

# NEONATOLOGY TODAY

Peer Reviewed Research, News and Information  
in Neonatal and Perinatal Medicine



Volume 14 / Issue 5 | May 2019

## Streamlining Neonatal Phototherapy: A New Design for Improved Quality of Care

Deepakshyam Krishnaraju, MSc, ME,  
Sivakumar Palaniswamy, MSc, BME

Page 4

## The Second Speaking of NEC: Unplugged

Jennifer Degl

Page 9

## Respiratory Report:

### Non-Invasive Nasal Jet Assisted Ventilation (NINJA):

#### A Case Study

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

Page 15

## Featured Conference: Addressing the Growing Need for Interdisciplinary Training in Perinatal/Neonatal Comfort Care:

### A New 3-Day Course in New York City

Elvira Parravicini, MD

Page 24

## From the National Perinatal Association:

### Shedding Light on the Dark Reality of Disparities in Perinatal Care

Cheryl A. Milford, Ed.S.

Page 33

## Fellow's Column: Working to Improve Neonatal Intensive Care Unit Transport Response Times:

### An Ongoing Quality Improvement Project

Jill Colontuono, APN, NNP-BC, CPNP, Christine Carlos, MD,  
Michael D. Schreiber, MD, Brandi Parker, MSN, MBA,  
Jaideep Singh, MD, Joseph R. Hageman, MD

Page 40

## Postpartum Depression Garners Attention of Policy and Lawmakers

Darby O'Donnell, JD

Page 44

## Medical News, Products & Information

Compiled and Reviewed by Mitchell Goldstein, MD Editor in Chief

Page 47

## Featured Conference: PAC/LAC Quality of Life for Families XXIII: Improving Care for Patients Across Generations and Cultures

Page 57

## A Great #99nicuMeetup!

Stefan Johansson, MD, PhD and Francesco Cardona, MD, MSc

Page 63

## The Genetics Corner:

### A Consultation for Multiple Congenital Anomalies

Subhadra Ramanathan, M.Sc., M.S. and Robin Clark, MD

Page 75

## Myths, Facts

### and Postpartum Depression

Susan Hepworth and Mitchell Goldstein, MD

Page 81

## Medicolegal Forum:

### Maternal Addiction, A Shakespearean Approach

Gilbert Martin, MD and Jonathan Fanaroff MD, JD

Page 88

## Monthly Clinical Pearl:

### Prenatal Consults by Neonatologists:

#### A Challenging Part of What We Do

Joseph R. Hageman, MD

Page 90

## Letters to the Editor

Mitchell Goldstein, MD responds as Editor-in-Chief  
to Peesay Moraji, MD on Global Fertility Rate Plummeting!

Page 94

## Erratum

Page 95

## Upcoming Meetings

Page 98

## Editorial Board

Page 101

## Manuscript Submission:

### Instructions to Authors

Page 102

## Neonatology and the Arts

Herbert Vasquez, MD

Page 102

## Neonatology Today is Still Going to the Birds

### A Very Nonchalant Seagull

Larry Tinsley, MD

Page 103



**NEONATOLOGY TODAY**  
© 2006-2019 by Neonatology Today  
Published monthly. All rights reserved.  
ISSN: 1932-7137 (Online), 1932-7129 (Print)  
All editions of the Journal and associated  
manuscripts are available on-line:  
[www.NeonatologyToday.net](http://www.NeonatologyToday.net)  
[www.Twitter.com/NeoToday](http://www.Twitter.com/NeoToday)



Loma Linda Publishing Company  
A Delaware "not for profit" 501(c) 3 Corporation.  
c/o Mitchell Goldstein, MD  
11175 Campus Street, Suite #11121  
Loma Linda, CA 92354  
Tel: +1 (302) 313-9984  
[LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com)

INOMAX® (NITRIC OXIDE) GAS, FOR INHALATION

# Because Every Moment Counts



**A complete system with comprehensive care is included in your INOMax Total Care contract at no extra cost.**

When critical moments arise, INOMax Total Care is there to help ensure your patients are getting uninterrupted delivery of inhaled nitric oxide.

- Over 18 years on market with over 700,000 patients treated<sup>1</sup>
- Continued innovation for delivery system enhancements
- Emergency deliveries of all INOMax Total Care components within hours<sup>†</sup>
- Live, around-the-clock medical and technical support and training
- Ongoing INOMAX® (nitric oxide) gas, for inhalation reimbursement assessment and assistance included in your INOMAX contract (Note: You are ultimately responsible for determining the appropriate reimbursement strategies and billing codes)

**2017 EMERGENCY DELIVERIES\***

DRUG & DEVICE  
**2,700+** 

## Indication

INOMAX is indicated to improve oxygenation and reduce the need for extracorporeal membrane oxygenation in term and near-term (>34 weeks gestation) neonates with hypoxic respiratory failure associated with clinical or echocardiographic evidence of pulmonary hypertension in conjunction with ventilatory support and other appropriate agents.

## Important Safety Information

- INOMAX is contraindicated in the treatment of neonates dependent on right-to-left shunting of blood.
- Abrupt discontinuation of INOMAX may lead to increasing pulmonary artery pressure and worsening oxygenation.
- Methemoglobinemia and NO<sub>2</sub> levels are dose dependent. Nitric oxide donor compounds may have an additive effect with INOMAX on the risk of developing methemoglobinemia. Nitrogen dioxide may cause airway inflammation and damage to lung tissues.

- In patients with pre-existing left ventricular dysfunction, INOMAX may increase pulmonary capillary wedge pressure leading to pulmonary edema.
- Monitor for PaO<sub>2</sub>, inspired NO<sub>2</sub>, and methemoglobin during INOMAX administration.
- INOMAX must be administered using a calibrated INOMax DSIR® Nitric Oxide Delivery System operated by trained personnel. Only validated ventilator systems should be used in conjunction with INOMAX.
- The most common adverse reaction is hypotension.

**You are encouraged to report negative side effects of prescription drugs to the FDA. Visit MedWatch or call 1-800-FDA-1088.**

**Please visit [inomax.com/PI](http://inomax.com/PI) for Full Prescribing Information.**

**Visit [inomax.com/totalcare](http://inomax.com/totalcare) to find out more about what's included in your contract.**

\*INOMax Total Care is included at no extra cost to contracted INOMAX customers.

<sup>†</sup>Emergency deliveries of various components are often made within 4 to 6 hours but may take up to 24 hours, depending on hospital location and/or circumstances.

Reference: 1. Data on file. Hampton, NJ: Mallinckrodt Pharmaceuticals.



# INOmax<sup>®</sup> (nitric oxide gas)

## Brief Summary of Prescribing Information

### INDICATIONS AND USAGE

#### Treatment of Hypoxic Respiratory Failure

INOmax<sup>®</sup> is indicated to improve oxygenation and reduce the need for extracorporeal membrane oxygenation in term and near-term (>34 weeks) neonates with hypoxic respiratory failure associated with clinical or echocardiographic evidence of pulmonary hypertension in conjunction with ventilator support and other appropriate agents.

### CONTRAINDICATIONS

INOmax is contraindicated in neonates dependent on right-to-left shunting of blood.

### WARNINGS AND PRECAUTIONS

#### Rebound Pulmonary Hypertension Syndrome following Abrupt Discontinuation

Wean from INOmax. Abrupt discontinuation of INOmax may lead to worsening oxygenation and increasing pulmonary artery pressure, i.e., Rebound Pulmonary Hypertension Syndrome. Signs and symptoms of Rebound Pulmonary Hypertension Syndrome include hypoxemia, systemic hypotension, bradycardia, and decreased cardiac output. If Rebound Pulmonary Hypertension occurs, reinstate INOmax therapy immediately.

#### Hypoxemia from Methemoglobinemia

Nitric oxide combines with hemoglobin to form methemoglobin, which does not transport oxygen. Methemoglobin levels increase with the dose of INOmax; it can take 8 hours or more before steady-state methemoglobin levels are attained. Monitor methemoglobin and adjust the dose of INOmax to optimize oxygenation.

If methemoglobin levels do not resolve with decrease in dose or discontinuation of INOmax, additional therapy may be warranted to treat methemoglobinemia.

#### Airway Injury from Nitrogen Dioxide

Nitrogen dioxide (NO<sub>2</sub>) forms in gas mixtures containing NO and O<sub>2</sub>. Nitrogen dioxide may cause airway inflammation and damage to lung tissues.

If there is an unexpected change in NO<sub>2</sub> concentration, or if the NO<sub>2</sub> concentration reaches 3 ppm when measured in the breathing circuit, then the delivery system should be assessed in accordance with the Nitric Oxide Delivery System O&M Manual troubleshooting section, and the NO<sub>2</sub> analyzer should be recalibrated. The dose of INOmax and/or FiO<sub>2</sub> should be adjusted as appropriate.

#### Worsening Heart Failure

Patients with left ventricular dysfunction treated with INOmax may experience pulmonary edema, increased pulmonary capillary wedge pressure, worsening of left ventricular dysfunction, systemic hypotension, bradycardia and cardiac arrest. Discontinue INOmax while providing symptomatic care.

### ADVERSE REACTIONS

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice. The adverse reaction information from the clinical studies does, however, provide a basis for identifying the adverse events that appear to be related to drug use and for approximating rates.

Controlled studies have included 325 patients on INOmax doses of 5 to 80 ppm and 251 patients on placebo. Total mortality in the pooled trials was 11% on placebo and 9% on INOmax, a result adequate to exclude INOmax mortality being more than 40% worse than placebo.

In both the NINOS and CINRGI studies, the duration of hospitalization was similar in INOmax and placebo-treated groups.

From all controlled studies, at least 6 months of follow-up is available for 278 patients who received INOmax and 212 patients who received placebo. Among these patients, there was no evidence of an adverse effect of treatment on the need for rehospitalization, special medical services, pulmonary disease, or neurological sequelae.

In the NINOS study, treatment groups were similar with respect to the incidence and severity of intracranial hemorrhage, Grade IV hemorrhage, periventricular leukomalacia, cerebral infarction, seizures requiring anticonvulsant therapy, pulmonary hemorrhage, or gastrointestinal hemorrhage.

In CINRGI, the only adverse reaction (>2% higher incidence on INOmax than on placebo) was hypotension (14% vs. 11%).

Based upon post-marketing experience, accidental exposure to nitric oxide for inhalation in hospital staff has been associated with chest discomfort, dizziness, dry throat, dyspnea, and headache.

### DRUG INTERACTIONS

#### Nitric Oxide Donor Agents

Nitric oxide donor agents such as prilocaine, sodium nitroprusside and nitroglycerine may increase the risk of developing methemoglobinemia.

### OVERDOSAGE

Overdosage with INOmax is manifest by elevations in methemoglobin and pulmonary toxicities associated with inspired NO<sub>2</sub>. Elevated NO<sub>2</sub> may cause acute lung injury. Elevations in methemoglobin reduce the oxygen delivery capacity of the circulation. In clinical studies, NO<sub>2</sub> levels >3 ppm or methemoglobin levels >7% were treated by reducing the dose of, or discontinuing, INOmax.

Methemoglobinemia that does not resolve after reduction or discontinuation of therapy can be treated with intravenous vitamin C, intravenous methylene blue, or blood transfusion, based upon the clinical situation.

INOMAX<sup>®</sup> is a registered trademark of a Mallinckrodt Pharmaceuticals company.

# Streamlining Neonatal Phototherapy: A New Design for Improved Quality of Care

Deepakshyam Krishnaraju, MSc, ME, Sivakumar Palaniswamy, MSc, BME

## Importance of Accessible NICU Facilities

The neonatal intensive care unit (NICU) can be a stressful and challenging environment for clinicians and families of critically ill children. For optimal working conditions and outcomes, equipment must not interfere with access to the patient. Particularly when the census and acuity are high, space may be at a premium and bulky equipment may impede access to the patient. It is imperative that NICU space is utilized optimally to make it feasible for clinicians to have constant visual and hands-on access. An accessible NICU makes possible the ease of administering routine and emergency treatment while ensuring patient comfort and reducing caregiver stress, and it is crucial for patient safety and maintaining quality metrics within a healthcare institution.

A reasonable argument can be made that medical device design has focused on the patient's needs but has lacked understanding about how the device will operate in conjunction with all of the other equipment in the NICU. A prime example is the decades-old, traditional overhead phototherapy device used to treat neonatal jaundice. These devices are bulky and may limit access to the patient, especially in incubators and on radiant warmers. This article explores the factors that impact accessibility in the NICU and using the phototherapy device as an example, explores how phototherapy design strategies can help to alleviate the problem.

## Current Challenges to Accessibility in the NICU

Compromised accessibility is a direct result of higher occupancy rates within NICUs. (2) In Great Britain, for example, the recommended occupancy of a NICU is 80% of the maximum bed capacity; however, a survey published in 2015 showed that two-thirds of hospitals are over this limit. (3) One result of high occupancy is the need for additional staff, causing further overcrowding. Overcrowding is exacerbated when borrowed or rented medical devices are brought into the nursery for excess occupancy. For example, incubators and mechanical ventilators are extremely bulky and may limit the space around the patient. Furthermore, there is substantial evidence that overcrowding is associated with a significant rise in healthcare associated infections (HAI). (4, 5)



Figure 1 NICU showing typical equipment overcrowding (7)  
Image Credit: University of Michigan C.S. Mott Children's Hospital Branson

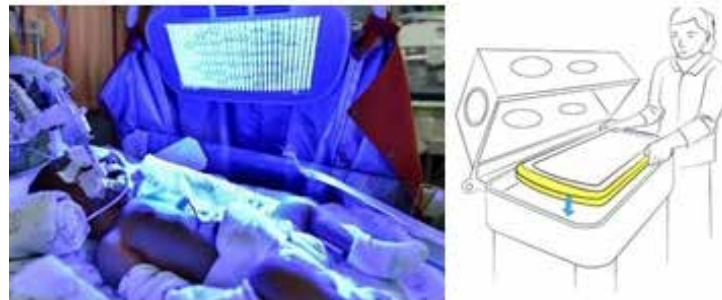


Figure 2: Traditional overhead phototherapy system (left) vs. accessible under-baby NeoLight Phototherapy device (right)

The fragile, immature population in the NICU is already at risk for infection, so the problem is compounded. Infection also leads to prolonged hospital stays and increases costs significantly, bearing in mind that a day in the NICU in the USA can exceed \$3500 USD. (7)

## Factors in Improving Accessibility

The ergonomic challenges of a crowded NICU can be overcome partially by use of modular, compact, and efficient medical devices. Phototherapy devices are ideal candidates for redesign, lending themselves to the key principles of versatility, ease of use, and simplicity.

Phototherapy is the most common treatment for neonatal hyperbilirubinemia. It works by photo-isomerization of bilirubin in the skin facilitating its excretion in urine and stool. Blue light sources have replaced white light and may be delivered by lights or pads powered by fiberoptic cables. The light source may be placed over an infant, under an infant, or in a combination of both. We believe that a phototherapy device should have specific characteristics to enhance its usability in the NICU and improve accessibility. These are noted as follows:

### Universality of Device:

Ideally, a single device should be able to treat both pre-term and term babies. The size of the baby should not dictate the practicality of the device. A major drawback when using fiberoptic phototherapy blankets is that the same size blanket will cover a different body surface area based on the size of the baby. For larger babies, multiple phototherapy devices may be needed. For term infants, particularly with near critical levels of hyperbilirubinemia, a combination of overhead and fiberoptic devices may be recommended. (8) The decision to use more than one type of phototherapy device increases the facility's burden of maintaining and monitoring the readiness of inventory.

***“The decision to use more than one type of phototherapy device increases the facility's burden of maintaining and monitoring the readiness of inventory.”***

Overhead phototherapy devices have been widely used to manage neonatal jaundice for decades and occupy significant space around and over an infant bed. A phototherapy light on a roll stand

can have typical dimensions around 19.7 x 7.9 in., and a height of well over 39.3 in., which can obstruct staff access to at least one side of the bed. (9) These devices must be correctly positioned, and the position maintained at a specified, measured distance from the baby to ensure administration of the correct dosage of light intensity. Fiberoptic pads that fit inside bassinets or incubators usually require additional hardware configurations, such as a nearby table with a means of securing the light source, creating further inconvenience and safety concerns.

These limitations support an improved approach to the design of phototherapy devices that are compatible with all neonatal beds. An additional benefit of these devices would be seamless usability

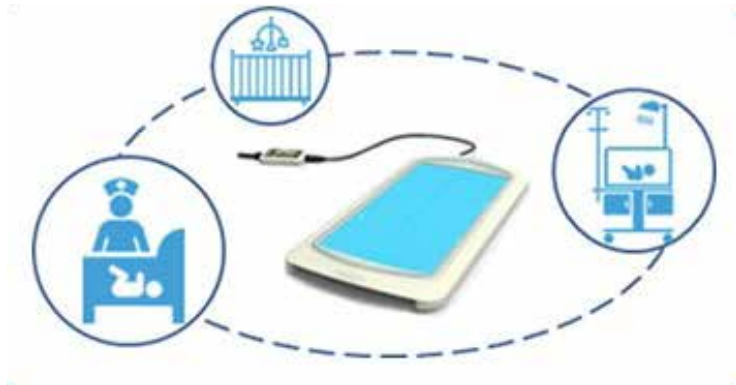


Figure 3: Optimal universality of NeoLight Phototherapy device that facilitates usage in the NICU, well-baby nursery, and home.

at home. The versatility of low-profile, easy to use phototherapy systems is a key factor in expanding the care models in which these devices can be employed.

#### Tandem Treatment:

Critically ill NICU babies require multiple life-supporting pieces of equipment such as a radiant warmer, high-frequency ventilator, NIPPV or CPAP machines, and infusion pumps. These devices are in operation simultaneously and are monitored primarily by the patient's nurse. Phototherapy treatment can compound the complexity in managing the organization and functionality of the collective devices needed to treat the patient. It is therefore essential for phototherapy devices to be simple to use and effective without compromising functionality of any life-supporting equipment. In these situations, a low profile, under-baby phototherapy system is optimal.

#### Ease of Storage:

Ensuring a device can be easily stored in a small space is critical. Most importantly, a device should be lightweight and ergonomically designed to help prevent back injuries to clinicians, which is one of the most common and costly injuries to health care staff. As patients are discharged, or soiled equipment needs to be cleaned, dirty equipment often is placed into a hallway or other central area awaiting cleaning. Once cleaning has been completed, it is common to place a sheet over the device to maintain cleanliness and denote that it is ready for use. Overhead phototherapy devices, ventilators, IV poles and other similar types of equipment take up a large volume of storage space due to their height and overall footprint. With many devices stored in the same area, equipment damage and staff injury are valid concerns as employees attempt to reach items at the back of the storage room through the plethora of devices sharing floor and air space. (10) Many phototherapy devices that are placed beneath the baby, although relatively small, are irregular in shape, making them difficult to



Figure 4: Phototherapy Body Surface Area Coverage Comparison\*

stack compactly. This situation overburdens inventory management and hinders the redeployment of clean devices available for treatment. Ideally, devices should employ a sleek, compact form that is easy to store, clean and mobilize to NICU patients when needs arise, which is why the NeoLight phototherapy system has been designed to be lightweight, stackable and easy to carry.

#### Treatment Efficacy:

The efficacy of a phototherapy device depends on several factors: the intensity, the capacity to cover a larger body surface area (BSA), the wavelength range of treatment light, and the average uniformity in light distribution. High BSA coverage enables light to reach larger areas of the infant's body. Higher light intensity per unit in conjunction with high BSA can reduce the need for using multiple phototherapy devices on a single baby, creating greater efficiency in patient care.

The optimum recommended light intensity, also referred to as irradiance, is 30  $\mu\text{W}/\text{cm}^2/\text{nm}$ . (11,12) International standards governing phototherapy systems state that peripheral intensity must be equal to or exceed 40% of the peak intensity (also known as distribution ratio). (13) A more uniformly irradiated patient surface offers optimal levels of light intensities over a larger peripheral surface area of the patient. The NeoLight Phototherapy device offers 79% average distribution across the treatment surface\*, a key achievement for phototherapy devices owing to the innovative optical engineering. Measuring irradiance requires that care-

#### Intensity: 30 $\mu\text{W}/\text{cm}^2/\text{nm}$

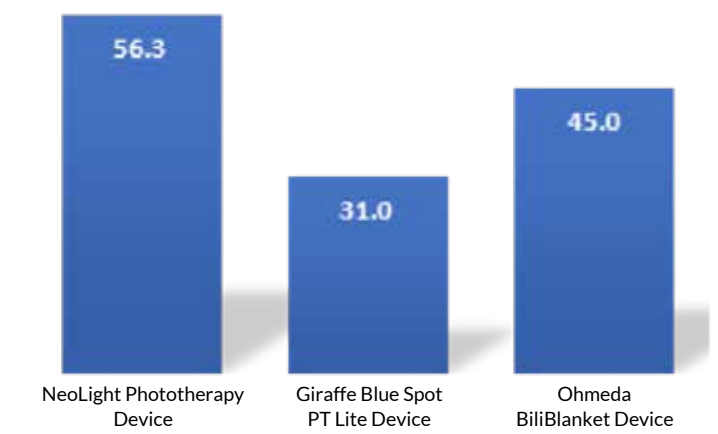


Figure 5: Average intensity of 3 phototherapy devices across treatment surface\*

givers take measurements at multiple points along the treatment area to verify that their device meets these treatment standards. If these measurements are suboptimal, additional phototherapy lights may need to be added, creating a larger equipment burden.

Comfort for all persons in the NICU must be considered when designing neonatal phototherapy devices. Glare is an optical phenomenon described as the inhibition in one's ability to view a scene which is normally associated with discomfort. (14) Studies have shown that visual exposure to blue phototherapy treatment lights can cause effects such as the alteration of one's circadian rhythm, headache, nausea, and suppression of melatonin. (15, 16) Therefore, it is important to mitigate the visual light exposure for nurses and physicians to mitigate the discomfort. The NeoLight phototherapy system has been designed to focus the light on the newborn and as much as possible, out of the direct visual path of the caregivers.

#### Variable Intensity:

A device that can provide flexibility to caregivers by allowing ad-

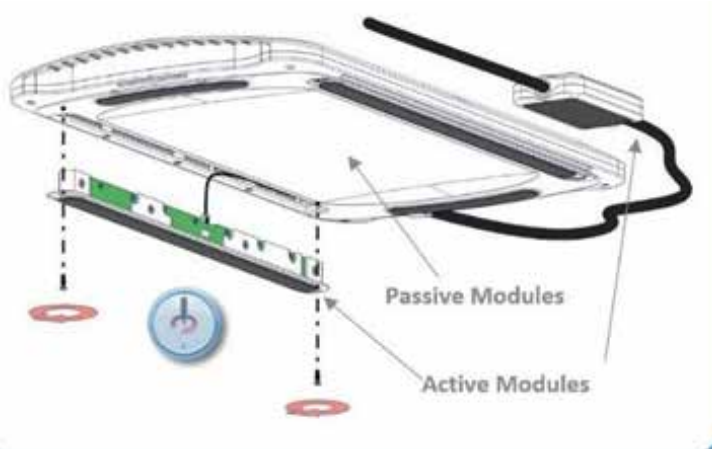


Figure 6: NeoLight phototherapy device modules

justment of administered light can facilitate the appropriate level of treatment from low to high severity infants, negating or greatly reducing the need for the use of multiple devices. Adjusting the intensity on a single device minimizes disturbance to the baby and others in close proximity and takes a few seconds instead of the longer time, noise, and possible jostling required to arrange multiple pieces of equipment. A single, flexible device effectively combats the limitations of conventional phototherapy devices.

#### Efficient Maintenance through Modularity:

Ongoing maintenance of medical devices must be continually monitored and can be inconvenient. The light source and mechanical components of the equipment must be regularly inspected to ensure that they are treatment ready. Devices with a modular design, e.g., consisting of separate replaceable modules, can effectively alleviate the cost and labor time to maintain equipment standards. For example, the light source represents one module, and in case of a failure, it is much more efficient to replace the module than the entire device. A modular design, as in the case of the NeoLight phototherapy device, supports the shipping and storage of modules that need regular maintenance and/or replacement rather than an entire device, reducing overall costs and streamlining inventory management for hospitals.

#### Ease of Cleaning:

As noted earlier, it is essential that a phototherapy device is easy to clean to ensure minimal downtime. A device administering phototherapy treatment from beneath a baby should be covered in a soft fabric that can be easily disposed of and replaced when soiled. An optimal device should not have irregular surfaces which would require complex cleaning procedures. Smooth, nonporous surfaces are key in making it easier to clean such a device.

---

***“The use of smaller, compact, versatile phototherapy devices will significantly contribute to reducing equipment overcrowding within the NICU environment.”***

---

#### Final Recommendation

The prime reason for improving accessibility in the NICU is to promote patient and staff safety, quality of care, and to reduce stress on clinical staff and families.

The use of bulky, inefficient technologies must be addressed to achieve increased patient accessibility. The use of smaller, compact, versatile phototherapy devices will significantly contribute to reducing equipment overcrowding within the NICU environment. Smart design of these devices will also broaden the use cases for phototherapy in the hospital as well as in the home environment.

#### References:

- 1 <https://www.theguardian.com/society/2015/oct/19/bliss-neonatal-intensive-care-units-stretched>.
- 2 <https://www.hopkinsmedicine.org/news/articles/NICU-Design-with-Less-Movement-in-Mind>.
- 3 Clements, Archie, et al. “Overcrowding and understaffing in modern health-care systems: key determinants in methicillin-resistant *Staphylococcus aureus* transmission.” *The Lancet infectious dis-*



- eases 8.7 (2008): 427-434.
- 4 Haley, Robert W., and Dennis A. Bregman. "The role of understaffing and overcrowding in recurrent outbreaks of staphylococcal infection in a neonatal special-care unit." *Journal of Infectious Diseases* 145.6 (1982): 875-885.
  - 5 Wubben, Stephanie M., et al. "The sound of operation and the acoustic attenuation of the Ohmeda Medical Giraffe OmniBed™." *Noise and Health* 13.50 (2011): 37.
  - 6 Whitfield, Michael, and Philippe Chessex. "The need for public involvement when operating a regionalized neonatal care system at maximum capacity." *Paediatrics & child health* 15.9 (2010): 573-575.
  - 7 <https://johnsontwinsjourney.wordpress.com/2014/10/27/more-bed-rest/>.
  - 8 Muchowski, Karen E. "Evaluation and treatment of neonatal hyperbilirubinemia." *Am Fam Physician* 89.11 (2014): 873-8.
  - 9 <https://www.slhd.nsw.gov.au/rpa/neonatal/content/pdf/guidelines/phototherapy.pdf>.
  - 10 Vreman, Hendrik J., Ronald J. Wong, and David K. Stevenson. "Phototherapy: current methods and future directions." *Seminars in perinatology*. Vol. 28. No. 5. Elsevier, 2004.
  - 11 Maisels, M. Jeffrey, and Antony F. McDonagh. "Phototherapy for neonatal jaundice." *New England Journal of Medicine* 358.9 (2008): 920-928.
  - 12 Harrison, Wade, and David Goodman. "Epidemiologic trends in neonatal intensive care, 2007-2012." *JAMA pediatrics* 169.9 (2015): 855-862.
  - 13 <http://www.usmed-equip.com/content/datasheet/GE%20lullaby-led-phototherapy-system%20%281%29.pdf>.
  - 14 [https://www.jointcommission.org/assets/1/6/JCPEP\\_LS\\_0201\\_20\\_LD\\_Module\\_FINAL.pdf](https://www.jointcommission.org/assets/1/6/JCPEP_LS_0201_20_LD_Module_FINAL.pdf).
  - 15 <http://ephesuslighting.com/wp-content/uploads/2014/01/Ad-dressing-Glare.pdf>
  - 16 Margrain, Tom H., et al. "Do blue light filters confer protection against age-related macular degeneration?." *Progress in retinal and eye research* 23.5 (2004): 523-531.
  - 17 <https://www.health.harvard.edu/staying-healthy/blue-light-has-a-dark-side>.

\*NOTE: Phototherapy device comparison data and light intensity comparison data referenced in this document is based on internal, anecdotal information gathered by NeoLight, LLC.

Disclosure: The authors are co-founders of NeoLight LLC and have a financial relationship with NeoLight LLC.

**NT**

Corresponding Author



Deepakshyam Krishnaraju, MSc  
 Mechanical Engineer and Co-founder  
 NeoLight LLC  
 275 North Gateway Drive  
 Suite 128  
 Phoenix, AZ 85034  
 Telephone: (312)273-2472  
 Email: Deepakshyam Krishnaraju <[Deepak@theneolight.com](mailto:Deepak@theneolight.com)>



Sivakumar Palaniswamy  
 Chief Technology Officer and Co-founder  
 NeoLight LLC  
 275 North Gateway Drive  
 Suite 128  
 Phoenix, AZ 85034

**New subscribers are always welcome!**

**NEONATOLOGY TODAY**

To sign up for a free monthly subscription,  
 just click on this box to go directly to our  
 subscription page



NICVIEW™ – STREAMING NEWBORN VIDEO FOR FAMILIES



## NATUS, PLACING FAMILIES AT THE CENTER OF NEWBORN CARE

### NICVIEW™ – Empowering parents in the care process

Childbirth is a hugely emotional experience, and unexpectedly having to leave the newborn in the NICU can cause stress and anxiety.

The 24/7 visual access offered by NICVIEW lets parents check up on the progress of their newborn at any time of the day or night, helping them to cope better with the temporary separation, confident that their newborn is in safe hands.

A trusting relationship between the parents and NICU staff encourages communication, empowering parents by enabling them to become active partners in the care process.





# The Second Speaking of NEC: Unplugged

Jennifer Degl

The Second Speaking of NEC: Unplugged was held on March 28, 2019, in Austin Texas at Hyatt Place at Austin Cedar Park. It was presented by The Morgan Leary Vaughan Fund (Morgan's Fund) and sponsored by both Texas nonprofit Hand to Hold and Prolacta Bioscience. The event hosted 65 attendees from the Texas area. Its goal was to share practical solutions for reducing the devastating effects of Necrotizing Enterocolitis (NEC) on premature infants as well as discuss ways to prevent it.

The inaugural Speaking of NEC: Unplugged was held in Connecticut in 2018 was such a success that Morgan's Fund wanted to take it on the road to help spread more awareness on Necrotizing Enterocolitis. You can read about the first conference by clicking below: (1)

<http://www.speakingformomsandbabies.com/speaking-of-nec-2018/>

NEC is a rare, inflammatory disease that leads to necrosis (death) of the intestine and it affects about 9,000 of the 480,000 infants born preterm each year in the United States. Although all newborn infants born preterm or born with a low birth weight (less than 5.5 pounds) are at increased risk for NEC, very low birthweight babies are at an even greater risk for developing this deadly disease.

Conference attendees were approved to receive 4.0 AMA PRA Category 1 credits or 4.5 RN CEU credits through The Perinatal Advisory Council: Leadership, Advocacy, and Consultation (PAC/LAC) if they were present for the full day of speakers. Guests listened to presentations from relevant NEC experts, including physicians, nurses, and parents of children who were diagnosed with Necrotizing Enterocolitis.

This one-day regional conference was broken up into different segments so that it touched on all aspects of the disease. These segments included the disease itself, prevention of NEC, research, and



development surrounding NEC, and what happens post diagnosis and post-surgery. (2)



The medical speakers included Mitchell Goldstein, MD (Professor of Pediatrics, Loma Linda University Children's Hospital; Medical Director, National Coalition of Infant Health); Tory Meyer, MD (Pediatric Surgeon, Dell Children's Medical Center of Central Texas); Diane Spatz, PhD, RN-BC, FAAN, (Professor of Perinatal Nursing and Nutrition, University of Pennsylvania School of Nursing, Nurse Researcher at Children's Hospital of Philadelphia); Sunyoung Kim, PhD (Professor of Biochemistry at LSU Health, Founder of Chosen Diagnostics); Muralidhar Premkumar, MD, MRCPCH, MS (Associate Director of Intestinal Rehabilitation Services for the NICU at Texas Children's Hospital). The topics of their presentations included information on the neonatologist's perspective, surgical NEC, improving human milk and breastfeeding outcomes, the diagnostics of NEC, and short bowel syndrome.

*"This one-day regional conference was broken up into different segments so that it touched on all aspects of the disease. These segments included the disease itself, prevention of NEC, research, and development surrounding NEC, and what happens post diagnosis and post-surgery. "*

What makes Speaking of NEC: Unplugged so special is that there were also several parent speakers. Parents of premature and medical-

**NEONATOLOGY TODAY** is interested in publishing manuscripts from Neonatologists, Fellows, NNPs and those involved in caring for neonates on case studies, research results, hospital news, meeting announcements, and other pertinent topics.

Please submit your manuscript to: [LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com)

ly fragile babies have experienced trauma that is not well understood by the average person or average physician. This makes it imperative that medical professionals hear from parents. The parent speakers shared their personal stories of pain and how their baby's NEC diagnosis affected not only their baby but the whole family unit.

Not every NICU story has a happy ending, and one parent speaker shared her family's story of love and loss of a NEC baby. Our parent speakers included Stephanie Vaughan (Co-Founder of The Morgan



Leary Vaughan Fund), Kathryn Whitaker, Christine Tester (Hand to Hold), Cristal Grogan (NICU Helping Hand and Premie Parent Alliance), Yamile Jackson (Nurtured by Design), and Heather Tanner (Sister Friend Up). The parent perspective seemed to have an impact on the audience, as it should.

At the conclusion of the conference, attendees were asked to list practice changes they would make as a result of attending this conference. The top three comments were as follows:

- 1<sup>st</sup> Push for less bovine supplements/more/earlier pumping
- 2<sup>nd</sup> Increase/earlier Kangaroo care
- 3<sup>rd</sup> Listen/ask/include parents more

---

***“Leveraging the outcomes of both Speaking of NEC: Unplugged conferences, Morgan’s Fund will continue to empower and educate parents, providers, researchers, policymakers, and the public about NEC.”***

---

A few exhibitors shared space in the back of the conference room and were available to speak to attendees both before and after the conference, and during the breaks. They included Jennifer Degl from Speaking for Moms and Babies, Inc., Yamile Jackson from Nurtured by Design, Kelli Kelley and her team from Hand to Hold, Carolyn Teneyck



and her team from Prolacta Bioscience, and Heather Tanner from Sister Friend Up.

Throughout the conference, a videographer was set up in a separate room, and he was recording personal stories and interviewing speakers and attendees to help create a video for The Morgan Leary Vaughan Fund.

Leveraging the outcomes of both Speaking of NEC: Unplugged conferences, Morgan’s Fund will continue to empower and educate parents, providers, researchers, policymakers, and the public about NEC. The Morgan Leary Vaughan Fund urges all parents to understand their nutritional options and to advocate for low birth weight and premature babies (especially those born under 2.2 pounds) to receive only breastmilk, human donor milk, and human milk-based fortifiers. (1, 2)

The Morgan Leary Vaughan Fund (Morgan’s Fund) is a 501(c) (3) public charity dedicated to NEC. Morgan’s Fund produced a podcast series on Necrotizing Enterocolitis, called “Speaking of NEC.” You can listen to them on iTunes or download them from this link:

<http://www.morgansfund.org/category/podcast/>



Morgan's Fund has also partnered with the National Organization of Rare Disorders (NORD) to create a first of its kind natural history registry where those affected by NEC can enroll to help further the research into both the causes of NEC and what NEC patients may face as they grow. You can find more information on the NEC Registry by clicking below: (2)

<https://www.necregistry.org/>.

..., <http://www.speakingformomsandbabies.com/speaking-of-nec-unplugged-hits-texas/> (accessed May 12, 2019).

*Disclosures:*  
No conflicts of interest or financial disclosures relevant to this article are reported.

**NT**



For more information on The Morgan Leary Vaughan Fund, please visit <http://www.morgansfund.org/>

**Corresponding Author**



Jennifer Degl  
Speaking for Moms & Babies, Inc  
[www.speakingformomsandbabies.com](http://www.speakingformomsandbabies.com)  
Board of Directors, The Morgan Leary Vaughan Fund  
Comms Workgroup, International Neonatal Consortium  
Speaker's Bureau, Premie Parent Alliance  
Amazon Author: [amazon.com/author/jenniferdegl/](https://www.amazon.com/author/jenniferdegl/)



Figure 1

**References:**

1. Jennifer Degl's Blog - Goodreads, [https://www.goodreads.com/author/show/7328952.Jennifer\\_Degl/blog](https://www.goodreads.com/author/show/7328952.Jennifer_Degl/blog) (accessed May 12, 2019).
2. Speaking Of Nec: Unplugged Hits Texas - Speaking For Moms



# We can't stop time, but we can give some back.

Time is precious, just like your patients. PediNotes is the Neonatal EMR that saves time for healthcare providers and upgrades your organization's efficiency. We make it easier for doctors, nurses, and everyone involved in an infant or child's care to immediately access critical information and provide the best treatment possible because when it comes to protecting life, timing makes all the difference.



90% Decrease in time required for Vermont Oxford input



90% Decrease in phone call time for lab results



70% Decrease in patient admission times



100% Reduction in lab transcription errors due to automated lab entry



25% Decrease in rounding time



Export NICU patient data within seconds

[pedinotes.com](http://pedinotes.com)

**Take a Test Drive Today!**  
Contact us for a **FREE DEMO**

[info@pedinotes.com](mailto:info@pedinotes.com)

**P** 225-214-6421



**WE NEED MORE RESEARCH**

We have valuable data to help us deliver the best NICU care for small and premature babies. But we still need more data to help us optimize care for the rest of our babies who are admitted to the NICU.

Educate. Advocate. Integrate.

Readers can also follow  
**NEONATOLOGY TODAY**  
 via our Twitter Feed  
**@NEOTODAY**



# Respiratory Syncytial Virus:

How you can advocate for babies this RSV season

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



Identify babies at greatest risk



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

Teach families how to protect



their babies from respiratory infections

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



Use your best clinical judgement



when prescribing RSV prophylaxis

Tell insurers what families need



and provide the supporting evidence



**EVIVO**<sup>®</sup>  
(activated *B. infantis* EVC001, ActiBif<sup>®</sup>)

the first  
**6 months**  
of life are  
**critical.**

This brief window is a **pivotal time** for your patients' immune system development.



*Evivo is in use in  
hospitals across the country!*

Research has shown the importance of the gut microbiome in the proper development of the immune system.<sup>1-3</sup> An abundance of potentially pathogenic bacteria has been linked to increased risk of autoimmune and allergic disorders.<sup>4,5</sup>

Evivo<sup>®</sup> is the first and only baby probiotic clinically proven to reduce these potentially pathogenic bacteria, their virulence factors and endotoxins, and restore key beneficial bacteria to the infant gut microbiome.<sup>6,7</sup>

**80%**  
reduction in potentially pathogenic bacteria

**4x**  
lower fecal endotoxin levels

Visit [Evivo.com](http://Evivo.com) to learn more about Evivo and the infant immune system.

Recommend clinically proven **Evivo** for your infant patients.

[Evivo.com](http://Evivo.com)

References: 1. Olin A et al. *Cell*. 2018;174(5):1277-1292. 2. Arrieta MC et al. *Sci Transl Med*. 2015;7(307):307ra12. 3. Laforest-Lapointe I et al. *Front Immunol*. 2017;8:788. 4. Vatanen T et al. *Cell*. 2016;165:842-853. 5. Pammi M et al. *Microbiome*. 2017;5(1):31. 6. Frese SA et al. *mSphere*. 2017;2(6):e00501-17. 7. Casaburi G et al. *Human Microbiome Journal*. 2018;9:7-10.

# Respiratory Report: Non-Invasive Nasal Jet Assisted Ventilation (NINJA): A Case Study

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.*

In a previous column on non-invasive ventilation (NIV) I indicated there was no evidence to support these modes (with the exception of neurally activated triggering – NAVA® in NIPPV). A recent study out of China supports the use of non-invasive HFO (NIHFO) to decrease the rate of reintubation and CO<sub>2</sub> elimination. (1) NIHFO is a mode available to clinicians outside the United States, and it is used extensively in my own unit. Current oscillators in the U.S. are not suitable for non-invasive application.

In this column, I present a case of using the Bunnell LifePulse® high-frequency jet ventilator in a non-invasive mode which I have named and will refer to as “NINJA” (Non-Invasive Nasal Jet Assist). To the best of my knowledge, this is the first non-invasive application of true high-frequency jet ventilation.

***“To the best of my knowledge, this is the first non-invasive application of true high-frequency jet ventilation.”***

## Overview

### Maternal History and Delivery

Mom was a thirty-six-year-old gravida one para zero with a history of polycystic ovarian syndrome. This pregnancy had been complicated by gestational diabetes requiring insulin management. A cerclage procedure was performed at twenty-two weeks gestation for a shortened cervix. Magnesium sulfate was started at twenty-one plus one day gestational age with a fetal weight estimated at 490 grams. Membranes ruptured spontaneously on November 14, 2017, at 18:00 and one dose of antenatal steroids was given. Unfortunately she progressed, and footling breech presentation necessitated a caesarian section which was performed November 15, 2017, at 06:06, thus giving insufficient time for effective steroid treatment.

### Resuscitation

There was a weak cry at birth, and then no spontaneous respirations, thus positive pressure ventilation (PPV) via mask and flow inflating bag commenced. The infant was orally intubated on the third attempt (the first, unable to visualize due to secretions, the second, vocal cords were closed, and the endotracheal tube would not pass, the third attempt, successful after positive pressure ventilation) at six-seven minutes of life). It is our usual practice to intubate nasally when possible. APGARs were 3<sup>1</sup>, 5<sup>5</sup>, 8<sup>10</sup> and birth weight was 648 grams. At no time were chest compressions required. Arterial cord blood gas was 7.34/42 CO<sub>2</sub>/22 HCO<sub>3</sub>

-3 base deficit.

### Initial Management

The baby was placed on high-frequency oscillation (HFO) with mean airway pressure (MAP) of 11 cmH<sub>2</sub>O which was decreased to 10, frequency of 10, amplitude of 22 which was decreased to 16. Volume guarantee was not initially used. FiO<sub>2</sub> was initially 1.0 but decreased to 0.21 post-surfactant administration (bLES®) (Infrasurf® outside Canada). The baby was switched to high-frequency jet ventilation (HFJV) approximately sixteen hours later. (Those interested in the ventilatory management of this baby may refer to April's column on hyperinflation).

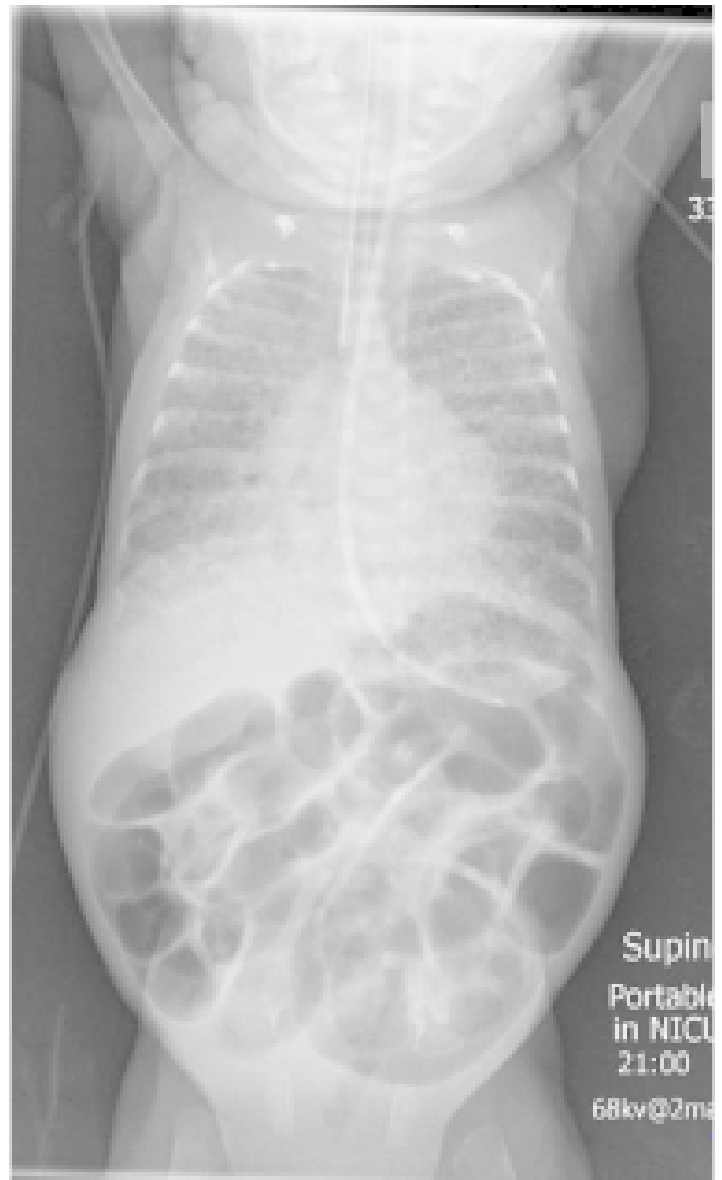


Figure 1

### Course

On day 21 of life dexamethasone was started using the “DART”

protocol (2) due to high oxygen requirements and severe, evolving chronic lung disease (CLD). (See figure 1). By day 24 of life, the baby had shown a very good response to the DART protocol with decreased oxygen requirements, although the MAP was still fairly high at 16cmH<sub>2</sub>O. This high pressure could not be reliably delivered in the team's estimation NIV using current equipment. As there was a large leak around the 2.5 ETT I suggested to the team that the positive response to steroids should be taken advantage of, a trial extubation would also allow us to upsize the ETT. Various discussions had taken place regarding the use of HFJV non-invasively, including its inclusion in an upcoming NIV study using electrical diaphragmatic impedance (EDI) to assess work of breathing. It was felt the mode would probably work and was no more "off label" than current NIV modes, but we had never actually used it on one of our babies. I felt the mode could be more able to provide higher MAP than other NI modes, and that the nature of the jet breath might facilitate CO<sub>2</sub> elimination similar to NIHFO as well.

In the end, a serendipitous combination of team members agreed it was worth a try. Before proceeding I insisted on setting clear failure criteria: increased FiO<sub>2</sub> greater than 0.2 above baseline and/or increased apneic/bradycardic/desaturation episodes above baseline. I also had been the primary respiratory therapist for this patient and had a very good relationship with the parents; hence it was agreed I could approach them for consent for this novel and hereto before untried therapy. Consent was given as was consent to present and/or publish results. Mom is a professional and had been following her baby's management very closely. Our unit provides for parental presence at all times, and she availed herself of that provision a great deal. (While caregivers may find having parents around all the time, shall we say annoying, I firmly believe that above and beyond the care and technology we as caregivers provide, it is their presence that positively impacts outcome the most, and it comes without risk of any kind.)

#### Method

RAM® nasal cannulae was chosen as the patient interface. A nasal pharyngeal tube (NPT) tube was also considered and could have been used, but patient comfort was a factor in favouring RAM®. The cannulae were modified to accommodate the Bunnell

Life Port® adaptor as I felt there to be too much dead space and potential for dampening of the jet breath using other connections.

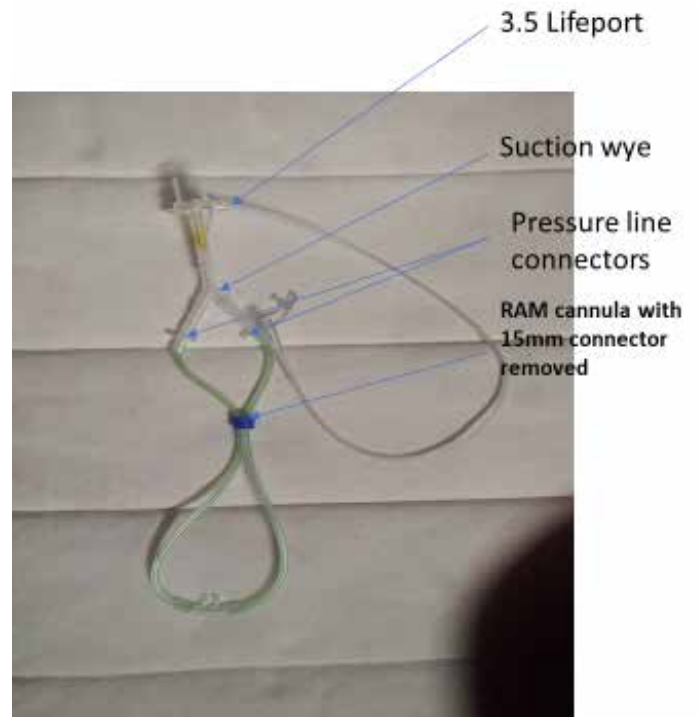


Figure 2: The set up

The set up as used is shown in figure 2.

Rapid Sequence Induction (RSI) medications were drawn up prior to extubation as a precaution and in preparation for failure. The Life Port® adaptor was connected to the jet and conventional ventilator circuit as usual, and as when used with an ETT provided consistent jet breath pressures.

Initial parameters were:

Jet rate 360, jet PIP 28cmH<sub>2</sub>O (increased to 30), Jet inspiratory time of 0.028 seconds, PEEP of 15cmH<sub>2</sub>O, and FiO<sub>2</sub> 0.35. No conventional breaths were used. These settings showed a resulting MAP on the jet ventilator monitoring section was 16.3 cmH<sub>2</sub>O. There was an initial bradycardic episode with desaturation when the ETT was removed, but the infant recovered well. (It took those at the bedside a bit longer to do so!)

#### The "NINJA" experience

Figure 3 shows the baby on NINJA, sleeping comfortably with no signs of respiratory distress. The team was also surprised to discover no air in the baby's stomach given the high pressures used and feeding continued via nasal gastric tube during the time on NINJA.

Failure criteria were met after about six hours. This was very gradual and uneventful, with a few bradycardic/desaturation episodes near the end. The infant appeared to be so comfortable the fellow in charge suggested we continue and simply accept higher FiO<sub>2</sub>. I rejected that suggestion since we were already operating in uncharted waters and I did not want the baby's course to be set back by allowing further deterioration. I do not like to use high FiO<sub>2</sub> on very premature infants in general, and increasing oxygen requirements are a sign of derecruitment. A blood gas done while on NINJA was similar to those done while the baby was jet ventilated.







Figure 3: "NINJA" baby! Jet and conventional circuit interface lower left

Re-intubation under RSI was quick, and a 3.0 ETT was successfully inserted nasally. Within hours of being re-intubated  $\text{FiO}_2$  and ventilator parameters returned to pre-extubation baseline; hence we were assured this foray into the ventilatory unknown did not hinder the baby's progress. (Had we not adhered to pre-determined failure criteria that might not have been the case).

#### Retrospection

Later bench testing revealed the settings chosen for this baby were delivering less MAP than indicated on the jet, as best as I could tell using the equipment available to me. As well, replacing the pressure line connectors with ones that fit over the RAM® cannula and suction wye rather than inside them delivered a MAP 1  $\text{cmH}_2\text{O}$  higher. The slight decrease in diameter causes enough resistance to decrease delivered pressure, but holding my hand in front of the nasal prongs, I could feel the pulse of the jet breaths quite well. I suspect the slightly lower MAP delivered to the baby was the primary reason for failure, and the efficacy of the jet breaths was responsible for the lack of spells until near the end. At that, higher MAP was realized than with other modes we currently utilize.

#### Implications for the future

I am currently tasked with drafting guidelines for "NINJA" use in our unit, and there is the possibility of testing this modality using EDI in a study proposed for the near future. While a single patient is hardly sufficient evidence to recommend the mode, our experience suggests that this may be a safe and viable modality to offer infants requiring high MAP but would otherwise be candidates for NI support.

Gastric distention commonly referred to as "CPAP belly" is a common problem with NIV. The resultant difficulty these babies sometimes have tolerating feeding may offer an opportunity to use NINJA at pressures currently thought of as high while avoiding CPAP belly, given the lack of gastric air present during NINJA with this baby.

As the Bunnell LifePulse® is available to clinicians in the U.S., it may be a way to offer a mode equivalent to NIHF0 to their patients provided settings are high enough to satisfy patient needs at the nasal interface. Further bench testing with more sophisticated equipment than is available to the writer would help determine settings required to deliver corresponding pressures to the patient, but lack thereof should not, in my opinion, dissuade clinicians from "winging it" at the bedside. Bear in mind delivered pressures will increase as cannulae diameter increases, however, delivered pressures will be considerably lower than indicated by

*"It is good practice to extubate to the last recorded MAP (not PEEP). It is my experience that RAM cannulae also reduced delivered pressure by at least 2cmH<sub>2</sub>O. This should be taken into consideration as well when setting parameters."*

the jet monitoring section. It is good practice to extubate to the last recorded MAP (not PEEP). It is my experience that RAM cannulae also reduced delivered pressure by at least 2cmH<sub>2</sub>O. This should be taken into consideration as well when setting parameters.

#### Epilogue

By day of life 80 (34+2 weeks corrected gestational age) the baby had been successfully extubated and was on CPAP of 6 cmH<sub>2</sub>O via RAM® (practically nothing!) with FiO<sub>2</sub> 0.25. Low flow oxygen was started shortly thereafter, and the baby went home on oxygen.

At discharge, clinical findings were as follows: a patent foramen ovale with small secundum atrial septal defect; a moderate to large unrestrictive ductus arteriosus; mild pulmonary hypertension and accompanying right ventricular hypertrophy with mildly decreased right ventricular systolic function; pulmonary stenosis.

The baby received home oxygen and was followed by cardiology and respiratory at Sick Kids hospital in Toronto, and the oxygen was weaned off a few months later with their approval. To date, no surgical procedures have been required. There have been a few admissions to the hospital, but I believe figure 4 requires no further explanation

Readers can also follow

**NEONATOLOGY TODAY**

via our Twitter Feed

@NEOTODAY

New subscribers are always welcome!

**NEONATOLOGY TODAY**

To sign up for free monthly subscription, just click on this box to go directly to our subscription page

# Join NPA

EDUCATE. ADVOCATE. INTEGRATE.

## Perinatal Mental Health:

### Advocating for the Health and Wellbeing of Families

early identification



of 1 in 7 moms

layered supports



in our community

Complex problems require interdisciplinary solutions.

specialized help



for at-risk dads

expert care for



the full spectrum of disorders



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



Figure 4. The first birthday

References:

1. Li et al. *Respiratory Research* (2019) 20:58 [https://doi.](https://doi.org/10.1186/s12931-019-1023-0)

2. [https://www.slhd.nsw.gov.au/RPA/neonatal%5Ccontent/pdf/Medications\\_Neomed/Dexamethasone\\_Neomed\\_v2.0.pdf](https://www.slhd.nsw.gov.au/RPA/neonatal%5Ccontent/pdf/Medications_Neomed/Dexamethasone_Neomed_v2.0.pdf)

**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.

**NT**



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



# Still a Premie?

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

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

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

**STILL A PREMIE**

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

Jaundice    
 Feeding issues    
 Respiratory problems

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

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

**STILL A PREMIE**

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

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

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

**STILL A PREMIE**

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

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

**Some Premies**

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

**All Premies**

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

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

# Omegaven<sup>®</sup>

(fish oil triglycerides) injectable emulsion



## Introducing a **Fish Oil** Lipid Emulsion for Pediatrics<sup>1</sup>

A source of calories and fatty acids in pediatric patients with parenteral nutrition-associated cholestasis (PNAC)

Patients receiving Omegaven achieved age appropriate growth

Omegaven treated patients experienced improvement in liver function parameters

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

#### BRIEF SUMMARY OF PRESCRIBING INFORMATION

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

#### INDICATIONS AND USAGE

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

#### Limitations of Use:

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

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

#### DOSAGE AND ADMINISTRATION

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

#### CONTRAINDICATIONS

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

#### WARNINGS AND PRECAUTIONS

- Risk of Death in Preterm Infants due to Pulmonary Lipid Accumulation: Deaths in preterm infants after infusion of soybean oil-based intravenous lipid emulsions have been reported in medical literature. Autopsy findings in these preterm infants included intravascular lipid accumulation in the lungs. The risk of pulmonary lipid accumulation with Omegaven is unknown. Preterm and small-for-gestational-age infants have poor clearance of intravenous lipid emulsion and increased free fatty acid plasma levels following lipid emulsion infusion. This risk due to poor lipid clearance should be considered when administering intravenous lipid emulsions. Monitor patients receiving Omegaven for signs and symptoms of pleural or pericardial effusion.
- Hypersensitivity Reactions: Omegaven contains fish oil and egg phospholipids, which may cause hypersensitivity reactions. Signs or symptoms of a hypersensitivity reaction may include: tachypnea, dyspnea, hypoxia, bronchospasm, tachycardia, hypotension, cyanosis, vomiting, nausea, headache, sweating, dizziness, altered mentation, flushing, rash, urticaria, erythema, fever, or chills. If a hypersensitivity reaction occurs, stop infusion of Omegaven immediately and initiate appropriate treatment and supportive measures.

# ORDERING INFORMATION

<b>Bottle Size</b>	50 mL single-dose glass bottle	100 mL single-dose glass bottle
<b>NDC Code</b>	63323-205-50	63323-205-00
<b>Bottle/Carton</b>	10	10

## FOR MORE INFORMATION ABOUT OMEGAVEN®:

**Website:** [www.OmegavenUSA.com](http://www.OmegavenUSA.com)

**To Order:** 1.888.386.1300

**Med Info phone:** 1.800.551.7176 (option 4)

**Med Info email:** [nutrition.medinfo.USA@fresenius-kabi.com](mailto:nutrition.medinfo.USA@fresenius-kabi.com)

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

### ADVERSE REACTIONS

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

### Clinical Trials Experience

The safety database for Omegaven reflects exposure in 189 pediatric patients (19 days to 15 years of age) treated for a median of 14 weeks (3 days to 8 years) in two clinical trials. Adverse reactions that occurred in more than 5% of patients who received Omegaven and with a higher incidence than the comparator group are: vomiting, agitation, bradycardia, apnea, viral infection, erythema, rash, abscess, neutropenia, hypertonia and incision site erythema. Patients had a complicated medical and surgical history prior to receiving Omegaven treatment and the mortality was 13%. Underlying clinical conditions prior to the initiation of Omegaven therapy included prematurity, low birth weight, necrotizing enterocolitis, short bowel syndrome, ventilator dependence, coagulopathy, intraventricular hemorrhage, and sepsis. Twelve (6%) Omegaven-treated patients were listed for liver transplantation (1 patient was listed 18 days before treatment, and 11 patients after a median of 42 days [range: 2 days to 8 months]) of

treatment); 9 (5%) received a transplant after a median of 121 days (range: 25 days to 6 months) of treatment, and 3 (2%) were taken off the waiting list because cholestasis resolved.

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

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

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

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

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

### Postmarketing Experience

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

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

### DRUG INTERACTIONS

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

### USE IN SPECIFIC POPULATIONS

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

### OVERDOSE

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

### REFERENCES:

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



Fresenius Kabi USA, LLC  
Three Corporate Drive,  
Lake Zurich, IL 60047  
Phone: 1.888.386.1300  
[www.fresenius-kabi.com/us](http://www.fresenius-kabi.com/us)

**NEONATOLOGY TODAY** is interested in publishing manuscripts from Neonatologists, Fellows, NNPs and those involved in caring for neonates on case studies, research results, hospital news, meeting announcements, and other pertinent topics.

Please submit your manuscript to: [LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com)



CONGENITAL  
CARDIOLOGY  
TODAY

The only worldwide monthly publication exclusively serving Pediatric and Adult Cardiologists that focus on Congenital/Structural Heart Disease (CHD), and Cardiothoracic Surgeons.



**Subscribe Electronically**  
Free on the Home Page

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

**DID YOU KNOW?**  
Postpartum  
depression  
affects  
**10%**  
of fathers

Join  **NPA**

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

**Patient Safety**  
MOVEMENT

Patient Safety Movement Foundation  
2019 Midyear Planning Meeting

CO-CONVENER:  
**UCI Health**

FOUNDER:  
 **Masimo**  
Foundation for 2014  
Innovation & Competition  
in Healthcare

BENEFACTOR:  
**Medtronic**

**INVITATION REQUEST**

# Featured Conference: Addressing the Growing Need for Interdisciplinary Training in Perinatal/Neonatal Comfort Care: A New 3-Day Course in New York City

Elvira Parravicini, MD

Elvira Parravicini, MD has been a neonatologist and perinatologist for more than 30 years, with 20 years at Columbia University Irving Medical Campus (CUIMC). She obtained a certification of Palliative Medicine at Harvard Medical School. In 2008, Dr. Parravicini created and continues to direct the [Neonatal Comfort Care](#) program at CUIMC, a service of perinatal and neonatal palliative care. She has written several scientific articles and, over the course of the past 10 years has been an invited speaker nationally and internationally. Elvira can be reached at [ep127@cumc.columbia.edu](mailto:ep127@cumc.columbia.edu).

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

*“Perinatal palliative care offers a plan for improving quality of life of the infant and the family, when extending the baby’s life is no longer the goal of care.”*

To begin addressing this growing need to support families or the comfort of the neonate, a collaborative and interdisciplinary team has come together to develop a 3-day intensive training, which will include information about the successful experiences of the [Neonatal Comfort Care Program](#) in providing perinatal palliative care for over a decade at CUIMC. Moreover, the course faculty will discuss evidence-based rationale, practical aspects and strategies for implementing and applying aspects of the CUIMC to provide support for families and achieve a state of comfort for newborns with life-limiting conditions. The course has been approved for CME credits. CNE credits pending.

## Training Objectives

1. Become familiar with the essential elements of prenatal and

## Ten Interdisciplinary Instructors

**Brian Carter, MD**, Professor at University of Missouri Kansas City School of Medicine and Doctor at Children's Mercy Hospital in Kansas City

**Ruth Downing, BSN, RN**, Clinical Nurse at NewYork-Presbyterian Morgan Stanley Children's Hospital

**Monica Joshi, MS, CCC-SLP**, Speech Language Pathologist at New York-Presbyterian Morgan Stanley Children's Hospital

**Frances McCarthy, MS, RNC-NIC, CPLC**, Nurse Clinical Coordinator at Columbia University and Nurse at NewYork-Presbyterian Morgan Stanley Children's Hospital

**Elvira Parravicini, MD**, Associate Professor of Pediatrics at Columbia University Irving Medical Center, Neonatologist at NewYork-Presbyterian Morgan Stanley Children's Hospital, and Director of the Columbia Comfort Care Program

**Solimar Santiago-Warner, LCSW, CPLC**, Instructor at Columbia University School of Social Work and Licensed Social Worker at NewYork-Presbyterian Morgan Stanley Children's Hospital

**Rochelle Steinwurtzel, PsyD**, Instructor in Clinical Psychology at Columbia University, and Clinical Psychologist at NewYork-Presbyterian Morgan Stanley Children's Hospital

**Maryanne Verzosa, MS, CCLS, CEIM, CLC**, Child Life Specialist at NewYork-Presbyterian Morgan Stanley Children's Hospital

**Emilee Walker-Cornetta, Chaplain, MDiv, BCC**, Assistant Professor at the University of Maryland School of Pharmacy, and Chaplain at NewYork-Presbyterian Morgan Stanley Children's Hospital

**Charlotte Wool, PhD, RN**, Associate Professor of Nursing at York College of Pennsylvania, and Pediatric Palliative Care Consultant at Wellspan Health, PA

neonatal palliative consult

2. Ability to adequately perform prenatal and neonatal palliative

## Next-Level Perinatal/Neonatal Comfort Care Training

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

June 19 – 21, 2019 | 9am – 5pm | Columbia University | New York City More info: [mailman.columbia.edu/comfort-care](mailto:mailman.columbia.edu/comfort-care)

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



consult

3. Ability to identify families' needs and apply strategies to successfully achieve support when they have a newborn with a life-limiting or life-threatening condition
4. Ability to identify newborns' basic needs and apply strategies to successfully achieve a state of comfort for newborns with life-limiting or life-threatening conditions

This training is designed for the entire perinatal team: physicians, nurses, nurse practitioners, physician assistants and other allied health professionals practicing in the perinatal arena (obstetric and neonatology) interested in improving the practice of perinatal palliative care, both nationally and internationally.

The three-day course will include didactic presentations followed by practical applications, hands-on training, role-play, videos, and Q & A sessions to cover virtually all aspects of perinatal palliative care. [A draft agenda is available here.](#)

Topics include

1. The current state of the science on perinatal palliative care
2. Strategies to assist families during decision-making processes
3. Definition and roles of the members of the interdisciplinary team
4. Essential elements of perinatal palliative consult
5. Advance care planning
6. Evidence-based interventions in the prenatal, intrapartum and postnatal periods that promote the health of the mother and family,
7. Essential elements of a neonatal comfort plan
8. Identification of potential barriers to institutional uptake of perinatal palliative care.

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

This course has been approved for CME credits. CNE credits pending.

Accreditation Statement: The Columbia University Vagelos College of Physicians and Surgeons is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians. AMA Credit Designation Statement: The Columbia University Vagelos College of Physicians and Surgeons designates this live activity for a maximum of 18.75 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Disclosure: The author has no disclosures..

NT

*Corresponding Author*



*Elvira Parravicini, MD*  
*Associate Professor of Pediatrics*  
*Columbia University Irving Medical Center,*  
*Neonatologist*  
*New York-Presbyterian Morgan Stanley Children's Hospital,*  
*Director of the Columbia Comfort Care Program*  
*Department of Pediatrics.*  
*622 West 168th Street*  
*Presbyterian Hospital Building, PH-17*  
*New York, NY 10032*  
*Email: [ep127@cumc.columbia.edu](mailto:ep127@cumc.columbia.edu)*  
*Telephone: 212-305-8504*



# Next-Level Perinatal/Neonatal Comfort Care Training



## Next-Level Perinatal/Neonatal Comfort Care Training

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

Columbia University, Mailman School of Public Health

722 W. 168<sup>th</sup> Street, New York, NY 10032

June 19 – 21, 2019

This training is designed for the entire perinatal team: physicians, nurses, nurse practitioners, physician assistants and other allied health professionals practicing in the perinatal arena (obstetric and neonatology) interested in improving the practice of perinatal palliative care, both nationally and internationally.

#### Training Objectives

1. Become familiar with the essential elements of prenatal and neonatal palliative consult
2. Ability to adequately perform prenatal and neonatal palliative consult
3. Ability to identify families' needs and apply strategies to successfully achieve support when they have a newborn with a life-limiting or life-threatening condition
4. Ability to identify newborns' basic needs and apply strategies to successfully achieve a state of comfort for newborns with life-limiting or life-threatening conditions

#### Accreditation Statement

The Columbia University Vagelos College of Physicians and Surgeons is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

#### AMA Credit Designation Statement

The Columbia University Vagelos College of Physicians and Surgeons designates this live activity for a maximum of 18.75 *AMA PRA Category 1 Credits*<sup>™</sup>. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

- June 19<sup>th</sup>: 6.25 credits
- June 20<sup>th</sup>: 6.50 credits
- June 21<sup>st</sup>: 6.00 credits



# Next-Level Perinatal/Neonatal Comfort Care Training

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

### Instructor List

Brian Carter, MD

Academic Affiliations: Professor in Medical Humanities at University of Missouri Kansas City School of Medicine; Department of Pediatrics

Hospital Affiliations: Children's Mercy Hospital in Kansas City

Ruth Downing, BSN, RN

Academic Affiliations: none

Hospital Affiliations: Clinical Nurse at NewYork-Presbyterian Morgan Stanley Children's Hospital, Department of Obstetrics & Gynecology

Monica Joshi, MS, CCC-SLP

Academic Affiliations: none

Hospital Affiliations: Speech Language Pathologist at NewYork-Presbyterian Morgan Stanley Children's Hospital, Department of Pediatrics

Frances McCarthy, MS, RNC-NIC, CPLC

Academic Affiliations: Nurse Clinical Coordinator at Columbia University, Department of Pediatrics

Hospital Affiliations: Nurse at NewYork-Presbyterian Morgan Stanley Children's Hospital; Department of Pediatrics

Elvira Parravicini, MD

Academic Affiliations: Associate Professor of Pediatrics at Columbia University Irving Medical Center

Hospital Affiliations: Neonatologist at NewYork-Presbyterian Morgan Stanley Children's Hospital; Department of Pediatrics

Solimar Santiago-Warner, LCSW, CPLC

Academic Affiliations: Instructor at Columbia University School of Social Work

Hospital Affiliations: Licensed Social Worker at NewYork-Presbyterian Morgan Stanley Children's Hospital, Department of Pediatrics

Rochelle Steinwurtzel, PsyD

Academic Affiliations: Instructor in Clinical Psychology at Columbia University, Department of Child & Adolescent Psychiatry

Hospital Affiliations: Clinical Psychologist at NewYork-Presbyterian Morgan Stanley Children's Hospital, Department of Pediatrics

Maryanne Verzosa, MS, CCLS, CEIM, CLC

Academic Affiliations: none

Hospital Affiliations: Child Life Specialist at NewYork-Presbyterian Morgan Stanley Children's Hospital, Department of Pediatrics

Emilee Walker-Cornetta, Chaplain, MDiv, BCC

Academic Affiliations: Assistant Professor at the University of Maryland School of Pharmacy, Department of Pharmacy Practice and Science Program

Hospital Affiliations: Chaplain at NewYork-Presbyterian Morgan Stanley Children's Hospital, Department of Pediatrics

Charlotte Wool, PhD, RN

Academic Affiliations: Associate Professor of Nursing at York College of Pennsylvania

Hospital Affiliations: Pediatric Palliative Care Consultant at Wellspan Health, PA



# Next-Level Perinatal/Neonatal Comfort Care Training

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

### Day 1: Wednesday June 19, 2019

8:30 – 9:00	<i>Check-in and Breakfast</i>	
9:00 – 9:15	Welcome and Introduction	Elvira Parravicini, MD
9:15 – 10:30	Session 1: The Perinatal Journey <ul style="list-style-type: none"><li>• Didactic Lecture</li><li>• Case Studies Presentation/Discussion</li></ul>	Elvira Parravicini, MD
10:30 – 10:45	<i>Break / One-on-one Questions</i>	
10:45 – 12:15	Session 2: State of the Science: Quality Imperatives for Prenatal and Intrapartum Interventions <ul style="list-style-type: none"><li>• Didactic Lecture</li><li>• Short Videos: Examination of Quality Indicators</li></ul>	Charlotte Wool, PhD, RN
12:15 – 12:30	<i>Group and One-on-one Questions</i>	
12:30 – 1:30	<i>Lunch</i>	<i>Auditorium Lobby</i>
1:30 – 3:00	Session 3: Essential Elements of the Prenatal Palliative Consult <ul style="list-style-type: none"><li>• Didactic Lecture</li><li>• Role Play/Simulated Session Practice</li></ul>	Elvira Parravicini, MD
3:00 – 3:15	<i>Break / One-on-one Questions</i>	
3:15 – 4:45	Session 4: Essential Elements of the NICU Palliative Consult <ul style="list-style-type: none"><li>• Didactic Lecture</li><li>• Role Play/Simulated Session Practice</li></ul>	Brian Carter, MD
4:45 – 5:00	Day Overview & Questions	Elvira Parravicini, MD



# Next-Level Perinatal/Neonatal Comfort Care Training

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

Day 2: Thursday June 20, 2019

8:30 – 9:00	<i>Breakfast</i>	
9:00 – 10:30	Session 1: Garnering the Interdisciplinary Team <ul style="list-style-type: none"><li>• Didactic Lecture</li><li>• Self/Team Assessment Questions: Identify team members and how they plan to work the perinatal journey steps</li></ul>	Brian Carter, MD
10:30 – 10:45	<i>Break / One-on-one Questions</i>	
10:45 – 12:15	Session 2: System-level and Provider-level Barriers <ul style="list-style-type: none"><li>• Didactic Lecture</li><li>• Self/Team Assessment Questions: Identify barriers within your organization</li></ul>	Charlotte Wool, PhD, RN
12:15 – 12:30	<i>Group and One-on-one Questions</i>	
12:30 – 1:30	<i>Lunch</i>	<i>Auditorium Lobby</i>
1:30 – 3:00	Session 3: Evidence-based Palliative Interventions/Quality of Life for Babies <ul style="list-style-type: none"><li>• Didactic Lecture</li><li>• Case Studies Presentation/Discussion</li></ul>	Elvira Parravicini, MD
3:00 – 3:15	<i>Break / One-on-one Questions</i>	
3:15 – 4:45	Session 4: Evidence-based Interventions Postnatally for Family <ul style="list-style-type: none"><li>• Didactic Lecture</li><li>• Parent Panel (or Video Documentary)</li></ul>	Rochelle Steinwurtzel, PsyD
4:45 – 5:00	Day Overview & Questions	Elvira Parravicini, MD



# Next-Level Perinatal/Neonatal Comfort Care Training

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

### Day 3: Friday June 21, 2019

8:30 – 9:00	<i>Breakfast</i>	
9:00 – 9:45	Session 1: Nurse Perspective in L&D <ul style="list-style-type: none"><li>• Didactic Lecture</li><li>• Case Studies Presentation/Discussion</li></ul>	Ruth Downing, BSN, RN
9:45 – 10:00	<i>Break / One-on-one Questions</i>	
10:00 – 11:00	Session 2: Nurse Perspective Intrapartum and Postpartum <ul style="list-style-type: none"><li>• Didactic Lecture</li><li>• Case Studies Presentation/Discussion</li></ul>	Frances McCarthy, MS, RNC-NIC, CPLC
11:00 – 11:15	<i>Break / One-on-one Questions</i>	
11:15 – 12:15	Session 3: Supporting Families Along the Journey <ul style="list-style-type: none"><li>• Didactic Lecture</li><li>• Role Play</li></ul>	Solimar Santiago, LMSW
12:15 – 12:30	<i>Group and One-on-one Questions</i>	
12:30 – 1:30	<i>Lunch</i>	<i>11<sup>th</sup> Floor, Room 1102</i>
1:30 – 2:30	Session 4: Feeding as Comfort <ul style="list-style-type: none"><li>• Didactic Lecture</li><li>• Video Documentary</li></ul>	Monica Joshi, MS, CCC-SLP
2:30 – 2:45	<i>Break / One-on-one Questions</i>	
2:45 – 3:45	Session 5: Memories and Siblings Support <ul style="list-style-type: none"><li>• Didactic Lecture</li><li>• Role Play/Demo</li></ul>	Maryanne Verzosa, MS, CCLS, CEIM, CLC
3:45 – 4:00	<i>Break / One-on-one Questions</i>	
4:00 – 4:30	Session 6: Spiritual Support <ul style="list-style-type: none"><li>• Didactic Lecture</li></ul>	Emilee Walker-Cornetta, Chaplain, MDiv, BCC
4:30 – 4:45	Training Evaluation	
4:45 – 5:00	Training Wrap Up & Questions	Elvira Parravicini, MD



**A saliva swab is all it takes to detect  
Congenital CMV in newborns < 21 days of age.**



**1 in 200 babies are born with congenital CMV, making it  
the most common congenital infection in newborns**

### **Improve outcomes of newborns with results that matter**

Alethia™ CMV detects Congenital CMV from saliva in less than 1 hour for same day reporting. Saliva is easy to collect and contains high viral load, allowing for optimal detection.

Get the answers you need to guide appropriate treatment plans before babies are discharged from the hospital.

---

Ask your lab about testing for Congenital CMV with Alethia™ CMV or contact us, we love to answer questions about our products.

 [meridianbioscience.com](https://www.meridianbioscience.com)

 [info@meridianbioscience.com](mailto:info@meridianbioscience.com)

 Call 1-888-763-6769

**alethia**™  
CMV

**meridian** BIOSCIENCE™  
LIFE DISCOVERED. LIFE DIAGNOSED.

**References:** Congenital CMV Facts. Centers for Disease Control and Prevention. <https://www.cdc.gov/features/cytomegalovirus/index.html>.  
Published 2018.

 **SAVE THE DATE**

**June 23<sup>rd</sup> –  
June 28<sup>th</sup>, 2019**



See you in **Kansas City, Missouri**  
at the  
**2019 iCAN Research & Advocacy Summit**



Readers can also follow

**NEONATOLOGY TODAY**

via our Twitter Feed

@NEOTODAY

**99nicu**

New subscribers are always welcome!

**NEONATOLOGY TODAY**

To sign up for free monthly subscription,  
just click on this box to go directly to our  
subscription page





# From the National Perinatal Association: Shedding Light on the Dark Reality of Disparities in Perinatal Care

Cheryl A. Milford, Ed.S.

*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.*



The National Perinatal Association (NPA) mission is to optimize perinatal health in the United States. One of the most significant areas of concern is perinatal mental health and its impact on parents, their children and their communities. In 2017, the NPA annual conference addressed this issue with experts in clinical and research providing opportunities for discussion conference, NPA initiated a perinatal mental health work group. The National Perinatal Association (NPA) works in partnership and collaboration with other organizations that advocate for perinatal health care, including Mental Health America, Postpartum Support International, Premie Parent Alliance, National Association of Perinatal Social Workers, and the NPA NICU Psychologists Association to address these issues. Over the next two years, the NPA Perinatal Mental Health group worked to

develop a position statement on Perinatal Mental Health issues. NPA developed stronger collaborations with Postpartum Support International, National Association of Perinatal Social Workers and the NPA NICU Psychologists Group to bring awareness to providers and families about perinatal mental health issues in the NICU.

***“Pregnancy and the birth of a child is an exciting and celebratory time for many families. However, for approximately 20-25% of these women and their families, PMADs can have profound adverse effects on the women, children, and their family’s mental, physical and emotional health.”***

Pregnancy and the birth of a child is an exciting and celebratory time for many families. However, for approximately 20-25% of these women and their families, PMADs can have profound adverse effects on the women, children, and their family’s mental, physical and emotional health. Postpartum depression is the most common complication following childbirth, affecting one in every seven women. (1, 2) Prevalence estimates of prenatal anxiety range from 13-21% of all new mothers, with postpartum prevalence estimated between 11-17%. (3) Symptoms of a PMAD may develop during pregnancy or in the postpartum period. Symptoms usually present within 3 weeks to 3 months after birth but can occur anytime during the first year after delivery. (4, 5) The numbers for parents with a child in the NICU are usually higher, closer to 40%

for mothers. Often the symptoms emerge in the NICU, and all NICU professionals need to be aware of the symptoms, how to assess for these concerns and resources and treatment options for families.

## Symptoms of Perinatal Mood and Anxiety Disorders

- Persistent sadness
- Anxiety
- Feeling overwhelmed or “empty”
- Crying episodes
- Panic attacks
- Chronic fatigue
- Loss of interest in previously enjoyable activities
- Avoidant behaviors
- Persistent self-doubt
- Changes in sleeping and/or eating patterns
- Feelings of hopelessness, helplessness, guilt
- Experiencing irritable and/or angry moods
- Fear of being alone or separated from baby
- Problems with concentration or making simple decisions

Perinatal mood and anxiety disorders are associated with increased risks of maternal and infant mortality and morbidity and are recognized as a significant patient safety issue. (1) While postpartum depression is the most commonly discussed PMAD, there is a much broader class of psychiatric conditions commonly encountered by women of reproductive age. The broader spectrum of PMADs’ symptomatology and diagnoses includes:

THE  
BRETT TASHMAN  
FOUNDATION

The Brett Tashman Foundation is a 501(c)(3) public charity. The mission of the Foundation is to find a cure for Desmoplastic Small Cell Round Tumors (DSRCT). DSRCT is an aggressive pediatric cancer for which there is no cure and no standard treatment. 100 percent of your gift will be used for research. There is no paid staff. To make your gift or for more information, go to [TheBrettTashmanFoundation.org](http://TheBrettTashmanFoundation.org) or phone (909) 981-1530. **Annual Golf Tournament Fund Raiser. July 13, 2019 at Sierra Lakes Country Club in Fontana, CA.**

- Depression
- Anxiety
- Obsessive-Compulsive Disorder
- Post-Traumatic Stress Disorder
- Bipolar Disorders
- Psychosis

---

***“The onset of these disorders can occur at any time during one’s life. However, there is a marked increase in the prevalence of these disorders during pregnancy and the postpartum period. Of particular concern is that up to 50% of mothers with symptoms will not seek mental health treatment.”***

---

The onset of these disorders can occur at any time during one’s life. However, there is a marked increase in the prevalence of these disorders during pregnancy and the postpartum period. Of particular concern is that up to 50% of mothers with symptoms will not seek mental health treatment.(7)

#### **Perinatal Mood and Anxiety Disorders in the Non-Gestational Parent**

While there is a large body of data demonstrating the prevalence of PMADs among women, little research and attention have been given to the rates of depression and anxiety among fathers. There is also a paucity of research around the experience of PMADs for non-gestational and non-biological parents, which may include a second parent in a same-sex relationship, multiple parents in a polyamorous family, foster parents, or adoptive parents. As the literature emerges, the evidence reflects that fathers, partners, and other non-gestational/non-biological parents (e.g., foster and adoptive parents) are also affected by the stress of having a newborn and may experience anxiety and depression. They are also at risk for anxiety and depression which directly relates to poor outcomes for the child.<sup>8</sup> Based on a meta-analysis performed by Paulson and Bazmore, the 3-6-month postpartum period had the highest rate of depression for partners, with the first 3 months having the lowest. This analysis also spoke to the variation regarding country of origin, with U.S. fathers demonstrating a greater rate of depression than fathers internationally. (8) Again, these numbers are found to be higher for the non-gestational

parent whose infant requires NICU hospitalization. O’Brien and colleagues found 10% of fathers experience depression and anxiety during the perinatal period. Fathers have been shown to exhibit symptoms of irritability, self-isolation, overworking, substance abuse, and hopelessness. (9) Research also demonstrates that the most significant risk factor for depression in fathers, both prenatally and in the postpartum period, is maternal depression. (8) It is plausible that a non-gestational or non-biological parent might be at risk for perinatal depression or anxiety. However, more research is needed in this area.



## National Perinatal Association PERINATAL SUBSTANCE USE

[nationalperinatal.org/position](http://nationalperinatal.org/position)  
[www.nationalperinatal.org/Substance\\_Use](http://www.nationalperinatal.org/Substance_Use)



**Educate. Advocate. Integrate.**

#### **The Infant**

The impact of parental depression and anxiety, especially the mother, can be quite significant both on the attachment relationship and on the neurodevelopment of the baby. This impact is exacerbated when the parent experiences more clinically significant mental health issues, such as psychosis. The significant impact that a parent’s mental health has on their baby’s development has been repeatedly demonstrated in the literature.(10,11) Tronick’s well-known Still Face Experiment demonstrates how emotionally distressed a child can become when a parent “checks out” or is emotionally unavailable.(12)

With the knowledge gained from the research discussed, there are specific actions that NICU professionals need to take while families are hospitalized.

#### **Routine Screening**

Routine screening of pregnant and postpartum women for perinatal depression has been recommended by The American College of Obstetricians and Gynecologists (ACOG), The American College of Nurse-Midwives, U.S. Preventive Services Task Force, and the American Academy of Pediatrics (AAP).(13-15) ACOG recommends universal screening for depression for all women, both as a part of routine gynecological care and during the perinatal period.(13) The AAP recommends screening for postpartum depression at 1, 2, 3, and 6 months post-delivery. ACOG’s Committee Opinion also adds that women at high risk of depression – for example, those with a history of depression or anxiety – warrant especially close monitoring.(13) The necessity of universal screening becomes even more apparent when considering that only a small percentage of women will disclose symptoms of a PMAD. There are several screening tools validated for use during and following pregnancy (Table 1).

#### **Screening Fathers and Partners:**

In 2013, the NPA published a position statement on screening for new fathers for depression. This position statement recommended that fathers be screened at least twice during the first

year postpartum. However, there was no guidance on the timing of these screenings. Given that most fathers experience depression between 3 and 6 months postpartum, the 2, 4, and 6 month well baby visits provide ideal opportunities to screen fathers. (8) However, screening should not be limited to this time. Screening can happen during the obstetric visits, in the delivery nursery, during well-child visits, and during a family practitioner visit too. (16)

For families in the NICU, Postpartum Support International and the NPA Neonatal Psychologists group recommends screening two weeks after admission and every two weeks for the duration of the hospitalization. There should be special consideration given to the effects of racial identification and racial status when screening mothers for PMADs who are from minority populations. Robert Keefe evaluated the differences in PMADs for Black, Latina, and White women and found that while Black women are less likely to express feelings of depression or anxiety, their rate of depression and anxiety is much higher rate than their White counterparts. He also found that Black and Latina women are less likely to seek support, treatment, and follow up after an initial psychiatric appointment. (17) This suggests there may be an unmet need for culturally respectful and appropriate services for these communities. Additionally, he found that when Black and Latina women sought services, the time span between symptomatology and engagement with treatment was much longer than for White women. (18) For these reasons, it has been recommended that a lower cutoff score be considered for these populations. It is proposed that a cutoff score of 2-3 points lower (greater than or equal to 7-8) will help to capture distress among these mothers and improve identification of depression and anxiety, which will hopefully increase the likelihood of support and treatment. (19) In addition, screening for perinatal mood and anxiety disorders should be inclusive of adolescent mothers (under 20 years of age). The rate of reported depression amongst this population is 28-59%. With over 300,000 births to adolescent mothers annually, the rate of depression among adolescents is greater than in the adult population. Venkatesh and colleagues determined that the Edinburgh Postpartum Depression Scale (EDPS) was appropriate for accurately identifying depression and anxiety in postpartum adolescent mothers. (20)

### Training and Education for Healthcare Professionals

Screening for perinatal mood and anxiety disorders should be inclusive of adolescent mothers (under 20 years of age). The rate of reported depression amongst this population is 28-59%. With over 300,000 births to adolescent mothers annually, the rate of depression among adolescents is greater than in the adult population. Venkatesh and colleagues determined that the Edinburgh Postpartum Depression Scale (EDPS) was appropriate for accurately identifying depression and anxiety in postpartum adolescent mothers. (20)

### Treatment Options

Treatment requires psychotherapy, support of family and friends, potentially a peer mentor and ongoing treatment. The use of an-

tidepressants has demonstrated some success but has not been as effective as was hoped. The FDA recently approved the use of ZULRESSO (brexanolone) for postpartum depression. ZULRESSO is administered over 60 hours by continuous IV infusion. It is an allosteric modulator of both synaptic and extrasynaptic GABAA receptors. This results in the desired activity instead of complete activation or inhibition of the receptor. Once the infusion is completed, the woman will not have any more symptoms. The research and clinical trials are very promising. (21)

### References:

1. Gaynes, B., Gavin, N., Metzger-Brody, S., Lohr, K., Swinson, T., Gartlehner, G., et al. *Perinatal depression: prevalence, screening accuracy, and screening outcomes. Evidence report/technology assessment no. 119. (Prepared by the RTI-University of North Carolina Evidence-based Practice Center, under contract no. 290-02-0016). AHRQ publication no. 05-E006-2. Rockville, MD: Agency for Healthcare Research and Quality, 2005.*
2. Wisner, K., Sit, D., McShwa, M., Rizzo, D., Zoretich, R., Hughes, C., et al (2013). *Onset timing, thoughts of self-harm, and diagnoses in postpartum women with screen-positive depression findings. JAMA Psychiatry, 70:490-8.*
3. Fairbrother, N., Young, A., Antony, M., Tucker, E. (2015). *Depression and anxiety during the perinatal period. BMC Psychiatry, 15:206.*
4. Newport, D., Hostetter, A., Arnold, A., Stowe, Z. (2002). *The treatment of postpartum depression; minimizing infant exposures. Journal of Clinical Psychiatry, 63 (Suppl 7): 31-44.*
5. Gaynes, B., Gavin, N., Meltzer-Brody, S., et al. (2005). *Perinatal Depression: prevalence, screening accuracy, and screening outcomes. Evidence Rep Technol Assess (Summ); 119: 1-8.*
6. Woolhouse H, Gartland D, Mensah F, Brown SJ. *Maternal depression from early pregnancy to 4 years postpartum in a prospective pregnancy cohort study: implications for primary health care. BJOG 2015;122:312-321.*
7. Centers for Disease Control (CDC). (2008). *Prevalence of self-reported postpartum depressive symptoms—17 states, 2004–2005. Morbidity and Mortality Weekly Report, 57(14), 361–366.*



**Readers can also follow**  
**NEONATOLOGY TODAY**  
**via our Twitter Feed**  
**@NEOTODAY**

Screening Tool	Items	Time	Language	Administrator	Where to access/purchase
Edinburgh Postnatal Depression Scale	10	< 5 min.	18 languages	Health care professional	<a href="http://pesnc.org/wp-content/uploads/EPDS.pdf">pesnc.org/wp-content/uploads/EPDS.pdf</a>
Postpartum Depression Screening Scale	35	5–10 min.	✓ English ✓ Spanish ✓ Italian	Health care professional	<a href="http://www.wpspublish.com">www.wpspublish.com</a>
Patient Health Questionnaire 9	9	< 5 min.	Numerous languages	Health care professional	<a href="http://www.phqscreeners.com">www.phqscreeners.com</a>
Beck Depression Inventory	21	5–10 min.	✓ English ✓ Spanish	Health care professional	<a href="http://www.pearsonclinical.com/psychology">www.pearsonclinical.com/psychology</a>
Beck Depression Inventory–II	21	5–10 min.	✓ English ✓ Spanish	Health care professional	<a href="http://www.pearsonclinical.com/psychology">www.pearsonclinical.com/psychology</a>
Center for Epidemiologic Studies Depression Scale	20	5–10 min.	✓ English ✓ Spanish	Health care professional	<a href="http://www.chcr.brown.edu/pcoc/cesdscale.pdf">www.chcr.brown.edu/pcoc/cesdscale.pdf</a>
Zung Self-rating Depression Scale	20	5–10 min.	English	Health care professional	<a href="http://www.mentalhealthministries.net/resources/flyers/zung_scale/zung_scale.pdf">www.mentalhealthministries.net/resources/flyers/zung_scale/zung_scale.pdf</a>

Table 1: Perinatal Mood and Anxiety Disorder Screening Tools

8. Paulson, J.F., Bazmore, S.D. (2010). Prenatal and postpartum depression in fathers and its association with maternal depression. *JAMA*, 303(19), 1961-1969.
9. Kim, P., & Swain, J. E. (2007). Sad Dads: Paternal Postpartum Depression. *Psychiatry (Edmont)*, 4(2), 35-47.
10. Gelfand, D. M., Teti, D.M. (1990). The effects of maternal depression on children. *Clinical Psychologist Review*, (10), 329-353.
11. Hall, S. L., Hynan, M. T., Phillips, R., Lassen, S., Craig, J. W., Goyer, E., Hatfield, R.F., Cohen, H. (2017). The neonatal intensive parenting unit: an introduction. *Journal of Perinatology*, 1-6.
12. Tronick, E. Z., & Cohn, J. F. (1989). Infant-mother face-to-face interaction: Age and gender differences in coordination and the occurrence of miscoordination. *Child Development*, 60, 85-92.
13. Screening for perinatal depression. Committee Opinion No. 630. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2015; 125:1268-71.
14. American College of Nurse-Midwives. Position statement: depression in women. 2003.
15. Siu, A; US Preventive Services Task Force (USPSTF), Bibbins-Domingo, K., Grossman, D., Baumann, L., Davidson, K., et al. (2016). Screening for depression in adults: US Preventive Services Task Force recommendation statement. *JAMA*, 315:380-7.
16. National Perinatal Association. (2013). Depression Screening for New Father [Position statement]. NPA: Hynan, M.T., Mounts, K. O.
17. Robert H. Keefe, Carol Brownstein-Evans & Rebecca S. Polmanteer R. (2016) Addressing access barriers to services for mothers at risk for perinatal mood disorders: A social work perspective, *Social Work in Health Care*, 55:1, 1-11,
18. Gambini, B. (2016). Study Offers New Insights on Postpartum Depression among Women of Color. *States News Service*. Retrieved December 14, 2017, from [http://www.highbeam.com/doc/1G1-451477396.html?refid=easy\\_hf](http://www.highbeam.com/doc/1G1-451477396.html?refid=easy_hf)
19. Chaudron, L. H., Szilagyi, P. G., Tang, W., Anson, E., Tolbert, N. L., Watkins, H. I., Tu, X., Wisner, K. L. (2010). Accuracy of brief screening tools for identifying postpartum depression among urban mothers. *Pediatrics*, 125(3), 609-617. doi:10.1542/peds.2013-1628d
20. Venkatesh, K. K., Zlotnick, C., Triche, E. W., Elizabeth, C., & Phipps, M. G. (2013). Accuracy of Brief screening tools for identifying postpartum depression among adolescent mothers. *Pediatrics*, 133(1). doi:10.1542/peds.2013-1628d.
21. Sage Therapeutics Announces FDA approval of ZURESSO (brexanolone) Injection, the First and Only Treatment Specifically Indicated for Postpartum Depression. Press Release March 19, 2019.

The author has no relevant disclosures.

NT

Corresponding Author



Cheryl A. Milford, Ed.S.  
 Educational Psychologist  
 Vice-President of Development  
 Family Advocacy Network Co-Chair  
 National Perinatal Association  
[cmilford@nationalperinatal.org](mailto:cmilford@nationalperinatal.org)



pac-lac

**New subscribers are always welcome!**

**NEONATOLOGY TODAY**

**To sign up for free monthly subscription, just click on this box to go directly to our subscription page**

**Save the Date**  
 23rd Annual PAC/LAC Conference  
 Quality of Life for Families  
**June 13, 2019**  
 The California Endowment  
 Downtown Los Angeles

# THE BRETT TASHMAN FOUNDATION

The Brett Tashman Foundation is a 501©(3) public charity. The mission of the Foundation is to find a cure for Desmoplastic Small Cell Round Tumors (DSRCT). DSRCT is an aggressive pediatric cancer for which there is no cure and no standard treatment. 100 percent of your gift will be used for research. There is no paid staff. To make your gift or for more information, go to "[TheBrettTashmanFoundation.org](http://TheBrettTashmanFoundation.org)" or phone (909) 981-1530. **Annual Golf Tournament Fund Raiser: July 13, 2019 at Sierra Lakes Country Club in Fontana, CA.**



**Patient Safety  
MOVEMENT**

Patient Safety Movement Foundation  
2019 Midyear Planning Meeting

CO-CONVENER:  
**UCI Health**

FOUNDER:  
**MASIMO** Foundation for DRUG, Immunology & Carcinoma in Healthcare

BENEFACTOR:  
**Medtronic**

**INVITATION REQUEST**



## SAVE THE DATE

We are pleased to invite you to the 17th Congress of the European Society for Developmental Perinatal and Paediatric Pharmacology on

**May 28-30, 2019 in Basel, Switzerland**

### Topics

- Precision medicine in children
- Use of modeling in all stages of life
- Research infrastructures to conduct neonatal and pediatric clinical trials
- Drug development study design for rare diseases
- Hot topics in perinatal pharmacology
- Tools to improve clinical trials in children and adolescents
- Treatment of serious infections in low and middle income countries

Registration and abstract submission will open on **October 01, 2018**

Registration for the newsletter and further information about the scientific programme are available on the website: [www.esdppp2019.org](http://www.esdppp2019.org)



37<sup>th</sup> Annual Conference

The Cliff Lodge  
Snowbird, Utah

This conference provides education and networking opportunities to healthcare professionals who provide care for pediatric patients with a focus on advances in therapeutics and technologies including telemedicine and information technologies. Along with featured speakers, the conference includes abstract presentations on research on advances in these areas. Registration open mid June, 2019!

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

*Physician, Nursing, and Respiratory Care Continuing education hours will be provided.*

# Advances in Therapeutics and Technology

*Formerly:*

*High-Frequency Ventilation of Infants, Children & Adults*

**March 24-28 2020**

*For more information, contact:*

Perinatal Advisory Council: Leadership,  
1010 N Central Ave | Glendale, CA 91202

(818) 708-2850

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

Call for Abstracts – Deadline December 15, 2019

Abstract submission: As are currently being accepted. Download the Abstract Guidelines from the website.

Exhibitor and Sponsorship Opportunities

For more information on how to exhibit at the conference or become a sponsor, please download the prospectus: Exhibitor / Sponsorship Prospectus

Ready to become an exhibitor or sponsor? Please download the registration form from the site (Exhibitor & Sponsorship Registration Form) and mail your completed form and payment to:

PAC/LAC

Perinatal Advisory Council: Leadership, Advocacy and Consultation  
1010 N Central Ave  
Glendale, CA 91202

If you would like to pay by credit card, please complete the credit card authorization form and email it along with the Exhibitor & Sponsorship Registration Form to [asimonian@paclac.org](mailto:asimonian@paclac.org).

# Fellow's Column: Working to Improve Neonatal Intensive Care Unit Transport Response Times: An Ongoing Quality Improvement Project

Jill Colontuono, APN, NNP-BC, CPNP, Christine Carlos, MD, Michael D. Schreiber, MD, Brandi Parker, MSN, MBA, RN, Jaideep Singh, MD, Joseph R. Hageman, MD

## Abstract:

*The transport of critically ill neonates from referring hospitals requires a varied multidisciplinary team of highly qualified caretakers including nurses (flight and/or NICU staff nurses), neonatal nurse practitioners, physicians, and respiratory therapists. The process from the referring hospital contacting the transport center to picking up the infant, to the return of the team to the NICU needs to be seamless and efficient. The objective for this quality improvement (QI) project was to improve transport response times, which was defined as the time from time of the incoming call to the time the transport team leaves the center by helicopter or by ambulance to < 30 minutes after a transfer center has received and processed requests from referring physicians. Over the 6 PDSA cycles, the median transport response time has been reduced to 35 minutes; 1/3 of the transport response times are < 30 minutes. The process and reasons for delays continue to be reviewed to identify interventions needed to achieve the goal of reducing the transport response time to <30 minutes.*

## Introduction:

The transport of critically ill neonates from referring hospitals requires a varied multidisciplinary team of highly qualified caretakers including nurses, nurse practitioners, physicians, and respiratory therapists. Guidelines for the organization and composition of the transport team, mode of transport, and clinical criteria for the types of infants who are transported are all published and available from the American Academy of Pediatrics (1). In general, the process of organizing a neonatal transport

team should be fluid and seamless and the team should be underway to the referring hospital within 30 minutes by whatever mode of transportation (ground, air) is considered best for the sick/well ratio of the infant (2). Our objective for this quality improvement (QI) project was to improve transport response time, which was defined as the time from time of the incoming call to the time the transport team leaves the center by helicopter or by ambulance to < 30 minutes after a transfer center has received and processed requests from referring physicians.

***“Our objective for this quality improvement (QI) project was to improve transport response time, which was defined as the time from time of the incoming call to the time the transport team leaves the center by helicopter or by ambulance to < 30 minutes after a transfer center has received and processed requests from referring physicians.”***

## Methods:

The Stephen Neonatal Intensive Care Unit (NICU) is a Level IV unit (ECMO, cardiac, general and neurosurgical patients) with 47 beds designated to tertiary care and 24 transitional care unit (TCU) beds in the Comer Children's Hospital at the University of Chicago in Chicago, IL. Our neonatal transport team performs about 25 transports/month. In August 2015, a new transfer center was established, and a new flow diagram was initiated to make the NICU transport process more seamless.

Jill Colontuono, NNP, has been the coordinator of the transport system. Dr. Michael Schreiber, NICU section chief, requested that Jill and Dr. Joseph Hageman, director of NICU quality improvement, organize an ongoing QI project after a transfer center to receive and process requests for the transport of critically ill neonates from referring physicians was initiated. Data is collected by the NNPs and is stored in SharePoint in an excel spreadsheet form. The data collected includes demographics,



Table 1: Evaluation Intervals

Interval 1: 8/28/2015- 01/16/2016 (pre intervention)  
 Interval 2: 01/23/2016-03/26/2016, (post intervention)  
 Interval 3: 03/26/2016- 07/26/2016,  
 Interval 4: 07/26/2016-02/03/2017,  
 Interval 5: 2/4/2017-7/9/2017,  
 Interval 6: 7/10/2017-01/28/2018.



<i>Interval</i>	<i>#Transports</i>	<i>Range times (minutes)</i>	<i># ≤ 30 mins</i>	<i>Median time</i>	<i>No Documentation</i>
1	42	19-191	7 (20%)	62	
2	19	23-240	6 (31%)	36.5	
3	18	20-112	5 (31%)	40	
4	50	23-95	8 (23%)	39	
5	37	22-102	9 (24%)	39	
6	74	20-276	17 (39%)	35	22 (30%)

Table 2: Neonatal Transport Response Times

time of initial call, departure time, and reasons for delays. Data are analyzed and the median response time, range of response times, percentage of response times <30 minutes are calculated. The data is then summarized and presented to nursing leadership and the neonatal section for review. With the review of each interval, the group then identifies an intervention (“PDSA”) to improve response times.

Transport response times and reasons for delays have been tracked since 8/25/2015 and data has been collected during six intervals, which are presented in Table 1.

#### Results:

The data for the six intervals are presented in Table 2.

The documentation of reasons for delays included: personnel/communication/staffing: four transports, equipment problems two transports, inhaled Nitric Oxide preparation two transports, transportation delay four transports from 2/4/16-7/9/17.

#### Discussion:

In the American Academy of Pediatrics (AAP) Guidelines for Neonatal and Pediatric Transport (1), potential metrics for quality improvement including documentation of mobilization delays and patient outcomes are listed (2). In this study, transport response time and reasons for delays are measured. Response times have been reduced to a median time of 35 minutes due

to the interventions of this study, but the goal of responding in < or equal to 30 minutes which has been proposed as an optimal transport response time for neonatal transports (2). In our most recent reported PDSA cycle, about 1/3 of transports leave the medical center in 30 minutes or less. The transport team is composed of a multidisciplinary group determined based on the medical and respiratory needs of the patient and the mode of transportation required (ground or air). The process of accepting the patient and assembling the team is a multi-step process which has been refined through PDSA cycles. Most recently, Dr. Christine Carlos, a former NICU fellow, and current attending neonatologists is now in charge of transport and is working to further refine the process. What is important to note is that the guidelines and metrics for measurement of the quality of neonatal transport have a limited evidence base which is based on clinical experience and is evolving (2,3,4).

#### References:

1. *Section of transport medicine, American Academy of Pediatrics. Guidelines for the Air and ground transport of neonatal and pediatric patients. Fourth Edition, Ed. Insoft, RM, Schwartz HP. 2017 American Academy of Pediatrics.*
2. *Section of transport medicine, American Academy of Pediatrics. Quality improvement. Guidelines for the Air and ground transport of neonatal and pediatric patients. Fourth Edition, Ed. Insoft, RM, Schwartz HP. 2017 American Academy of Pediatrics. P. 134.*
3. *Jack T. Neonatal nurse practitioner utilization on neonatal*

**NEONATOLOGY TODAY** is interested in publishing manuscripts from Neonatologists, Fellows, NNPs and those involved in caring for neonates on case studies, research results, hospital news, meeting announcements, and other pertinent topics.

Please submit your manuscript to: [LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com)

- transport. *Pediatrics* 2018;141(1): 727.
4. Bigham, MT, Parrish PR, Gothard MD, Schwartz HP. The tortoise or the hare: time amongst neonatal/pediatric transport teams. *Pediatrics* 2018;141(1): 713.

Disclosure: The authors do not identify any relevant disclosures.

**NT**



Jill Colontuono, APN, NNP-BC, CPNP  
Senior Clinician Educator  
Pritzker School of Medicine  
University of Chicago  
MC6060  
5841 S. Maryland Ave.  
Chicago, IL 60637



Christine Carlos, MD  
Assistant Professor, Pediatrics  
Pritzker School of Medicine  
University of Chicago  
MC6060  
5841 S. Maryland Ave.  
Chicago, IL 60637



Michael D. Schreiber, MD  
Section Chief, Neonatology,  
Professor of Pediatrics  
Vice Chairman, Pediatrics.  
Pritzker School of Medicine  
University of Chicago  
MC6060  
5841 S. Maryland Ave.  
Chicago, IL 60637



Brandi N. Parker, MSN, MBA, RN  
Clinical Director NICU/CTCU/MTCU  
UChicago Medicine Comer Children's  
University of Chicago  
MC6060  
5841 S. Maryland Ave.  
Chicago, IL 60637

**New subscribers are always welcome!**

**NEONATOLOGY TODAY**

**To sign up for free monthly subscription,  
just click on this box to go directly to our  
subscription page**

**NEONATOLOGY TODAY** is interested in publishing manuscripts from Neonatologists, Fellows, NNPs and those involved in caring for neonates on case studies, research results, hospital news, meeting announcements, and other pertinent topics.

Please submit your manuscript to: [LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com)



**Jaideep Singh, MD**  
 Medical Director, NICU  
 Professor of Pediatrics  
 Pritzker School of Medicine  
 University of Chicago  
 MC6060  
 5841 S. Maryland Ave.  
 Chicago, IL 60637

**Corresponding Author**



**Joseph R. Hageman, MD**  
 Senior Clinician Educator  
 Pritzker School of Medicine  
 University of Chicago  
 MC6060  
 5841 S. Maryland Ave.  
 Chicago, IL 60637  
 Phone: 773-702-7794  
 Fax: 773-732-0764  
[jhageman@peds.bsd.uchicago.edu](mailto:jhageman@peds.bsd.uchicago.edu)

**Fellow's Column is published monthly.**

- Submission guidelines for "Fellow's Column":
- 1250 word limit not including references or title page.
- QI/QA work, case studies, or a poster from a scientific meeting may be submitted..
- Submission should be from a resident, fellow, or NNP in training.
- Topics may include Perinatology, Neonatology, and Younger Pediatric patients.
- No more than 7 references.
- Please send your submissions to:

Elba Fayard, MD  
 Interim Fellowship Column Editor  
[efayard@llu.edu](mailto:efayard@llu.edu)

*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:



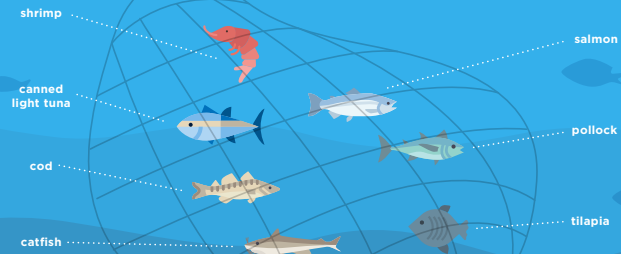
Iron



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.



**GET THE FACTS**  
 ON FISH CONSUMPTION  
 FOR PREGNANT  
 WOMEN, INFANTS,  
 AND NURSING MOMS.

**NCJIH** National Coalition  
 for Infant Health  
Providing Access for Premature Infants through Age Two

**LEARN MORE** ▶

# Postpartum Depression Garner Attention of Policy and Lawmakers

Darby O'Donnell, JD,  
Alliance for Patient Access (AfPA) Government Affairs Team

*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.*



Postpartum depression (PPD) impacts large numbers of women but receives minimal attention from policymakers and health care insurers.

“Postpartum depression is a mood disorder that affects approximately 600,000 women each year,” notes a new resource from the National Coalition for Infant Health. (1, 2) That many women impacted by one disease state is practically the same size as a single, congressional district of roughly 700,000-plus people (per the 2010 Census).

Health Affairs adds: “Too often, women struggle to get the care they need in the fourth trimester, the 12 weeks following childbirth during which a woman recovers from birth and transitions to nurture and care for her infant.”

One important step forward occurred in March when the FDA approved the first U.S. drug indicated for postpartum depression, which arrives in late June.

So as drug companies are looking for solutions to expand treatment for PPD, what can policymakers do to help?

## Medicaid Coverage Expansion

For hundreds of thousands of women, the excitement of having a new baby can be marred by overwhelming feelings of anxiety and helplessness caused by postpartum depression.

***“ The Kaiser Family Foundation reports that roughly 45 percent of all births in the United States were financed by Medicaid. This means that those mothers should be able to avail themselves of all pregnancy-related services up to 60 days postpartum, as required by federal law. ”***

Per Health Affairs, access to care is an added burden on new mothers, whereby “women [whether they have commercial or Medicaid coverage] receive postpartum care from providers in different locations and in different health systems from their infants.”

The Kaiser Family Foundation reports that roughly 45 percent of all births in the United States were financed by Medicaid. (4) This means that those mothers should be able to avail themselves of all pregnancy-related services up to 60 days postpartum, as required by federal law.

“In addition, 31 states and the District of Columbia have adopted Medicaid expansion programs that extended coverage for new mothers beyond the postpartum period, when historically many women lost coverage,” reports Health Affairs. “However, in the remaining 19 states, pregnancy coverage ends at 60 days postpartum.” (3)

Extensions to Medicaid coverage may be done at the state and federal level, providing coverage for longer periods of postpartum months, which may lead to greater access to services and other wellness checks. Expansion of PPD screenings and support services beyond the so-called fourth trimester has been reported to curb postpartum depression and lead to healthier outcomes.

## Expand Family Leave Laws

**Readers can also follow**  
**NEONATOLOGY TODAY**  
**via our Twitter Feed**  
**@NEOTODAY**

At the federal level, there is a new push to expand paid family leave at the federal level with several bills being introduced on both sides of the aisle and also by 2020 Presidential hopefuls.

**“ House Bill 696 would cover those workers that apply for family and medical leave insurance benefits from 12-26 weeks, depending on eligibility, with the first payment of benefits to be made to an individual within two weeks after the claim is filed.”**

According to Time Magazine, “As many as one in seven women experience postpartum depression throughout the first year of their baby’s life, but longer maternity leaves can significantly reduce the number of new moms who suffer symptoms of it.” (5)

The Time article highlights that those advocating for a “national mandate for paid parental leave in the U.S.,” are increasingly encouraged “due to support from Republicans and the business lobby.” (5)

State lawmakers are also taking notice. For example, last month, North Carolina lawmakers introduced a bill that would provide paid family and medical leave to North Carolina’s workforce. A Duke University study found that paid family leave would not only encourage work force participation and employee retention but would also improve workers’ health. (6) House Bill 696 would cover those workers that apply for family and medical leave insurance benefits from 12-26 weeks, depending on eligibility, with the first payment of benefits to be made to an individual within two weeks after the claim is filed. (7)

### Next Steps

The need for increased attention, resources, and policies to help mothers with PPD is clear. Thankfully, the conversation is beginning, and multiple solutions are being explored at the federal and state levels of government. Policymakers have the opportunity to lessen the devastating effects of postpartum depression by broadening awareness, adopting supportive policies and increasing funding for the screening of new parents, especially those most at risk.

### References:

1. [Postpartum Depression | Lifespan Learn More. \(n.d.\). Retrieved from https://www.lifespan.org/centers-services/multi-disciplinary-obstetric-medicine-s](https://www.lifespan.org/centers-services/multi-disciplinary-obstetric-medicine-s)
2. [https://static1.squarespace.com/static/5523fcf7e4b0fef011e668e6/t/5cc766d6bdf5a40001cecb84/1556571863851/AFFA\\_042919\\_NCFIH\\_Facts\\_Myths\\_Paper.pdf](https://static1.squarespace.com/static/5523fcf7e4b0fef011e668e6/t/5cc766d6bdf5a40001cecb84/1556571863851/AFFA_042919_NCFIH_Facts_Myths_Paper.pdf)
3. <https://www.healthaffairs.org/doi/10.1377/hblog20190501.254675/full>
4. <https://www.kff.org/medicaid/state-indicator/births-financed-by-medicaid/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D>
5. <http://time.com/5562960/paid-family-leave-congress/>

# Still a Premie?

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

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

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

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

- Jaundice
- Feeding issues
- Respiratory problems

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

**Born preterm at a “normal” weight?** **STILL A PREMIE**

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

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

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

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

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

**Some Premies**

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

**All Premies**

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

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

6. <https://duke.app.box.com/s/9wti16byhdyyz6k99ri2yib3ttlprgl8>
7. <https://www.ncleg.gov/Sessions/2019/Bills/House/PDF/H696v0.pdf>

The author has not indicated any disclosures.

**NT**

Corresponding Author



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



## 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)





# Patient Safety

## MOVEMENT

Patient Safety Movement Foundation  
2019 Midyear Planning Meeting

CO-CONVENER:

## UCI Health

FOUNDER:



Foundation for 2014, Innovation & Competence in Healthcare

BENEFACTOR:

## Medtronic

**INVITATION REQUEST**

Compiled and Reviewed by Mitchell Goldstein, MD Editor in Chief

## Tremoflo N-100 "Neo" Airwave Oscillometry for Neonates and Infants

*Tremoflo is in its early development and offers the potential of non-invasive pulmonary function testing for preterm infants down to 28 weeks gestation.*

Release date: April 3, 2019

**IMPORTANT NOTICE:** This document relates to an investigational device that by the laws of the United States and other countries is limited to INVESTIGATIONAL USE ONLY pursuant to applicable approvals.

In its early development, the respiratory system of newborns and infants is exceptionally vulnerable to disease (1). It is therefore not surprising that pneumonia is the world's leading killer among infants and children (2), and that asthma is the most common childhood chronic disease (3).

Moreover, respiratory tract infections in early childhood are believed to adversely effect adult lung function trajectories (4). However, there are currently no lung function tests that are practically feasible, clinically meaningful, and widely used in infants and children.

THORASYS has worked in collaboration with leading experts in this field to develop a new respiratory function test device aimed specifically at the 0-2-years age group. Specifically, we have modified our tremoflo C-100 system to create a unique solution for lung function assessment in neonates and infants: the tremoflo N-100 "Neo". This new device measures lung function in only a few minutes while the newborn or infant is sleeping normally, using an adapted version of Airwave Oscillometry (AOS) to calculate the impedance of the lungs and quantify airway obstruction. A neonatal tremoflo device is currently being used on a cohort of more than 1000 newborns in a clinical study in the United States. The tremoflo N-100 is now available for investigational use under approved study protocols. Contact THORASYS for more information.

Investigational use of this device requires IRB or Ethics Committee approval and any other regulatory approvals as per the requirements applicable in the country where the study is to be con-

ducted. THORASYS reserves the right to request proof of such approvals and to ensure use of the device as intended.

1. Wilmott et al, Disorders of the Respiratory Tract in Children, Elsevier, 2018
2. Respiratory Diseases in the World: Realities of Today - Opportunities for Tomorrow; Forum of International Respiratory Societies, 2013
3. Kabesch M., Early origins of asthma (and allergy), Molecular and Cellular Pediatrics (2016) 3:31.
4. Bui, D et al., Childhood Predictors of Lung Function Trajectories and Future COPD Risk: A Prospective Cohort Study from the First to the Sixth Decade of Life. The Lancet, Respiratory Medicine 6 (7): 535-44
5. [https:// clinicaltrials.gov/ ct2/show /NCT03346343?term=inf](https://clinicaltrials.gov/ct2/show/NCT03346343?term=inf)

# neo



## The conference for neonatology

Readers can also follow

**NEONATOLOGY TODAY**

via our Twitter Feed

@NEOTODAY

## The National Urea Cycle Disorders Foundation



*The NUCDF is a non-profit organization dedicated to the identification, treatment and cure of urea cycle disorders. NUCDF is a nationally-recognized resource of information and education for families and healthcare professionals.*

[www.nucdf.org](http://www.nucdf.org) | Phone: (626) 578-0833

June 19 – 21, 2019 | 9am – 5pm | Columbia University | New York City

# Next-Level Perinatal/Neonatal Comfort Care Training

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

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

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

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

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

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

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

*See site for full instructor list.*

**Continuing Medical Education (CME) and Continuing Nursing Education (CNE):** This course has been approved for CME credits. CNE credits pending.

**Accreditation Statement:** The Columbia University Vagelos College of Physicians and Surgeons is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians. **AMA Credit Designation Statement:** The Columbia University Vagelos College of Physicians and Surgeons designates this live activity for a maximum of 18.75 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

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



###

Media Contacts

THORASYS Thoracic Medical Systems Inc.  
Montreal, Quebec, Canada | Teningen  
(Freiburg), Germany

[www.thorasys.com](http://www.thorasys.com) | [info@thorasys.com](mailto:info@thorasys.com)

NT

## 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

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

- Connect with other AAP members who share your interests in improving effective drug therapies and devices in children.
- Receive the SOATT newsletter containing AAP and Section news.
- Access the Section's Website and Collaboration page – with current happenings and opportunities to get

- Network with other pediatricians, pharmacists, and other health care providers to be stronger advocates for children.
- Invitation for special programming by the Section at the AAP's National Conference.
- Access to and ability to submit research abstracts related to advancing child health through innovations in pediatric drugs, devices, research, clinical trials and information technology; abstracts are published in Pediatrics.

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

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

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

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

Christopher Rizzo, MD, FAAP, Membership Chairperson, [crizzo624@gmail.com](mailto:crizzo624@gmail.com)

Jackie Burke

Sections Manager

AAP Division of Pediatric Practice

Department of Primary Care and Subspecialty Pediatrics

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

Dedicated to the Health of All Children

###

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

NT

## FDA permits marketing of first medical device for treatment of ADHD

*The approval of the first medical device to treat ADHD is announced by the FDA.*

For Immediate Release: April 19, 2019

The U.S. Food and Drug Administration today permitted marketing of the first medical device to treat attention deficit hyperactivity disorder (ADHD). The prescription-only device, called the Monarch external Trigeminal Nerve Stimulation (eTNS) System, is indicated for patients ages 7 to 12 years old who are not currently taking prescription ADHD medication and is the first non-drug treatment for ADHD granted marketing authorization by the FDA.

"This new device offers a safe, non-drug option for treatment of ADHD in pediatric patients through the use of mild nerve stimulation, a first of its kind," said Carlos Peña, Ph.D., director of the Division

# THE BRETT TASHMAN FOUNDATION

The Brett Tashman Foundation is a 501(c)(3) public charity. The mission of the Foundation is to find a cure for Desmoplastic Small Cell Round Tumors (DSRCT). DSRCT is an aggressive pediatric cancer for which there is no cure and no standard treatment. 100 percent of your gift will be used for research. There is no paid staff. To make your gift or for more information, go to ["TheBrettTashmanFoundation.org"](http://TheBrettTashmanFoundation.org) or phone (909) 981-1530. **Annual Golf Tournament Fund Raiser: July 13, 2019 at Sierra Lakes Country Club in Fontana, CA.**

of Neurological and Physical Medicine Devices in the FDA's Center for Devices and Radiological Health. "Today's action reflects our deep commitment to working with device manufacturers to advance the development of pediatric medical devices so that children have access to innovative, safe and effective medical devices that meet their unique needs."

ADHD is a common disorder that begins in childhood. Symptoms include difficulty staying focused and paying attention, difficulty controlling behavior and very high levels of activity. The diagnosis of ADHD requires a comprehensive evaluation by a health care professional. For a person to receive a diagnosis of ADHD, the symptoms of inattention and/or hyperactivity-impulsivity must be chronic or long-lasting, impair the person's functioning and cause the person to fall behind normal development for his or her age.

The Monarch eTNS System is intended to be used in the home under the supervision of a caregiver. The cell-phone sized device generates a low-level electrical pulse and connects via a wire to a small patch that adheres to a patient's forehead, just above the eyebrows, and should feel like a tingling sensation on the skin. The system delivers the low-level electrical stimulation to the branches of the trigeminal nerve, which sends therapeutic signals to the parts of the brain thought to be involved in ADHD. While the exact mechanism of eTNS is not yet known, neuroimaging studies have shown that eTNS increases activity in the brain regions that are known to be important in regulating attention, emotion and behavior.

The stimulation should feel like a tingling sensation on the skin, and the device should be used in the home under the supervision of a caregiver during periods of sleep. Clinical trials suggest that a response to eTNS may take up to 4 weeks to become evident. Patients should consult with their health care professional after four weeks of use to assess treatment effects.

The Monarch eTNS System's efficacy in treating ADHD was shown in a clinical trial that compared eTNS as the sole treatment, or monotherapy, to a placebo device. A total of 62 children with moderate to severe ADHD were enrolled in the trial and used either the eTNS therapy each night or a placebo device at home for four weeks. The trial's primary endpoint was improvement on a clinician-administered ADHD Rating Scale, ADHD-RS. ADHD-RS scales are used to monitor severity and frequency of ADHD symptoms. A higher score is indicative of worsening symptoms. The ADHD-RS uses questions about the patient's behavior, such as whether they have difficulty paying attention or regularly interrupt others. The trial showed that subjects using the eTNS device had statistically significant improvement in their ADHD symptoms compared with the placebo group. At the end of week four, the average ADHD-RS score in the active group decreased from 34.1 points at baseline to 23.4 points, versus a decrease from 33.7 to 27.5 points in the placebo group.

The most common side effects observed with eTNS use are: drowsiness, an increase in appetite, trouble sleeping, teeth clenching, headache and fatigue. No serious adverse events were associated with use of the device.

The Monarch eTNS System should not be used in children under seven years of age. It should not be used in patients with an active implantable pacemaker or with active implantable neurostimulators. Patients with body-worn devices such as insulin pumps should not use this device. The eTNS System should not be used in the presence of radio frequency energy such as magnetic resonance imaging (MRI), because it has not been tested in an MRI machine, or cell phones, because the phone's low levels of electromagnetic energy may interrupt the therapy.

The FDA reviewed the Monarch eTNS System through the de novo premarket review pathway, a regulatory pathway for low- to moderate-risk devices of a new

type. This action creates a new regulatory classification, which means that subsequent devices of the same type with the same intended use may go through the FDA's 510(k) premarket process, whereby devices can obtain marketing authorization by demonstrating substantial equivalence to a predicate device.

The FDA granted marketing authorization of the Monarch eTNS System to NeuroSigma.

The FDA, an agency within the U.S. Department of Health and Human Services, promotes and protects the public health by, among other things, assuring the safety, effectiveness, and security of human and veterinary drugs, vaccines and other biological products for human use, and medical devices. The agency also is responsible for the safety and security of our nation's food supply, cosmetics, dietary supplements, products that give off electronic radiation, and for regulating tobacco products.

###

Inquiries

Media:  
Stephanie Caccomo  
301-348-1956

Consumer:  
888-INFO-FDA

NT



**NEONATOLOGY TODAY** is interested in publishing manuscripts from Neonatologists, Fellows, NNPs and those involved in caring for neonates on case studies, research results, hospital news, meeting announcements, and other pertinent topics.

Please submit your manuscript to: [LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com)



THE  
BRETT TASHMAN  
FOUNDATION  
*Making DSRCT History*

## **Memorial Golf Tournament and Luncheon**

**Proceeds support research surrounding  
Desmoplastic Small Round Cell Tumor (DSRCT),  
in an effort to find a cure for this cancer.**

**Saturday, July 13, 2019  
Tee Off at 8:00 am  
Sierra Lakes Golf Club  
16600 Clubhouse Drive  
Fontana, CA 92336**

Great prizes for on-course contests  
including hole-in-one,  
long drive, putting and more!

Banquet lunch buffet with silent auction benefitting the Foundation.

\$150 per person includes golf, range balls and banquet lunch.  
For non-golfers, banquet lunch available for \$60.

Various tax-deductible sponsorship opportunities also available.

Visit [thebretttashmanfoundation.org](http://thebretttashmanfoundation.org) to register  
or email [tash5@aol.com](mailto:tash5@aol.com) or call 909.981.1530 for more information.

---

**Statement from  
Principal Deputy  
Commissioner Amy  
Abernethy, M.D., Ph.D.,  
and Janet Woodcock,  
M.D., director of FDA's  
Center for Drug  
Evaluation and Re-  
search, on policies  
designed to capture  
more data to better  
understand ef-  
fects of prescription  
drugs in pregnant  
and nursing women**

---

*Better policies are needed to capture more data on the effect of certain drugs in pregnant and nursing women.*

For Immediate Release: May 08, 2019  
Statement From: Principal Deputy Commissioner - Office of the Commissioner  
Amy Abernethy MD PhD.  
Director - Center for Drug Evaluation and Research  
Janet Woodcock M.D.

It can be a challenge for health care professionals and patients to find quality scientific information about the safety of drugs and biological products when used during pregnancy or breastfeeding. Ethical challenges often arise in studying women in these populations as there are valid concerns about maternal and fetal safety. For example, if a woman who is currently breastfeeding starts an investigational drug for a disease or condition, breastfeeding should be discontinued for the duration of the study because the risks of the exposure to the drug in the breastfeeding infant may outweigh the benefits.

We also know that there are differences in how medicines affect men compared to



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

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

women, and pregnancy can often add to these differences. But because of the challenges in studying this area, often, women and their health care professionals must make decisions about whether to use a drug during pregnancy or lactation even when relevant safety data are scant or lacking.

The FDA is committed to advancing and promoting women's health and continues to engage in an open public dialogue with patient groups, medical experts and other federal partners to address the gap in scientific knowledge for women during this important phase of their lives. Today, we're issuing two draft guidances, which, when finalized, will provide new and updated information for companies designed to increase the availability of high-quality safety information in drugs used during pregnancy or lactation.

The first draft guidance, Clinical Lactation Studies: Considerations for Study Design, will, when finalized, provide recommendations for sponsors conducting clinical lactation studies. The FDA has required these studies under the Food, Drug, and Cosmetic Act under some circumstances and is considering additional circumstances in which

they may be recommended. Today's draft guidance builds upon our previous guidance from 2005 ("Clinical Lactation Studies-Study Design, Data Analysis, and Recommendations for Labeling") and streamlines and simplifies our recommendations for sponsors on these types of studies. The revised guidance, when finalized, will help to work toward overcoming the knowledge gap that health care professionals and women may face in making decisions about their health and the health of their baby. For example, we're recommending when companies should conduct a lactation study when a drug is expected to be used in women of reproductive age, or if a new indication is being sought for an approved drug and there is evidence of use or anticipated use of the drug by women who are breastfeeding. In addition, the draft guidance provides information about ethical considerations for when lactating women can potentially participate in a clinical trial.

In developing this draft guidance, we factored in discussions at advisory committee meetings [External Link Disclaimer](#) and public workshops where we considered how data from these studies can inform the safety of





Perinatal Advisory Council:  
Leadership, Advocacy and Consultation

## CONTINUING MEDICAL EDUCATION

The Continuing Education Department at PAC/LAC is pleased to consider requests to be a joint provider of your CME activity. PAC/LAC is actively involved in direct and joint-providership of multiple continuing education activities and programs and works with our partners to ensure the highest standards of content and design. PAC/LAC is the recipient of the 2018 Cultural & Linguistic Competency Award. This award recognizes a CME provider that exemplifies the goal of integrating cultural and linguistic competency into overall program and individual activities and/or a physician who provides leadership, mentorship, vision, and commitment to reducing health care disparities

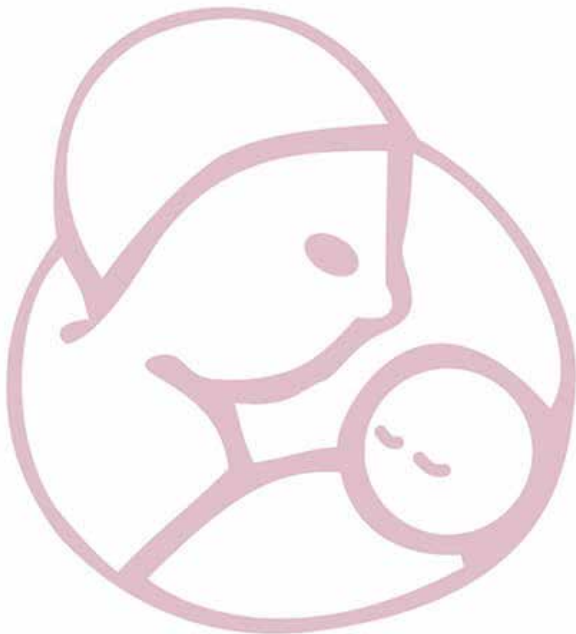
PAC/LAC is an accredited provider of continuing education by Accreditation Council for Continuing Medical Education / Institute for Medical Quality, the California Board of Registered Nursing, the California Association of Marriage and Family Therapists, the National Commission for Health Education Credentialing, and the American Association for Respiratory Care.

To inquire about Continuing Education Joint-Providership opportunities for your event please visit our website and complete the online request form.

PAC/LAC offers continuing education for:

- Continuing Medical Education (CME)
- California Registered Nurses (CEU)
- Licensed Clinical Social Workers (LCSW)
- Licensed Marriage and Family Therapists (LMFT)
- Licensed Professional Clinical Counselors (LPCC)
- Licensed Educational Psychologists (LEP)
- Certified Health Education Specialists (CHES)
- Continuing Respiratory Care Education (CRCE)

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



**PAC/LAC's core values** for improving maternal and child health have remained constant for over 30 years – a promise to lead, advocate and consult with others.

### **Leadership**

Providing guidance to healthcare professionals, hospitals and healthcare systems, stimulating higher levels of excellence and improving outcomes for mothers and babies.

### **Advocacy**

Providing a voice for healthcare professionals and healthcare systems to improve public policy and state legislation on issues that impact the maternal, child and adolescent population.

### **Consultation**

Providing and promoting dialogue among healthcare professionals with the expectation of shared excellence in the systems that care for women and children.

a drug when used during lactation, including whether it's passed through breastmilk to a nursing infant, or there are any changes in a women's body as a result of her lactation that could otherwise impact the safety or efficacy of a drug.

We're also announcing a second draft guidance, Postapproval Pregnancy Safety Studies which, when finalized, will outline our recommendations on how to design studies and leverage other forms of data, including real-world data, to assess the outcomes of pregnancies in women taking to FDA-regulated drugs and biological products during pregnancy.

The Postapproval Pregnancy Safety Studies draft guidance broadens the scope of methods used in collection of safety information for drugs and biological products used during pregnancy to include database studies such as claims or electronic health records, case-control studies, population-based surveillance and other pharmacovigilance methods. The recommendations in this draft guidance reflect discussions and recommendations received during a two-day workshop convened by the FDA in 2014, Study Approaches and Methods to Evaluate the Safety of Drugs and Biological Products During Pregnancy in the Post-Approval Setting, as well as FDA review. When finalized, this guidance replaces our 2002 guidance, Establishing Pregnancy Exposure Registries.

Both draft guidances announced today are consistent with the recommendations made by the Task Force on Research Specific to Pregnant Women and Lactating Women (PRGLAC). The 21st Century Cures Act established this task force to identify and report on gaps in knowledge and research on safe and effective therapies for pregnant women and lactating women. The task force includes representatives from federal agencies, including the FDA, the National Institutes of Health and the Centers for Disease Control and Prevention, among others. Non-federal members include representatives from industry and other relevant organizations.

The draft guidances are an additional step

the agency is taking toward getting women who are pregnant or breastfeeding important safety information about their medications, so they can make informed decisions about their health and the health of their babies.

The FDA, an agency within the U.S. Department of Health and Human Services, protects the public health by assuring the safety, effectiveness, and security of human and veterinary drugs, vaccines and other biological products for human use, and medical devices. The agency also is responsible for the safety and security of our nation's food supply, cosmetics, dietary supplements, products that give off electronic radiation, and for regulating tobacco products.

###

Inquiries

Media:  
Amanda Turney  
301-796-2969

Consumer:  
888-INFO-FDA

NT

---

## Older Fathers Put Health of Partners, Unborn Children at Risk, Rutgers Study Finds

---

*Men who delay fatherhood should consult their doctor and consider banking sperm before age 35*

11-May-2019 1:05 PM EDT

Rutgers University-New Brunswick

Men who delay starting a family have a ticking "biological clock" — just like women — that may affect the health of their

partners and children, according to Rutgers researchers.

The study, which reviewed 40 years of research on the effect of parental age on fertility, pregnancy and the health of children, was published in the journal *Maturitas*.

"While it is widely accepted that physiological changes that occur in women after 35 can affect conception, pregnancy and the health of the child, most men do not realize their advanced age can have a similar impact," said study author Gloria Bachmann, director of the Women's Health Institute at Rutgers Robert Wood Johnson Medical School.

While the medical profession has no clearly accepted definition of when advanced paternal age begins — it ranges from 35 to 45 — infants born to fathers over 45 have risen 10 percent in the United States over the past 40 years, likely due to assisted reproductive technology.

The study found that men 45 and older can experience decreased fertility and put their partners at risk for increased pregnancy complications such as gestational diabetes, preeclampsia and preterm birth. Infants born to older fathers were found to be at higher risk of premature birth, late still birth, low Apgar scores, low birth weight, higher incidence of newborn seizures and birth defects such as congenital heart disease and cleft palate. As they matured, these children were found to have an increased likelihood of childhood cancers, psychiatric and cognitive disorders, and autism.

Bachmann attributes most of these outcomes to a natural decline in testosterone that occurs with aging, as well as sperm degradation and poorer semen quality, but she said that some correlations need more research. "In addition to advancing paternal age being associated with an increased risk of male infertility, there appears to be other adverse changes that may occur to the sperm with aging. For example, just as people lose muscle



pac-lac

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

March 24-28, 2020; Snowbird, UT

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

strength, flexibility and endurance with age, in men, sperm also tend to lose 'fitness' over the life cycle," she said.

Damage to sperm from stresses of aging can lead to a decrease in sperm number and a change in the sperm and egg that is passed from parent to offspring and becomes incorporated into the DNA of cells in the offspring's body. "In addition to decreasing fertilization potential, this can also influence the pregnancy itself, as is noted by increased pregnancy risks when conception is successful," she said.

These germline or heredity mutations also may contribute to the association of advancing paternal age and disorders in the offspring, such as these children being diagnosed with autism and schizophrenia. "Although it is well documented that children of older fathers are more likely to be diagnosed with schizophrenia — one in 141 infants with fathers under 25 versus one in 47 with fathers over 50 — the reason is not well understood," she said. "Also, some studies have shown that the risk of autism starts to increase when the father is 30, plateaus after 40 and then

increases again at 50."

The study also found that older men struggled with fertility issues even if their partner was under 25.

"While women tend to be more aware and educated than men about their reproductive health, most men do not consult with physicians unless they have a medical or fertility issue," Bachmann said.

She recommended that physicians counsel older men as they do older women on the effect their age will have on conception, pregnancy and the health of their child. If men plan on delaying fatherhood, they should consider banking sperm before their 35th — or at least by their 45th birthday — to decrease the increased risks to the health of the mother and child.

Co-authors of the study are Nancy Phillips, associate professor in the Department of Obstetrics, Gynecology and Reproductive Science at Rutgers Robert Wood Johnson Medical School, and Leahannah Taylor, a graduate student at Rutgers Graduate School of Biomedical Sciences.

###

NT

---


## Quieter Intensive Care Units May Translate to Better Outcomes for Infants in New Study

---

*Katy Peck, a speech-language pathologist for Children's Hospital Los Angeles, writes on how cue-based feeding can promote optimal feeding opportunities and improve the care-giver infant relationship*

Released: 10-May-2019 11:10 AM EDT-  
Source Newsroom: Acoustical Society of America (ASA)

Newswise — WASHINGTON, D.C. May 13, 2019 -- Excessive noise is widely known to have negative effects on health, and children in neonatal intensive care units are among the most vulnerable. To help preterm infants make a smooth tran-



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

Join  NPA

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

sition to life outside of the womb, some NICUs have instituted set quiet times to limit children's exposure to potentially dangerous levels of noise.

Researchers from the University of Nebraska-Lincoln, George Washington University and Baptist Health South Florida conducted one of the first studies linking the quiet time soundscape inside NICUs with infant health. The study examined the effects of quiet time implementation in multiple NICUs on infants up to 18 months after implementation, giving the group a sense of which features of quiet time policies have the largest impact on the youngest patients in the hospital.

The team will present their findings at the 177th Meeting of the Acoustical Society of America, which takes place May 13-17, at the Galt House in Louisville, Kentucky.

"Although the NICU noise literature dates back more than 40 years, even recent studies show that ambient NICU noise often exceeds recommended levels," said Dr. Erica Ryherd. "Despite the growing evidence of the negative impacts of NICU

soundscapes on infants, there are large and pressing gaps in the literature that need immediate attention before ideal, evidence-based NICU soundscapes are achievable and more widely implemented."

Ryherd, Dr. Jonathan Weber, and Dr. Ashley Darcy Mahoney from Baptist Children's Hospital worked with nursing staffs at NICUs as they developed their own quiet time guidelines, including limiting conversations, dimming lights, and coordinating scheduled cleaning services, at set hours every afternoon and night.

The researchers then analyzed how each NICU's soundscape changed throughout the day. Acoustic measurements revealed that certain stressful pitches were quieter, very loud sounds occurred more infrequently, and total amount of quiet time throughout the day was longer. The infants in the NICU had healthier heart rates during quiet time hours.

From this data, the group recommends using quiet time protocols to help NICU patients in addition to implementing architectural noise reduction strategies in NICUs.

The researchers hope that their work stokes interest in how noise affects other types of hospital patients and beyond, including how public spaces are designed to mitigate the effects of loud sounds. The group looks to continue their work with currently ongoing studies on healthy built environments and on the impact of language on health outcomes among children.

pacts on the neonatal intensive care unit soundscape and patient outcomes," will be at 9:05 a.m., Monday, May 13, in the Segell room of the Galt House in Louisville, Kentucky.

###

MORE MEETING INFORMATION -

USEFUL LINKS

Main meeting website: <http://acoustical-society.org/asa-meetings/>

Technical program: <https://ep70.eventpilotadmin.com/web/planner.php?id=ASASPRING19>

ABOUT THE ACOUSTICAL SOCIETY OF AMERICA

The Acoustical Society of America (ASA) is the premier international scientific society in acoustics devoted to the science and technology of sound. Its 7,000 members worldwide represent a broad spectrum of the study of acoustics. ASA publications include The Journal of the Acoustical Society of America (the world's leading journal on acoustics), Acoustics Today magazine, books, and standards on acoustics. The society also holds two major scientific meetings each year. For more information about ASA, visit our website at <http://www.acoustical-society.org>.

###

NT

New subscribers are always welcome!

**NEONATOLOGY TODAY**

To sign up for free monthly subscription, just click on this box to go directly to our subscription page

Readers can also follow

**NEONATOLOGY TODAY**

via our Twitter Feed

@NEOTODAY

###

Presentation #1aNS1, "Quiet time im-

Every contract comes with round-the-clock support.

Do you know what else is included in your contract?

**INOMax** Total Care

LEARN MORE >>

©Mallinckrodt 2018 US-1800305



CONGENITAL  
CARDIOLOGY  
TODAY

The only worldwide monthly publication exclusively serving Pediatric and Adult Cardiologists that focus on Congenital/Structural Heart Disease (CHD), and Cardiothoracic Surgeons.



**Subscribe Electronically**  
Free on the Home Page

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





# Quality of Life for Families XXIII:

## Improving Care for Patients Across Generation and Cultures

The California Endowment  
Center for Healthy Communities  
1000 N. Alameda St.  
Los Angeles, CA 90012

**June 13, 2019**

Register Online at  
**[www.paclac2019.eventbrite.com](http://www.paclac2019.eventbrite.com)**

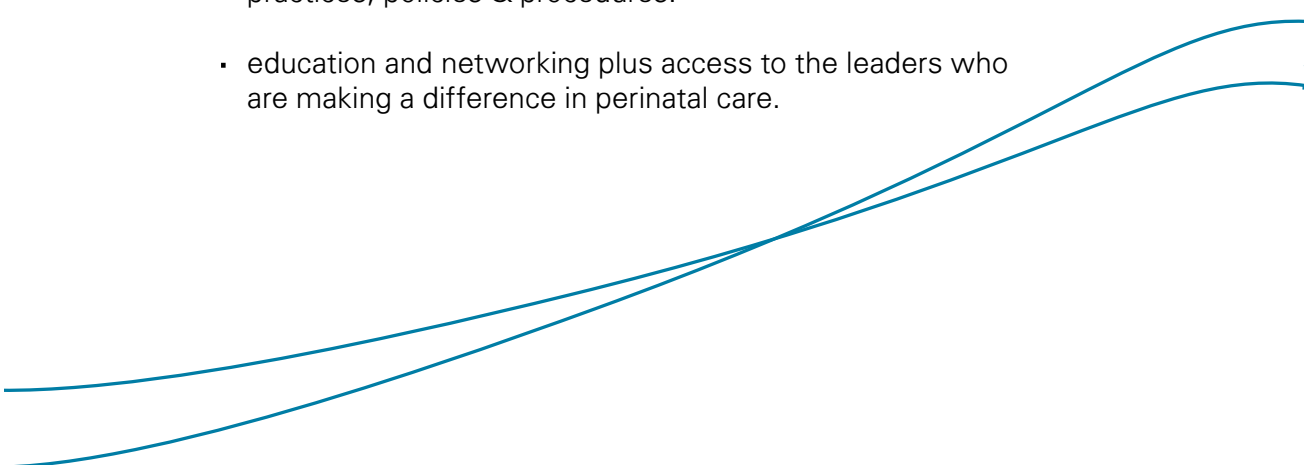
[www.paclac.org](http://www.paclac.org)

## About PAC/LAC

The Perinatal Advisory Council: Leadership, Advocacy and Consultation (PAC/LAC) has been a leading maternal and child health organization since its incorporation as a non-profit agency in 1981. PAC/LAC's mission is to improve perinatal health outcomes by providing leadership, education, and support to professionals and systems caring for women and their families. Children's health and well-being start with a healthy pregnancy and the events that occur during an infant's first few hours of life. PAC/LAC strives to make those first health experiences the best by ensuring that pregnant women, babies, and families are cared for by the most competent professionals in well-equipped health care settings. PAC/LAC has a long-standing reputation of excellence in the community for our work with hospitals and health care professionals.



### As a continued supporter of PAC/LAC, you will gain access to:

- a broad-spectrum of individuals and organizations in the maternal child health community including healthcare professionals, hospitals, community-based organizations, health clinics, health plans and public health organizations.
  - cutting-edge research and information regarding perinatal care.
  - on-demand, customized expert consultation, advice and resources on all topics related to perinatal care, hospital practices, policies & procedures.
  - education and networking plus access to the leaders who are making a difference in perinatal care.
- 

## Objectives

Upon completion of this conference, participants will be able to:

- Identify the State Initiative takeaways to reduce prematurity and adverse pregnancy outcomes of the African American Women.
- Describe the various features Nitrous Oxide can provide a woman during the birthing process to include: be an alternative method of comfort, uses in procedures such as external cephalic version, intracervical balloons, as well as Foley bulbs for cervical ripening; manual removal of placenta and laceration repair.
- Identify the current scientific knowledge on prenatal cannabis use and utilize this information to improve the dissemination of scientific knowledge transfer.
- Explain data snapshots that guides and informs the call-to-action. How change fatigue impacts care, and how expanding your cultural humility tool box can be put into practice.
- Assess the value of incorporating simulation to develop and implement innovative training strategies that act as a catalyst for health care providers to make individual, team and system changes.
- Explain the importance of mental health screening during the post partum period as Angelina Spicer shares her personal journey. "There is no health without mental health screening."
- Describe the role of birth doulas and the impact of doulas and non-labored clinical support in clinical outcomes.

### CONFERENCE AGENDA

**7:30am Registration and Breakfast**

**7:55am Opening Remarks**

*Catherine Ekwa-Ekoko, MD  
PAC/LAC Board President*

**8:05am State Initiatives to Close the Black: White Infant Mortality Rate.**

*Keynote Speaker  
Leslie Kowalewski  
Division Chief, Maternal Child Health*

**9:00am "Gas and Air"; The Utility of Nitrous Oxide in Childbirth**

*Michelle Collins, PhD, CNM, FACNM, FAAN*

**10:00am Break and Exhibits**

**10:15am Cannabis Education and Information Campaign**

*Martha E. Dominguez, MA, MPH, Ph.D., CLC*

**11:15am Making It Real: Data and Life Stories on Black Maternal and Infant Health**

*Wenonah Valentine, MBA*

**12:15am Lunch**

**12:45pm Poster Session and Exhibits**

**1:00pm Award Presentations**

**1:10pm Successful Reduction of Maternal Mortality and Morbidity, Utilizing Simulation**

*Patricia (Frances) Lirio, MSN, RNC-OB, Jeff Mackenzie, BSN, RN, &  
Josephine Dutton, RN  
Pomona Valley Hospital Simulation Team*

**2:10pm Break**

**2:25pm Postpartum Depression: A Personal Journey**

*Angelina Spicer, Comedian, Influencer, Activist*

**3:25pm UCSD Medical Center's Volunteer Doula Program: The Role of Hospital-based Doulas in Improving Maternal and Neonatal Health Outcomes**

*Ann Fulcher, CD(DONA), CLE*

**4:15pm Certificates, Closing and Door Prizes**

## Continuing Education

### Physicians:

This activity has been planned and implemented in accordance with the Institute for Medical Quality/California Medical Association's CME Accreditation Standards through the Perinatal Advisory Council: Leadership, Advocacy and Consultation (PAC/LAC). PAC/LAC is accredited by the Institute for Medical Quality/California Medical Association (IMQ/CMA) to provide continuing education for physicians. PAC/LAC designates this live activity for a maximum of 6.5 *AMA PRA Category 1 Credit(s)*<sup>™</sup>.

Physicians should claim only the credit commensurate with the extent of their participation in the activity. This credit may also be applied to the CMA Certification in Continuing Medical Education.

### Nurses:

The Perinatal Advisory Council – Leadership, Advocacy and Consultation (PAC/LAC) is an approved provider by the California Board of Registered Nursing Provider CEP 5862. This course is approved for 8.0 contact hours of continuing education credit.

### LCSW & LMFT:

PAC/LAC is approved by the California Association of Marriage and Family Therapists to sponsor continuing education for LCSW and LMFT. PAC/LAC maintains responsibility for this program/course and its content. This course is approved for 3.5 continuing education units. PAC/LAC's provider number is 128542.

### CHES:

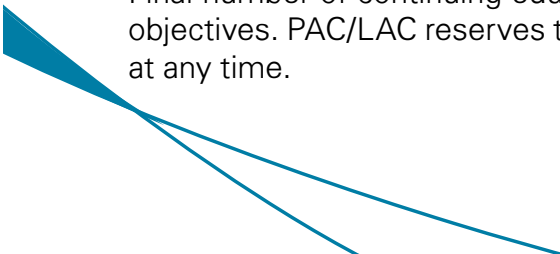
This activity is sponsored by the Perinatal Advisory Council: Leadership, Advocacy, and Consultation (PAC/LAC), a designated provider of continuing education contact hours (CECH) in health education by the National Commission for Health Education Credentialing, Inc. This program is designed for Certified Health Education Specialists (CHES) to receive up to 3.5 total Category 1 continuing education contact hours.

### Certificate Policy:

After completion of the course evaluation, you will be provided with a continuing education certificate. Make sure to save your certificate. PAC/LAC will assist you with finding your certificate for up to 1 year from the event without cost. For assistance with any certificates older than 1 year from the time of the event, PAC/LAC charges \$20 for the first certificate, and \$15 for each additional certificate requested each calendar year. A \$10 processing fee will be added to requests needing fulfillment within 24 hours.

### DISCLAIMERS:

Final number of continuing education credits maybe changed based on speakers objectives. PAC/LAC reserves the right to amend speakers, topics and scheduling at any time.





**Save the Date**  
 23rd Annual PAC/LAC Conference  
 Quality of Life for Families  
**June 13, 2019**  
 The California Endowment  
 Downtown Los Angeles

**New subscribers are always welcome!**

**NEONATOLOGY TODAY**

To sign up for a free monthly subscription, just click on this box to go directly to our subscription page

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

Infants need drugs tested and approved just for them.



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

Consider the following:

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

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

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

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

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

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



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

**99nicu**

Sign up for free membership at 99nicu, the Internet community for professionals in neonatal medicine. Discussion Forums, Image Library, Virtual NICU, and more..."

[www.99nicu.org](http://www.99nicu.org)



37<sup>th</sup> Annual Conference

The Cliff Lodge  
Snowbird, Utah

This conference provides education and networking opportunities to healthcare professionals who provide care for pediatric patients with a focus on advances in therapeutics and technologies including telemedicine and information technologies. Along with featured speakers, the conference includes abstract presentations on research on advances in these areas. Registration open mid June, 2019!

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

*Physician, Nursing, and Respiratory Care Continuing education hours will be provided.*

# Advances in Therapeutics and Technology

*Formerly:*

*High-Frequency Ventilation of Infants, Children & Adults*

**March 24-28 2020**

*For more information, contact:*

Perinatal Advisory Council: Leadership,  
1010 N Central Ave | Glendale, CA 91202

(818) 708-2850

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

Call for Abstracts – Deadline December 15, 2019

Abstract submission: As are currently being accepted. Download the Abstract Guidelines from the website.

Exhibitor and Sponsorship Opportunities

For more information on how to exhibit at the conference or become a sponsor, please download the prospectus: Exhibitor / Sponsorship Prospectus

Ready to become an exhibitor or sponsor? Please download the registration form from the site (Exhibitor & Sponsorship Registration Form) and mail your completed form and payment to:

PAC/LAC

Perinatal Advisory Council: Leadership, Advocacy and Consultation  
1010 N Central Ave  
Glendale, CA 91202

If you would like to pay by credit card, please complete the credit card authorization form and email it along with the Exhibitor & Sponsorship Registration Form to [asimonian@paclac.org](mailto:asimonian@paclac.org).

# A great #99nicuMeetup!

Stefan Johansson, MD, PhD and Francesco Cardona, MD, MSc



A few weeks ago, the 99nicu Community gathered in Copenhagen, for the Future of Neonatal Care Conference. Like the previous two conferences, this third occasion was also a success - the mean score for "how much did you enjoy the conference" was 4.6 on a 5-point scale! This positive feedback was only possible thanks to all Faculty members, delegates, and Partners bringing in a lot of positive energy.

Our vision with 99nicu is to make the world smaller by providing an independent platform for neonatal staff to share experience and expertise, beyond the limitations of geography and hierarchies. After all, newborn infants around the world are alike. Although our capabilities to act can be restrained by various aspects, we face similar clinical problems regardless of our contexts.

One of the great things about the Future of Neonatal Care conference in Copenhagen was to see our vision come to life. More than 200 people from 32 countries from all around the world met up and created a welcoming and un-prestigious at-

*"Our Twitter account is @99nicu (<https://twitter.com/99nicu>). As in previous years, the hashtag is #99nicuMeetup (<https://twitter.com/hashtag/99nicumeetup>)"*

mosphere.

This third conference built on the experiences from previous conferences, that interactivity is key for a good learning experience. We kept our lecture format of 45-minute slots, split into 30 minutes of lecture time and 15 minutes for discussion. Delegates used a smartphone app (sli.do) to give speakers feedback through polls and word clouds, and allowed sharing questions without having to line up for a microphone. The time for discussions was not always sufficient. The session around delayed cord clamping sparked around 30 delegate questions, some we had to leave without discussion and feedback.

Our mission with the conference was learning within a clinically relevant framework. Our topics included every-day-questions in the NICU, like blood transfusions, prevention of BPD, the role of high flow nasal cannula use, reduction of CLABSI rates, the challenges to diagnose seizures, how to reduce NEC by quality improvement, what inotrope to use when, and pain management. We also had sessions allowing for reflections about parental involvement in decision-making, and the medical and ethical aspects of periviability. One interesting point in the latter session was how differently we speak openly about dying



and death. For example, while Dutch delegates shared how it was natural for them to talk about suffering and “quality of death,” delegates from other countries shared how those questions could be regarded as more taboo.

If you want to get glimpses of the meeting, check out the Twitter hashtag #99nicuMeetup to find the live-feed of lectures. You are also able to view most lectures on our Youtube channel ([https://www.youtube.com/channel/UCY5s1ZlBmBaxox6Zi\\_v\\_e0Q](https://www.youtube.com/channel/UCY5s1ZlBmBaxox6Zi_v_e0Q)).

What about plans for the Future of Neonatal Care conference? Given the fantastic feedback, we feel obliged and committed to put together a fourth conference in 2020. Moreover, we have preliminary plans about when and where. Keep updated by becoming a 99nicu member, and by following 99nicu on Twitter, LinkedIn, and Facebook.

Stockholm 2019-05-06



Stefan Johansson

Join/follow 99nicu:

<https://99nicu.org/register>

<https://twitter.com/99nicu>

<https://www.linkedin.com/company/99nicu/>

<https://www.facebook.com/99nicu/>

The authors indicate that they have no disclosures

**NT**

Corresponding Author



Stefan Johansson, MD, PhD  
Consultant Neonatologist, Sachs' Children's Hospital  
Associate Professor, Karolinska Institutet  
Stockholm, Sweden  
[stefan.johansson@99nicu.org](mailto:stefan.johansson@99nicu.org)



Francesco Cardona, MD, MSc  
Consultant, Medical University of Vienna  
Department of Paediatrics and Adolescent Medicine  
Vienna, Austria  
[francesco@99nicu.org](mailto:francesco@99nicu.org)

Support the  
Open Letter



Breastfeeding  
Innovations  
Team

New subscribers are always welcome!

**NEONATOLOGY TODAY**

To sign up for free monthly subscription,  
just click on this box to go directly to our  
subscription page



**Patient Safety**  
MOVEMENT

Patient Safety Movement Foundation  
2019 Midyear Planning Meeting

CO-CONVENER:  
**UCI Health**

FOUNDER:  
**MASIMO** Association for 2014  
Innovation & Cooperation  
in Healthcare

BENEFACTOR:  
**Medtronic**

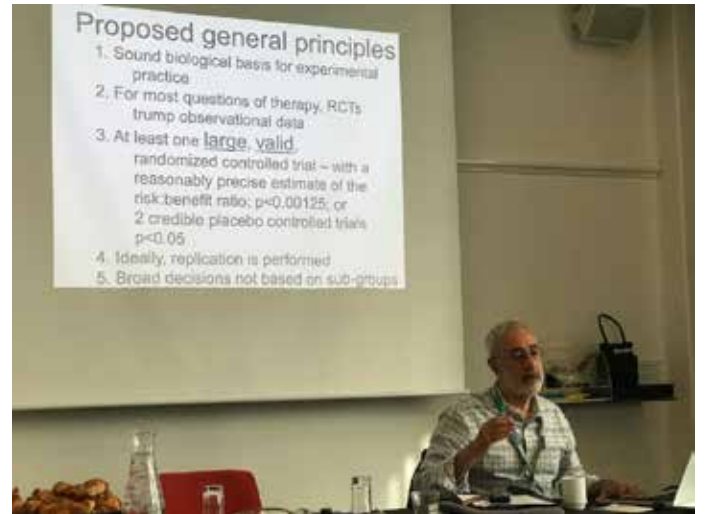
**INVITATION REQUEST**

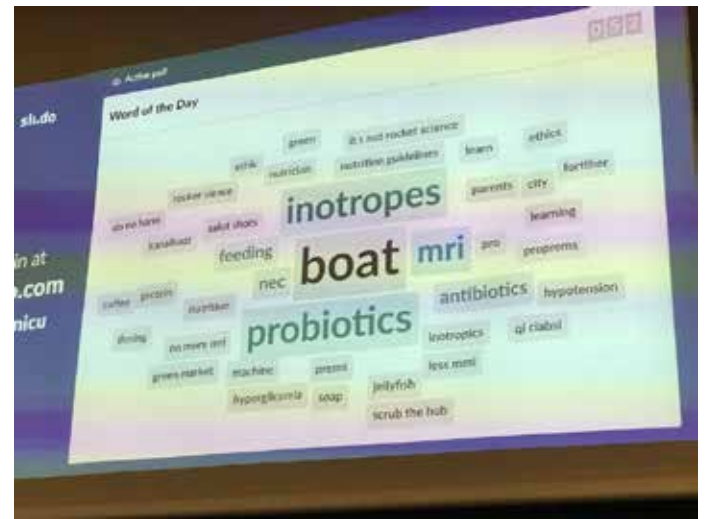
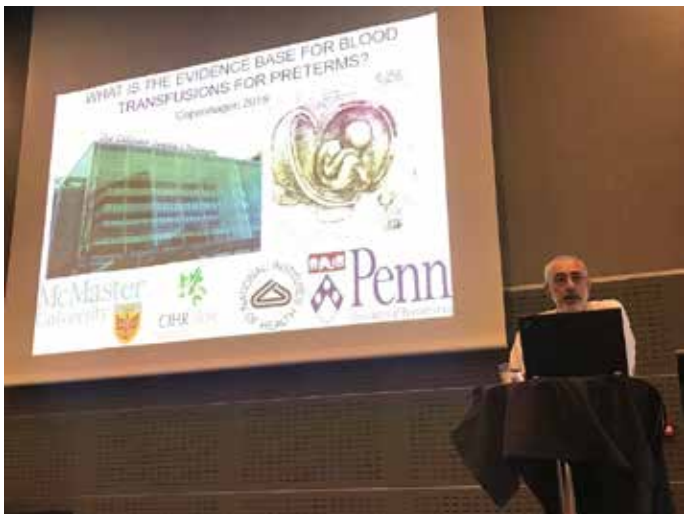


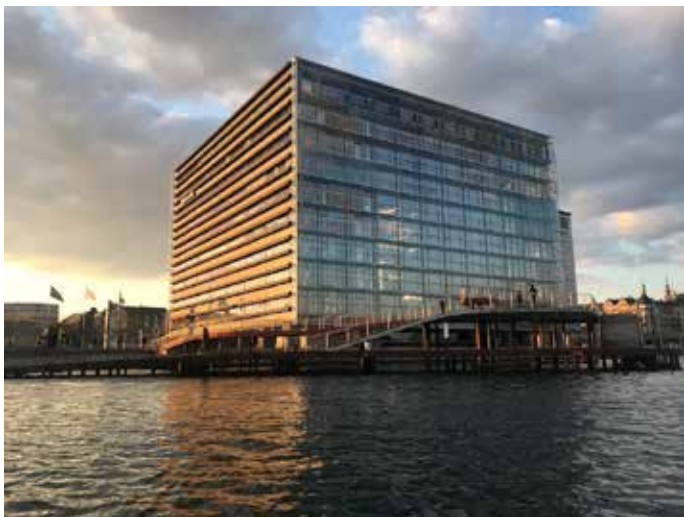
# #99nicuMeetup





















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

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

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

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

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

When that happens:

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

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

What is an Exclusive Human Milk Diet?

- NO cow's milk
- NO sheep's milk
- NO goat's milk
- NO formula
- ✓ mother's milk
- ✓ human donor milk
- ✓ human milk-based fortifier

Why is An Exclusive Human Milk Diet important?

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

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

- Mortality is reduced by **75%**
- Feeding intolerance decreased?
- Chances of NEC are reduced by **77%**

**HUMAN MILK = MEDICINE**

NEC is more often fatal, especially for the most vulnerable babies. NEC is a leading cause of death in the NICU. For more information, visit [www.nichd.nih.gov/health/topics/NEC](http://www.nichd.nih.gov/health/topics/NEC).

**LEARN MORE >**

**NCJFH** National Coalition for Infant Health

© 2018 NCJFH. All rights reserved. For more information, visit [www.nichd.nih.gov/health/topics/NEC](http://www.nichd.nih.gov/health/topics/NEC). For more information, visit [www.nichd.nih.gov/health/topics/NEC](http://www.nichd.nih.gov/health/topics/NEC). For more information, visit [www.nichd.nih.gov/health/topics/NEC](http://www.nichd.nih.gov/health/topics/NEC). For more information, visit [www.nichd.nih.gov/health/topics/NEC](http://www.nichd.nih.gov/health/topics/NEC).



Readers can also follow  
**NEONATOLOGY TODAY**  
via our Twitter Feed  
**@NEOTODAY**

## Perinatal Substance Use

### 5 ways you can improve care during pregnancy and beyond

Pregnancy presents unique opportunities for patients to make positive changes in their substance use. When you become an informed provider you empower patients to make those changes.



#### Educate Yourself

Learn more about the pharmacology of substance use. Promote evidence-based care by communicating with patients in a way that separates fact from fiction. Understand the cycles of sobriety and relapse so that you can help patients plan for their recovery. Advise on the risks associated with polysubstance use.



#### Use the Right Words

Know the difference between substance use, substance misuse, and Substance Use Disorders (SUDs). Recognize that substance use is stigmatized and that stigma is a barrier to seeking care. Reject language that shames. Embrace the principles of Harm Reduction as a way to support any positive change.



#### Screen Every Patient

Talking about substance use should be a routine part of everyone's medical care. Get comfortable discussing it. Ask questions and listen to what your patients have to say. You may be the first person to ever ask.



#### Get Trained to Offer MAT

Medication-Assisted Treatment is the Standard of Care during pregnancy, but there are not enough providers. Contact SAMHSA to become an OTP\*. Make naloxone available to all your patients who use opioids.

\*opioid treatment program



#### End the Stigma and Criminalization of Drug Use

Embrace people who use substances. Meet them where they are. Abide by your medical ethics. Practice beneficence. Promote public health. Advocate for decriminalization.

## Your Advocacy Matters

Learn more at  
[www.nationalperinatal.org](http://www.nationalperinatal.org)



# The Genetics Corner: A Consultation for Multiple Congenital Anomalies

Subhadra Ramanathan, M.Sc., M.S. and Robin Clark, MD

## Case History:

A 1-day-old 33 week gestation male infant was evaluated for multiple congenital anomalies that were diagnosed prenatally on fetal ultrasound. Fetal MRI at 32w5d showed micrognathia with associated glossoptosis, absent right kidney, short right upper extremity suggestive of absent right humerus, bilateral short lower extremities suggestive of absent femora with clubbed feet. Pelvic osseous structures and sacrococcygeal segments were suspicious for caudal regression syndrome.

The infant was delivered by emergency C-section at secondary to a placental abruption and maternal preeclampsia to a 25 year old primigravida mother. The parents had been trying to conceive for 5 years prior to this conception. The pregnancy was complicated by maternal insulin-dependent diabetes mellitus diagnosed in the 9th week of gestation. Insulin therapy was started in the first trimester. Mother was obese at 170 lbs pre-pregnancy weight and gained 20 lbs during her pregnancy. First trimester HgbA1c levels were unavailable for review. Apgar scores were 31 and 85.

Birth weight: 1.5 kg (3 lb 4.9 oz) (10th percentile)  
Birth length: 28 cm (0th percentile)  
Birth head circumference: 30.5 cm (60th percentile)

In addition to the prenatally diagnosed anomalies, the infant had Pierre-Robin sequence with cleft palate. He also had a bicuspid aortic valve and bilateral inguinal hernia. He required a tracheostomy for severe micrognathia and a gastrostomy tube. Chromosome microarray analysis was normal. He was in the NICU for two months primarily for respiratory issues and growth. He was referred for bilateral abnormalities on the newborn hearing screen and was subsequently diagnosed with mild hearing loss.

The family history was significant for type 2 diabetes in both maternal grandparents.

## Genetics Evaluation:

On physical exam, the infant had facial dysmorphism: a round face, square forehead, short nose with prominent nasal tip, bilateral epicanthus, long philtrum, cleft palate, micrognathia and thin lips. He had absent femurs and absent right humerus with multiple vertebral segmentation anomalies with 5 lumbar vertebrae, a questionable fusion of L4-5 and 2 sacral vertebral segments. Both feet were clubbed. Abdominal US revealed a solitary right kidney. Xrays confirmed absence of the right humerus, left humeral-ulnar fusion, and absence of both femora.

This infant has the typical phenotype of femoral facial syndrome, also known as femoral hypoplasia unusual facies syndrome (FFS). This rare, variable and sporadic multiple congenital anomaly syndrome ([OMIM 134780](#)) is not associated with any known genetic variant. The initial report (1) described 4 patients with a similar phenotype of femoral hypoplasia and characteristic facial features

with micrognathia, cleft palate, short nose with broad nasal tip, long philtrum and thin upper lip. Abnormalities of the genitourinary tract, dysplastic sacrum and vertebral anomalies are also reported. Associated central nervous system anomalies can include hydrocephalus and corpus callosal abnormalities.

Although maternal pregestational diabetes was not noted in the initial report, subsequent reports have documented a strong relationship between maternal diabetes in pregnancy and femoral facial syndrome. In a recent review of FFS, 50.8% of patients with FFS in a Brazilian cohort were infants of diabetic mothers (2).

That report also describes a discordant monozygotic (MZ) twin pair, which is evidence against a Mendelian gene disorder. MZ twins can be discordant due to a number of different mechanisms. There can be unequal allocation of cells as early as the blastomere stage, genetic discrepancies (post-zygotic changes, chromosome mosaicism) and epigenetic mechanisms due to imprinting and X-chromosome inactivation (in females). There is one report of an affected father having an affected daughter, but all other cases have been sporadic.

***“Epigenetic mechanisms may underlie the variability in both the range of birth defects as well as the incomplete penetrance of the phenotype in diabetic embryopathy.”***

Maternal diabetes is a well-known human teratogen that causes several different patterns of congenital anomalies, which are collectively referred to as diabetic embryopathy. Diabetic embryopathy is associated with poor maternal glycemic control in the first trimester of pregnancy (3). The risk for birth defects is increased to about 10% in infants of diabetic mothers (IDMs) whereas the background risk is 3% (4). The risk for malformations is higher in women with pregestational diabetes and is inversely related to the degree of maternal diabetic control, as measured by maternal serum hemoglobin A1c levels (HgbA1c) (5).

Epigenetic mechanisms may underlie the variability in both the range of birth defects as well as the incomplete penetrance of the phenotype in diabetic embryopathy. Epigenetic modifications are heritable changes in gene expression without a change in the underlying nucleotide sequence. This is achieved by a combination of DNA methylation, histone modifications and non-coding RNAs, which contribute to mitotic memory. It is an important mechanism facilitating the differentiation of cells during embryonic development (6, 7).

In animal studies, the cellular mechanisms responsible for diabetic embryopathy include increased cellular apoptosis and protuberance of the temporal pattern of gene expression during embryonic



*Figure 1: Characteristic findings of femoral facial syndrome: round face, short nose with bulbous nasal tip, long philtrum, thin upper lip. Short lower extremities (absent femurs), short right upper extremity (absent humerus)*

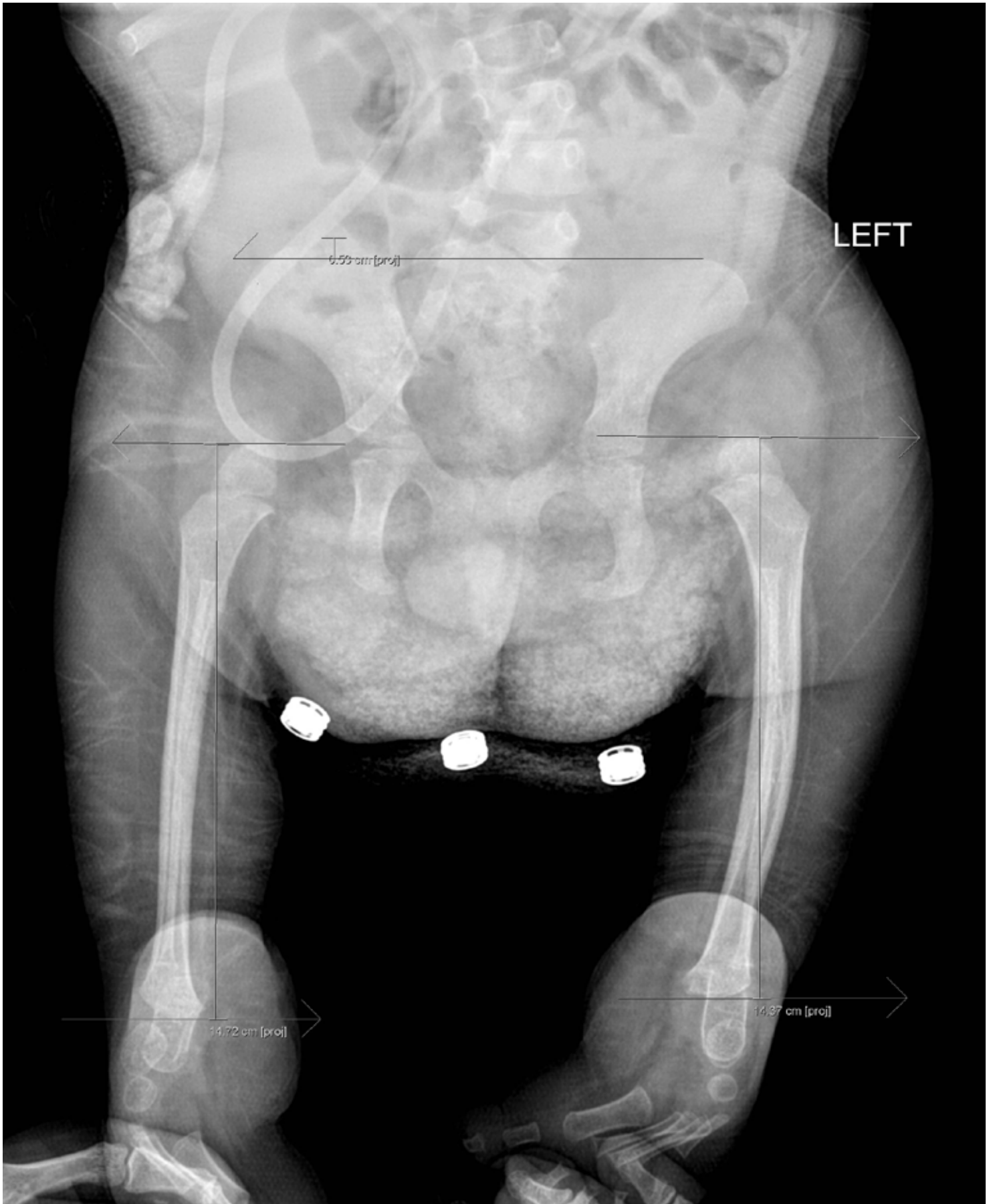


Figure 2: Absent femurs, wide pubic symphysis, shortened/ dysplastic sacrum, bilateral clubbed feet

development. The disturbance may happen only during hyperglycemic peaks in maternal circulation, but these can be sufficient to cause permanent, irreversible changes during critical periods of fetal morphogenesis (8). Administration of supplemental folic acid has been shown to ameliorate diabetic embryopathy in animals.

---

**“Diabetic women should be encouraged to plan all future pregnancies and to be in excellent diabetic control prior to conception, optimally with a HgbA1c level between 5.7- 5.9.”**

---

### Conclusion and Counseling:

Infants of diabetic mothers are at a higher risk for birth defects. The highest window of susceptibility for fetal malformations is in the first 4 weeks of pregnancy, which is strong recommendation for counseling diabetic women to optimize their diabetic control prior to conception. Blastogenic malformations and first trimester miscarriages are the most common adverse effects of diabetic embryopathy (9). Infertility is more common among gestational diabetics, as was the experience in this young mother (10).

The recurrence risk for diabetic embryopathy in a future pregnancy in a mother with pregestational diabetes, who has had a prior affected pregnancy, is increased over 10%. Diabetic women should be encouraged to plan all future pregnancies and to be in excellent diabetic control prior to conception, optimally with a HgbA1c level between 5.7- 5.9. The greater the level of control, the less the potential risk to the pregnancy and the lower the risk for miscarriage and infertility as well as congenital anomalies. The diabetic mother-to-be should start prenatal vitamins and supplemental folic acid (4mg/day) beginning at least a month prior to any future conception. The latter recommendation also addresses the increased risk for open neural tube defects in infants of diabetic mothers.

### Practical applications:

- Femoral facial syndrome is highly associated with maternal diabetes.
  - o It should be suspected when one or both femora are hypoplastic or absent in an IDM.
- There is no known genetic etiology for this disorder.
  - o Epigenetic variants may play a role by creating a permissive environment that fosters the teratogenicity of hyperglycemia.
- Poorly controlled maternal diabetes is one of the strongest human teratogens, tripling or more the chance of birth defects
- Counsel diabetic mothers to achieve good diabetic control prior to conception to reduce the risk for diabetic embryopathy.
  - o Recommend monitoring maternal HgbA1c levels prior to gestation and early in the first trimester.

- o Counsel diabetic women of child-bearing age on the increased risk for congenital anomalies when diabetes is poorly controlled in early pregnancy.
- o Encourage diabetic mothers to take folic acid daily starting prior to conception.
- o Recognize that miscarriage and infertility are associated with gestational diabetes mellitus.

### References:

1. Daentl, DL, Smith, DW, Scott, CI, et al. Femoral hypoplasia-unusual facies syndrome. *J. Pediat.* 1975;86:107-111. PMID: 1110431
2. Lacarrubba MDJ, et al., Femoral-facial syndrome: A review of the literature and 14 additional patients including a monozygotic discordant twin pair. *Am J Med Genet A.* 2018 Sep;176(9):1917-1928. PMID: 30070764
3. Zhao Z & Reece EA. New Concepts in Diabetic Embryopathy. *Clin. Lab. Med.* 2013;33:207-233. PMID: 23702113
4. Becerra, JE, et al. Diabetes Mellitus During Pregnancy and the Risks for Specific Birth Defects: A Population-Based Case-Control Study. *Pediatrics.* 1990;85:1-9. PMID 23702113
5. Greene MF. First-trimester hemoglobin A1 and risk for major malformation and spontaneous abortion in diabetic pregnancy. *Teratology.* 1989;39:225-231. PMID: 2727930
6. Schulze KV, Bhatt A, Azamian MS, et al. Aberrant DNA methylation as a diagnostic biomarker of diabetic embryopathy. *Genet Med.* 2019 Apr 17. Epublished ahead of print. PMID: 30992551.
7. Machin G. Non-identical monozygotic twins, intermediate twin types, zygosity testing, and the non-random nature of monozygotic twinning: a review. *Am J Med Genet C Semin Med Genet.* 2009 May 15;151C(2):110-27. PMID: 19363805
8. Bohuslavova R, et al. Gene expression profiling of changes induced by maternal diabetes in the embryonic heart. *Reprod Toxicol.* 2015 Nov;57:147-56. PMID: 26073000
9. Castori M. Diabetic embryopathy: a developmental perspective from fertilization to adulthood. *Mol Syndromol.* 2013 Feb;4(1-2):74-86. PMID: 23653578
10. Holst S, Kjær SK, Jørgensen ME, et al. Fertility problems and risk of gestational diabetes mellitus: a nationwide cohort study. *Fertil Steril.* 2016 Aug;106(2):427-434.e1. PMID: 27068302

The authors have no relevant disclosures.

**NT**



Corresponding Author



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



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

**GET THE FACTS**  
ON FISH CONSUMPTION  
FOR PREGNANT  
WOMEN, INFANTS,  
AND NURSING MOMS.

**NCfIH** National Coalition  
for Infant Health  
Promoting Access for Premature Infants through Age Two

[LEARN MORE ▶](#)

# How to Care for a Baby with NAS



## Use the Right Words

I was exposed to substances in utero. I am not an addict. And my mother may or may not have a Substance Use Disorder (SUD).



## Treat Us as a Dyad

Mothers and babies need each other. Help my mom and me bond. Whenever possible, provide my care alongside her and teach her how to meet my needs.



## Support Rooming-In

Babies like me do best in a calm, quiet, dimly-lit room where we can be close to our caregivers.



## Promote Kangaroo Care

Skin-to-skin care helps me stabilize and self-regulate. It helps relieve the autonomic symptoms associated with withdrawal and promotes bonding.



## Try Non-Pharmacological Care

Help me self-soothe. Swaddle me snugly in a flexed position that reminds me of the womb. Offer me a pacifier to suck on. Protect my sleep by "clustering" my care.



## Support Breastfeeding

Breast milk is important to my gastrointestinal health and breastfeeding is recommended when moms are HIV-negative and receiving medically-supervised care. Help my mother reach her pumping and breastfeeding goals.



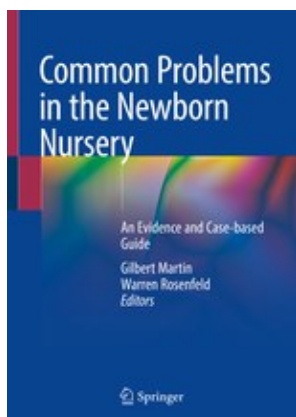
## Treat My Symptoms

If I am experiencing withdrawal symptoms that make it hard for me to eat, sleep, and be soothed, create a care plan to help me wean comfortably.

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



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



## **Common Problems in the Newborn Nursery An Evidence and Case-based Guide**

- **Provides practical, state of the art management guidance for common clinical problems in the newborn nursery**
- **Written by experts in the field in a clear, easy-to-use format**
- **Utilizes a case-based approach**

This comprehensive book thoroughly addresses common clinical challenges in newborns, providing an evidence-based, step-by-step approach for their diagnosis and management. *Common Problems in the Newborn Nursery* is an easy-to-use, practical guide, covering a full range of clinical dilemmas: bacterial and viral infections, jaundice, hypoglycemia, hypotonia, nursery arrhythmia, developmental dysplasia of the hips, newborn feeding, cardiac problems, late preterm infants, dermatology, anemia, birth injuries, ocular issues, and hearing assessments in the newborn.

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

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

**ORDER NOW! 20% Discount!**

**Expires 4/30/2019**

Special meeting price: USD ~~\$109.99~~ \$87.99  
**Common Problems in Newborn Nursery**

**Softcover Edition**  
**978-3-319-95671-8**

Please send me \_\_\_\_\_ copies at the discounted price of \$87.99 ea. plus tax + shipping.

**YOU WILL BE SENT A SECURE LINK FOR YOUR CREDIT CARD INFORMATION**

Please email orders to:  
[Holly.Klokis@springer.com](mailto:Holly.Klokis@springer.com)

**FREE  
SHIPPING  
IN THE U.S.**

Please note that sales tax will be added into your final invoice. . Outside the US and Canada add \$7.00 for first book, \$5.00 for each additional book. All orders are processed upon publication of title..

Name \_\_\_\_\_  
Address (we cannot deliver to PO Boxes) : \_\_\_\_\_  
\_\_\_\_\_  
City/State/Zip \_\_\_\_\_  
Country \_\_\_\_\_ Telephone \_\_\_\_\_  
Email \_\_\_\_\_  
Signature \_\_\_\_\_



## Myths, Facts and Postpartum Depression

Susan Hepworth and Mitchell Goldstein, MD



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

For hundreds of thousands of women, the excitement of having a new baby is marred by overwhelming feelings of anxiety and helplessness caused by postpartum depression. The condition robs new parents of happiness during what they rightly expect to be a joyous time.

***“In some cases, when new moms know something is not right, they feel embarrassed, ashamed or too overwhelmed by the responsibilities of new motherhood to take time to get or ask for help.”***

Sadly, many women experiencing postpartum depression will not receive a medical diagnosis or treatment. Often new moms or their health care providers do not know the signs of postpartum depression—or do not recognize them. And most hospitals do not yet have screening policies in place.

In some cases, when new moms know something is not right, they feel embarrassed, ashamed or too overwhelmed by the responsibilities of new motherhood to take time to get or ask for help. This is not healthy for them or their babies, which is why it is important to know the facts about postpartum depression.

**Fact:** Postpartum depression is a mood disorder that affects approximately 600,000 women each year. (1)

It is most likely caused by a combination of physical and emotional factors. (2) Common symptoms like extreme sadness, irritability, exhaustion and withdrawal are often dismissed as just the “baby blues.” While the “baby blues” and postpartum depression have some commonalities, they are not the same.

**Myth:** Postpartum depression is just the “baby blues.”

Mild feelings of worry and tiredness are common when caring for a new baby; upwards of 80 percent of new mothers experience the “baby blues.” However, these feelings typically subside on their own in a matter of days or weeks for most new moms.<sup>2</sup> Approximately one in seven women experience the more extreme feelings of postpartum depression, (3) though experts believe the incidence is probably much higher. (4)

**Myth:** Postpartum depression will go away on its own.

**Fact:** If postpartum depression symptoms have not subsided in a week or two, or if they are interfering with caring for the baby or everyday tasks, treatment may be necessary. The two most common treatments are talk therapy and medication. (2)

Engaging with a mental health professional can help new moms recognize and overcome harmful symptoms and behaviors. Anti-depressants are the most common pharmacologic treatment. The medicine can help with regulating chemicals in the brain and stabilizing the mother’s mood, although it may take a few weeks to



## POSTPARTUM DEPRESSION

VS.

## BABY BLUES

*Extreme sadness, irritability, exhaustion and withdrawal*



*Mild feelings of worry and tiredness*

*Requires treatment*



*Goes away on its own*

*Experienced by at least one in seven new moms and up to one in four of new dads*



*Experienced by upwards of 80% of new moms*



become fully effective.

Just this year, the Food and Drug Administration approved the first medication specifically for postpartum depression. (5) Researchers are continuing to investigate additional therapies.

It is important to start and continue treatment as prescribed because the ramifications of leaving postpartum depression untreated can be serious. It can interfere with self-care and relationships, and mothers can become more anxious, ambivalent or detached from their infant, potentially leading to long-term adverse effects on the baby's ability to sleep, eat and develop. In extreme cases, postpartum depression can lead to suicide or harming the infant. (2)

***“Family and close friends may be the first to recognize the signs of postpartum depression in a new parent.”***

Family and close friends may be the first to recognize the signs of postpartum depression in a new parent. They should speak up and encourage the new mom or dad to seek help quickly. Family and friends can also assist with caring for the baby, helping with other children or tending to household tasks.

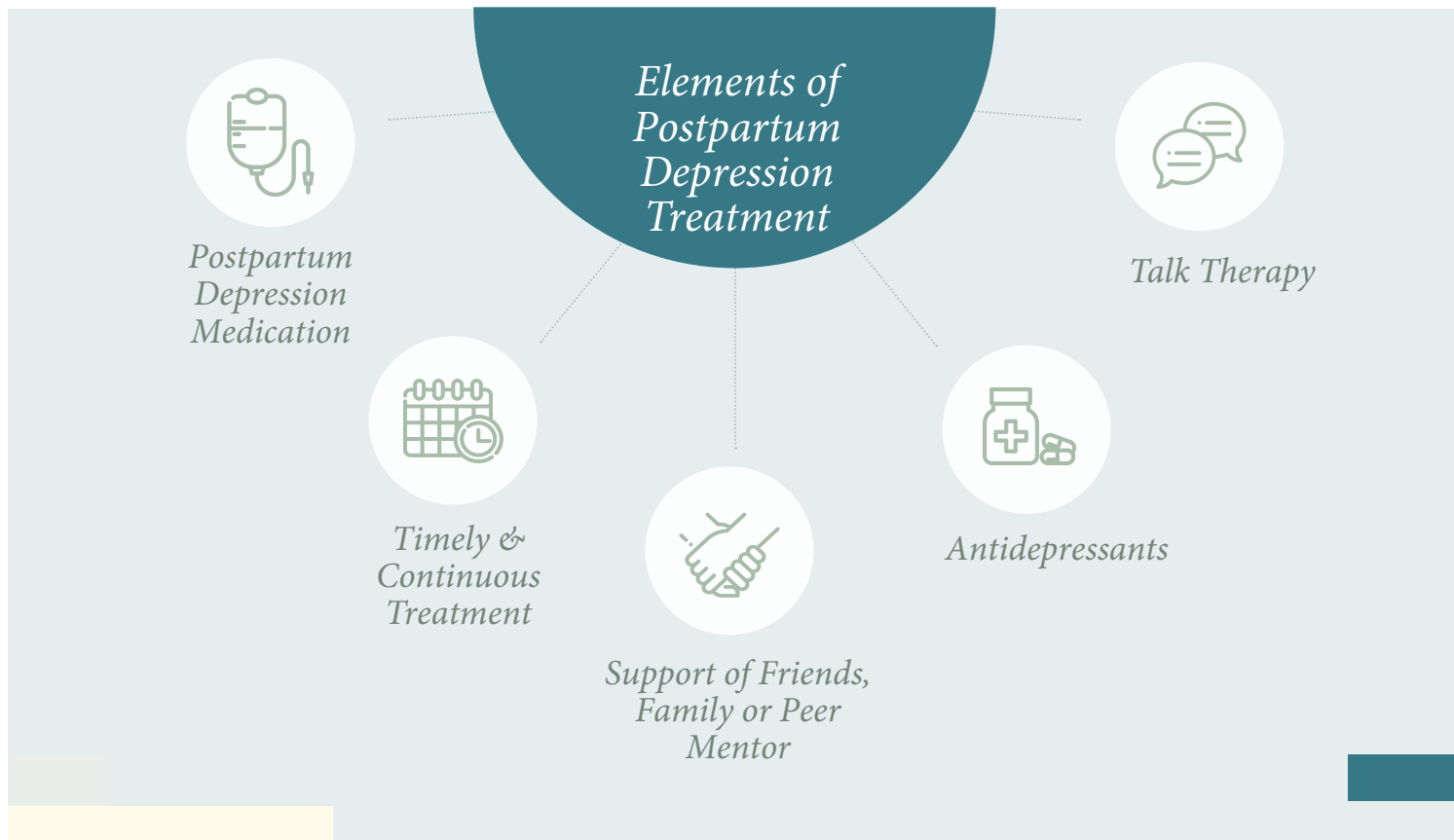
**Myth:** All new moms are equally susceptible to experiencing postpartum depression

**Fact:** Certain women are more likely than others to experience postpartum depression, with the highest risk in those who have previously experienced depression or postpartum depression.

Research shows moms who gave birth to low birthweight babies and those who had babies requiring admission to the neonatal intensive care unit have higher rates of postpartum depression. Parents who are 24 years of age or under, unmarried or less educated also experience higher rates of postpartum depression. (6)

**Myth:** Only women are affected by postpartum depression.

**Fact:** Just like new moms, new dads may also experience extreme sadness and fatigue, and feel overwhelmed by caring for



their new baby. Research shows depression among new dads is increasing, (7) and as many as 25 percent of new dads experience paternal postpartum depression in the two months following the birth of their child. (8)

***“Just like new moms, new dads may also experience extreme sadness and fatigue, and feel overwhelmed by caring for their new baby. Research shows depression among new dads is increasing, and as many as 25 percent of new dads experience paternal postpartum depression in the two months following the birth of their child.”***

Fathers of preterm infants can become emotionally disconnected and reluctant to express their feelings in a neonatal intensive care unit setting. (9) Dads experiencing postpartum depression symptoms should also see a health care provider so they can begin treatment quickly, (10) before depression has a negative impact on parenting behaviors. (11)

**Myth:** Only psychiatrists can recognize postpartum depression.

**Fact:** All health care professionals, including those who work in primary care, pediatrics, labor and delivery, the neonatal intensive care unit, and other specialties, should be screening new parents for postpartum depression.

The patient’s past medical history and family health history should be reviewed. Additionally, factors that increase risk, such as

stressful life events, history of depression, complications during childbirth and strength of the parent’s psychosocial support networks should also be considered. (2)

A positive screen using a tool such as the Edinburgh Postnatal Depression Scale should prompt a referral for further evaluation. Proper diagnosis may include symptom assessment, an in-person interview and testing for other medical conditions. (12)

**Myth:** If a new parent develops postpartum depression, it will happen quickly after the baby’s birth.

**Fact:** Postpartum depression symptoms typically develop within a week or two after the baby is born. But for some new parents, it may not emerge for months, or even up to one year later. (10)

This is especially true for parents of babies admitted to the neonatal intensive care unit. (6) There is so much competing for parents’ attention while their baby is being cared for in the NICU that moms and dads may not show any signs of postpartum depression until after the baby goes home.

**Conclusion:**

Left untreated, postpartum depression can have dire consequences for new moms, dads, and their babies. Yet, many people would not recognize the signs.

The American College of Obstetricians and Gynecologists, the American Academy of Pediatrics and the U.S. Preventive Services Task Force all recommend universal screening for postpartum depression. Following this directive, obstetricians, pediatricians and hospital staff are increasingly adopting this practice, but more can be done to encourage it.

Lawmakers and health care administrators have the opportunity to lessen the devastating effects of postpartum depression by broadening awareness, adopting supportive policies and increas-



ing funding for the screening of new parents, especially those most at risk. An investment in early identification and treatment of postpartum depression has the potential to improve the lives of hundreds of thousands of new parents and their children each year.

#### References:

1. Postpartum Depression. (2019, January 24). Postpartum depression statistics. Retrieved from <https://www.postpartumdepression.org/resources/statistics>
2. National Institute of Mental Health. (n.d.). Postpartum depression facts. Retrieved from <https://www.nimh.nih.gov/health/publications/postpartum-depression-facts/index.shtml>
3. Rope, K. (n.d.). New study reveals disturbing PPD statistics. Retrieved from <https://www.seleni.org/advice-support/2018/3/16/new-study-reveals-disturbing-ppd-statistics>
4. Wolfberg, A. (2019, February 22). Are we massively underestimating how many women have postpartum depression? Center for Health Journalism. Retrieved from <https://www.centerforhealthjournalism.org/2019/02/21/are-we-hugely-underestimating-how-many-women-have-postpartum-depression>
5. U.S. Food and Drug Administration. (2019, March 19). FDA approves first treatment for post-partum depression. [Press release]. Retrieved from <https://www.fda.gov/News-Events/Newsroom/PressAnnouncements/ucm633919.htm>
6. Ko JY, Rockhill KM, Tong VT, Morrow B, Farr SL. Trends in postpartum depressive symptoms — 27 States, 2004, 2008, and 2012. *MMWR Morb Mortal Wkly Rep.* 2017;66:153–158. <https://www.cdc.gov/mmwr/volumes/66/wr/mm6606a1.htm>
7. Garfield CF, Duncan G, Rutsohn J, McDade TW et al. 2014. A longitudinal study of paternal mental health during transition to fatherhood as young adults. *Pediatrics*, 133(5). Retrieved from <https://pediatrics.aappublications.org/content/133/5/836>
8. Kim, P, and JE Swain. 2007. Sad dads: Paternal postpartum depression. *Psychiatry*, 4 (2): 35–47. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2922346/>
9. Hugill K, Letherby G, Reid, Lavendar T. 2013. Experiences of fathers shortly after the birth of their preterm infants. *Journal of Gynecology & Neonatal Nursing*, 42: 655–63.
10. Mayo Clinic. (2018, September 1). Postpartum depression. Retrieved from <https://www.mayoclinic.org/diseases-conditions/postpartum-depression/symptoms-causes/syc-20376617>
11. Davis RN, Davis MM, Freed GL, Clark SJ. 2011. Fathers' depression related to positive and negative parenting behaviors with 1-year-old children. *Pediatrics*, 27 (4): 612–18. <https://doi.org/10.1542/peds.2010-1779>
12. Postpartum Depression. (2019, January 23). Postpartum depression diagnostics. Retrieved from <https://www.postpartumdepression.org/postpartum-depression/diagnosis/>

The authors have no relevant disclosures.

NT

**NEONATOLOGY TODAY** is interested in publishing manuscripts from Neonatologists, Fellows, NNPs and those involved in caring for neonates on case studies, research results, hospital news, meeting announcements, and other pertinent topics.

Please submit your manuscript to: [LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com)



Susan Hepworth  
Director

National Coalition for Infant Health  
1275 Pennsylvania Ave. NW, Suite 1100A  
Washington, DC 20004  
[info@infanthealth.org](mailto:info@infanthealth.org)



Mitchell Goldstein, MD  
Professor of Pediatrics  
Loma Linda University School of Medicine  
Division of Neonatology  
Department of Pediatrics  
[mgoldstein@llu.edu](mailto:mgoldstein@llu.edu)

### National Coalition for Infant Health Values (SANE)

**Safety.** Premature infants are born vulnerable. Products, treatments and related public policies should prioritize these fragile infants' safety.

**Access.** Budget-driven health care policies should not preclude premature infants' access to preventative or necessary therapies.

**Nutrition.** Proper nutrition and full access to health care keep premature infants healthy after discharge from the NICU.

**Equality.** Prematurity and related vulnerabilities disproportionately impact minority and economically disadvantaged families. Restrictions on care and treatment should not worsen inherent disparities.

New subscribers are always welcome!

NEONATOLOGY TODAY

To sign up for free monthly subscription,  
just click on this box to go directly to our  
subscription page

# TOP 10



## RECOMMENDATIONS FOR THE PSYCHOSOCIAL SUPPORT OF NICU PARENTS

Essential evidence-based practices that can transform the health and well being of NICU families and staff

based on the National Perinatal Association's  
Interdisciplinary Recommendations for Psychosocial Support of NICU Parents

### 1 PROMOTE PARTICIPATION

Honor parents' role as primary caregiver. Actively welcome parents to participate during rounds and shift changes. Remove any barriers to 24/7 parental involvement and avoid unnecessary separation of parents from their infants.



### 2 LEAD IN DEVELOPMENTAL CARE

Teach parents how to read their baby's cues. Harness your staff's knowledge, skills, and experience to mentor families in the principles of neuroprotection & developmental care and to promote attachment.



### 3 FACILITATE PEER SUPPORT

Invest in your own NICU Parent Support program with dedicated staff. Involve veteran NICU parents. Partner with established parent-to-parent support organizations in your community to provide continuity of care.



### 4 ADDRESS MENTAL HEALTH

Prioritize mental health by building a team of social workers and psychologists who are available to meet with and support families. Provide appropriate therapeutic interventions. Consult with staff on trauma-informed care - as well as the critical importance of self-care.



### 5 SCREEN EARLY AND OFTEN

Establish trusting and therapeutic relationships with parents by meeting with them within 72 hours of admission. Follow up during the first week with a screening for common maternal & paternal risk factors. Provide anticipatory guidance that can help normalize NICU distress and timely interventions when needed. Re-screen prior to discharge.



### 6 OFFER PALLIATIVE & BEREAVEMENT CARE

Support families and NICU staff as they grieve. Stay current with best practices in palliative care and bereavement support. Build relationships with service providers in your community.

### 7 PLAN FOR THE TRANSITION HOME

Set families up for success by providing comprehensive pre-discharge education and support. Create an expert NICU discharge team that works with parents to find specialists, connect with service providers, schedule follow-up appointments, order necessary medical supplies, and fill Rx.



### 8 FOLLOW UP

Re-connect with families post-discharge. Make follow-up calls. Facilitate in-home visits with community-based service providers, including Early Intervention. Partner with professionals and paraprofessionals who can screen families for emotional distress and provide timely therapeutic interventions and supports.

### 9 SUPPORT NICU CARE GIVERS

Provide comprehensive staff education and support on how to best meet families' psychosocial needs, as well as their own. Acknowledge and address feelings that lead to "burnout."



### 10 HELP US HEAL

Welcome the pastoral care team into your NICU to serve families & staff.

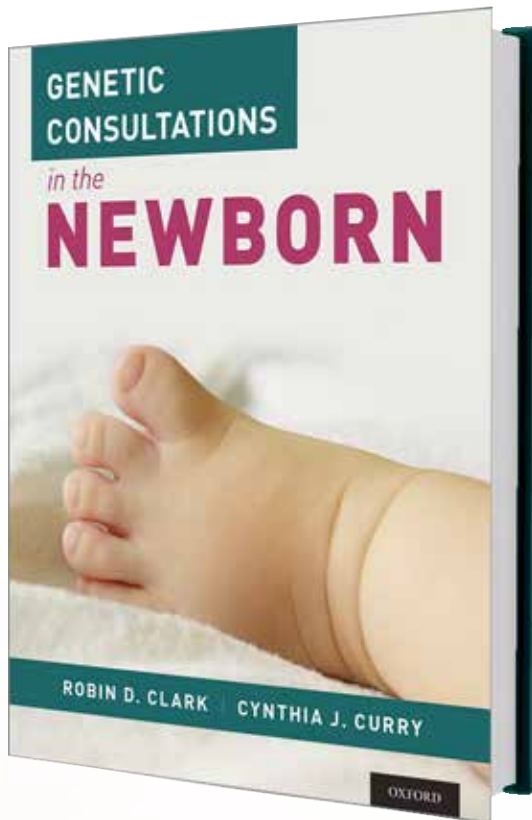
[SUPPORT4NICUPARENTS.ORG](http://SUPPORT4NICUPARENTS.ORG)

*“The definitive work in genetic evaluation of newborns”*  
- Judith G. Hall

## GENETIC CONSULTATIONS

# in the **NEWBORN**

\$99.95  
Hardcover



### **Robin D. Clark | Cynthia J. Curry**

- A streamlined diagnostic manual for neonatologists, clinical geneticists, and pediatricians - any clinician who cares for newborns
- Organized by symptom and system, enriched with more than 250 photography and clinical pearls derived from authors' decades of clinical practice
- Includes “Syndromes You Should Know” appendix, distilling the most frequently encountered syndromes and chromosomal abnormalities in newborns
- OMIM numbers for each condition situate authors' practical guidance in the broader genetics literature, connecting readers to the most up-to-date references

Comprising of more than 60 chapters organized by system and symptom, *Genetic Consultations in the Newborn* facilitates fast, expert navigation from recognition to management in syndromes that manifest during the newborn period. Richly illustrated and packed with pearls of practical wisdom from the authors' decades of practice, it empowers readers to recognize the outward signs and symptoms crucial for an effective diagnosis.

Order now by [clicking here.](#)

OXFORD

# 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

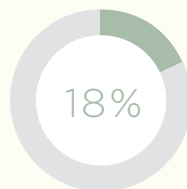
### *Preparedness*

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.

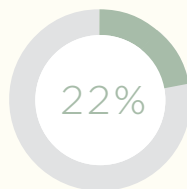
Specialty health care providers reiterated these concerns; 70% agreed that parents of their patients have a low awareness of RSV. Meanwhile, specialty health care providers themselves actively monitor for RSV. They reported that:

#### PARENTS

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

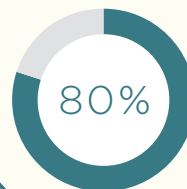


**Only 22% of parents consider themselves “very well prepared” to prevent RSV.**

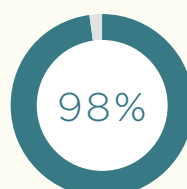


#### SPECIALTY HEALTH CARE PROVIDERS

**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%).



# Medicolegal Forum: Maternal Addiction, A Shakespearean Approach

Gilbert Martin, MD and Jonathan Fanaroff MD, JD

There is no doubt that in today's society, drug addiction has become epidemic and frustrating to all healthcare providers. If a mother uses drugs is there a medical-legal issue when there is an effect on the fetus and newborn? Is the problem of alcohol abuse and its effect on the fetus and newborn similar from the standpoint of legality? We must remember that the fetus or newborn can be exposed transplacentally, through second-hand smoke and when a mother breastfeeds.

***“There is no doubt that in today’s society, drug addiction has become epidemic and frustrating to all healthcare providers. If a mother uses drugs is there a medical-legal issue when there is an effect on the fetus and newborn? Is the problem of alcohol abuse and its effect on the fetus and newborn similar from the standpoint of legality?”***

Consider the most famous soliloquy spoken by Hamlet in Shakespeare “Hamlet Act I, Scene II.”

O, that this too too solid flesh would melt  
Thaw and resolve itself into a dew!  
Or that the Everlasting had not fix'd  
His canon 'gainst self-slaughter! O God! God!  
How weary, stale, flat and unprofitable,  
Seem to me all the uses of this world!  
Fie on't! ah fie! 'tis an unweeded garden,  
That grows to seed; things rank and gross in nature  
Possess it merely. That it should come to this!  
But two months dead: nay, not so much, not two:  
So excellent a king; that was, to this,  
Hyperion to a satyr; so loving to my mother  
That he might not beteem the winds of heaven  
Visit her face too roughly. Heaven and earth!  
Must I remember? why, she would hang on him,  
As if increase of appetite had grown  
By what it fed on: and yet, within a month—  
Let me not think on't—Frailty, thy name is woman!— (1)

## AN UPDATED VERSION

### Hamlet II: The Cocaine Addicted Infant

Hamlet II is now eight weeks old. Unknown to his father, Hamlet I, his mother, Ophelia, used cocaine during her pregnancy and continues her habit even though she is breastfeeding. The infant had irritability and jitteriness at birth and now shows signs of poor feeding and neurobehavioral abnormalities. Hamlet I has just received the report of a positive cocaine immunoassay screen on Ophelia.

*Hamlet hangs up the phone. He is alone in their two-bedroom condominium. The hazy sunshine filters through the vertical blinds. He turns, looks outside, squinting.*

Hamlet:

O that this too solid flesh would melt,  
Thaw and resolve itself into a dew!  
Or that the Everlasting had not fix'd  
His canon 'gainst self-slaughter.  
O God! O God!  
How weary, stale, flat, and unprofitable  
Seem to me all the uses of this world.  
Fie on't! ah, fie! 'tis an unweeded garden  
Filled with cannabis and coca leaves.  
These grow to seed; things rank and gross in nature  
Possess it merely. That it should come to this!  
But two months born! Small in size, irritable.  
Lack of bonding thought to be colic.  
...Heaven and earth!  
Must I remember? He would hang on her  
As if increase of appetite had grown  
By what it fed on; and yet, through her milk,  
Poor growth, fits of crying—  
Let me not think on't.



99nicu



Parens patriae (the state as a parent)  
 Jurisdiction, constitutional protection...  
 Child abuse, Is there a legality  
 For protection of the fetus from socially unacceptable  
 And dangerous maternal abuse?  
 .....Frailty, thy name is addiction!

References:

1. 1. *O That This Too Solid Flesh Would Melt: Hamlet Soliloquy ...*, <https://www.nosweatshakespeare.com/quotes/that-this-too-solid-flesh-would-melt/> (accessed May 04, 2019).

The authors have no conflicts of interests to disclose.

**NT**

Corresponding Author:



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



Jonathan Fanaroff, MD, JD, FAAP  
 Professor of Pediatrics  
 Case Western Reserve University School of Medicine  
 Director, Rainbow Center for Pediatric Ethics  
 Rainbow Babies & Children's Hospital  
 Cleveland, Ohio  
 Jonathan Fanaroff <[jmf20@case.edu](mailto:jmf20@case.edu)>

Readers can also follow  
**NEONATOLOGY TODAY**  
 via our Twitter Feed  
 @NEOTODAY

**Survey Says: RSV**

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

- Hospitalization
- Lifelong health complications
- Death for infants and young children

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

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

**But Parents are Unprepared.**

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

**RSV EDUCATION & AWARENESS CAN HELP**

After parents learned more about RSV, they were:

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

**NCJIH** National Coalition for Infant Health  
 Promoting Better and Proven Infant Health Through Age Five  
 Learn More about RSV at [www.infanthealth.org/RSV](http://www.infanthealth.org/RSV)

# Monthly Clinical Pearl: Prenatal Consults by Neonatologists: A Challenging Part of What We Do

Joseph R. Hageman, MD.

First, I would like to provide a bit of historical perspective for your consideration. It is 1983 and, as neonatologists, we were having more conversations with our maternal-fetal medicine colleagues about extremely premature fetuses at around 24 weeks gestation as well as fetuses with prenatally diagnosed syndromes, chromosomal abnormalities, and congenital anomalies. What seemed to be novel was, with improvements in prenatal recognition and management, and the availability of surfactants and newer modes of assisted ventilation, there seemed to be more we could do to support and potentially improve the overall survival and quality of life of these fetuses before and after they were delivered. So we thought it would be a good idea to organize a multispecialty group or committee to evaluate these maternal-infant dyads and have thoughtful conversations with the parents. We organized a group and began to involve all of the disciplines that were involved in the evaluation of this group of patients. A lot of progress has been made since that time.

***“What seemed to be novel was, with improvements in prenatal recognition and management, and the availability of surfactants and newer modes of assisted ventilation, there seemed to be more we could do to support and potentially improve the overall survival and quality of life of these fetuses before and after they were delivered.”***

We thought it would be interesting to provide you a summary of the clinical issues for which we are being consulted for prenatally now in 2019. Here is an example of a list of prenatal consults categorized by major clinical issue or anomaly\*:

Cardiac disease:	10
Central Nervous System	11
GI	8
Genetic/Dysmorphology	6
Skeletal	4
Renal	3
Cleft Lip/Palate	2
Respiratory	1

In addition, the obstetricians and maternal-fetal medicine specialists ask us to see pregnant women who present in preterm labor, premature rupture of membranes, preeclampsia and those with abnormal placentation, fetuses with intrauterine growth restriction, and maternal substance use disorders.

A lot of what I learned about each clinical condition was initiated

when I was presented with a fetus or newborn who I was going to be caring for in the delivery room and in the neonatal intensive care unit (NICU). As a medical student when I had the opportunity to care for newborns with surgical problems, I learned from my supervisory residents and attending surgeons and the neonatologists. I usually did a bedside clinical conference as well, which included the development of the fetus and the anomaly (e.g., gastroschisis), the presentation in the delivery room with appropriate stabilization, then diagnosis with confirmation if the anomaly was internal (e.g., congenital heart disease), and management. I really enjoyed this care, which included discussions with the parents. This strategy continued during my residency, fellowship and, as an attending neonatologist.

What is interesting is that I think this basic strategy still applies.

1. Gather the clinical information from the maternal-fetal medicine specialist and discuss a strategy of potential prenatal management, intrapartum and delivery room management. For many of the prenatally diagnosed clinical problems on the list above, preparation and discussion with the parents are key portions of the management.
2. Once the clinical plan has been worked out with all of the specialists involved with the evaluation of the fetus' and the mother's status, this is reviewed with the parents to confirm they agree with the plan.
3. Make sure that everyone who will be in the delivery room knows and understands the plan. For example, if the fetus has micrognathia and will potentially be difficult to intubate with orally or nasally, or may need a tracheostomy, it will be important to have a pediatric otolaryngologist in the delivery room to evaluate the infant. Make sure the delivery room or



- resuscitation area in the operating room is prepared with the necessary equipment.
4. The anticipation of potential problems and their solutions once the baby is delivered is very important. As much as you prepare and anticipate, only so much can be determined prenatally.
  5. Make sure there is an ongoing conversation with the mother-father before, during and after the delivery of the infant.
  6. Preparation for whatever will need to be done once the infant is transported from the delivery room to the NICU is of the utmost importance.
  7. Once the baby is delivered and stabilized, it is important to show her/him to the mother and father and explain what has been done. Since close contact such as skin-to-skin contact may not be possible, the chance for the Mother to touch the baby or hold their hand is important.
  8. The clinical management once the infant is admitted to the NICU can be anticipated so that, if this is a surgical anomaly, the surgeons will know ahead of time and be present for immediate evaluation.
  9. If further diagnostic studies need to be performed, the neonatology team can alert the radiologist ahead of time so things can be organized for the scan, ultrasound, contrast study, MRI, etc. can be performed in a timely fashion.
  10. The plan for postoperative management is in place with the active management team alerted in advance. If they need to be in the delivery room, that can be arranged.
  11. Ongoing communication is of the utmost importance.

This summary is what I have learned beginning about 45 years ago and is based on a fair amount of clinical experiences with about one or more of every one of the clinical problems summarized in the list above.

Once we are aware of a fetus with a clinical issue and our involvement is required, preparation should begin as soon as possible. At present, there are databases to help give us an idea

**Readers can also follow**  
**NEONATOLOGY TODAY**  
**via our Twitter Feed**  
**@NEOTODAY**

of the short and long term outcomes of fetuses and newborns we will be involved with caring for and it is important to have this information before having a series of discussions with the parents and colleagues. What is also clear from my own clinical experience is that each fetus, newborn and family is unique and I think it is best to also approach each clinical situation in this way.

**References:**

1. \*Data provided Dr. Kelly Nelson Kelly, Attending Neonatologist, University of Chicago.

*The author has identified no conflicts of interest.*

**NT**

**Corresponding Author**



*Joseph R. Hageman, MD  
 Senior Clinician Educator  
 Pritzker School of Medicine  
 University of Chicago  
 MC6060  
 5841 S. Maryland Ave.  
 Chicago, IL 60637  
 Phone: 773-702-7794  
 Fax: 773-732-0764  
[jhageman@peds.bsd.uchicago.edu](mailto:jhageman@peds.bsd.uchicago.edu)*

**Clinical Pearls are published monthly.**

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)

The first and only baby probiotic **clinically proven to reduce pathogens that may disrupt proper immune development.** Visit [Evivo.com](http://Evivo.com)



Did you know that  
**PMAD**  
related suicides  
account for

**20%**

of Postpartum  
Maternal Deaths?

Join  **NPA**

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

**NCFIH** National Coalition  
for Infant Health

Protecting Access for Premature Infants through Age Two

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



New subscribers are always welcome!

**NEONATOLOGY TODAY**

To sign up for a free monthly subscription, just click on this box to go directly to our subscription page

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

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

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

**Support the  
Open Letter**



**Breastfeeding  
Innovations  
Team**

**NEONATOLOGY TODAY** is interested in publishing manuscripts from Neonatologists, Fellows, NNPs and those involved in caring for neonates on case studies, research results, hospital news, meeting announcements, and other pertinent topics.

Please submit your manuscript to: [LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com)

# Save the Date



CELEBRATING 10 YEARS

## The Future is Now!

JW Marriott Austin • Austin, TX  
August 11 - 13, 2019

### Global Objectives:

- Discuss treatment and strategies to improve the outcome of the extremely premature infant
- Understand the effects of sedation, narcotics and anesthesia on the developmental of the neonate
- Discuss a model of NEC and potential treatment
- Identify the role of bedside echocardiography and point-of-care ultrasound
- Discuss ways to optimize nutrition in the extremely premature infant

[innovationsconference.com](http://innovationsconference.com)

# Letters to the Editor

Letter to the Editor

Tuesday, May 14th, 2019

From: Morarji Peesay, Associate Professor. Neonatal-Perinatal Medicine. MedStar Georgetown University Hospital, Washington DC.

To: LomaLindaPublishingCompany@gmail.com

Subject: Global Fertility Rate Plummeting!

Dear Dr. Goldstein,

I wanted to bring this information to the attention of all Neonatologists. It seems around the world, in developed countries, people are having fewer babies. From North America to Europe to China to Japan, there has been a consistent decline in birth rates. In fact, over the past 50 years, the global fertility rate has halved. WHO data shows that we need to have an average of about 2.1 children per woman to replace the previous generation. Many of us think that overpopulation going to be a problem in ~ 100 years – but it looks like underpopulation. There seems to be a domino effect when this number dips below 2.1. As millennials get older, and live longer, with a shrinking younger population, lead to rising labor shortages in the world's biggest economies - United States, China, Japan, Germany. Fewer working people less tax revenue, less money, and resources to go to safety net programs such as pensions and health care.

Wajahat Ali, TED2019 says in 1980, China decided to implement the one-child policy, to combat overpopulation. Even after ending its one-child policy in 2015, China's birth rates seem to have largely declined. If trends continue, China's population is going to peak in 2029, before entering "unstoppable decline." China's government is so is encouraging couples to have children for the country. As Wajahat Ali puts it, Japan is now producing more adult diapers than infant ones. The number of kids in Japan has fallen for the 37th straight year. The birthrate fell for nearly every group of women of reproductive age in the U.S. in 2017, reflecting a sharp drop that saw the fewest newborns since 1987, according to a new report by the Centers for Disease Control and Prevention. There were 3,853,472 births in the U.S. in 2017 — "down 2 percent from 2016 and the lowest number in 30 years," --- the CDC said. The general fertility rate sank to a record low of 60.2 births per 1,000 women between the ages of 15 and 44 — a 3 percent drop from 2016.



"The rate has generally been below replacement since 1971," according to the report from CDC's National Center for Health Statistics. The CDC calculates a "total fertility rate" by estimating how many babies a hypothetical group of 1,000 women would likely have over their lifetime. That measure now stands at 1,764.5 births per 1,000 women — a 3 percent drop from 2016. Broken out by age, the 2017 birthrate fell for teenagers by 7 percent, to 18.8 births per 1,000, a record low. That figure is for women from 15 to 19 years old. For that same group, the birthrate has fallen by 55 percent since 2007 and by 70 percent since the most recent peak in 1991!

So where do we go from here?

The case for having kids (Wajahat Ali | TED2019)

[https://www.ted.com/talks/wajahat\\_ali\\_the\\_case\\_for\\_having\\_kids](https://www.ted.com/talks/wajahat_ali_the_case_for_having_kids)

Dr. Morarji Peesay, MD FAAP  
Associate Professor  
Division of Neonatal Perinatal Medicine,  
Suite M3400,  
Georgetown University Hospital,  
3800 Reservoir Rd, NW.  
Washington DC 20007.  
Phone 2404741318.  
Fax 202 444 4747  
Email : [Morarji.R.Peesay@gunet.georgetown.edu](mailto:Morarji.R.Peesay@gunet.georgetown.edu)

Dear Dr. Peesay,

These population changes may be tied to a number of factors as you note in your letter to the editor. Wajahat Ali's point regarding the production of adult diapers in Japan is mind numbing. We appear to be rapidly approaching a time where the birth rate will be vastly less than that which is required for population replacement in certain areas of the world.

The US numbers provide further corroboration; yet, we still face significant infant mortality in Africa and India as well as other areas of the third world where fertility rates are higher. While we may not be able to control the dynamics in Europe, North America, China, and Japan, we must focus continually on methods of im-

**Readers can also follow**

**NEONATOLOGY TODAY**

**via our Twitter Feed**

**@NEOTODAY**

Sign up for free membership at 99nicu, the Internet community for professionals in neonatal medicine. Discussion Forums, Image Library, Virtual NICU, and more..."

[www.99nicu.org](http://www.99nicu.org)

proving access to care for those who are most at risk and face the most disparity worldwide.

Sincerely,



Mitchell Goldstein, MD  
Editor in Chief

# NT

NEONATOLOGY TODAY

Loma Linda Publishing Company  
A Delaware "not for profit" 501(c) 3 Corporation.  
c/o Mitchell Goldstein, MD  
11175 Campus Street, Suite #11121  
Loma Linda, CA 92354  
Tel: +1 (302) 313-9984  
[LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com)  
© 2006-2018 by Neonatology Today ISSN: 1932-7137 (online)  
Published monthly.  
All rights reserved.  
[www.NeonatologyToday.net](http://www.NeonatologyToday.net)  
Twitter: [www.Twitter.com/NeoToday](http://www.Twitter.com/NeoToday)

NT



Mitchell Goldstein, MD  
Professor of Pediatrics  
Loma Linda University School of Medicine  
Division of Neonatology  
Department of Pediatrics  
[mgoldstein@llu.edu](mailto:mgoldstein@llu.edu)

Neonatology Today welcomes your editorial commentary on previously published manuscripts, news items, and other academic material relevant to the fields of Neonatology and Perinatology.

Please address your response in the form of a letter. For further formatting questions and submissions, please contact Mitchell Goldstein, MD at [LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com).

NT

### Erratum (Neonatology Today April, 2019)

*Neonatology Today has not identified an erratum affecting the April, 2019 edition. Corrections can be sent directly to [LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com). The most recent edition of Neonatology Today including any previously identified erratum may be downloaded from [www.neonatologytoday.net](http://www.neonatologytoday.net).*

NT



**NEONATOLOGY TODAY** is interested in publishing manuscripts from Neonatologists, Fellows, NNPs and those involved in caring for neonates on case studies, research results, hospital news, meeting announcements, and other pertinent topics.

Please submit your manuscript to: [LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com)

## OPIOIDS and NAS

When reporting on mothers, babies, and substance use

# LANGUAGE MATTERS



### I am not an addict.

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



### I was exposed to opioids.

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



### NAS is a temporary and treatable condition.

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



### My mother may have a SUD.

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

### My potential is limitless.

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



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



## Las nuevas mamás necesitan acceso a la detección y tratamiento para LA DEPRESIÓN POSPARTO



1 DE CADA 7 MADRES AFRONTA LA DEPRESIÓN POSPARTO, experimentando



Sin embargo, sólo el 15% recibe tratamiento!

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



### PARA AYUDAR A LAS MADRES A ENFRENTAR LA DEPRESIÓN POSPARTO



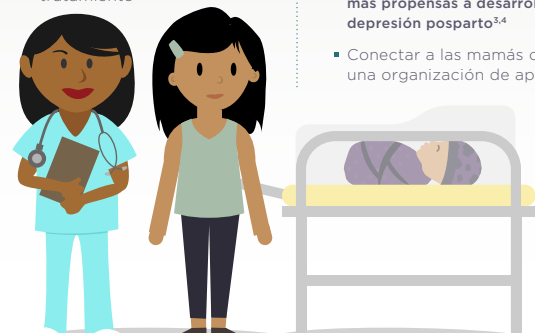
**LOS ENCARGADOS DE FORMULAR POLÍTICAS PUEDEN:**

- Financiar los esfuerzos de despistaje y diagnóstico
- Proteger el acceso al tratamiento



**LOS HOSPITALES PUEDEN:**

- Capacitar a los profesionales de la salud para proporcionar apoyo psicosocial a las familias... **Especialmente aquellas con bebés prematuros, que son 40% más propensas a desarrollar depresión posparto<sup>3,4</sup>**
- Conectar a las mamás con una organización de apoyo



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

<sup>1</sup> American Psychological Association. Accessed on <http://www.apa.org/women/resources/reports/postpartum-depression.aspx>

<sup>2</sup> National Institute of Mental Health. Accessed on <https://www.nimh.nih.gov/health/publications/postpartum-depression-facts/index.shtml>

<sup>3</sup> Journal of Perinatology (2015) 35, 529–536. doi:10.1097/JP.0000000000000147

<sup>4</sup> Prevalence and risk factors for postpartum depression among women with problem and low-birth-weight infants: a systematic review. Vigod SN, Villages L, Olesen CL, Ross LE BJOG. 2010 Apr; 117(5):540-50.





International  
Neonatology  
Association



## Neonatology from a Global Perspective

12- 14 July, 2019 • Tijuana, Mexico

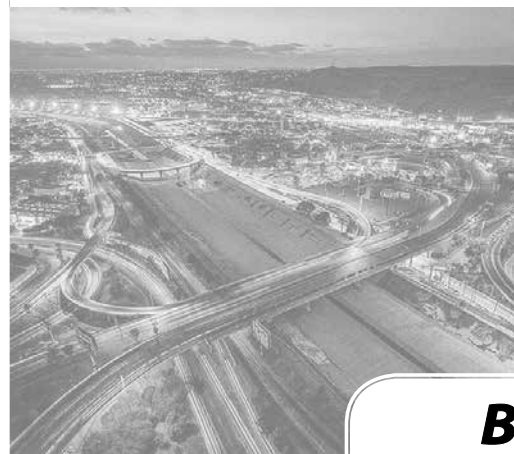
The 5<sup>th</sup> International Neonatology Association Conference (INAC) will be held in the beautiful, city of Tijuana, Mexico on July 12-16, 2019.

For the 2019 edition, a wide spectrum of topics will be covered by highly esteemed international speakers. Participants will have the opportunity to enjoy both expert keynote lectures on main topics as well as more focused discussions on specific aspects of neonatal care during concurrent sessions. Emphasis will lie on the neonatal brain and various facets of neonatal neurology.

**Abstract  
Submission  
now open**

### Abstract Topics Include:

- ★ Birth Defects ★ Neonatal Cardiology ★ Neonatal Jaundice
- ★ Resuscitation Best Practices ★ Respiratory Support: New Approaches
- ★ Neurology of the Newborn ★ Neonatal Radiology



***Be a Part of INAC 2019!!***



## Upcoming Medical Meetings

Perinatal Advisory Council,  
Consulting, Advocacy, and  
Consultation (PAC-LAC)  
June 13, 2019  
Los Angeles, CA

<https://paclac.org/paclacconference/>

Next-Level Perinatal/Neonatal  
Comfort Care Training  
June 19–21, 2019 | 9am – 5pm  
Columbia University | New York City  
[http://mailman.columbia.edu/  
comfort-care](http://mailman.columbia.edu/comfort-care)

The 5<sup>th</sup> annual 2019 iCAN Research &  
Advocacy Summit  
June 23-28, 2019  
Kansas City, Missouri  
[https://www.icanresearch.org/2019-  
summit](https://www.icanresearch.org/2019-summit)

5<sup>th</sup> Conference of the International  
Neonatology Association  
July 12-14, 2019  
Tijuana, Mexico  
[http://worldneonatology.com/2019/  
welcome-letter-2](http://worldneonatology.com/2019/welcome-letter-2)

Innovations in Neonatal Care:  
Celebrating 10 Years. The Future is  
Now!  
August 11-13, 2019  
Austin, Tx  
<http://innovationsconference.com>

The AAP Experience  
National Convention and Exhibition  
New Orleans, LA  
October 25-29, 2019.  
<http://aapexperience.org/>

8<sup>th</sup> Annual Scientific Sessions of the  
Cardiac  
Neurodevelopmental Outcome  
Collaborative  
October 11-13, 2019;  
Hospital for Sick Children, Toronto,  
Ontario, Canada  
[www.cardiacneuro.org/upcoming/](http://www.cardiacneuro.org/upcoming/)

NANN's 35<sup>th</sup> Annual Conference  
Savannah Convention Center  
Savannah, GA  
October 9-12, 2019  
[http://nann.org/education/annual-  
meeting](http://nann.org/education/annual-meeting)

International Lactoferrin Conference  
Lima, Peru  
November 4-8, 2019  
[http://www.  
lactoferrinconference2019.com/  
index.html](http://www.lactoferrinconference2019.com/index.html)  
Chair: Dr. Theresa Ochoa,  
[Theresa.J.Ochoa@uth.tmc.edu](mailto:Theresa.J.Ochoa@uth.tmc.edu)

Hot Topics in Neonatology®  
National Harbor, MD  
December 8-11, 2019  
[http://www.hottopicinneonatology.  
org/](http://www.hottopicinneonatology.org/)

NEO  
The Conference for Neonatology  
Coming February 2020  
San Diego, CA  
<http://www.neoconference.com/>

The 37<sup>th</sup> Annual Advances in  
Therapeutics and Technologies  
Conference  
March 24-28, 2020  
Snowbird, UT  
[http://paclac.org/advances-in-care-  
conference/](http://paclac.org/advances-in-care-conference/)

*For Additional Meeting  
Information, visit  
[NeonatologyToday.net](http://NeonatologyToday.net) and click  
on the events tab.*

## NEONATOLOGY TODAY

© 2019 by Neonatology Today  
ISSN: 1932-7137 (Online). ISSN: 1932-  
7129 (Print). Published monthly. All rights  
reserved.

### Publication

Mitchell Goldstein, MD  
Loma Linda Publishing Company  
11175 Campus Street  
Suite #11121  
Loma Linda, CA 92354  
[www.NeonatologyToday.net](http://www.NeonatologyToday.net)  
Tel: +1 (302) 313-9984  
[LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com)

### Editorial and Subscription

Mitchell Goldstein, MD  
Neonatology Today  
11175 Campus Street  
Suite #11121  
Loma Linda, CA 92354

### Sponsorships and Recruitment Advertising

For information on sponsorships or  
recruitment advertising call Andrea Schwartz  
Goodman at: +1 (302) 313-9984 or send  
an email to [andrea.schwartzgoodman@  
neonatologytoday.net](mailto:andrea.schwartzgoodman@neonatologytoday.net)

### FREE Subscription

Neonatology Today is available free to  
qualified individuals worldwide interested in  
neonatology and perinatology. International  
editions are available in electronic PDF file  
only; North American edition available in  
print once a year in February. To receive  
your free qualified subscription please click  
[here](#).

### Submit a Manuscript:

On case studies, clinical and bench  
research, hospital news, meeting  
announcements, book reviews, and "state of  
the art" meta analysis.  
Please submit your manuscript to:  
[LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com)  
We will respond promptly  
Twitter Account: @NeoToday



The only worldwide monthly publication  
exclusively serving Pediatric and Adult  
Cardiologists that focus on Congenital/  
Structural Heart Disease (CHD), and  
Cardiothoracic Surgeons.



**Subscribe Electronically**  
Free on the Home Page

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



## Academic Neonatologist Opportunity in Southern California

Loma Linda University Faculty Medical Group, Department of Pediatrics, Division of Neonatology, is seeking board certified or board eligible Neonatologists to join their team.

The Neonatal Intensive Care Unit (NICU) at Loma Linda University Children's Hospital is committed to providing the highest quality of family-centered medical care with our skilled, multi-disciplinary neonatal team. Our unit has 84 licensed beds for the most critically ill babies. As one of the few level 4 tertiary centers in Southern California, we are equipped to provide the highest level of care for newborns with the most complex disorders. Our facility has the largest Level IV NICU in California, serving approximately 25 percent of the state.

We have subspecialists in all medical and surgical areas that are available at all times and are supported by hospital staff with technical, laboratory, and service expertise. Pediatric neurologists work together with us in our NeuroNICU to diagnose, treat and monitor babies with neurologic injury or illness and we focus on providing neuroprotective, developmentally appropriate care for all babies in the NICU. Very specialized care is given in our Small Baby Unit to babies born at less than 30 weeks gestation. Babies at risk for developmental delay are followed up to 3 years in our High-Risk Infant Follow-up Clinic. Genetics specialists are available for evaluation and consultation.

Our Children's Hospital is designated as a Baby Friendly Hospital that supports breastmilk feeding for both term and preterm babies. Neonatal Social Workers and Child Life Specialists are important members of our team. It is our goal to support babies and families in culturally sensitive ways as our patients come from many different ethnic and religious backgrounds.

Loma Linda is located in the center of Southern California. A sunny climate augments the cultural benefits of Los Angeles and Palm Springs and the year-round recreational opportunities of nearby mountains, deserts and beaches.

This opportunity is not eligible for a J1 Waiver.



LOMA LINDA  
UNIVERSITY

Faculty Medical  
Group

For more information please contact:

Elba Fayard, MD  
Division Chief of Pediatric Neonatology  
efayard@llu.edu

Kelly Swensen  
Physician Recruitment Coordinator  
kswensen@llu.edu

# NEONATOLOGY TODAY

News and Information for BC/BE Neonatologists and Perinatologists



**We Can Help  
You Recruit  
from 1,045  
NICUs in the  
USA & Canada**

## **Your Recruitment Advertising Includes:**

- Full color Recruitment Ad in the issue(s)
- Your recruitment listing in the e-mail blast for the issue(s) with a hot link
- 3-Step Special Recruitment Opportunity Website Section on three (3) areas of the website
- *We can create your recruitment ad at no extra charge!*

**For more information, contact:**

**Andrea Schwartz Goodman**

+1 (302) 313-9984 or

[andrea.schwartzgoodman@neonatologytoday.net](mailto:andrea.schwartzgoodman@neonatologytoday.net)

# NEONATOLOGY TODAY

Peer Reviewed Research, News and Information in Neonatal and Perinatal Medicine  
Loma Linda Publishing Company | c/o Mitchell Goldstein, MD | 11175 Campus St, Ste. 11121 | Loma Linda, CA 92354 |  
[LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com)

© 2019 Neonatology Today | ISSN: 1932-7137 (digital). Published monthly. All rights reserved.

## Editorial Board



Mitchell Goldstein, MD - Editor-in-Chief  
[LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com)  
[MGoldstein@llu.edu](mailto:MGoldstein@llu.edu)  
Professor of Pediatrics  
Loma Linda University School of Medicine  
Division of Neonatology, Department of Pediatrics  
Loma Linda University Children's Hospital



T. Allen Merritt, MD - Senior Associate Editor for  
Contributions & Reviews  
[AllenMerritt.md@gmail.com](mailto:AllenMerritt.md@gmail.com)  
Professor of Pediatrics  
Loma Linda University School of Medicine  
Division of Neonatology, Department of Pediatrics  
Loma Linda University Children's Hospital



Larry Tinsley, MD - Senior Managing Editor  
[LTinsley@llu.edu](mailto:LTinsley@llu.edu)  
Associate Professor of Pediatrics  
Division of Neonatology-Perinatal Medicine  
Loma Linda University Children's Hospital



Elba Fayard, MD - Interim Fellowship Editor  
[Efayard@llu.edu](mailto:Efayard@llu.edu)  
Professor of Pediatrics  
Division Chair  
Division of Neonatology-Perinatal Medicine  
Loma Linda University Children's Hospital



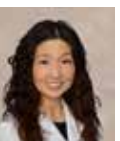
Munaf Kadri, MD - International Editor  
[MKadri@llu.edu](mailto:MKadri@llu.edu)  
Executive Board  
UMMA Clinic  
Los Angeles, CA  
Assistant Professor Loma Linda  
Loma Linda University Children's Hospital



Michael Narvey, MD - Canada Editor  
[MNarvey@exchange.hsc.mb.ca](mailto:MNarvey@exchange.hsc.mb.ca)  
Section Head of Neonatology  
Children's Hospital Research Institute of Manitoba



Joseph R. Hageman, MD - Clinical Pearls Editor  
Senior Clinician Educator  
Pritzker School of Medicine  
University of Chicago  
[jhageman@peds.bsd.uchicago.edu](mailto:jhageman@peds.bsd.uchicago.edu)



Clara Song, MD - Social Media Editor  
Assistant Professor of Pediatrics, Children's Hospital at  
OU Medical Center  
University of Oklahoma Health Sciences Center  
[clara-song@ouhsc.edu](mailto:clara-song@ouhsc.edu)



Thomas A Clarke, MD - Western Europe Editor  
[tclarke347@gmail.com](mailto:tclarke347@gmail.com)  
Emeritus Consultant in Neonatology  
The Rotunda Hospital,  
Dublin, Ireland



Jan Mazela, MD - Central Europe Editor  
[janco@pol-med.com.pl](mailto:janco@pol-med.com.pl)  
Associate Professor  
Poznan University of Medical Sciences  
Poznan, Greater Poland District, Poland



Stefan Johansson, MD PhD - Scandinavian Editor  
[stefan.johansson@99nicu.org](mailto:stefan.johansson@99nicu.org)  
Consultant Neonatologist, Sachs' Childrens Hospital  
Associate Professor, Karolinska Institutet  
Stockholm, Sweden



Francesco Cardona, MD - European Editor at Large  
[francesco@99nicu.org](mailto:francesco@99nicu.org)  
Consultant, Medical University of Vienna  
Department of Paediatrics and Adolescent Medicine  
Vienna, Austria



Andrea Schwartz Goodman, MSW, MPH  
Senior Editorial Project Director  
[Andrea.SchwartzGoodman@NeonatologyToday.net](mailto:Andrea.SchwartzGoodman@NeonatologyToday.net)  
Washington, D.C.



Herbert Vasquez, MD - Arts Editor  
[VasquezH1@gmail.com](mailto:VasquezH1@gmail.com)  
Associate Neonatologist  
Citrus Valley Medical Center, Queen of the Valley  
Campus, West Covina, CA



Giang Truong, MD - QI/QA Editor  
[GTruong@llu.edu](mailto:GTruong@llu.edu)  
Associate Professor of Pediatrics  
Division of Neonatology-Perinatal Medicine  
Loma Linda University Children's Hospital

Maha Amr, MD, Loma Linda University Children's Hospital  
Dilip R. Bhatt, MD  
Barry D. Chandler, MD  
Anthony C. Chang, MD - Children's Hospital of Orange County  
K.K. Diwakar, MD - Malankara Orthodox Syrian Church Medical  
College  
Willa H. Drummond, MD, MS (Informatics)  
Philippe S. Friedlich, MD - Children's Hospital Los Angeles  
Kimberly Hillyer, NNP - Loma Linda University Children's Hospital  
Andrew Hopper, MD, Loma Linda University Children's Hospital  
Lucky Jain, MD - Emory School of Medicine  
Prakash Kabbur, MBBS, DCH (UK), MRCPCH (UK) - Kapiolani  
Medical Center of Women & Children

Gail Levine, MD - Loma Linda University Children's Hospital  
 Lily Martorell, MD - Loma Linda University Children's Hospital  
 Patrick McNamara, MD - Sickkids, Toronto, ON  
 Rita Patel, NNP - Loma Linda University Children's Hospital  
 John W. Moore, MD - Rady Children's Hospital  
 Raylene Phillips, MD, Loma Linda University Children's Hospital  
 Michael A. Posencheg, MD - Children's Hospital of Philadelphia  
 DeWayne Pursley, MD, MPH - Boston Children's Hospital  
 Luis Rivera, MD - Loma Linda University Children's Hospital  
 P. Syamasundar Rao, MD - UT-Houston Medical School  
 Joseph Schulman, MD, MS - California Department of Health Care Services  
 Steven B. Spedale, MD, FAAP - Woman's Hospital  
 Alan R. Spitzer, MD  
 Cherry Uy, MD, FAAP - University of California, Irvine  
 Dharmapuri Vidysagar, MD - University of Illinois Chicago  
 Farha Vora, MD, Loma Linda University Children's Hospital  
 Leonard E. Weisman, MD - Texas Children's Hospital  
 Stephen Welty, MD - Seattle Children's Hospital  
 Robert White, MD - Memorial Hospital  
 T.F. Yeh, MD - John H. Stroger Jr. Hospital of Cook County and Taipei Medical University

### 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.

The topic is still "birds" for this month. Our senior managing editor Larry Tinsley, MD shares a photograph of a very nonchalant seagull. The birds have taken over for now.



Herbert Vasquez, MD

Associate Neonatologist  
 Queen of the Valley Campus  
 Citrus Valley Medical Center  
 West Covina, CA  
[VasquezH1@gmail.com](mailto:VasquezH1@gmail.com)

NT

### Manuscript Submission: Instructions to Authors

1. Manuscripts are solicited by members of the Editorial Board or may be submitted by readers or other interested parties. Neonatology Today welcomes the submission of all academic manuscripts including randomized control trials, case reports, guidelines, best practice analysis, QI/QA, conference abstracts, and other important works. All content is subject to peer review.

2. All material should be emailed to: [LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com) in a Microsoft Word, Open Office, or XML format for the textual material and separate files (tif, eps, jpg, gif, ai, psd, or pdf) for each figure. Preferred formats are ai, psd, or pdf. tif and jpg images should have sufficient resolution so as not to have visible pixilation for the intended dimension. In general, if acceptable for publication, submissions will be published within 3 months.

3. There is no charge for submission, publication (regardless of number of graphics and charts), use of color, or length. Published content will be freely available after publication (i.e., open access). There is no charge for your manuscript to be published under open access

4. The title page should contain a brief title and full names of all authors, their professional degrees, their institutional affiliations, and any conflict of interest relevant to the manuscript. The principal author should be identified as the first author. Contact information for the principal author including phone number, fax number, e-mail address, and mailing address should be included.

5. A brief biographical sketch (very short paragraph) of the principal author including current position and academic titles as well as fellowship status in professional societies should be included. A picture of the principal (corresponding) author and supporting authors should be submitted if available.

6. An abstract may be submitted.

7. The main text of the article should be written in formal style using correct English. The length may be up to 5,000 words. Abbreviations which are commonplace in neonatology or in the lay literature may be used.

8. References should be included in standard "Vancouver" format. 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.

10. Only manuscripts that have not been published previously will be considered for publication except under special circumstances. Prior publication must be disclosed on submission. Published articles become the property of the Neonatology Today and may not be published, copied or reproduced elsewhere without permission from Neonatology Today.

11. NT recommends reading Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals from ICMJE prior to submission if there is any question regarding the appropriateness of a manuscript. NT follows Principles of Transparency and Best Practice in Scholarly Publishing (a joint statement by COPE, DOAJ, WAME, and OASPA). Published articles become the property of the Neonatology Today and may not be published, copied or reproduced elsewhere without permission from Neonatology Today.

NT

**NEONATOLOGY TODAY** is interested in publishing manuscripts from Neonatologists, Fellows, NNPs and those involved in caring for neonates on case studies, research results, hospital news, meeting announcements, and other pertinent topics.

Please submit your manuscript to: [LomaLindaPublishingCompany@gmail.com](mailto:LomaLindaPublishingCompany@gmail.com)

