting victims (25).

*I keep coming back to "the look of death." Sensemaking seems too abstract and too distant to "describe" that engaged description. It is imminent in the EMS world of practice, part of an EMT's being-in-the-world, a world in which his pragmatic frame gives meaning to a patient vacillating between covert and overt decompensation. You're describing something other than a name or a concept; you're describing a look, a visual sense derived from experience. I could look at the same scene and see "nothing" that you see, yet see everything that my ethnographer experience "discloses."*

*This is powerful! I hope people spend time thinking about it.*

Karl Weick (personal communication)

## Art, Chaos, and Complexity

### Art genres / styles

The methods art historians use to classify painting genres can enhance our visual evaluation of complex and chaotic situations.

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***“Mathematical measurements of borders and edges that reflect structure produced the degree of complexity. Measurements of diffuse fuzziness that reflected randomness gave a measure of entropy. Patterns of entropy produced an order-disorder spectrum.”***

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For example, the use of measures for entropy and complexity to evaluate an extensive series of digitalized paintings generated the same groupings as the classifications used by art historians (26). Mathematical measurements of borders and edges that reflect structure produced the degree of complexity. Measurements of diffuse fuzziness that reflected randomness gave a measure of entropy. Patterns of entropy produced an order-disorder spectrum. Patterns of complexity produced a simplicity–complexity spectrum. For standardization of art genres, the authors used the existing systems developed by Alois Riegl and Heinrich Wölfflin. Riegl used how the artist represented objects and Wölfflin how the artist used outlines and contours. Their artwork sample utilized online digitalized artworks of almost 140,000 paintings between the years 1031 and 2016.

Borders and edges (structure). Images formed by distinct and outlined parts yield many repetitions of a few ordinal patterns.

Diffuse fuzziness (randomness). Images composed of interrelated parts delimited by smudged edges produce a more random pattern.

Riegl distinguishes between artworks depicting tangible discrete objects (“haptic”) versus objects interrelating in deep space using light, color, and shadow (“optic”). The former presents discrete objects, while the latter creates an open spatial continuum.

Wölfflin distinguishes between artworks containing objects with discrete borders and clearly outlined shapes (“linear”) versus fuzzy outlines and contours that are subtle, smudged boundaries that merge images to give the idea of fluidity.

The authors (26) use mathematical equations to evaluate art genres can help us better understand the concepts of chaos and complexity. “Permutation entropy” as a measure between order-disorder and “statistical complexity” for simplicity–complexity can help us better characterize the unexpected.

Often, we hear people say, “We are ready for anything.” They understand entropy and believe there is a limit to the entropy change in their NICU. Permutation entropy measures the system’s freedom to form any sequence of permutations without a change in the maximum entropy of the system (27). The care of the critically ill neonate may be finite, but the permutations of that care have their own entropy and can change in unexpected sequences or progressions.

With some almost helpless resignation, people will bemoan a “random” event, or the system has become too complex. Statistical complexity measures the complexity of the system’s structure *independent* of random processes (28). It is worth recognizing there are independent contributions to system complexity that come from the randomness that is distinct from the system’s structural complexity.

These measures distinguished between classifications of artworks and help us observe and appreciate the turmoil at the beginning of a resuscitation.

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***“Complexity and entropy are measures of information contained within the painting or system. Entropy is a time-based measure of divergence as the system moves from initial conditions toward randomness.”***

---

Complexity and entropy are measures of information contained within the painting or system. Entropy is a time-based measure of divergence as the system moves from initial conditions toward randomness. Chaos is also time-based, but it occurs at a threshold reaction rate (29). Complexity has a large number of elements, but only a few have linear interactions. Chaos has only a few elements, but they have nonlinear interactions.

Information as Shannon Information Entropy is created from the conversion of uncertainty to certainty. The certainty of ordered systems means they do not contain information. We do not learn anything new from an ordered system. Disordered systems, on the other hand, generate information as they become ordered from the conversion of uncertainty (disorder) to certainty (order) (30). The complexity develops from the interaction of entropy (disorder) and disequilibrium; therefore, complexity also carries information (27). Regular, ordered paintings such as Minimalism paintings have small entropy values and carry little information, while paintings with less regularity, such as Pollock’s drip painting, have larger entropy values and carry more information.

The genres of art also map to the genres of education and medicine. Romanticism rigidly distinguishes objects separated by flat surfaces. The low complexity and decreased randomness are ideal for documentation and introductory programs. The looser, smudged brushstrokes of Impressionism avoid the creation of sharp edges to show complexity, depth, light, and shadow, while the merged images and smudged boundaries reveal the complexity of life. In the words of Peabody (2), “an impressionistic painting

of the patient surrounded by his home, his work, his relations, his friends, his joys, sorrows, hopes, and fears.”

Modern and Postmodern Art's transition gave artwork clear outlined shapes that depict tangible discrete objects having less complexity and randomness. This imaging is good for a straightforward evaluation of a stable neonate. It would be of less use at the beginning of abrupt patient deterioration.

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***“Our digression to understanding chaos and complexity through art has a serious purpose. An extensive literature in medicine and emergency care discusses chaos and complexity, the causes, identification, and necessary responses.”***

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Our digression to understanding chaos and complexity through art has a serious purpose. An extensive literature in medicine and emergency care discusses chaos and complexity, the causes, identification, and necessary responses. However, in practice, we encounter exigent situations somewhere between the covert compensated state and the overt decompensated state (9). We engage in saving a life. Determining uncertainty, complexity, or chaos detract from our primary objective. What we have readily available is observation. The above exercise guides us to identify borders of instability, edges that differentiate, and fuzzy, unclear elements. We engage areas without structure and evaluate regions of randomness. We reduce complexity and act from reciprocal feedback. There is time enough to tell outsiders if it was uncertainty, complexity, or chaos.

### **Observation and Inductive Processes**

During the first moments of resuscitation, it matters little whether we have uncertainty, complexity, or chaos. All we have is observation. Only observation will lead us to the Knowledge necessary to engage the emergency. “The kind of knowledge which is supported only by observations and is not yet proved must be carefully distinguished from the truth,” Leonhard Euler (31). Distinguishing false Knowledge from the truth, solely by observation, can engender fear of making a mistake. Such generalized fear will cause greater harm than the act or mistake itself (32). Acting on imperfect Knowledge is not a mistake or error. Actions become mistaken when circumstances change or new information becomes available, but the action does not become an error until its completion (33).

Engagement describes continuous interaction with a situation until resolution, obviating the effects of error. In this approach, errors serve to identify a change in circumstances, correct heuristic biases, and mark the limits of individual capabilities or operational performance (21). Identification of an error initiates learning as the environment begins to correct our beliefs or ideas (31). Viewed from this frame of reference may make it difficult to recognize the induction process introduced by Euler within this quote above. Observation, then, begins the inductive process. “We should use

such a discovery as an opportunity to investigate more than exactly the properties discovered and to prove or disprove them; in both cases, we may learn something useful,” Leonhard Euler (31).

In the HRO, engagement bridges the gap between theory and practice during the constant action of a crisis (9). The engaged individual is continuously thinking and making judgments, using those judgments for the improvisation that directs self-organization (25) (34). This engagement better describes the results of the more accurate translation of René Descartes' dictum, *cogito ergo sum*, “I am thinking; therefore I exist” (34).

When the environment carries information, one is constantly thinking. To stop thinking is a mistake. When premature diagnosis terminates inquiry, or members do not take action to avoid error, there develops the more insidious “error from not acting” (35). These errors cannot easily be detected, becoming organizational Knowledge enforced by moral authority.

In a back-and-forth discussion with Karl Weick regarding cognitive dissonance as a risk for uncorrected errors and failures, Weick concluded with this reply [his comments in italics]:

*On page 8 of chapter 2 of one of your manuscripts, the chapter is called Logic of Operations, you [DvS] say this: “Knowledge in the threatening, unstructured state takes a different form from what we are accustomed to. Knowledge acts as a degree of belief that must be updated from information generated during the event. Mistaken beliefs must be identified and corrected, no matter how dearly held. Compared to an updated belief, a mistaken belief may only depend on its presence at initiation or the length of time it is held. Events happen continuously, creating the need for dynamic reasoning processes and easier acceptance of new, disconfirming evidence. Long-held entrusted beliefs must be freely questioned, not an easy thing to do for most people, regardless of the level of skill or logic used” (23).*

*The clash between a mistaken old belief and an updated belief would seem to be a form of dissonance. An interesting possibility is that the more you engage in dynamic reasoning, the less chance there is for dissonance between old belief and updated belief to develop and the fewer errors you make.*

Karl Weick, personal communication

An inductive attitude is protective from error. The individual adapts to experience as efficiently as possible. “It requires a ready ascent from observation to generalizations and a ready descent from the highest generalizations to the most concrete observations. It requires saying “maybe” and “perhaps” in a thousand different shades (31).

It requires:

1. Intellectual courage, ready to revise any one of our beliefs;
2. Intellectual honesty, change a belief when there is a compelling reason to change it; and
3. Wise restraint, to not change a belief wantonly, without some good reason



*Inductive processes give us a chance to correct our ideas when they are wrong, to adapt them to reality.*

George Pólya.(31)

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***“Engagement and an inductive attitude readily turn error away from harm and failure toward learning and serendipity. After all, how do we convert an accident into a fortunate discovery except by continued engagement and learning?”***

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Engagement and an inductive attitude readily turn error away from harm and failure toward learning and serendipity. After all, how do we convert an accident into a fortunate discovery except by continued engagement and learning? We draw upon our unrelated experiences and Knowledge, such as an artist’s eye for detail and crystalline tartrates. Louis Pasteur “presented himself as a practitioner of the inductive scientific method, working outside of theories,” creatively seizing opportunities that appeared accidental (36). His explanation:

*“Dans les champs de l’observation, le hazard ne favorise que les esprits préparés.”*

(Where observation is concerned, chance favors only the prepared mind.)

## **Conclusion**

Not by leaders, nor by rules, nor by design does the individual engage in a turbulent scene. The individual must have “the kind of knowledge which is supported only by observations and is not yet proved,” Euler (31). One can confirm through observation, aligning experience with science for a sense of security and stability. Not to act is not to err, unintentionally and paradoxically adding to organizational Knowledge. With experience, one can develop a practice of neonatology. But confirming what is known is not reliable for the particular. Failure by not acting is not visible, errors cannot be corrected, and judgment cannot become refined.

The Art of Neonatology is the art observation. Let your looking teach you. Even in complexity and chaos, we observe elements that form structure. Thinking is continuous, “I am *thinking*; therefore I exist,” René Descartes. We continuously exist in our environment with combined mind, emotions, and judgments, John Dewey’s aesthetics of pragmatism. With continuous actions, some of our acts become mistakes. Our acts are not mistakes; they become mistaken from a change in circumstances, Marianne Paget. Whether we prove or disprove our mistakes, this kind of Knowledge is gained by induction, “we may learn something useful,” Leonhard Euler. It is induction that gives us a chance to correct our ideas and adapt to reality, George Pólya. Inductive processes with involved inquiry generate “learning through observation.” Louis Pasteur advised us, “Where observation is concerned, chance favors only the prepared mind.”

In the final analysis, it is the individual who alone faces the turbulence. That person must enter the void supported solely by their ability to observe and act. We achieve high reliability through individuals such as these. The aesthetic makes this an art, the interest in humanity, as Francis Peabody (2) stated, “the secret of the care of the patient is in caring for the patient.”

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***“The art of a discipline is synthesis. Synthesis extends Knowledge to new heights. Alpine climbers gained height through the art of climbing. Neonatologists gain life through the Art of Neonatology.”***

---

The art of a discipline is synthesis. Synthesis extends Knowledge to new heights. Alpine climbers gained height through the art of climbing. Neonatologists gain life through the Art of Neonatology. An individual can master the “science of neonatology.” Perhaps an individual can approach mastery of the “practice of neonatology.” But the Art of Neonatology, like High-Reliability Organizing, cannot be mastered. Mastery is an inductive process with continuous learning, continuous synthesis, continuous observation. Like Aristotle’s practical wisdom, mastery is an art.

*It took me four years to paint like Raphael, but a lifetime to paint like a child.*

Pablo Picasso

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Identify babies at greatest risk



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

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their babies from respiratory infections

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



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## Survey Says: RSV

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- 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



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# Teaching Pediatric High-Value Care Strategies at the Bedside

Emily Wong, MD, Chad Vercio, MD

***“A 4 month-old previously healthy, full-term female is brought to the ED for difficulty breathing and decreased feeding. She is found to be RSV positive, mildly dehydrated, and hypoxic on room air. She is admitted for treatment of bronchiolitis.”***

Case:

A 4 month-old previously healthy, full-term female is brought to the ED for difficulty breathing and decreased feeding. She is found to be RSV positive, mildly dehydrated, and hypoxic on room air. She is admitted for treatment of bronchiolitis.

On hospital day 3, she requires a high-flow nasal cannula at 7 LPM 40% FiO<sub>2</sub>. She has been unable to be weaned from this level for the last two days. The night resident is paged to speak with the father at the bedside. The father is worried about his daughter's lack of improvement and requests a chest x-ray because one has not been done during the admission, and he feels the medical team has not been thorough enough.

***What would you advise your learner to do? What resources could you point him or her towards?***

The concepts of medical over-diagnosis, over-treatment, and overuse or low-value care, long important topics in adult medicine, have received increasing attention in pediatrics (1,2). However, promoting and teaching high-value care in pediatrics, with value defined as quality over cost (3), has met unique challenges. There can be a perception that because the medical spending on children is significantly smaller than adults, it is less valuable to spend time in an already crowded curriculum to focus on high-value care. It can also be perceived that when focusing on high-value care, one is claiming that children use too much of a shared resource, which would be seen as socially undesirable (4). However, we believe modeling high-value care practices in children is

critical because it focuses on unnecessary and potentially harmful interventions as well as decreasing the overall costs in pediatrics. Expectations for what constitutes appropriate evidence-based care practices are set early, both for medical learners as well as for families and patients themselves. Once set, expectations are difficult to change.

Furthermore, the SARS-CoV-2 pandemic is highlighting the ease with which low-value treatments can be inadvertently thrust into the spotlight through politicization. Politicians have inaccurately touted positive responses to unproven remedies such as Regeneron and hydroxychloroquine as “cures.” This can create a public perception that treating a patient always involves medication, leading to even more medical waste as well as the potential for harm (5). However, a clinician must communicate clearly with patients and their families and, at times, protect them from unnecessary interventions they may desire.

Potential barriers to providing high-value care are multifactorial and can include: lack of evidence; poor familiarity with existing guidelines; local culture; time pressures relating to productivity; time required to explain to patients why tests or treatments are not indicated; and pressures to practice defensive medicine (6). With a relative weakness of evidence-based and large randomized clinical trials in pediatrics, it is even more important to stay aware of existing practice guidelines and professional resources and to teach learners early to seek these out. To address our case, the clinical practice guidelines for bronchiolitis by the American Board of Pediatrics is a good starting point for clinicians and medical trainees alike (7). Choosing Wisely, the American Board of Internal Medicine campaign to encourage physicians and patients to reconsider specific medically unnecessary interventions has also grown rapidly in recent years to include many general pediatric and pediatric subspecialty recommendations (8).

***“Choosing Wisely, the American Board of Internal Medicine campaign to encourage physicians and patients to reconsider specific medically unnecessary interventions has also grown rapidly in recent years to include many general pediatric and pediatric subspecialty recommendations (8).”***

Fear of malpractice litigation is a commonly cited concern among physicians who knowingly order low-value interventions, such that up to 93% of physicians surveyed in Pennsylvania reported practicing defensive medicine (9). However, the reality is that practicing defensive medicine does not necessarily protect against

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malpractice claims, which can be arbitrary – nearly 40% of injury-related malpractice claims in one study were found not to involve medical errors (10). This is an important concept to impart upon medical learners, as perceptions surrounding malpractice are formed early in training. Instead, behaviors to prevent malpractice should focus on nurturing good communication and bedside manner: listening to families and patients carefully, accurate and timely documentation of decision-making, discussion of side-effects and risks of tests and treatments. When mistakes do occur, it is essential to communicate openly. While historically, physicians have been conflicted about error disclosures due to fear of litigation or embarrassment, standards issued by the Joint Commission on Accreditation of Healthcare Organizations identify disclosure of harmful medical errors as an ethical obligation. Prominent open disclosure programs throughout the nation have demonstrated a significant reduction in litigation expenses and payouts (11).

A major component of combating medical overuse involves managing patient expectations. It is a common perception that more testing leads to better care. This is at times exacerbated by legitimate pressures the clinician may face about patient satisfaction, which is often tied to reimbursement. Effective communication will often contribute more to the parent/patient's satisfaction than the management plan itself. Elements of discussion should center around the fact that parents/patients desire a clear diagnosis,

shared decision-making, and acknowledgment that their concerns are valid (Figure 1).

---

***“As pediatricians and medical educators, we are unique in advocating for children in the national dialogue about overtreatment and overdiagnosis.”***

---

As pediatricians and medical educators, we are unique in advocating for children in the national dialogue about overtreatment and overdiagnosis. This process begins with addressing self-identified barriers to practicing high-value care, utilizing professional and educational resources, cultivating one's ability to hold productive conversations with patients and families about low-value interventions and testing, and setting appropriate expectations about care by modeling this behavior for medical learners and young patients.

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**Figure 1: Tips for talking to patients about doing less**

Determine the patient or family's primary concerns

- “What do you think is going on?”
- “What are you most worried about?”
- Consider unique barriers: financial, transportation, etc.

Explain your reasoning clearly while acknowledging the patient's concerns

- “I understand why you would be worried about [diagnosis], but the good news is you don't have any concerning signs or symptoms.”

Show the patient you are on their side

- “I wish I could prescribe you antibiotics, but it may make the situation worse.”

Create a clear follow-up plan; review red-flag signs and symptoms

- “My colleague is on call this weekend and can discuss with you if things change. Please call or be seen in urgent care if [x,y,z].”

Respond calmly to resistance

- If attacked: take a breath; attack likely has a deeper cause and has nothing to do with the clinician. Resist the urge to retort or walk away.
- If met with silence: ask open-ended questions. Seek to understand. Some silence is ok; do not feel obligated to fill it.

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**NT**



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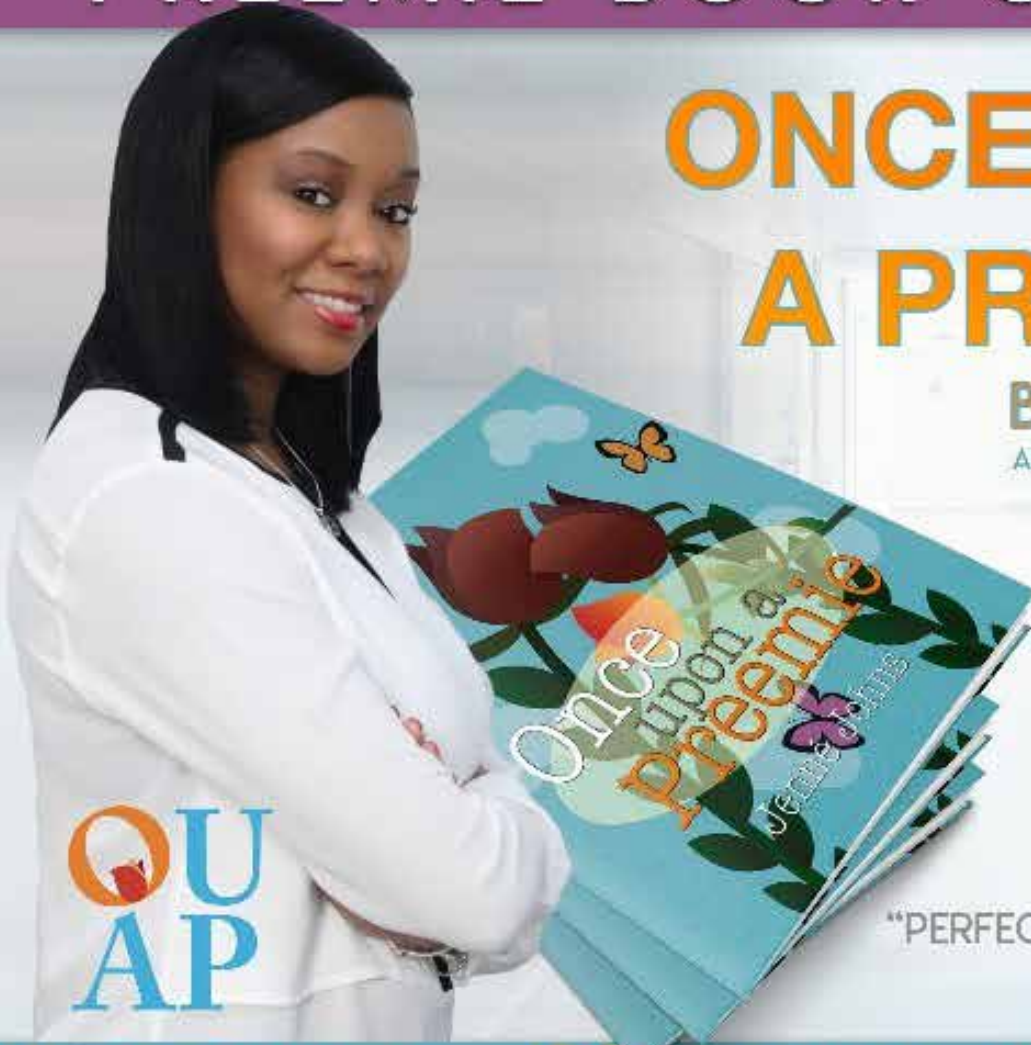
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BY JENNÉ JOHNS

AUTHOR | SPEAKER | ADVOCATE



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Fu-Sheng Chou, MD Ph.D., Japmeet Sandhu OSM III, Mitchell Goldstein, MD

Since the Loma Linda Publishing Company and the faculty at the Division of Neonatology of Loma Linda University School of Medicine took over the production of Neonatology Today in March 2018, there has been a steady increase in the number of articles in each issue, thanks to the expansion of the contracted column articles (Figure 1). We want to thank all the contributing authors for making Neonatology Today a sustainable publication.

**“Six months ago, we developed a new website (<https://neonatologytoday.org>) intending to expand further the digital footprint of the Journal in this modern era of the digital world. The custom-designed web site was developed using the R programming language and the Shiny package. (1)”**

Six months ago, we developed a new website (<https://neonatologytoday.org>) intending to expand further the digital footprint of

the *Journal* in this modern era of the digital world. The custom-designed web site was developed using the R programming language and the *Shiny* package. (1) In addition to providing the links to the digital (HTML) and the print (PDF) versions of the articles, we also added a Search function for readers to quickly find articles of interest. Moreover, we developed online manuscript submission and review systems, which have not been used by our authors and reviewers yet. The website was visited by readers like you from all over the world. The traffic came from all five continents over 34 countries (Figure 2). We share this information to let our readers and authors know that the information available in the *Journal* can reach every corner of the world. We hope that some of the distributed knowledge has made an impact on neonates around the world.

Neonatology Today is committed to bringing you, our loyal readers, the most timely and accurate information. In addition, we aspire to provide our practicing neonatologists and academic researchers with inspirations for your next quality improvement or research projects. To increase the Journal's visibility in academic society, we had the *Journal* registered with Crossref. Following this step is assigning a digital object identifier (DOI) to each HTML article and including metadata in the HTML files. As many of our readers who read academic journals are very aware, DOI is a unique web link that takes the readers to the article's web page. DOI can also import articles into the citation managers (Mendeley, Paperpile, EndNote, Zotero, etc.), allowing the metadata (year, volume, issue, page, title, abstract, etc.) to be populated automatically. In addition to assigning DOIs to all future articles, we are also ac-

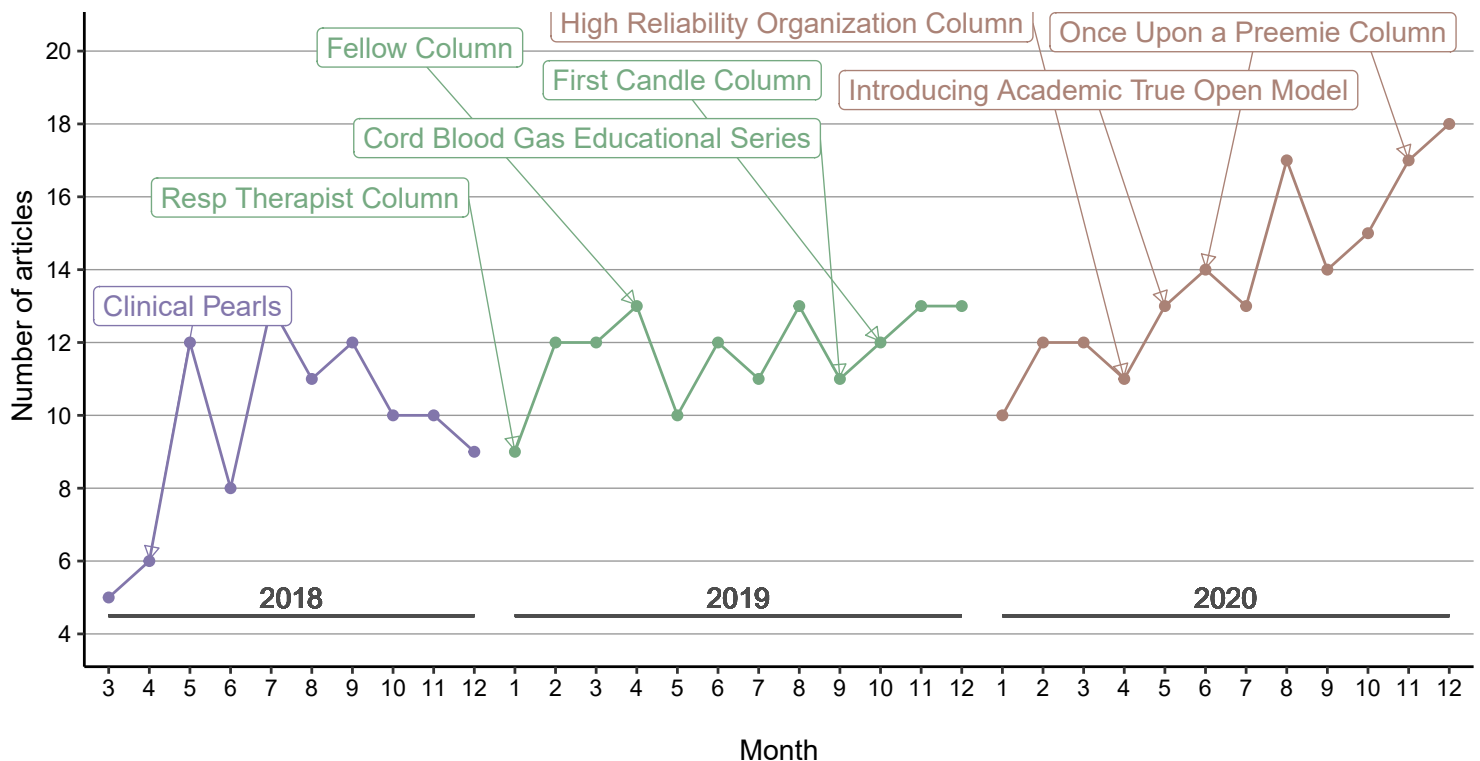


Figure 1.

tively working on assigning DOIs to the archived articles (work led by Japmeet Sandhu). With assigning the DOIs to all articles, our goal is to make citations of articles published with Neonatology Today straightforward and meet the industry standards.

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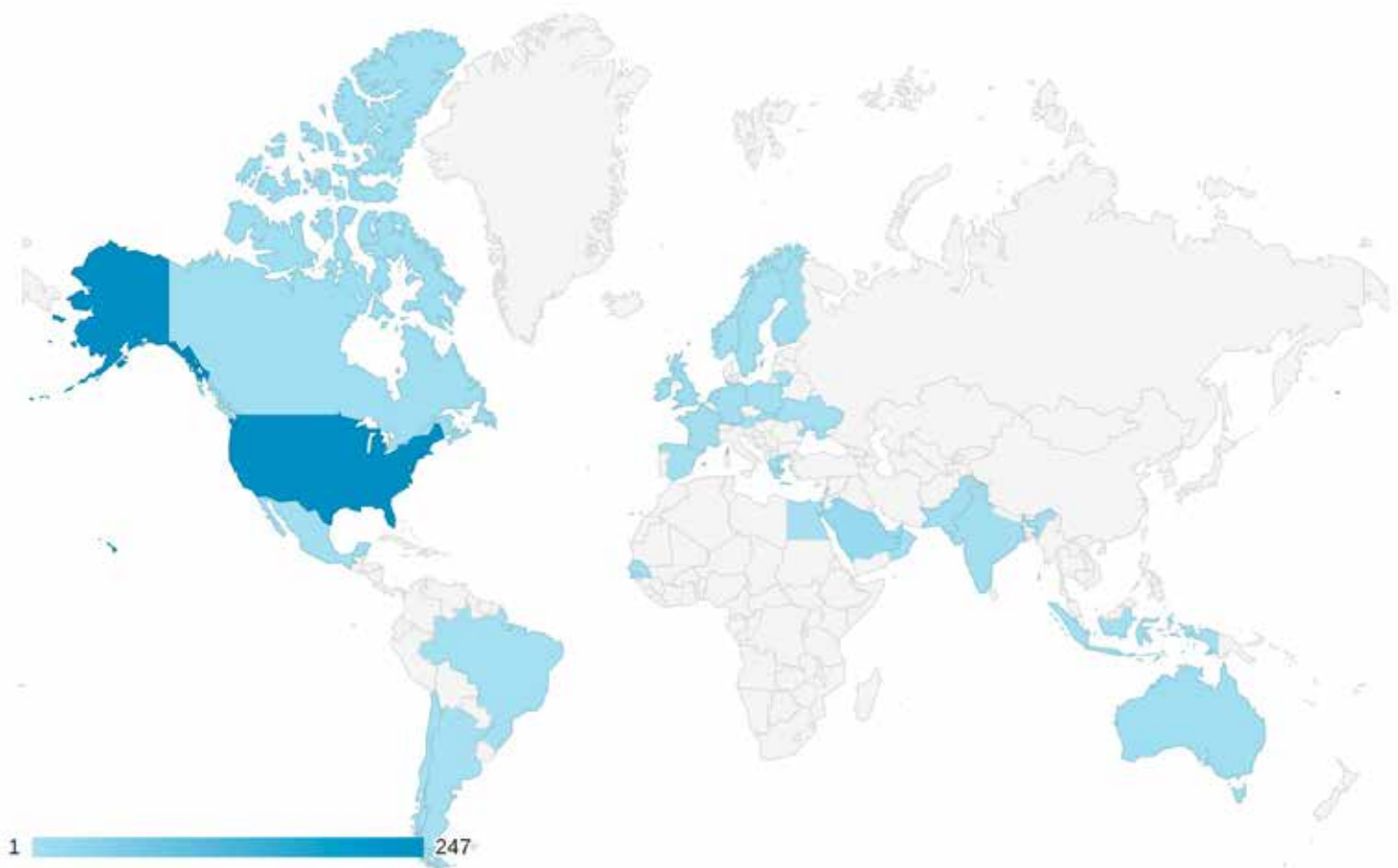
Keep asking questions and keep writing!

**Reference:**

1. Chou F-S. An unexpected use of the shiny package for R. *Neonatology Today*. 2020;15(11):26–8.

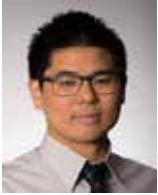
*Disclosure: The authors have no disclosures.*

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**Figure 2.**

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## Still a Premie?

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

But that's not every premie's story.

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

STILL A PREMIE

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



Jaundice

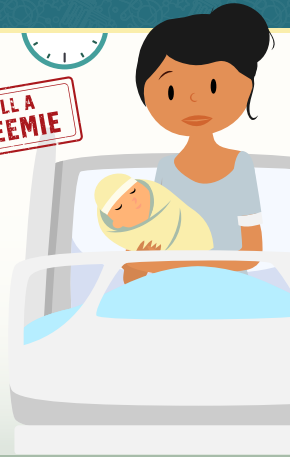


Feeding issues



Respiratory problems

And their parents, like all parents of premies, 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 premie's weight, families of babies that weigh more may face access barriers and unmanageable medical bills.

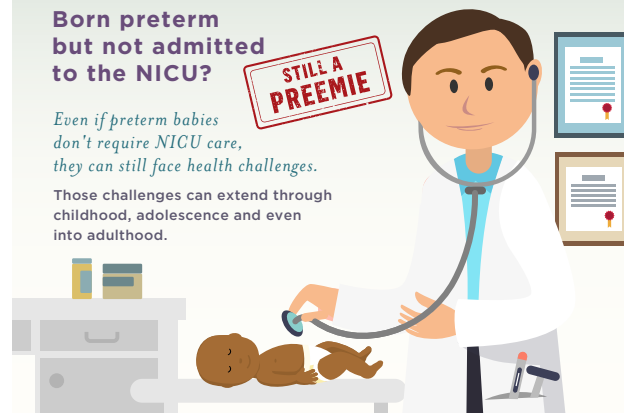


### Born preterm but not admitted to the NICU?

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

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

## 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:

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

### But Parents are Unprepared.

-  Only 18% know "a lot" about RSV
-  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



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## 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)



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Eunice Kennedy Shriver National Institute  
of Child Health and Human Development



Compiled and Reviewed by Mitchell Goldstein, MD Editor in Chief

## NIH funds study to evaluate remdesivir for COVID-19 in pregnancy

*Remdesivir is being studied for COVID 19 in pregnancy.*

Wednesday, February 17, 2021

A new study funded by the National Institutes of Health will evaluate the effects of remdesivir in pregnant women who have been prescribed the drug to treat COVID-19. The study, which will be conducted at 17 sites in the continental United States and Puerto Rico, aims to determine how pregnant women metabolize the drug and whether there are any potential side effects.

“Pregnant women with COVID-19 are at high risk for hospitalization, for intensive care admission and for needing ventilator support,” said Diana W. Bianchi, M.D., director of NIH’s *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD). “There is an urgent need to identify effective treatments for this population and to determine whether drugs prescribed for other adults are appropriate for use in pregnancy.”

The study is funded by NICHD, the National Institute of Allergy and Infectious Diseases (NIAID), and the National Institute of Mental Health, all part of NIH. Additional funding is provided by Gilead Sciences, Inc. Called IMPAACT 2032, the study will be conducted by the NIH-funded International Maternal Pediatric Adolescent AIDS Clinical Trials (IMPAACT) Network.

Originally developed to treat Ebola and Marburg virus infections, remdesivir was shown in a [NIAID-funded clinical trial](#) to accelerate recovery in patients with advanced COVID-19 disease. Remdesivir has since been approved by the U.S. Food and Drug Administration for the [treatment \(link is external\)](#) of COVID-19 in adults and children over age 12 years.

Although it has not been approved specifically for use in pregnancy, remdesivir can be prescribed to pregnant women if their physicians believe the drug may benefit them. However, physicians currently lack scientific evidence for the safety and efficacy of remdesivir for treating pregnant women with COVID-19. Because pregnancy may influence a drug’s effects, IMPAACT 2032 will compare remdesivir use in pregnant and non-pregnant women of reproductive age who are hospitalized with COVID-19.

The study will evaluate remdesivir’s pharmacokinetics—how a drug is absorbed, moves through the body and is broken down and eliminated in pregnant women and nonpregnant women of childbearing potential who receive it as part of clinical care. For women who received the drug within five days of delivery, samples from the plasma and umbilical cord will be analyzed for insight into remdesivir’s pharmacokinetics in the placenta. Breast milk will also be tested for remdesivir among women who are lactating. Researchers will also document potential side effects and adverse events that could occur with use of the drug.

Additional information about IMPAACT 2032 and a list of participating institutions is available on [ClinicalTrials.gov](#) under study identifier [NCT04582266](#) and on the [IMPAACT Network website \(link is external\)](#).

**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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### References

Pharmacokinetics and safety of remdesivir for treatment of COVID-19 in pregnant and non-pregnant women in the United States: A [Study](#) of the International Maternal Pediatric Adolescent AIDS Clinical Trials Network.

### Note

On February 18, 2021, the third paragraph was revised to include funding information omitted from the previous version.

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

Released: Thursday 12/13/2018 12:32 PM, updated Saturday 3/16/2019 08:38, Sunday 11/17/2019 and Friday 11/20/2020

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

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## NIH experts discuss SARS-CoV-2 viral variants

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*Editorial emphasizes need for global response.*

Thursday, January 7, 2021

### What

The rise of several significant variants of SARS-CoV-2, the virus that causes COVID-19, has attracted the attention of health and science experts worldwide. In an editorial published today in *JAMA: The Journal of the American Medical Association*, experts from the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health, outline how these variants have arisen, concerns about whether vaccines currently authorized for use will continue to protect against new variants, and the need for a global approach to fighting SARS-CoV-2 as it spreads and acquires additional mutations.

The article was written by NIAID Director Anthony S. Fauci, M.D.; John R. Mascola, M.D., director of NIAID's Vaccine Research Center (VRC); and Barney S. Graham, M.D., Ph.D., deputy director of NIAID's VRC.

The authors note that the overlapping discovery of several SARS-CoV-2 variants has led to confusing terms used to name them. The appearance of SARS-CoV-2 variants is so recent that the World Health Organization and other groups are still developing appropriate nomenclature for the different variants.

Numerous SARS-CoV-2 variants have emerged over the last several months. The authors note that the variants known as B.1.1.7 (first identified in the United Kingdom) and B.1.351 (first identified in South Africa) concern scientists because of emerging data suggesting their increased trans-

missibility.

Variants can carry several different mutations, but changes in the spike protein of the virus, used to enter cells and infect them, are especially concerning. Changes to this protein may cause a vaccine to be less effective against a particular variant. The authors note that the B.1.351 variant may be partially or fully resistant to certain SARS-CoV-2 monoclonal antibodies currently authorized for use as therapeutics in the United States.

The recognition of all new variants, including a novel emergent strain (20C/S:452R) in California, requires systematic evaluation, according to the authors. The rise of these variants is a reminder that as long as SARS-CoV-2 continues to spread, it has the potential to evolve into new variants, the authors stress. Therefore, the fight against SARS-CoV-2 and COVID-19 will require robust surveillance, tracking, and vaccine deployment worldwide.

The authors also note the need for a pan-coronavirus vaccine. Once researchers know more about how the virus changes as it spreads, it may be possible to develop a vaccine that protects against most or all variants. While similar research programs are already in place for other diseases, such as influenza, the changing nature of SARS-CoV-2 indicates that they will be necessary for this virus.

### Article

JR Mascola *et al.* SARS-COV-2 Viral variants—Tackling a moving target. *JAMA* DOI: 10.1001/jama.2021.2088 (2021).

### Who

NIAID Director Anthony S. Fauci, M.D., John R. Mascola, M.D., director of NIAID's Vaccine Research Center (VRC); and Barney S. Graham, MD, PhD, Deputy Director of NIAID's VRC, are available for comment.

NIAID conducts and supports research — at NIH, throughout the United States, and worldwide — to study the causes of infec-

tious and immune-mediated diseases, and to develop better means of preventing, diagnosing and treating these illnesses. News releases, fact sheets and other NIAID-related materials are available on the [NIAID website](#).

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## NIH calls for greater inclusion of pregnant and lactating people in COVID-19 vaccine research

---

*Vaccine research must include maternal groups.*

Wednesday, February 10, 2021

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## What

Longstanding obstacles to include pregnant and lactating people in clinical research have led to this population now deciding whether or not to receive a SARS-CoV-2 vaccine without the benefit of scientific evidence, writes Diana W. Bianchi, M.D., director of the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), part of the National Institutes of Health, and colleagues. Their viewpoint article appears [online in JAMA](#) (link is external).

The manufacturers of currently available vaccines excluded pregnant and lactating people from the clinical trials needed to obtain Emergency Use Authorizations from the U.S. Food and Drug Administration. Now that the vaccines have been distributed, the U.S. Centers for Disease Control and Prevention and the FDA will obtain information from those who receive them on their potential impact during pregnancy, as well as information on infant outcomes. While these data will prove useful, pregnant people and their clinicians must make real-time decisions now about the vaccine based on little or no scientific evidence that applies specifically to them.

In 2016, the 21<sup>st</sup> Century Cures Act established the [Task Force on Research Specific to Pregnant Women and Lactating Women](#), representing multiple federal agencies, academia, industry and non-profit organizations. The Task Force developed recommendations on how to safely and ethically include pregnant and lactating people in clinical research. These recommendations must now be implemented to ensure pregnant people receive the same evidence that non-pregnant adults receive to make informed decisions about their medical care.

Recent findings from a [National Institutes of Health study](#) suggest COVID-19 during pregnancy can carry a higher risk for complications. Pregnant people need to be protected *through* research rather than *from* research, the authors contend.

## Who



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

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Institute/Center

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

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301-496-5133

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## Reference

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## NIH's TOPMed program publishes data on over 53,000 diverse genomes

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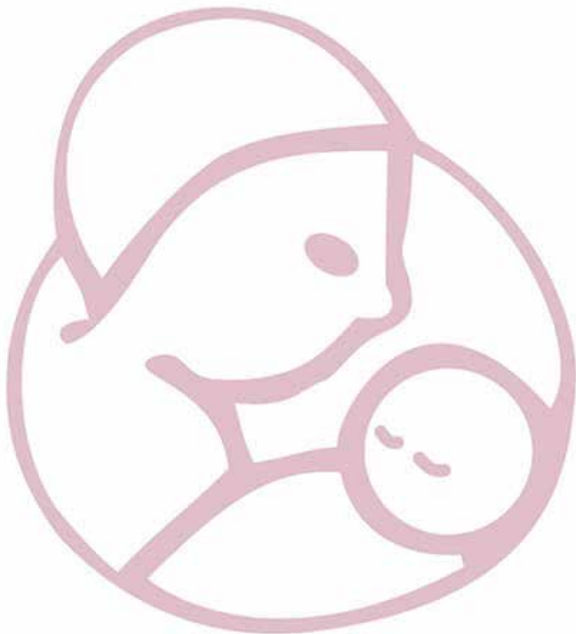
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What

Researchers supported by the National Heart, Lung, and Blood Institute (NHLBI), part of the National Institutes of Health, announced the publication of a groundbreaking study which analyzed more than 53,000 whole genomes, primarily from minority populations. The study, which appears in the Feb. 10 online issue of the journal *Nature*, examines one of the largest and most diverse data sets of high-quality whole genome sequencing—a person’s complete set of DNA. The genetic data could shed new light on how heart, lung, blood, and sleep disorders impact people with diverse racial and ethnic backgrounds, who often are underrepresented in genetic studies.

The whole genomes used in the study are based on data from participants in the NHLBI’s Trans-Omics for Precision Medicine Program (TOPMed). Researchers there hope this data will one day lead to treatments tailor-made to individual patients, as well as shed light on racial and ethnic health disparities. Among its many findings, the current study:

- Identified 400 million genetic variants, more than 78% of which had not been described before
- Produced the best quality genotype data available for people with African ancestry, who showed the highest genetic variability of the groups studied
- Provided new insights into certain gene variants that adversely affect the metabolism of prescription drugs and whose biological effects may vary by race and ethnic group

Who

Cashell Jaquish, Ph.D., a genetic epidemiologist and program officer for TOPMed, Division of Cardiovascular Sciences, NHLBI,

is available to comment on the findings and implications of this research. She is a corresponding author on the *Nature* paper.

Study

*Nature*. Sequencing of 53,831 diverse genomes from the NHLBI TOPMed Program. DOI: 10.1038/s41586-021-03205-y

Contact

For more information or to schedule an interview, please contact the NHLBI Office of Science Policy, Engagement, Education, and Communications at 301-496-5449 or [nhlbi\\_news@nhlbi.nih.gov](mailto:nhlbi_news@nhlbi.nih.gov) (link sends e-mail).

**About the National Heart, Lung, and Blood Institute (NHLBI):** NHLBI is the global leader in conducting and supporting research in heart, lung, and blood diseases and sleep disorders that advances scientific knowledge, improves public health, and saves lives. For more information, visit [www.nhlbi.nih.gov](http://www.nhlbi.nih.gov).

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## Severe COVID-19 in pregnancy associated with preterm birth, other complications

*NIH-funded study also suggests mother-to-infant transmission appears to be rare.*

Thursday, January 28, 2021

What

Pregnant women who experienced severe symptoms of COVID-19 had a higher risk of complications during and after pregnancy, according to preliminary findings from a National Institutes of Health study. Compared to COVID-19 patients without symptoms, those with severe symptoms were at higher risk for cesarean delivery, postpartum hemorrhage, hypertensive disorders of pregnancy and preterm birth.

The study was led by Torri Metz, M.D., of University of Utah Health, Salt Lake City, and Rebecca Clifton, Ph.D., of the Milken Institute School of Public Health at the George Washington University, Washington, D.C. An abstract of the study will be [presented today at the Society for Maternal-Fetal Medicine’s](#) (link is external) virtual annual meeting.

The findings come from the Gestational Research Assessments for COVID-19 (GRAVID) study conducted by investigators in the Maternal-Fetal Medicine Units (MFMU) Network, a group of U.S. clinical centers funded by NIH’s Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD).

Researchers evaluated more than 1,200 pregnant women with COVID-19 who deliv-



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ered at 33 U.S. hospitals between March 1 and July 30, 2020. Roughly half of the women (47%) were asymptomatic, 27% had mild symptoms, 14% had moderate symptoms, 8% had severe symptoms and 4% were critically ill. Those with more severe symptoms tended to be older, with a higher than average body mass index and underlying health issues, such as asthma, diabetes, hypertension, liver disease and seizure disorder.

Researchers attributed four maternal deaths to COVID-19. Transmission of SARS-CoV-2, the virus that causes COVID-19, from mother to child was rare, with 1% of newborns testing positive for the virus before discharge from the hospital.

#### Who

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

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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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## Antibody infusions prevent acquisition of some HIV strains, NIH studies find

Results will inform development of long-acting antibody-based HIV prevention tools.

Tuesday, January 26, 2021

An investigational anti-HIV antibody delivered intravenously once every eight weeks safely and effectively prevented acquisition of HIV strains sensitive to that antibody, but did not significantly reduce overall HIV acquisition after 80 weeks among participants

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in two multinational clinical trials. Known as the Antibody-Mediated Prevention (AMP) Studies, the Phase 2b trials are sponsored and funded by the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health. The studies are being conducted jointly by the HIV Vaccine Trials Network (HVTN) and HIV Prevention Trials Network (HPTN).

While currently available HIV treatment and prevention tools have greatly reduced transmission of the virus, there remains a need for long-acting HIV prevention strategies that are acceptable and desirable to people from diverse communities worldwide. Broadly neutralizing antibodies (bNAbs), which arise naturally in some people living with HIV and can stop a wide range of HIV strains from infecting human cells in the laboratory, are considered promising candidates for long-acting HIV prevention. These antibodies could be given directly by either infusion or injection or could be elicited by an HIV vaccine.

Launched in 2016, the AMP Studies aimed to establish whether infusions of a bNAb called VRC01 are safe, tolerable and effective at preventing HIV acquisition. The NIAID Vaccine Research Center (VRC) discovered VRC01 in 2010 in the blood of a person living with HIV and subsequently manufactured the antibody for the AMP Studies. The two trials included more than 4,600 participants. Men and transgender people who have sex with men were enrolled in the Americas and Europe—geographic regions where HIV subtype B predominates. Women were enrolled in sub-Saharan Africa, where HIV subtype C is dominant. Results will be discussed at a press conference and oral presentation during the 4<sup>th</sup> HIV Research for Prevention Conference (HIVR4P // Virtual).

“These findings establish the concept that passive administration of a broadly neutralizing antibody can prevent acquisition of susceptible HIV strains,” said NIAID Director Anthony S. Fauci, M.D. “Insights gleaned from the AMP Studies lay the foundation for future development of long-acting antibody-based HIV prevention tools and, ultimately,

a vaccine.”

Study participants were randomly assigned to receive 10 intravenous infusions over 80 weeks of either VRC01 at a dose of 30 milligrams per kilogram of body weight (mg/kg), VRC01 at a dose of 10 mg/kg, or a placebo. Neither the participants nor the study investigators knew who received the antibody or the placebo.

Both VRC01 doses prevented acquisition of HIV strains determined to be sensitive to the bNAb by a laboratory test that measures viral susceptibility to neutralization by an antibody. VRC01 was 75% effective at preventing acquisition of sensitive HIV strains across the 80-week study period in both women in sub-Saharan Africa exposed primarily to subtype C variants and men and transgender people in the Americas and Europe exposed primarily to subtype B variants. Among participants who acquired a VRC01-sensitive HIV strain during the trials, the HIV incidence rate was 0.2 per 100 person-years for VRC01 recipients and 0.86 per 100 person-years for placebo recipients. The key determinant of how well the antibody worked to prevent HIV acquisition was whether the HIV strain to which a person was exposed was susceptible to VRC01. VRC01 did not prevent acquisition of resistant HIV strains, which could escape neutralization by the antibody and cause infection.

Overall, VRC01 infusions did not provide statistically significant protection against HIV acquisition at 80 weeks compared to placebo. Investigators attribute this to the finding that only 30% of HIV strains circulating in the regions where the trials were conducted were sensitive to VRC01. Similar to observations with first-generation antiretroviral drugs to treat HIV, resistance to VRC01 exhibited by a majority of HIV strains resulted in the inability of this single bNAb to prevent HIV acquisition over time across the entire study population.

“These observations suggest that more than one antibody likely will be needed to offer effective protection against the wide variety of HIV strains, similar to how combinations of

antiretroviral drugs are required to treat HIV,” said Larry Corey, M.D., AMP Studies protocol chair and principal investigator of the HVTN. “The AMP Studies have identified a laboratory test to predict the efficacy of an antibody against different HIV strains and have given us the tools we need to estimate the amount of antibody needed for protection.”

Since the AMP Studies began, scientists have made progress in optimizing known HIV bNAbs in the laboratory to increase the number of HIV strains the antibody can block, how long the antibody lasts in the body, the strength of antibody binding to the virus, and how efficiently the antibody triggers the immune system to attack both the virus and HIV-infected cells. Potentially, these optimized bNAbs could be combined to develop a highly effective HIV prevention method.

“The AMP Studies demonstrate the potential broad applicability of antibody-based HIV prevention methods for women, men, and transgender persons in diverse geographical areas where different HIV subtypes predominate,” said Myron Cohen, M.D., AMP Studies protocol chair and principal investigator of the HPTN. “We are grateful to the study participants for their contributions to helping pave the way forward for antibody-based prevention of HIV.”

The two trials are individually known as HVTN 704/HPTN 085 and HVTN 703/HPTN 081. Conducted in Brazil, Peru, Switzerland and the United States, HVTN 704/HPTN 085 enrolled 2,699 HIV-negative cisgender men and transgender people who have sex with men or transgender partners. In this study population, there were 32 HIV acquisitions in the group who received 10 mg/kg VRC01, 28 in the 30 mg/kg group, and 38 in the placebo group. This translated to HIV incidence rates of 2.35 per 100 person-years for VRC01 recipients and 2.98 per 100 person-years for placebo recipients. HVTN 703/HPTN 081 enrolled 1,924 HIV-negative cisgender women in Botswana, Kenya, Malawi, Mozambique, South Africa, Tanzania and Zimbabwe. Investigators observed 28 HIV acquisitions among women who received 10

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mg/kg VRC01 infusions, 19 in the 30 mg/kg group, and 29 in the placebo group, which translated to overall HIV incidence rates of 2.49 per 100 person-years for VRC01 recipients and 3.10 per 100 person-years for placebo recipients.

VRC01 was well-tolerated by participants in both trials, and no safety concerns were identified. Investigators are continuing to follow participants until 32 weeks after the last study infusion to assess the longer-term safety of VRC01. These final study visits are expected to conclude in early 2021.

Data from the AMP Studies will inform the design of future preclinical and clinical studies with newer, highly potent, long-lasting HIV bNAbs. Several of these next-generation bNAbs currently are being evaluated individually and in combinations in early-stage clinical studies.

NIAID funds the HVTN, and the HPTN is co-funded by NIAID, the National Institute on Drug Abuse, the National Institute of Mental Health and the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, all part of NIH. More information about the AMP Studies is available on ClinicalTrials.gov under study identifiers [NCT02716675](#) and [NCT02568215](#).

NIAID conducts and supports research — at NIH, throughout the United States, and worldwide — to study the causes of infectious and immune-mediated diseases, and to develop better means of preventing, diagnosing and treating these illnesses. News releases, fact sheets and other NIAID-related materials are available on the [NIAID website](#).

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## References

L Corey *et al.* VRC01 antibody preven-

tion of HIV. Oral presentation at the 4<sup>th</sup> HIV Research for Prevention Conference (HIVR4P // Virtual), January 27, 2021.

###

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## Low-dose aspirin may improve pregnancy chances for women with one or two prior miscarriages

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*Low dose aspirin may improve certain pregnancy outcomes.*

Monday, January 25, 2021

What

Contrary to previous findings, low-dose aspirin therapy before conception and during early pregnancy may increase pregnancy chances and live births among women who have experienced one or two prior miscarriages, suggests a study by researchers at the National Institutes of Health. Rather than looking solely at the difference in pregnancy rates between women who were given aspirin and those receiving a placebo, the study also accounted for differences in total aspirin use between women who deviated from the daily regimen and those who adhered to it.

The research team was led by Enrique Schisterman, Ph.D., of the Epidemiology Branch at NIH's *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD) and colleagues. It appears in the *Annals of Internal Medicine*.

Published in 2014, the Effects of Aspirin in Gestation and Reproduction ([EAGeR](#)) trial included more than 1,000 women between 18 and 40 years old with one or two previous miscarriages. The women received either daily low-dose aspirin (81 milligrams) or a placebo while trying to conceive. If they did conceive, they would continue to receive this regimen through the 36<sup>th</sup> week of pregnancy. Although the study found no overall difference in pregnancy loss rates between the two groups, there was a higher birthrate for the subgroup of women who had experienced only one previous miscarriage before the 20th week of pregnancy.

Unlike the original analysis, the current re-analysis considered whether a participant adhered to the treatment or skipped days or discontinued it entirely for side effects such as bleeding, nausea or vomiting. Compared to the placebo group, for every 100 women, adhering to the aspirin regimen for five to seven days a week led to eight more positive pregnancy tests, six fewer pregnancy losses, and culminated in 15 more live births. Women who adhered to the therapy four days per week experienced similar results. The researchers concluded that taking low-dose aspirin at least four days per week could improve the odds for pregnancy and live birth in this group of women.

Who

Lindsey Sjaarda, Ph.D., Staff Scientist in the NICHD Epidemiology Branch, is available for comment.

Naimi, AI, et al. The effect of preconception-initiated low-dose aspirin on human chorionic gonadotropin-detected pregnancy, pregnancy loss, and live birth: per protocol analysis of a randomized trial. *Annals of Internal Medicine*. 2021.

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## NIH researchers identify new genetic disorder that affects brain, craniofacial skeleton

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*Analysis of patients with rare condition uncovers key pathway for human development.*

Thursday, January 21, 2021

Researchers at the National Institutes of Health have discovered a new genetic disorder characterized by developmental delays and malformations of the brain, heart and facial features. Named linkage-specific-deubiquitylation-deficiency-induced embryonic defects syndrome (LINKED), it is caused by a mutated version of the *OTUD5* gene, which interferes with key molecular steps in embryo development. The findings indicate that the newly identified pathway may be essential for human development and may also underlie other disorders that are present at birth. The information will help scientists better understand such diseases — both common and rare — and improve patient care. The results were reported Jan. 20, 2021 in *Science Advances*.

“Our discovery of the dysregulated neurodevelopmental pathway that underlies LINKED syndrome was only possible through the teamwork of geneticists, developmental biologists and biochemists from NIH,” said Achim Werner, Ph.D., an investigator at the National Institute of Dental and Craniofacial Research (NIDCR) and lead author. “This collaboration provided the opportunity to pinpoint the likely genetic cause of disease, and then take it a step further to precisely define the sequence of cellular events that are disrupted to cause the disease.”

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

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The project began when David B. Beck, M.D., Ph.D., a clinical fellow in the laboratory of Dan Kastner M.D., Ph.D., at the National Human Genome Research Institute (NHGRI) and co-first author, was asked to consult on a male infant who had been born with severe birth defects that included abnormalities of the brain, craniofacial skeleton, heart and urinary tract. An in-depth

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during the COVID-19 pandemic

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- Tell others what you're doing to stay safe.



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examination of siblings' and family members' genomes, combined with genetic bioinformatics analyses, revealed a mutation in the *OTUD5* gene as the likely cause of the condition. Through outreach to other researchers working on similar problems, Beck found seven additional males ranging from 1 to 14 years of age who shared symptoms with the first patient and had varying mutations in the *OTUD5* gene.

The gene contains instructions for making the OTUD5 enzyme, which is involved in ubiquitylation, a process that molecularly alters a protein to change its function. Ubiquitylation plays a role in governing cell fate, where stem cells are instructed to become specific cell types in the early stages of embryo development.

"Based on the genetic evidence, I was pretty sure *OTUD5* mutations caused the disease, but I didn't understand how this enzyme, when mutated, led to the symptoms seen in our patients," said Beck. "For this reason we sought to work with Dr. Werner's group, which specializes in using biochemistry to understand the functions of enzymes like OTUD5."

To start, the NIH team examined cells taken from patient samples, which were processed at the NIH Clinical Center. Normally, OTUD5 edits or removes molecular tags on certain proteins (substrates) to regulate their function. But in cells from patients with *OTUD5* mutations, this activity was impaired.

Using a method to return mature human cells to the stem cell-like state of embryo cells, the scientists found that *OTUD5* mutations were linked to abnormalities in the development of neural crest cells, which give rise to tissues of the craniofacial skeleton, and of neural precursors, cells that eventually give rise to the brain and spinal cord.

In further experiments, the team discovered that the OTUD5 enzyme acts on a handful of protein substrates called chromatin remodelers. This class of proteins physically alters the tightly packed strands of DNA in a cell's nucleus to make certain genes more accessible for being turned on, or expressed.

With help from collaborators led by Pedro Rocha Ph.D., an investigator at the National Institute of Child Health and Human Development (NICHD), the team found that chromatin remodelers targeted by OTUD5 help enhance expression of genes that control the cell fate of neural precursors during embryo development.

Taken together, the researchers concluded, OTUD5 normally

keeps these chromatin remodelers from being tagged for destruction. But when OTUD5 is mutated, its protective function is lost and the chromatin remodelers are destroyed, leading to abnormal development of neural precursors and neural crest cells. Ultimately, these changes can lead to some of the birth defects seen in LINKED patients.

"Several of the chromatin remodelers OTUD5 interacts with are mutated in Coffin Siris and Cornelia de Lange syndromes, which have clinically overlapping features with LINKED syndrome," said Werner. "This suggests that the mechanism we discovered is part of a common developmental pathway that, when mutated at various points, will lead to a spectrum of disease."

"We were surprised to find that OTUD5 elicits its effects through multiple, functionally related substrates, which reveals a new principle of cellular signaling during early embryonic development," said Mohammed A. Basar, Ph.D., a postdoctoral fellow in Werner's lab and co-first author of the study. "These findings lead us to believe that OTUD5 may have far-reaching effects beyond those identified in LINKED patients."

In future work, Werner's team plans to more fully investigate the role that OTUD5 and similar enzymes play in development. The researchers hope the study can serve as a guiding framework for unraveling the causes of other undiagnosed diseases, ultimately helping clinicians better assess and care for patients.

"We're finally able to provide families with a diagnosis, bringing an end to what is often a long and exhausting search for answers," said Beck.

This research was supported by NIH intramural research programs at NIDCR, NICHD, NHGRI and the NIH Undiagnosed Diseases Program. Support also came from the Estonian Research Council, Japan Society for the Promotion of Science and the Japan Agency for Medical Research and Development.

**About the National Institute of Dental and Craniofacial Research:** NIDCR is the nation's leading funder of research on oral, dental and craniofacial health.

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and is investigating the causes, treatments, and cures for both common and rare diseases. For more information about NIH and its programs, visit [www.nih.gov](http://www.nih.gov).

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References

Beck D.B., Basar M.A., et al. [Linkage-specific deubiquitylation by OTUD5 defines an embryonic pathway intolerant to genomic variation\(link is external\)](#). *Science Advances*. Jan 21, 2021. DOI: 10.1126/sciadv.abe2116

###

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Contact

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NT

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- Make health equity and implicit bias training mandatory.
- Prioritize health + racial equity as a goal.
- Communicate with parents using plain language.
- Partner with Black parents to deliver bias free care.
- Hire, retain, or partner with Black Premie family support groups + professionals to fill diversity gaps.
- Make digital + virtual resources available.
- Encourage reading to Premie babies while bedside.



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- 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	17%
Very low birthweight babies requiring surgery to treat NEC	12%
Very low birthweight babies who die from NEC	5%
Very low birthweight babies who die from NEC	1%

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

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- NO formula

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

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

**HUMAN MILK = MEDICINE**

NEC means often have difficulty breathing, an unstable blood sugar level, and a high risk of infection. Talk to your care team about your baby's specific nutrition needs and research options to help you achieve your goals.

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# Genetics Corner: An Infant with Amyoplasia Limited to the Upper Extremities

Ciara Catherine Fulgar, OMS III, Jared Huggins, OMS III, Aaron Ly, OMS III, Alma Zamora, OMS III, and Robin D. Clark, MD

## Clinical case presentation

A pre-term male infant with congenital contractures confined to the upper extremities was referred for a genetic consultation. Due to quarantine restrictions imposed by the coronavirus pandemic, the geneticist conducted this consultation at a distance and examined photographs of the child provided by the care team. The medical students documented the history and physical examination below on site.

This infant was born at 33 weeks 3 days gestation by C-section to a 23-year old G2P1 mother following persistent non-reactive NST with decelerations. Prenatal care began at 11 weeks gestation and included a cerclage placement for a history of a previous stillbirth at 20 weeks gestation. The mother admitted to using cannabis but denied alcohol, tobacco, or any other drug use during pregnancy. Asymmetric IUGR and severe oligohydramnios complicated the prenatal course. However, fetal ultrasound examination four days before delivery did not reveal any upper or lower extremity defects. NIPT and CF screen were negative. Birth weight was 1340 grams (< 3 percentile), and the birth length was 41.5 cm (11-25 percentile). Apgar scores were 5 and 8 at 1 and 5 minutes, respectively. The newborn required resuscitation in the delivery room and was transferred to the NICU on nasal cannula CPAP, given his ongoing respiratory distress.

Physical exam revealed joint contractures at the elbows bilaterally, with an inability to flex the elbow joints. Shoulders appeared narrow, sloping, and internally rotated. There was decreased range of motion at the wrists (Figure 1). The upper extremity musculature was underdeveloped. Hips and lower extremities had a full range of motion and normal morphology. No other anomalies were noted. On neurological examination, the newborn responded to tactile stimulation, though tone and activity were decreased. The skin was pink and adequately perfused. No rashes, vesicles, or other lesions were noted. Radiographically, the right elbow was unremarkable for any pathology. Cranial ultrasound examination was normal with no evidence of significant hemorrhage.

In the NICU, occupational therapy treated the newborn for 15 minutes daily. Place-and-hold passive range of motion was performed to encourage elbow flexion and wrist rotation. Pre-treatment elbow range of motion measured at 0 degrees, bilaterally. Post-treatment, right elbow and left elbow passive range of motion were 0-15 degrees and 0-25 degrees, respectively. A flexion position was maintained at the end of the session with swaddle wrap. The baby was discharged home, tolerating feeds, and was medically stable with a recommendation for parents to continue home exercises.

The family history was noncontributory. The patient has no siblings. The parents reported Hispanic (mother) and Caucasian (father) ancestry. They denied consanguinity. There was no family history of amyoplasia or any other musculoskeletal abnormalities. There was no family history of birth defects, developmental delay, intellectual disability, or multiple miscarriages.

## Discussion

This infant has amyoplasia based on the pattern of his congenital contractures – specifically the combination of sloping shoulders, upper arm extension, decreased muscle mass with replacement by fibrous tissue and fat, and limited spontaneous movement of the affected extremities. Of these, the most telling sign is the so-called "policeman's tip" position of the upper limbs in which the arms are internally rotated at the shoulders, the elbows are extended, and the wrists are flexed and usually facing the back (Figure 1). Amyoplasia is the most common form of arthrogryposis multiplex congenita, representing about 50% of cases. A clinical diagnosis should be made with care because of the low recurrence risk associated with this sporadic and non-genetic condition. The etiology of amyoplasia is not known, but it is thought to be vascular disruption *in utero*, leading to hypoperfusion of the spinal cord roots. Usually, all four limbs are affected. However, as Hall (2014) described in a series of 560 patients with amyoplasia, 16.8% had involvement of the upper limbs only, and 15.2% had involvement of the lower limbs only. Three limb involvement was documented in 4.8%. When the lower extremities were affected, unlike the upper extremities, which have a characteristic and recognizable position, the legs were fixed in various positions, but talipes equinovarus was almost always present.

***“Patients with amyoplasia may have associated anomalies that share a vascular etiology, such as bowel atresias, gastroschisis, and small or partially absent digits with constriction rings and distal amputations as part of amniotic band sequence (Hall et al., 2014).”***

Patients with amyoplasia may have associated anomalies that share a vascular etiology, such as bowel atresias, gastroschisis, and small or partially absent digits with constriction rings and distal amputations as part of amniotic band sequence (Hall *et al.*, 2014). Deep dimples in the extremities, abdominal hernias, and facial hemangiomas are reported. Bone density is reduced due to decreased fetal movement, and perinatal long bone fractures

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**Figure 1:** Note the lack of muscle mass in the upper extremity that is internally rotated at the shoulder, extended at the elbow, and flexed at the wrist. This characteristic position, known as "the policeman's tip," is virtually pathognomonic for amyoplasia.



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occurred in 10.5% in Hall's series. Even in the absence of an amniotic band sequence, circumferential marks may be present that correspond to an umbilical cord that was tightly wrapped, *in utero*, around a limb with decreased mobility. An excess of discordantly affected monozygotic twins has been reported in amyoplasia. Intelligence is usually normal.

Children with amyoplasia respond well to multidisciplinary support, including physical and occupational therapy and assistive devices. The Wilmington Robotic Exoskeleton (WREX) is an articulated arm orthosis that enhances upper extremity function and improves life quality in children with neuromuscular diseases that cause weakness and limited range of motion. It negates gravity's effects with rubber bands and 3-D printable components that are made to measure, enabling the device to grow with the child. Online videos demonstrate the benefits of this technology: <https://www.youtube.com/watch?app=desktop&v=w-4EJ1rlvv0>, which is effective in children with arthrogryposis and spinal muscular atrophy (Haumont *et al.* 2011). I recommend sharing these videos with parents before discharge from the NICU, so parents are aware of this device for their child.

#### Practical Applications:

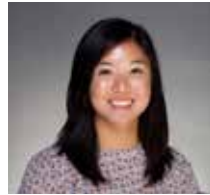
1. Be aware of the variability in amyoplasia, which can involve only the upper limbs.
2. Recognize that "the policeman's tip" position of the upper extremity in a child with arthrogryposis is a reliable sign of amyoplasia
3. Examine the infant with amyoplasia for other vascularly-mediated congenital anomalies, including bowel atresia, gastroschisis, circumferential constrictions caused by amniotic bands, and impressions on the limbs left by umbilical cord wrapping.
4. Inform the families about the availability of orthoses that improve upper extremity function and offer to show them videos demonstrating the WREX orthosis.

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## 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.

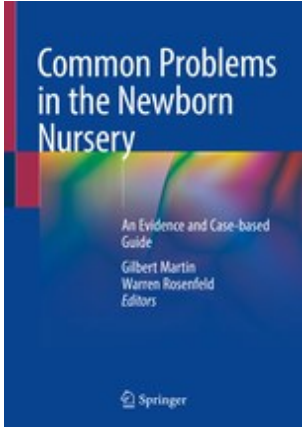
I am so much more than my NAS diagnosis. My drug exposure will not determine my long-term outcomes. But how you treat me will. When you invest in my family's health and wellbeing by supporting Medicaid and Early Childhood Education you can expect that I will do as well as any of my peers!



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Editors: **Martin**, Gilbert, **Rosenfeld**, Warren (Eds.)



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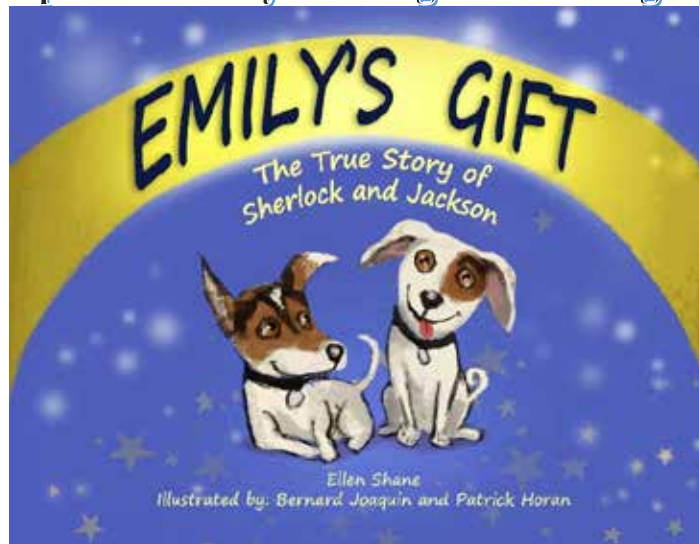
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## What Happened to the Flu and RSV?

Susan Hepworth



The National Coalition for Infant Health is a collaborative of more than 200 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.

*Wash your hands. Cover your nose.* It's familiar advice, but more people seem to be following it in the wake of a global pandemic. In fact, the behaviors aimed at helping to slow the spread of COVID-19 have also curbed the spread of other common viruses.

***“Wash your hands. Cover your nose. It's familiar advice, but more people seem to be following it in the wake of a global pandemic. In fact, the behaviors aimed at helping to slow the spread of COVID-19 have also curbed the spread of other common viruses.”***

Cases of flu, for example, remain unusually low this year. During



the 2019 flu season, the [CDC reported](#) more than 65,000 cases of influenza nationwide. During the same period this flu season, the agency reported just over 1,000 cases so far. Increased use of flu vaccine, which is readily available to just about everyone, may have also contributed to the decline.

---

***“Fewer cases of the respiratory syncytial virus are also being reported. The seasonal virus can be deadly for infants and young children, so less of it is an unexpected silver lining of COVID-19. Experts warn against complacency, though.”***

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Fewer cases of the respiratory syncytial virus are also being reported. The seasonal virus can be deadly for infants and young children, so less of it is an unexpected silver lining of COVID-19. Experts warn against complacency, though.

“While we’re not seeing as many severe cases of RSV right now, we are still seeing some, and parents must remain vigilant,” said Suzanne Staebler, DNP. “RSV is still circulating, and it’s still dangerous.”

Staying alert to symptoms is good advice – as the dip is likely temporary. A rebound of new viral infections is expected when current precautionary measures and ongoing travel restrictions subside. And next season is already anticipated to be more severe than usual due to lack of exposure this year.

---

***“The world remains laser-focused on the distribution of COVID-19 vaccinations, and rightly so. The mass vaccination effort is critical to the world’s return to “normal.” Yet when coronavirus fades, policymakers would do well to shift their focus toward ensuring better access to the RSV preventive treatment.”***

---

Like the flu and COVID-19, there is a preventive treatment for RSV. Getting babies access to it, however, has historically been difficult. Upward of [40%](#) of prescriptions for the treatment are denied by health plans for some of the most at-risk infants.

The world remains laser-focused on the distribution of COVID-19 vaccinations, and rightly so. The mass vaccination effort is critical to the world’s return to “normal.” Yet when coronavirus fades, policymakers would do well to shift their focus toward ensuring better access to the RSV preventive treatment. It, too, has the potential to save thousands of precious young lives.

**References:**

1. <https://www.cdc.gov/flu/weekly/weeklyarchives2020-2021/week52.htm>
2. <https://instituteformpatientaccess.org/wp-content/uploads/2020/04/IfPA-ReportCard-RSV-2020-National.pdf>

Disclosure: The author has no relevant disclosures.

**NT**



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**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.



# The Premie Parent's SURVIVAL GUIDE to the NICU

By

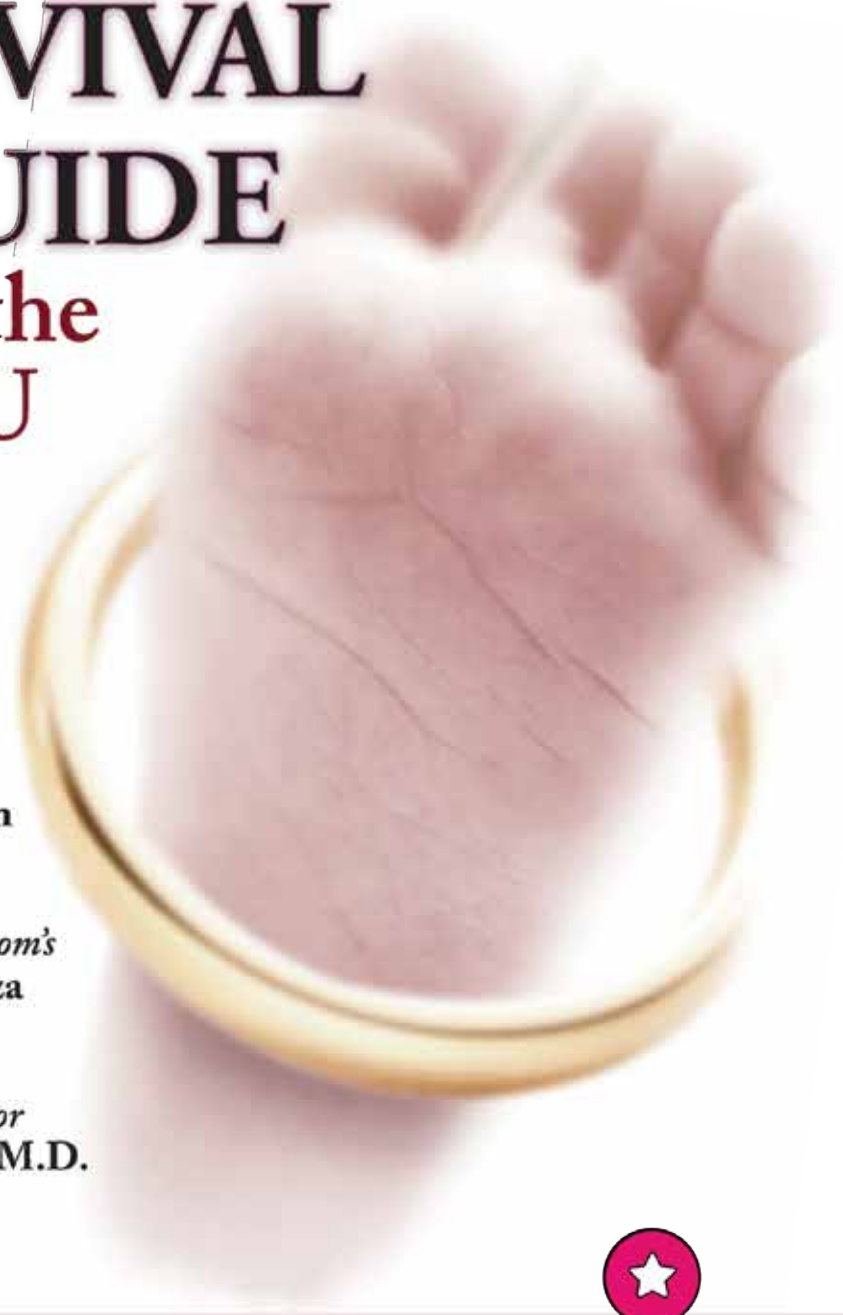
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# National Statistics

## 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.



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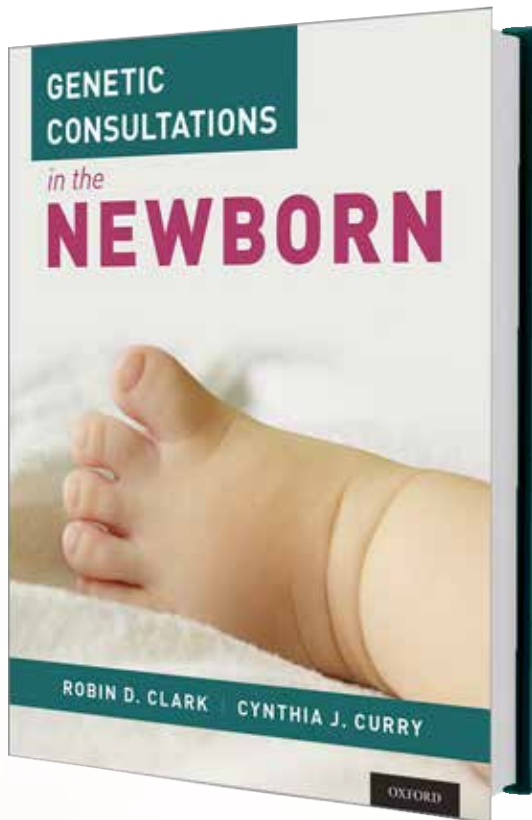


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# RSV AWARENESS:

## *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

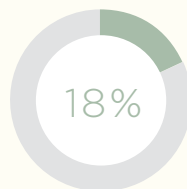
### *Preparedness*

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.

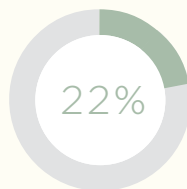
Specialty health care providers reiterated these concerns; 70% agreed that parents of their patients have a low awareness of RSV. Meanwhile, specialty health care providers themselves actively monitor for RSV. They reported that:

#### PARENTS

**Only 18% said parents know “a lot” about RSV,** reflecting an awareness level that’s roughly half that of the flu

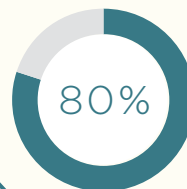


**Only 22% of parents consider themselves “very well prepared” to prevent RSV.**

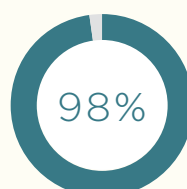


#### SPECIALTY HEALTH CARE PROVIDERS

**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: Transplacental SARS-CoV-2 Antibody Transfer: Yes?!

Joseph R. Hageman, MD, Mitchell Goldstein, MD

Our daughter lives in rural Illinois with her husband and three girls, ages 6, 4, and 2 years. They live on a farm and have been very careful, and have worked hard to remain healthy and safe. She is pregnant at 19 weeks' gestation, and things have been going well. That is, until eight days ago, when her husband developed a cough and some fever. His father also became symptomatic, and now she and her daughters have all developed some congestion and various signs and symptoms of COVID-19, including some fever, cough, diarrhea, muscle aches, and fatigue. She, her husband, and his father have all been tested and are positive by nasopharyngeal RCT-PCR test. The children are presumed to be positive. This morning when she awoke and tried to take a deep breath, she had pleuritic chest pain and dyspnea. They have had a pulse oximeter, and her oxygen saturation was 97% in room air. She called her obstetrician, who felt it best for her to go to the hospital's emergency department, where she had delivered her three daughters. She drove herself to the hospital. There she was afebrile and remained in room air. Her chest radiograph was unremarkable. She was given an albuterol inhaler with a spacer and took 2 puffs with subsequent improvement in her ability to breathe and increase her cough productivity. Her laboratory studies were all within normal limits, including her D-dimer and a negative myoglobin test, except for a potassium level of 3.2 mEq/L and her electrocardiograms were also normal. After a discussion with her physicians on oral hydration, she was discharged home, acetaminophen for the chest discomfort, and her albuterol inhaler with spacer q 4-6 hours, her pulse oximeter, and with close follow up. As of January 6, she continues to improve, and her baby is moving in utero.

***“So what do we know about the clinical course and risks to pregnant women with COVID-19 infection/disease during Pregnancy during the second and third trimester?”***

So what do we know about the clinical course and risks to pregnant women with COVID-19 infection/disease during Pregnancy during the second and third trimester?

First of all, there are changes in the immune system of pregnant women as described by Wadman et al.:

“Pregnancy does appear to make women's bodies more vulnerable to severe COVID-19, the disease caused by SARS-CoV-2. That is partly because of pregnant women's uniquely adjusted immune systems, and partly because the coronavirus' points of attack—the lungs and the cardiovascular system—are already stressed in pregnancy” (1).

Secondly, In the study by Ellington et al., SARS-CoV-2 infection in Pregnancy was associated with hospitalization and increased risk for intensive care unit admission and receipt of mechanical ventilation, but not with death (2). If a pregnant woman with SARS-CoV-2 is sick enough to be admitted to the hospital, she is considered high risk for developing severe SARS-CoV-2 disease.

***“ If a pregnant woman with SARS-CoV-2 is sick enough to be admitted to the hospital, she is considered high risk for developing severe SARS-CoV-2 disease.”***

There is also a nationwide prospective cohort study, PRIORITY or Pregnancy CoRonavirus Outcomes RegIsTrY, organized by Afshar, Gaw, Flaherman, Jacoby, and co-investigators at the University of California San Francisco. This study collected clinical data from 736 pregnant or recently pregnant women with SARS-CoV-2 positive (N= 594) or patients under investigation (PUIs = 142 who tested negative) from across the United States to describe the clinical presentation, symptomatology, and disease course of known or suspected COVID-19 disease in Pregnancy who were enrolled and followed up for one year (3). This paper was just published in December and is different from Ellington's study in that most of these women had mild illness and were seen as outpatients (3). These patients were collected between March 20, 2020, and July 10, 2020. The most prevalent symptoms in the first week after diagnosis were cough (46%), fatigue (38%), and headache (25%), with symptoms usually resolving within a



month (3). By week four after diagnosis, 60% were asymptomatic; however, 25% were still symptomatic at week eight post-diagnosis (3) in those patients who tested positive for SARS-CoV-2 (3).

---

***“Early reports of decreased preterm birth and subsequent admission to the NICU must be looked at in context as well. As many have been heeding the orders to shelter and avoid crowds, could the incidence of very early loss be under appreciated and under reported?”***

---

How about the rate of preterm birth and stillbirth during this pandemic? Concerning stillbirth, a study done by Stowe and colleagues in England comparing pre-pandemic and pandemic stillbirth rates revealed no increase in stillbirth rates (4). In Philadelphia, changes in preterm birth rates and stillbirth during the SARS-CoV-2 pandemic from March-June 2020 were examined, and no increase in preterm birth rate or increase in stillbirths was noted (5). This finding is in contrast to a study from a single London hospital by Khalil et al. that reported an increase in stillbirth rates (6).

Early reports of decreased preterm birth and subsequent admission to the NICU must be looked at in context as well. As many have been heeding the orders to shelter and avoid crowds, could the incidence of very early loss be under appreciated and under reported? Some of the symptomatology of CoV-2 infection may mask early spontaneous abortion.

There has been discussion about the differences in morbidity and mortality in Hispanic or black patients with SARS-CoV-2 infection. Here is a quote from the paper in the *Morbidity and Mortality Weekly Report (MMWR)* by Ellington and colleagues:

---

***“Although data on race/ethnicity were missing for 20% of pregnant women in this study, these findings suggest that pregnant women who are Hispanic and black might be disproportionately affected by SARS-CoV-2 infection during pregnancy (2).”***

---

“During the study period, among pregnant women with laboratory-confirmed SARS-CoV-2 infection who reported race/ethnicity, 46% were Hispanic, 22% were black, and 23% were white; these proportions differ from those among women with reported race/ethnicity who gave birth in 2019: 24% were Hispanic, 15% were black, and 51% were white.†† Although data on race/ethnicity were missing for 20% of pregnant women in this study, these findings suggest that pregnant women who are Hispanic and black might be disproportionately affected by SARS-CoV-2 infection during pregnancy” (2). In the PRIORITY study, an effort is ongoing to collect more patients of color to provide more clinical information about these women’s course and provide ongoing follow up (3).

Disparity may play an important role in access to care and the circumstances that allow for CoV-2 disease to spread more rapidly. Crowded, shared living spaces in apartment complexes with common ventilation systems may ultimately be implicated, especially in expectant mothers experiencing poverty.

We will continue to closely follow the available literature to provide clinicians further perspective about the diagnosis, management, vaccination, and ongoing care of pregnant women with COVID-19 disease and their infants.

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The authors have no conflicts to disclose

**NT**

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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:

[jhageman@peds.bsd.uchicago.edu](mailto:jhageman@peds.bsd.uchicago.edu)

### Keeping Your Baby Safe

How to protect your little one from germs and viruses

The 2020 cold and flu season is going to be especially dangerous for vulnerable infants their families. But there are things you can do to be safer.

- FLU
- COVID-19
- RSV

Here's what you can do...

- Wash Your Hands**
  - This is the single most important thing you can do to stop the spread of viruses.
  - Use soap.
  - Wash for more than 20 seconds.
  - Use alcohol-based sanitizers.
- Limit Contact with Others**
  - Stay home when you can.
  - Wear a face mask when out.
  - Stay at least 6 feet apart when out.
  - Change your clothes when you get home.
  - Tell others what you're doing to stay safe.
- Provide Protective Immunity**
  - Hold baby skin-to-skin.
  - Give them your breast milk.
  - Stay current with your family's immunizations.
- Take Care of Yourself**
  - Stay connected with your family and friends.
  - Sleep when you can.
  - Drink more water and eat healthy foods.
  - Seek mental health support.
- Immunizations** Vaccinations save lives. Protecting your baby from flu and pertussis lowers their risk for complications from RSV and COVID-19.
- WARNING: Never Put a Mask on Your Baby**
  - Because babies have smaller airways, a mask makes it hard for them to breathe.
  - Masks pose a risk of strangulation and suffocation.
  - A baby can't remove their mask if they're suffocating.
- If you are positive for COVID-19**
  - Wash with soap and water and put on fresh clothes before holding or feeding your baby.
  - Wear a mask to help stop respiratory viruses from spreading.
  - Watch out for symptoms like fever, confusion, or trouble breathing.
  - Ask for help caring for your baby and yourself while you recover.

We can help protect each other.

Learn more: [www.nationalperinatal.org/COVID-19](http://www.nationalperinatal.org/COVID-19)

National Perinatal Association

### The Corona Warriors

We are safe and strong at home!

Written by Shrey Parikh  
Illustrated by Lente Artemieff

## 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.

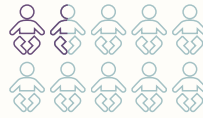
I am so much more than my NAS diagnosis. My drug exposure will not determine my long-term outcomes. But how you treat me will. When you invest in my family's health and wellbeing by supporting Medicaid and Early Childhood Education you can expect that I will do as well as any of my peers!



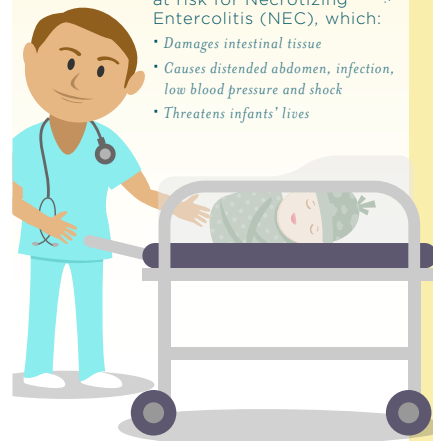
Learn more about Neonatal Abstinence Syndrome at [www.nationalperinatal.org](http://www.nationalperinatal.org)



## 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.

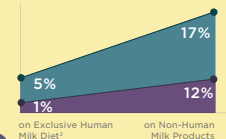


**MICRO PREMIES** are at risk for Necrotizing Enterocolitis (NEC), which:

- 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?



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 micro preemie can access an EXCLUSIVE HUMAN MILK DIET:



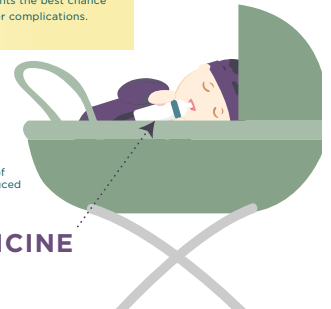
Mortality is reduced by **75%**\*



Feeding intolerance decreases\*



Chances of NEC are reduced by **77%**\*



HUMAN MILK = MEDICINE

LEARN MORE ▶

**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 SA, 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 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: 10.1097/JP.0000000000000118

# SUPPORTING KANGAROO CARE



SKIN-TO-SKIN CARE DURING  
**COVID-19**



## GET INFORMED ABOUT THE RISKS + BENEFITS

work with your medical  
team to create a plan

## GET CLEAN WASH YOUR HANDS, ARMS, and CHEST

with soap and water for  
20+ seconds. Dry well.



## PUT ON FRESH CLOTHES

change into a clean  
gown or shirt.

## IF COVID-19 + WEAR A MASK

and ask others to  
hold your baby when  
you can't be there



[nicuawareness.org](http://nicuawareness.org)  
[nationalperinatal.org/NICU\\_Awareness](http://nationalperinatal.org/NICU_Awareness)  
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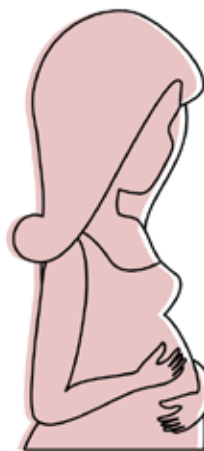
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NATIONAL PERINATAL ASSOCIATION

## 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)

**Time is precious, just like your patients.**





## 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:



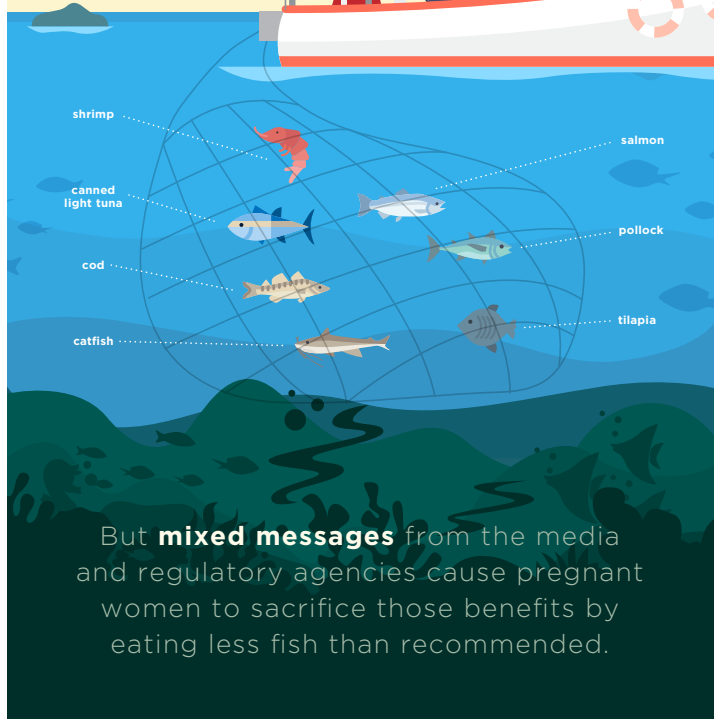
Iron



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?

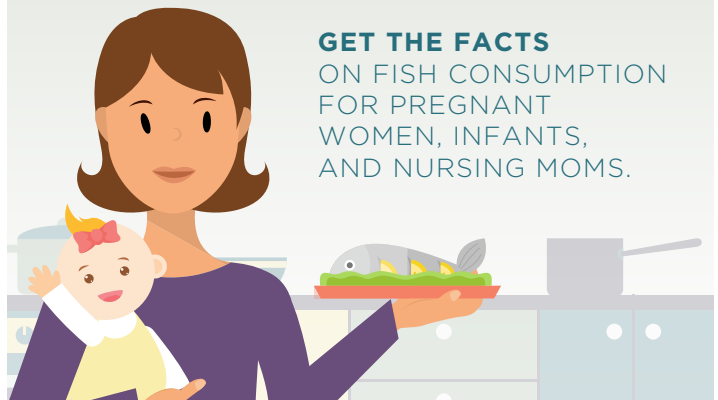
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Open Letter**



**Breastfeeding  
Innovations  
Team**



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ON FISH CONSUMPTION  
FOR PREGNANT  
WOMEN, INFANTS,  
AND NURSING MOMS.

**NCfIH** National Coalition  
for Infant Health

Protecting Access for Premature Infants through Age Two

**LEARN MORE** ▶

# Letters to the Editor

December 18, 2020

Letter to the Editor:

Khoury et al. published an online article in the Journal of Perinatology in November 2020, comparing the times taken to achieve stable readings for Masimo and Nellcor pulse oximeters in neonates immediately after delivery (1). The study described in the article did not use Masimo's current technology developed in response to the 2015 update of the American Academy of Pediatrics Newborn Resuscitation Protocol (NRP) to address the measurement conditions during the first few minutes after birth (2). Based on the revised NRP, Masimo optimized a new solution in 2016, using its newborn specialty sensor to provide stable pulse rate readings earlier. This solution was not included in the Khoury study.

***“Based on the revised NRP, Masimo optimized a new solution in 2016, using its newborn specialty sensor to provide stable pulse rate readings earlier. This solution was not included in the Khoury study.”***

In the case plot of pulse rate versus time in a neonate shown below (unpublished), the blue trace is from the Nellcor pulse oximeter, the red trace is from the Masimo pulse oximeter used by Khoury et al., and the green trace is from the 2016 Masimo pulse oximeter with newborn specialty sensor solution. This comparison of the pulse rates is limited to the first 3 minutes from the start of monitoring. The actual heart rate during this time period was in the 170-180 range.

As shown in this case example, Masimo's 2016 newborn specialty sensor solution provided stable pulse rate readings earlier than either the standard Masimo pulse oximeter or the Nellcor pulse oximeter.

An additional concern with the Khoury study is the use of the electrocardiogram (ECG) heart rate as a “gold standard” for pulse rate from pulse oximetry. Pulseless Electrical Activity (PEA, also known as Electro-Mechanical Dissociation or EMD) is not rare during the first minutes after birth, especially during asphyxia. The ECG can display heart rates far greater than the actual pulse rate in this situation. There are several studies affirming this fact

(2,3). This is a possible explanation of some of the “low pulse rate” data points shown in Khoury's Figure 2: the actual peripheral pulse rate can be significantly lower than the ECG rate.

***“An additional concern with the Khoury study is the use of the electrocardiogram (ECG) heart rate as a “gold standard” for pulse rate from pulse oximetry. Pulseless Electrical Activity (PEA, also known as Electro-Mechanical Dissociation or EMD) is not rare during the first minutes after birth, especially during asphyxia.”***

Masimo welcomes clinical studies of the ability of pulse oximetry to display data rapidly and reliably in the period immediately following birth. We appreciate this effort by Khoury et al. and recommend that this study be repeated with the current Masimo technology. Masimo would be happy to support such a study.

#### References:

1. Khoury R, et al., “Monitoring Oxygen Saturation and Heart Rate During Neonatal Transition,” J Perinatology, <https://doi.org/10.1038/s41372-020-00881-y>, November 2020.
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4. Luong D, Cheung PY, Barrington KJ, et al. “Cardiac arrest with pulseless electrical activity rhythm in newborn infants: a case series,” Arch Dis Child Fetal Neonatal Ed. 2019;104(6):F572-F574.

Sincerely,

Steven J Barker, PhD, MD

Chief Science Officer

Masimo Corporation



Dear Dr. Barker:

Comparison trials of relevant devices define usage parameters. These studies are essential not only for understanding boundaries where these devices are useful but also to identify instances when a device may function less well or provide erroneous results. (1) That said, these comparison trials only produce useful clinical information when the most current technology from one manufacturer is compared to another manufacturer's most current technology. To demonstrate superiority over a technology that is no longer current does not provide useful clinical information and may unduly prejudice clinical decision-making against a more competent and current device. The absence of head-to-head controlled studies does not mean that an effect is absent. When making use decisions, unless the revisions are those that have been studied, the comparison is irrelevant. (2, 3)

Pulseless Electrical Activity in the delivery room is not without consequence. The decision to intervene and provide resuscitation must not be delayed in the absence of perfusion. While an ECG may be the gold standard for heart rate, there is not absolute concordance of heart rate and pulse rate even in well individuals. Ultimately, what is associated with distal perfusion is most important. While an ECG may identify rhythms that can produce alterations in perfusion, it is a poor surrogate for perfusion. If there is no HR identified on the ECG, there is no distal perfusion; but the reverse is not always true even if there is a strong steady ECG rhythm. (4-6)

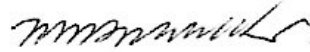
Indeed, this study should have incorporated the most current device from both manufacturers. Should Khoury et al. have doubts as to whether the improvements were significant, incorporating another sensor and comparing the three may be a worthwhile endeavor.

#### References:

1. Barker SJ. "Motion-resistant" pulse oximetry: a comparison of new and old models. *Anesth Analg*. 2002;95(4):967-72, table of contents. Epub 2002/09/28. doi: 10.1097/00000539-200210000-00033. PubMed PMID: 12351278.
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Sincerely,



Mitchell Goldstein, MD

Editor in Chief

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c/o Mitchell Goldstein, MD

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**Erratum (Neonatology Today January, 2020)**

Neonatology Today has identified no erratum affecting the January, 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).

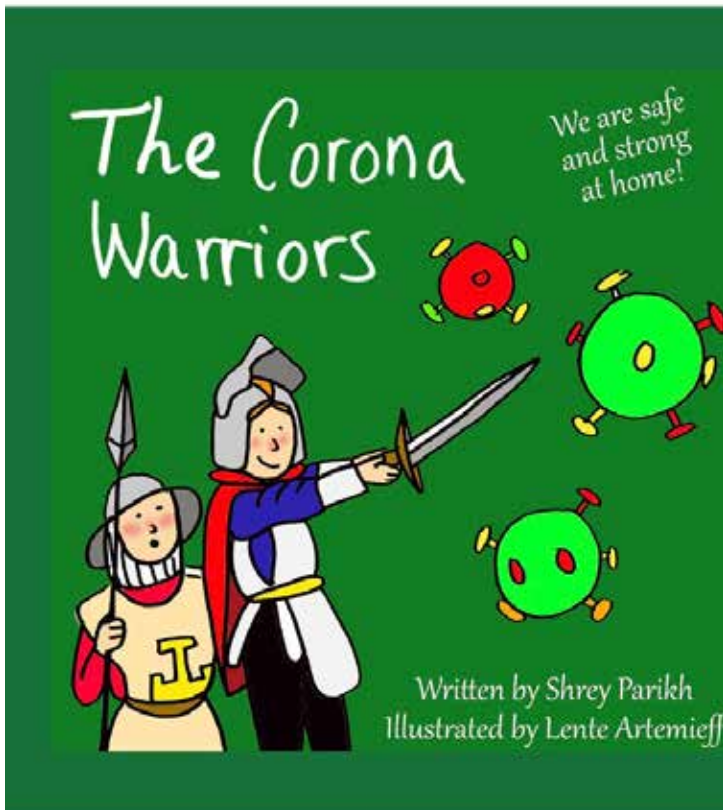
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
## Which Infants are More Vulnerable to Respiratory Syncytial Virus?

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.

**AfPA**  
Advocates for Patient Access



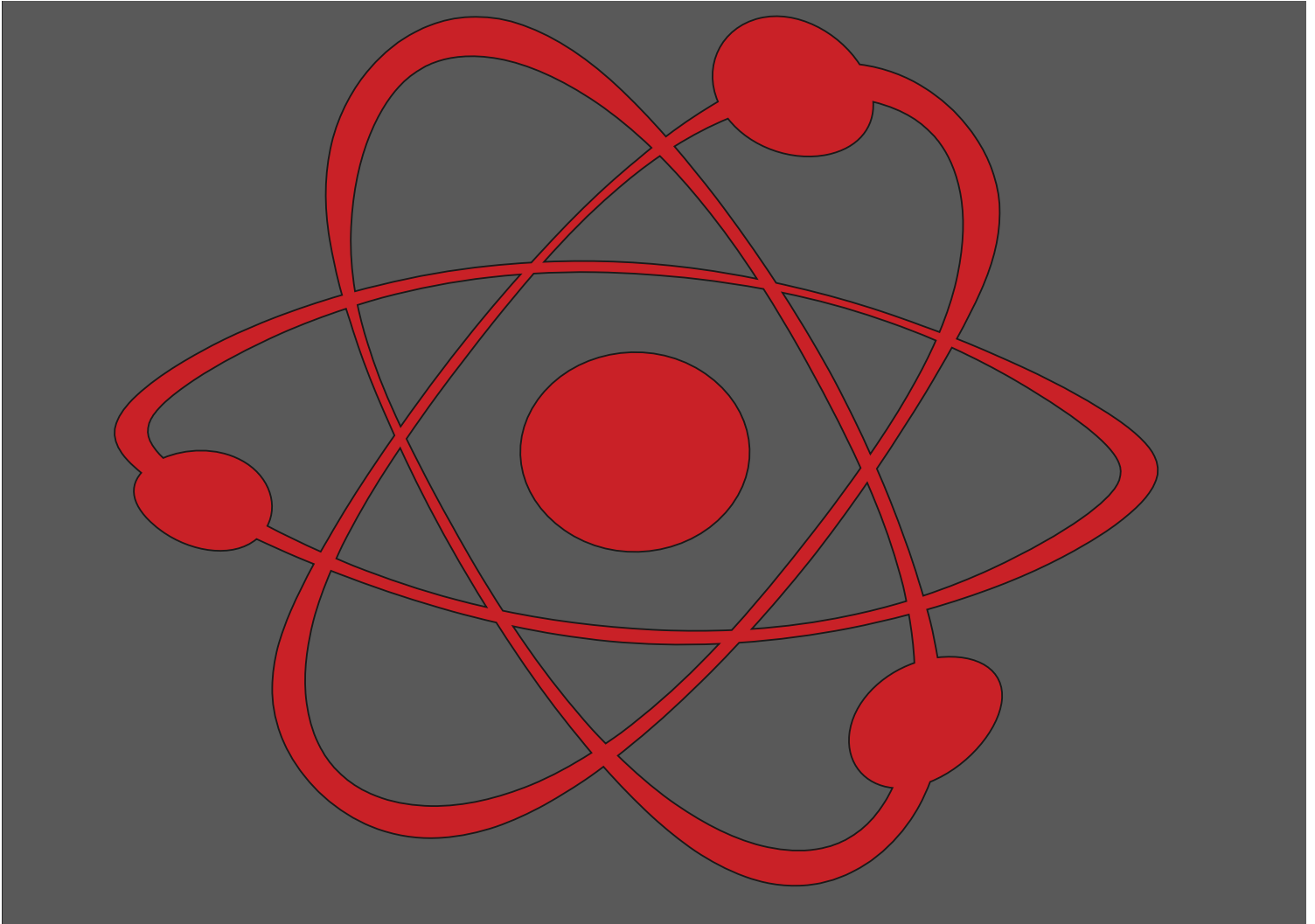
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Will your **PRETERM INFANT** need **EARLY INTERVENTION** services?

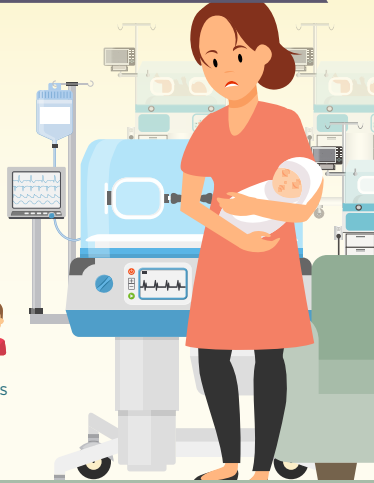
Preterm infants are:

**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



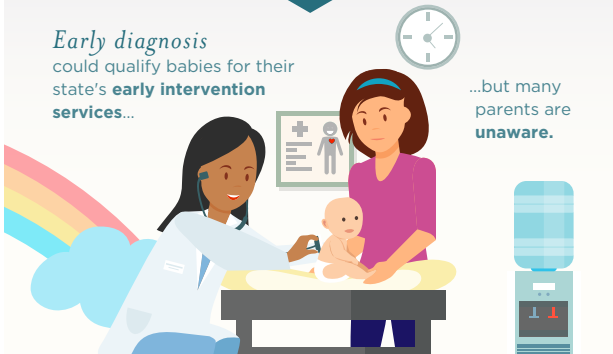
Address physical challenges



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 POSTPARTO**



**1 DE CADA 7** MADRES AFRONTA LA DEPRESIÓN POSTPARTO, *experimentando*



Sin embargo, sólo el **15%** recibe tratamiento<sup>1</sup>

LA DEPRESIÓN POSTPARTO **NO TRATADA PUEDE AFECTAR:**

El sueño, la alimentación y el comportamiento del bebé a medida que crece<sup>2</sup>



La salud de la madre  
La capacidad para cuidar de un bebé y sus hermanos

PARA AYUDAR A LAS MADRES A ENFRENTAR LA DEPRESIÓN POSTPARTO



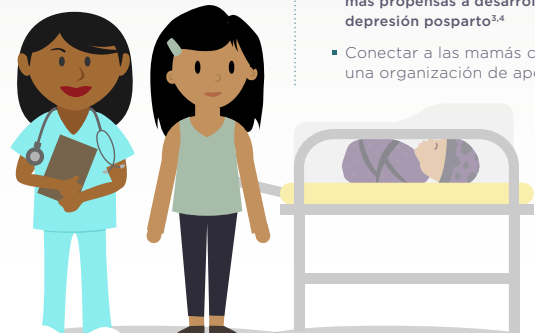
**LOS ENCARGADOS DE FORMULAR POLÍTICAS PUEDEN:**

- 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 postparto**<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 (2019) 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, Villages L, Dennis CL. *PLoS ONE* 2010 Apr; 11(7):1540-50.

## Upcoming Medical Meetings

**NEO: The Conference in Neonatology**  
February 15-19, 2021  
Virtual

<https://mednax.swoogo.com/NEO2021>

**The 34<sup>th</sup> Annual Gravens Conference**  
March 3, 4, 10, and 17, 2021  
Virtual

<https://health.usf.edu/publichealth/chiles/gravens-conference>

**37<sup>th</sup> Annual Advances in Therapeutics and Technology Conference**

March 24 -26, 2021  
Virtual

<https://paclac.org/advances-in-care-conference/>

**Annual Neonatal and Pediatric Airborne Transport Conference**  
May 5 - 7, 2021

International Biomedical  
Austin, Texas

<https://www.int-bio.com/events-news/airborne-conference/>

**Pediatric Academic Society Virtual Meeting**

Phase 1: April 30 - May 4, 2021

Phase 2: May 10 - June 4, 2021

<https://www.pas-meeting.org/pas2021-virtual/>

**22<sup>nd</sup> Annual International Perinatal Bereavement Conference (IPBC)**  
May 12 - 15, 2021

Pregnancy Death and Infant Loss Alliance (PLIDA)  
Chicago, Illinois

<https://www.plida.org/ipbc-2021>

**44<sup>th</sup> Annual Conference on Neonatal Perinatal Medicine**  
June 17 - 21, 2021

AAP District VIII Section on Neonatal-Perinatal Medicine

<https://nm2020.district8sonpm.org/>

**Innovations in Neonatal Care**  
Location: Santa Fe, New Mexico  
August 9 - 11, 2021

Mednax

<http://www.innovationsconference.com/>

**42<sup>nd</sup> Conference on Pediatric Health Care.**

Phase 1:

March 10-13 (Orlando, FL)

Phase 2:

March 24-27 (Virtual)

NAPNAP

<https://www.napnap.org/national-conference/>

Location: Austin, Texas  
*For up to date Meeting Information, visit*

*[NeonatologyToday.net](http://NeonatologyToday.net) and click on the events tab.*

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- Collaborative work environment
- Care of high acuity NICU patients
- State of the art technology
- 24/7 coverage provided by NNP team and Fellows



EOE/AAE

## Who We Are

With over 900 beds in four hospitals, we operate some of the largest clinical programs in the nation. We also offer the only Level I Regional Trauma Center and Children's Hospital in the Inland Empire servicing the largest county in the US. We lead in many areas of excellence; pediatrics, cardiac services, cancer treatment and research, mental health, chemical dependency, and other essential clinical disciplines. All this adds up to endless possibilities for our patients and for you.

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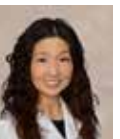
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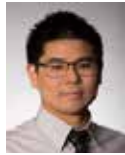
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coronavirus

pertussis

RSV



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Ask about protective  
injections for RSV.



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Sneeze and cough  
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ALCOHOL-BASED  
HAND SANITIZER.**



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FROM SICK PEOPLE**  
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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 continue to 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 White, MD who shares yet another stunning image of Hydrangeas. Our Bird for this month is a Hummingbird Nesting by the ocean provided by Elba Fayard, MD.

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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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