NEONATOLOGY TODAY

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

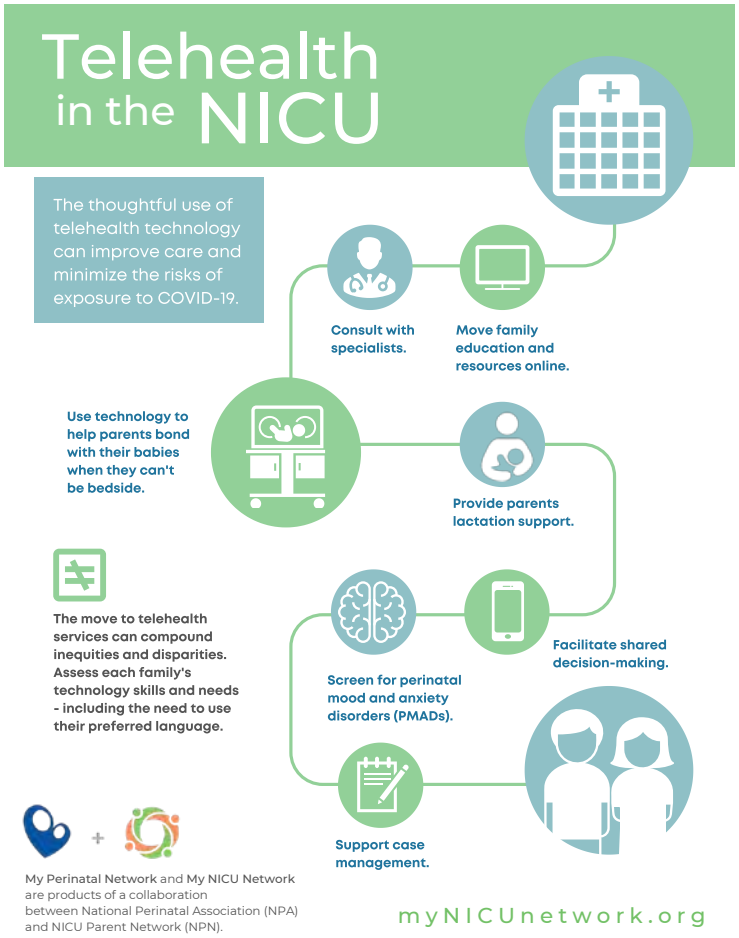
NT

Volume 21 / Issue 1 January 2026

ISSN: 1932-7137 (Online), 1932-7129 (Print)
All editions of the Journal and associated manuscripts are available on-line:
www.NeonatologyToday.net
www.Twitter.com/NeoToday

NT

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



Readers can also follow

NEONATOLOGY TODAY

via our Twitter Feed

@NEOTODAY

Pictured: Baby Kole with his Dad

Save the Date!

Join us for the 39th Annual Gravens Conference

"Sensitive Issues in Sensational Times"

New date & location, same great topics, workshops, abstracts, and networking for those who work in Newborn Intensive Care Units.

Come learn with us!

June 15th Preconference,
June 16th, 17th, and 18th, 2026
at University of Notre Dame
Notre Dame, Indiana

UNIVERSITY OF NOTRE DAME

LOMA LINDA LLPC

Loma Linda Publishing Company

nidcap FEDERATION INTERNATIONAL voice of the newborn

Endorsed by the NIDCAP© Federation International, Inc

Abstracts Due
March 15th, 2026
(Date extended)

To learn more and register, visit our website:

The Sordid Recent History of Botulism Contamination of ByHeart Formula: Another Reason to Promote Breastfeeding

T. Allen Merritt, M.D. MHA, MBA, Maureen E. Sims, M.D.

Introduction:

As of January 27, 2026, the chronology of the **ByHeart** infant formula contamination and subsequent botulism outbreaks in infants is summarized:

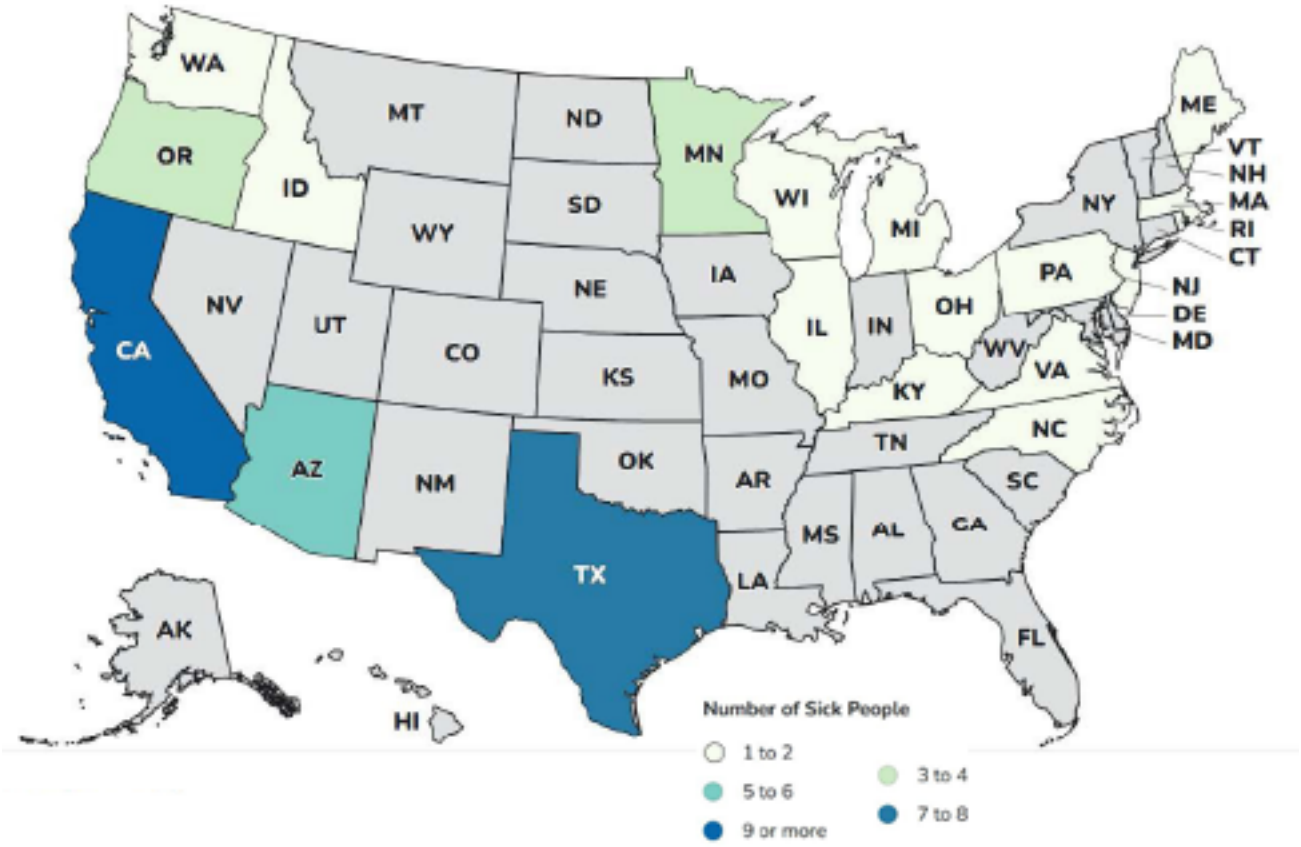
2023–2024: Retrospective Origins

- **December 2023:** The earliest illnesses later linked to the outbreak began during this period, though they were not identified as part of a cluster at the time.
- **Late 2024 – Early 2025:** Several families later reported their infants were treated for botulism during this window after consuming ByHeart formula.

2025: Detection and Initial Recalls

- **August 2025:** A notable spike in infant botulism cases began nationwide.
- **November 7–8, 2025:** California health officials (IBTPP) alerted the CDC and FDA to an unusual rise in botulism cases, specifically among infants who consumed ByHeart formula.
- **November 8:** ByHeart initiated a voluntary recall of two lots (251261P2 and 251131P2) after 13 infants fell ill.
- **November 11, 2025:** ByHeart expanded the recall to **all products** nationwide (cans and single-serve sticks) after preliminary testing by the California Department of Public Health (CDPH) found *Clostridium botulinum* type A spores in an opened formula sample.
- **November 24–26, 2025:** ByHeart confirmed that independent laboratory testing found bacteria in 5 of 36 samples across 3 lots, including **unopened** containers.
- **December 10–11, 2025:** The CDC and FDA expanded the outbreak's scope to include any infant exposed to the formula since the company's launch in **March 2022**.
- The official case count reached 51 infants across 19 states. (see Figure 1)
- **December 15, 2025:** The FDA issued warning letters to

Figure 1. Number of sick babies in different states from botulism from infant formula.From https://www.fda.gov/food/outbreaks-foodborne-illness/outbreak-investigation-infant-botulism-infant-formula-november-2025 (12)



major retailers (Target, Walmart, Kroger, and Albertsons) for failing to remove recalled formula from shelves in a timely fashion.

2026: Identification of Source

- **January 23–26, 2026:** The FDA reported that testing identified **powdered whole milk** from a supplier as the likely source of the contamination.
- The bacteria found in the raw milk powder matched the strain in the finished formula.
- No new cases have been reported since mid-December 2025.

Current Status (January 2026)

- **Hospitalizations:** All 51 infants in the outbreak required hospitalization and intensive care treatment. Infants were treated with BabyBIG®; no deaths have been reported as of January 27, 2026.
- **Legal Action:** ByHeart faces significant class-action lawsuits from nearly 30 families alleging negligence and inadequate food safety protocols. (Note: BabyBIG® is a licensed orphan drug of the California Department of Health.)

"All 51 infants in the outbreak required hospitalization and intensive care treatment. Infants were treated with BabyBIG®; no deaths have been reported as of January 27, 2026."

The saga of recent infant formula contamination and manufacturing plant closures began in 2022 when Abbott Laboratories in Sturgis, Michigan, was closed after Food and Drug Administration inspectors found unsanitary conditions, according to workers at the plant. Employees at the plant disclosed unsanitary practices, including using a cardboard funnel retrieved from the trash to funnel coconut oil, a formula ingredient, into a tank during production of the company's Pure Bliss Similac Organic brand, according to Vogell of ProPublica (1). Abbott conceded that the plan acted "outside of our quality process." Abbott Laboratories responded that Abbott "stands behind the quality and safety of all our products, including those made at Sturgis." Abbott further downgraded the incident's significance, saying it occurred early in the manufacturing process, before pasteurization. The product underwent "enhanced testing," which returned negative results for microbes (1). In another incident, employees complained to regulators that the company had signed off on the use of an amino acid that was 10 months past the manufacturer's "best by" date, which is counter to the law that requires that ingredients in formula not expire "before the formula as a whole" (1). Abbott Laboratories disputed that it is cutting corners to make more formula. A former employee at the plant informed the FDA that the plant was using lax cleaning practices, falsifying records, and releasing untested infant formula for use in infants. FDA inspectors found leaking equipment valves, standing water, and a type of bacteria at the plant, *Cronobacter sakazakii*, that can be lethal to newborns.

In May of 2022, Abbott Laboratories signed a consent decree with the Department of Justice and the FDA, committing to follow improved procedures at the facility. The Sturgis, Michigan, plant was shut down in 2022, leading to a nationwide formula shortage that required the federal government to import infant formula from Europe and left some parents desperate.

"Abbott Laboratories disputed that it is cutting corners to make more formula. A former employee at the plant informed the FDA that the plant was using lax cleaning practices, falsifying records, and releasing untested infant formula for use in infants. FDA inspectors found leaking equipment valves, standing water, and a type of bacteria at the plant, Cronobacter sakazakii***, that can be lethal to newborns."***

Since the 2023 consent decree, the FDA has conducted 10 inspections, and in December 2022, it issued a citation noting concerns regarding contamination prevention, worker hygiene, and handling of consumer complaints. According to Public Broadcasting Service News, the FDA required closure of Abbott's Sturgis, Michigan plant for violations, and Department of Justice opened an investigation. Closure of this plant contributed to the national shortage of infant formula in 2022 (2).

"In May of 2022, Abbott Laboratories signed a consent decree with the Department of Justice and the FDA, committing to follow improved procedures at the facility. The Sturgis, Michigan, plant was shut down in 2022, leading to a nationwide formula shortage that required the federal government to import infant formula from Europe and left some parents desperate."

After reporting the reopening of the Stugis, Michigan, plant in June of 2022, a severe storm closed the plant again due to flooding, for damage assessment, and to re-sanitize the plant (3).

On August 30, 2023, the FDA issued warning letters to three infant formula manufacturers regarding violations of the Federal Food, Drug, and Cosmetic Act and the FDA's infant formula regulations to ByHeart, Inc, Reckitt/Mead-Johnson Nutrition, and Perrigo Wisconsin, LLC, that reflected deficiencies at the time of FDA inspection. In ByHeart's letter regarding the positive culture from contamination, ByHeart blamed the contamination on their "third-party packaging facility." Reckitt/Mead-Johnson's inspectors noted several internal cracks of varying lengths throughout their dryer

system, multiple water leaks in the facility, and standing piles of spilled infant formula product at the facility, emphasizing that the company's investigation "did not consider all potential sources of contamination." The FDA's finding at Reckitt/Mead Johnson came amid months in which the company also found Cronobacter in "high and critical hygiene zones" of its facility's environment from July 2022 to February 2023 (5). The FDA sent warning letters to 3 major baby formula makers over quality control concerns.

"On August 30, 2023, the FDA issued warning letters to three infant formula manufacturers regarding violations of the Federal Food, Drug, and Cosmetic Act and the FDA's infant formula regulations to ByHeart, Inc, Reckitt/Mead-Johnson Nutrition, and Perrigo Wisconsin, LLC, that reflected deficiencies at the time of FDA inspection."

Infant Botulism:

Infant botulism is the most common form of human botulism in the U.S. (6) and furthermore, results from an unusual infectious condition termed intestinal toxemia. Swallowed spores of *Clostridium bolulinum* (or rarely neurotoxigenic *C butyrium* or *C baratil*) germinate and temporarily colonize the lumen of the large intestine, where as vegetative cells they produce botulinum neurotoxin (7, 8). The toxin is absorbed and carried by the bloodstream to the neuromuscular junction, where it binds irreversibly (9, 10). As noted by Arnon et al., breastfeeding is protective against sudden infant death syndrome from infant botulism (11).

"Infant botulism is the most common form of human botulism in the U.S. and furthermore, results from an unusual infectious condition termed intestinal toxemia. Swallowed spores of* Clostridium bolulinum*...germinate and temporarily colonize the lumen of the large intestine, where as vegetative cells they produce botulinum neurotoxin. The toxin is absorbed and carried by the bloodstream to the neuromuscular junction, where it binds irreversibly. As noted by Arnon et al., breastfeeding is protective against sudden infant death syndrome from infant botulism."

The clinical spectrum of laboratory confirmed cases ranges from milder symptoms of constipation, hypotonia, failure to feed, to sudden respiratory failure requiring ventilatory support. In all 51 cases identified with infant botulism from ByHeart formula, hospitalization has been required. Usually, in the U.S., 80–110 cases are identified annually because their severity necessitates hospital admission. As of January 2026, 51 cases have been identified and have been geographically dispersed throughout the U.S. (Figure 1)(12). The FDA reported *C. botulinum* isolates from samples of ByHeart formula from two batches of formula (251261P2 or 251131P2, an open container tested by the California Department of Public Health, and a sample collected in Arizona. All were positive for Toxin A. One isolate from an infant included in the outbreak, as determined by whole-genome sequencing, matched an isolate from the formula. These samples also match two isolated samples of organic whole milk powder, an ingredient used in the production of ByHeart Whole Nutrition powdered infant formula, which were collected and tested by ByHeart. A second organic whole milk powder sample was collected by the FDA at a processor for a supplier to ByHeart and analyzed using whole-genome sequencing, which yielded a genetic match to the *C. botulinum* detected in the finished product sample of ByHeart's infant formula, according to analysis conducted by ByHeart.

"The clinical spectrum of laboratory confirmed cases ranges from milder symptoms of constipation, hypotonia, failure to feed, to sudden respiratory failure requiring ventilatory support."

All ByHeart infant formula has been recalled, although the FDA noted that ByHeart formula remained on the shelves of some retail stores well into December 2025, and in one Oregon infant, 10 months of age, from ByHeart formula that a worker provided for the Oregon Department of Human Services, which was part of a donation program for vulnerable families (13). This 10-month-old infant had been exclusively breastfeeding, but the mother's milk supply was waning, and a case worker for the Department of Health and Human Services gave the mother donated ByHeart formula. Within a few days, this infant developed severe constipation and muscle weakness, becoming so limp that he could not move his head. He was evaluated in the Emergency department, where stool samples were taken, admitted to the Pediatric Intensive Care Unit, and given intravenous BabyBIG, followed for days, and discharged home with a feeding tube. The Portland, Oregon Diaper Bank has received about 400 cans of donated ByHeart formula through the Baby2Baby program, which had distributed more than 300 cans before they were recalled, and then took action to recall donated formula from parents.

While in the early 2000s pediatricians were aware that honey was being fed to infants as a source of infant botulism, most recently, neonatologists and pediatricians have been alerted to formula contamination with *C. botulinum* as a cause (14). In contrast, infant botulism has been recognized in premature infants still in the NICU (14), and infants between 3–4 months are most at risk (median age of onset 16.8 weeks (15). The incubation period ranges from 10 to 30 days, and initial symptoms such as vomiting and diarrhea are associated with gastrointestinal involvement. Parents often report poor feeding, lethargy, a weak cry, and constipation. Facial and ocular involvement may present as ptosis

and excessive drooling due to a weak suck reflex. Respiratory suppression can lead to shallow breathing and may require respiratory support (Figure 2) , and parents often report general hypotonia or floppiness (Figure 3). As the condition progresses, the neurotoxin induces descending, bilateral, and symmetric paralysis along with bulbar palsy (18). Sluggish pupillary reflexes may be noticed.

"All ByHeart infant formula has been recalled, although the FDA noted that ByHeart formula remained on the shelves of some retail stores well into December 2025, and in one Oregon infant, 10 months of age, from ByHeart formula that a worker provided for the Oregon Department of Human Services, which was part of a donation program for vulnerable families."

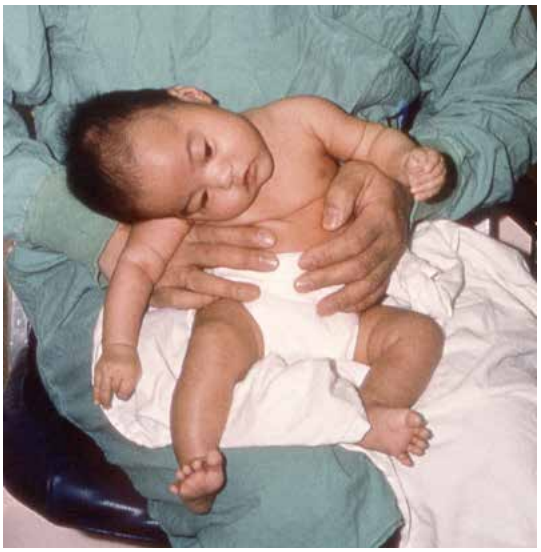
The diagnosis should be strongly considered in a clinically floppy infant or when history and physical examination are consistent with infant botulism. Routine laboratory assessments are typically normal, although secondary abnormalities may occur due to infection-related complications. Diagnostic confirmation requires both a stool culture and a direct toxin assay. Both tests are ideally performed at the California Public Health Laboratory or the Centers for Disease Control and Prevention. Polymerase chain reaction (PCR) testing can detect spores within 24 to 72 hours, although availability varies by hospital and laboratory.

"The incubation period ranges from 10 to 30 days, and initial symptoms such as vomiting and diarrhea are associated with gastrointestinal involvement. Parents often report poor feeding, lethargy, a weak cry, and constipation. Facial and ocular involvement may present as ptosis and excessive drooling due to a weak suck reflex. Respiratory suppression can lead to shallow breathing, and parents often report general hypotonia or floppiness. As the condition progresses, the neurotoxin induces descending, bilateral, and symmetric paralysis along with bulbar palsy. Sluggish pupillary reflexes may be noticed."

Figure 2. Infant with botulism intubated and unable to move. Photo by Momofbear - Own work, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=37247359 (16)

Based on a clinical diagnosis, while awaiting laboratory confirmation, infusion of BabyBIG®, an orphan drug obtained through the California Public Health Laboratories, should be started as an intravenous infusion in accordance with treatment guidelines from this laboratory and BABYBIG supplier (Food and Drug Administration, BabyBIG®, updated 2025,12-08). The cost of BabyBIG for a single vial in 2025 is $69,300 (19).

Figure 3. Patient recovering from infant botulism still has neck muscle weakness. From: https://www.cdc.gov/botulism/hcp/clinical-overview/infant-botulism.html (17).



Recovery from infant botulism even after BabyBIG® treatment is variable, ranging from complete recovery to a slower recovery of sucking and swallowing, as evidenced by the 10-month-old infant (at time of diagnosis) in Oregon, who was still requiring nasogastric feedings several weeks after treatment.

"The diagnosis should be strongly considered in a clinically floppy infant or when history and physical examination are consistent with infant botulism. Routine laboratory assessments are typically normal, although secondary abnormalities may occur due to infection-related complications. Diagnostic confirmation requires both a stool culture and a direct toxin assay."

Legal Comment:

If infant botulism is linked to contaminated formula, claims usually fall under product liability and sometimes negligence. Parents do not need to prove the company was "careless"; they only need to show the product was defective and caused harm. The questions on the defects center on whether it is a manufacturing or design defect, or a failure to warn due to inadequate instructions (storage, preparation, contamination risks). Negligence requires proof that the company owed a duty of care, breached that duty (e.g., poor sanitation, testing, or quality control), caused the illness, or resulted in damages. Families must show that the infant consumed the specific formula batch, the formula contained *C. botulinum,* and no more likely alternative source (soil, dust, or honey exposure, etc.) was responsible. This often requires laboratory testing, batch tracking, epidemiological evidence, and expert testimony. Economic damages include hospitalization and long-term medical care. Non-economic damages include infant pain and suffering, emotional distress of parents, loss of normal childhood experiences, or, in severe cases, permanent disability and wrongful death.

"Based on a clinical diagnosis, while awaiting laboratory confirmation, infusion of BabyBIG®, an orphan drug obtained through the California Public Health Laboratories, should be started as an intravenous infusion in accordance with treatment guidelines from this laboratory and BABYBIG supplier...The cost of BabyBIG for a single vial in 2025 is $69,300."

FDA rules regulate formula manufacturers, and violations can support civil lawsuits. If, on the other hand, criminal liability can occur if executives knowingly distribute contaminated products or falsify or conceal records. The statute of limitations is typically 2–3 years and often starts when parents knew, or reasonably should have known, that the formula caused the injury. Class actions occur when many individuals are similarly affected, but sometimes both an individual and a class action are pursued. Practical steps

"Recovery from infant botulism even after BabyBIG® treatment is variable, ranging from complete recovery to a slower recovery of sucking and swallowing, as evidenced by the 10-month-old infant (at time of diagnosis) in Oregon, who was still requiring nasogastric feedings several weeks after treatment."

families usually take: a) preserve the formula container, receipts, and lot number, b) obtain complete medical records, c) report the case to the FDA, and d) consult a products liability attorney. As of January 28, 2026, there are multiple claims in litigation, but to a reasonable person, it is evident that the ByHeart company's formula harmed at least 51 infants and their parents' emotional well-being during their long recovery. A class action suit has been filed in New York representing the families of two infants who developed infant botulism after consuming ByHeart formula as

"UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF NEW YORK MARIAH PILATO, and ASHLEY MARTINEZ, individually and on behalf of all others similarly situated, Plaintiffs, v. BYHEART, INC., Defendant. Case No. CLASS ACTION COMPLAINT JURY TRIAL DEMANDED Plaintiffs, Mariah Pilato and Ashley Martinez (hereinafter "Plaintiffs"), individually and on behalf of all others similarly situated, by their attorneys, allege the following upon information and belief, except for those allegations about Plaintiffs, which are based on personal knowledge: NATURE OF THE ACTION 1. This action seeks to remedy the deceptive and misleading business practices of ByHeart, Inc. (hereinafter 'Defendant') with respect to the manufacturing, marketing, and sale of Defendant's ByHeart infant formula products throughout the United States (hereinafter the 'Products'). 2. Defendant has improperly, deceptively, and misleadingly labeled and marketed its Products to reasonable

"Negligence requires proof that the company owed a duty of care, breached that duty (e.g., poor sanitation, testing, or quality control), caused the illness, or resulted in damages. Families must show that the infant consumed the specific formula batch, the formula contained C. botulinum, and no more likely alternative source (soil, dust, or honey exposure, etc.) was responsible. This often requires laboratory testing, batch tracking, epidemiological evidence, and expert testimony."

consumers, like Plaintiffs, by omitting and not disclosing to consumers on its packaging that the Products are contaminated with *Clostridium botulinum*, also known as infant botulism. 3. As described in further detail below, the Products contain *Clostridium botulinum*, which could lead to serious and life-threatening adverse health consequences."

"If, on the other hand, criminal liability can occur if executives knowingly distribute contaminated products or falsify or conceal records. The statute of limitations is typically 2–3 years and often starts when parents knew, or reasonably should have known, that the formula caused the injury. Class actions occur when many individuals are similarly affected, but sometimes both an individual and a class action are pursued. Practical steps families usually take: a) preserve the formula container, receipts, and lot number, b) obtain complete medical records, c) report the case to the FDA, and d) consult a products liability attorney."

Conclusion:

The sordid recent history of botulism contamination of ByHeart Formula and prior documented contamination of infant formulas with other pathologic organisms should remind neonatologists and pediatricians of the strong recommendation of the American Academy of Pediatrics position that breastfeeding is the most nutritious and safe method of feeding infants with the rare exception of infants requiring specialized nutritional products for rare metabolic disorders. Hopefully, the Expert Panel for "Operation Stork Speed" will place a greater national emphasis on the importance of an exclusive breast milk diet during the first 6 months after birth and continue through the first year of life. "Operation Stork Speed" should dedicate these specific recommendations, not with haste but with careful deliberation that prevents the poisoning of infants and when profit is more important than safety of their products (19)). The elegiac of the ByHeart formula saga should enlighten FDA regulators of the critical importance of frequent regulatory monitoring of formula manufacturing processes, and should also serve as a strong stimulus for federal support of donor milk banks for infant nutrition when mother's own milk is no longer available.

Update:

On January 22, 2026 ByHeart issued a Letter titled ByHeart Safety and Education Hub. They describe that the whole genome analysis conducted by the FDA identified *C. botulinum* on ByHeart formula and a whole milk sample used in the manufacturing process and that they were "closer to determining the root cause of the contamination of their formula." They have refused to release the powdered organic milk powder used in their manufacturing processes, but it has been widely reported in various media. The next steps of testing protocols and committed to having a third-party testing for *C. botulinum* every batch formula produced. They indicate that enhanced manufacturing and process controls safeguard against further botulism contamination. The company has created a Food Safety Advisory Board of third-party experts (unnamed) to safeguard future spore contamination, heavy metals, and "other" contaminants. They also post a list of symptoms of infant botulism and that if observed by parents to urgently seek medical advice (21) While this letter and admission of the company that their formula was contaminated resulting in a full product recall action, it does not address the severe adverse impact of their formula on the 51 reported infants consuming their formula who developed infant botulism and required hospitalization or the ill-effects that some infants will have during their recovery from this life-threatening disease.

"The sordid recent history of botulism contamination of ByHeart Formula and prior documented contamination of infant formulas with other pathogenic organisms should remind neonatologists and pediatricians of the strong recommendation of the American Academy of Pediatrics position that breastfeeding is the most nutritious and safe method of feeding infants with the rare exception of infants requiring specialized nutritional products for rare metabolic disorders."

Neonatologists or pediatricians with concerns about possible infant botulism are encouraged to call the California Department of Health Laboratories at (510)231-7600 or email them at IBTPP @infantbotulism.org.

"Neonatologists or pediatricians with concerns about possible infant botulism are encouraged to call the California Department of Health Laboratories at (510)231-7600 or email them at IBTPP @ infantbotulism.org."

References:

1. Vogell H. Unsanitary Practices Persist at Baby Formula Factory Whose Shut down Led to Mass Shortages, Workers Say, Propublica. 2025 Apr 4. https://www.propoublica.org//artice/baby-formula-abbott-sturgis-michigan-shortages-unsanitary-connditions-workers-say

2. DOJ Investigating Abbott plant at the center of 2022 baby formula shortage. PBS News. 2023 January 21. Available at: https://www.pbs.org/newshour/nation/doj-investigating-abbott-plant-at-the-center-of-2022-baby-formula-shortage

3. Abbott's baby formula plant closes again after severe storms and flooding (2022, June 16). National Public Radio. https://www.npr.org/2022/06/16/1105488061/baby-formula-plant-abbott-closed-flooding

4. US Food and Drug Admin. ByHeart Issues Voluntary Recall of Five Batches of Its Infant Formula Because of Possible Health Risk. 2022 Dec 11. Available at: https://www.fda.gov/safety/recalls-market-withdrawals-safety-alerts/byheart-issues-voluntary-recall-five-batches-its-infant-formula-because-possible-health-risk

5. Pezenik S, Salzman S. FDA sends warning letter to 3 major baby formula makers over quality control concerns. ABC News. 2023 Sept 1. Available at: https://abc7.com/post/fda-baby-formula-warning-infant-reckitt-mead-johnson-perrigo/13722492

6. Botulism in the United States, 1899-1996: handbook for epidemiologists, clinicians, and laboratory workers. Atlanta: Centers for Disease Control and Prevention; 1988, Available at : http://www.bt.cdc.gov/agent/botulism/index.asp)

7. Wilcke BW, Midura TF, Arnon SS. Quantitative evidence of intestinal colonization by *Clostridium botulinum* in four cases of infant botulism. J Infect D. 1980;141:419–423.

8. Arnon SS, Midura, TT, Clay SA, Wood, RM, Chin J. Infant botulism: epidemiological. Clinical and laboratory aspects. JAMA. 1977;2237:1947–1951.

9. Schiavo G, Matteoli M, Montecucco C, Neurotoxins affecting neuroexocytosis. Physiol Rev. 2000;80:717–766.

10. Simpson H. Identification of the major steps in botulinum toxin action. Annu Rev Pharmacol Toxicol 2004;44:167-196.

11. Arnon SS, Midura, TF, Darmus F, Thoropson B, Wood RM, Chin J. Protective role of human milk against sudden infant death syndrome from infant botulism. J Pediatr. 1982;100:569–73.

12. Outbreak Investigation of Infant Botulism: Infant Formula Current Update. Food and Drug Administration. 2026 January 23. Available at: (https://www.fda.gov/foodoutbreasts-foodborne-illness/outbreak-investigation-infant-botulism-infant-formulal-november 2025, updated January 23, 2026.

13. Aleccia J. Portland infant battles botulism after contaminated formula donated to families in need. The Oregonian. 2026 January 19. Available at: https://www.oregonlive.com/health//2026/01/portland-infant-battles-botulism-after-contaminated-formula-donated-to-families-in-need.html

14. Ibrahim Y, Merritt TA, Barash JR, Arnon S. et. al. Index of Suspicion in the Nursery. NeoReviews. 2009;10(1):e36-e38.

15. Panditrao MV, Dabritz HA, Kazerouni NN, Damus KH, Meissinger JK, Arnon SS. Descriptive Epidemiology of Infant Botulism in California: The First 40 Years. J Pediatr. 2020 Dec;227:247-257.e3. doi: 10.1016/j.jpeds.2020.08.013. Epub 2020 Aug 12. PMID: 32800814.

16. Wikipedia contributors. Botulism. Wikipedia, The Free Encyclopedia. 2025 Dec.27. [Accessed. Feb. 11, 2026]. Available at https://en.wikipedia.org/wiki/Botulism.

17. Clinical Overview of Infant Botulism. Centers for Disease Control. 2024 Apr 24. [Accessed Feb. 10, 2026]. https://www.cdc.gov/botulism/hcp/clinical-overview/infant-botulism.html.

18. Van Horn, NL, Shah, A. Infant Botulism. StatPearls, 2025. NCIH Bookshelf, Treasure Island, Florida, Stat Pearls Publishing, 2025.

19. California Department of Public Health, Title 17, Public Health, Division 1, State Department of Health Services, Chapter 4, Preventive Medical Services, Subchapter 4, The Infant Botulism Treatment and Prevention Program, Article 4 Fees.

20. Abrams SA, Du N. Perspective: Operation Stork Speed: Strategy for reviewing and advising on Infant Formula. Am. J. Clinical Nutrition. 2005;121(6):1220–1223.

21. ByHeart Safety and Education Hub (January 23, 2026). Important update on root cause investigation. Available at: https://byheart.com/pages/jan-23-2026-important-update-on-root-cause-investigation?srsltid=AfmBOooTwV3YMk4IFUOIqk2Nr_nhMQ7YVBI3NL9uxVf6934RhnvGbAOw

Disclosure: *Neither author has any financial ties to a manufacturer of infant formula. The authors have no conflicts of interests to disclose.*

NT

Corresponding Author

T.Allen Merritt, MD, MHA
Professor of Pediatrics
Loma Linda University School of Medicine
Division of Neonatology
Department of Pediatrics
email: allenmerritt.md@gmail.com

Corresponding Author

Maureen E. Sims, M.D.
Professor of Pediatrics
Geffen School of Medicine
University of California, Los Angeles
Los Angeles, California
email: mes@g.ucla.edu

Stan and Mavis Graven Award for Leadership

Nominating leaders past, present, and future

The Stan and Mavis Graven Leadership Award for Enhancing the Environment of Care for High Risk Babies and Families highlights leaders (both clinical and non-clinical) that are working to enhance the physical and developmental environments for high-risk infants and families. Leaders who show exemplary contributions in any of these areas qualify to be nominated:

- Family-Centered Care
- Developmental Care
- Physical Environment/Design
- Equity, Diversity, Inclusion, and Belonging

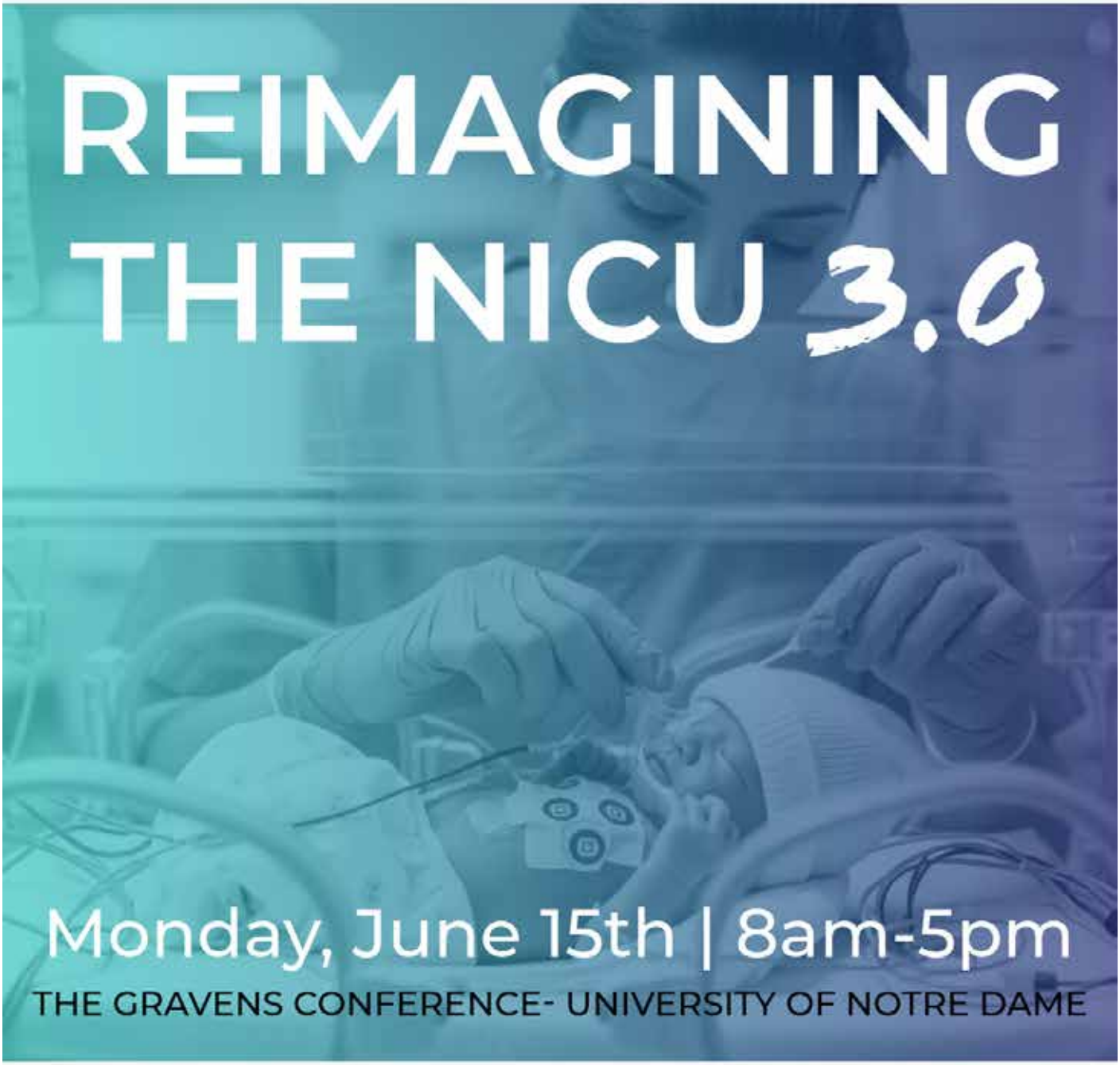
Please use the QR code to nominate yourself or another amazing leader!
Email us at thegravensaward@thegravensconference.org with questions

To learn more about the legacy of Stan Graven go to www.thegravensconference.org

Deadline to apply is March 15, 2026

REIMAGINING WORKSHOP

REIMAGINING THE NICU 3.0



Monday, June 15th | 8am-5pm

THE GRAVENS CONFERENCE- UNIVERSITY OF NOTRE DAME

supported by:

The Gravens Conference
on the Environment of Care for High Risk Newborns

organized by:

SEXTANT

Should Informed Consent be Required Prior to Feeding Bovine-Derived Human Milk Fortifier? Court Says Yes

Maureen Sims, M.D., T. Allen Merritt, M.D., MHA, MBA

Introduction:

On December 12, 2025, a Court in Connecticut (1) found in favor of the parents of a deceased infant who developed necrotizing enterocolitis after being fed a bovine "human milk fortifier" added to the mother's own milk without the consent of the parents against Yale New Haven Hospital and Yale University for failing to obtain informed consent. The Court awarded $1,962,884.42 in economic damages and $31,962,884.42 in non-economic damages against each of the defendants. The plaintiffs withdrew their allegation of medical malpractice against the treating neonatologist and loss of consortium.

"On December 12, 2025, a Court in Connecticut found in favor of the parents of a deceased infant who developed necrotizing enterocolitis after being fed a bovine 'human milk fortifier' added to the mother's own milk without the consent of the parents against Yale New Haven Hospital and Yale University for failing to obtain informed consent. The Court awarded $1,962,884.42 in economic damages and $31,962,884.42 in non-economic damages against each of the defendants."

The Court considered testimony and evidence that included the medical record, and found that the plaintiffs had proven "by a preponderance of the evidence" that the defendants failed to obtain any consent and failed to obtain informed consent regarding the use of cow-based fortifier and cow-based formula, and that the estate of the deceased infant suffered damages as a result of failure to obtain consent and informed consent.

Case Study:

The infant was born at 27 weeks 4 days of gestation and weighed 620 grams. The mother was not taking any medications that would affect the infant's health. Upon birth, the infant was transferred to the NICU at Yale-New Haven Medical Center due to the infant's prematurity and need for ventilatory and nutritional support. Over the following days, volumes and calories were increased, but the mother's own milk accounted for less than 50% of the total volume of gavage feedings. On day 26, the infant experienced increased respiratory distress, had a distended abdomen, vomiting, and lethargy. He was placed NPO, and an abdominal radiograph was concerning for NEC. The parents opted not to pursue surgical treatment, and TPN was restarted, and feedings were discontinued. The infant died on day 78.

The Court found that the parents desired to have the mother's own milk and that she had an adequate amount of milk for her infant and had received a lactation consultation early in the infant's NICU stay. The infant initially was NPO and received total parenteral nutrition. The parents indicated to the lactation consultant that they only wanted the mother's own milk and that they were never advised that bovine-based products would be fed to their infant. On day 8, he was bolus gavage fed mother's milk (MOM). Because of intermittent feeding intolerance manifested by vomiting and abdominal distension, he was at times placed NPO and then switched to continuous nasogastric feeds. He has several radiographs, some of which were concerning, but none showed definite NEC or obstruction.

"The Court found that the parents desired to have the mother's own milk and that she had an adequate amount of milk for her infant..."

Because of insufficient weight gain by day 23, clinicians decided to fortify MOM with a bovine product but did not discuss it with the parents. The parents testified that they assumed this addition was to thicken MOM, and they were never told about the risks and benefits of using bovine-based products and wanted only MOM- or human milk-derived fortifier. During the following days, volumes and calories were increased, but MOM was less than 50% of the total feeding volume. After the infant's death from NEC on day 78, his parents learned from reading the records that their infant had been fed a bovine-based fortifier. Furthermore, the parents believed they were deceived, as the fortifier is labeled "Human Milk Fortifier" and is not made from human breast milk.

"Because of insufficient weight gain by day 23, clinicians decided to fortify MOM with a bovine product but did not discuss it with the parents. The parents testified that they assumed this addition was to thicken MOM, and they were never told about the risks and benefits of using bovine-based products and wanted only MOM- or human milk-derived fortifier."

The Court stated that the care team did not advise the parents of the use of bovine fortifier and that a human-derived human milk fortifier could have been made available, or the infant could

have been transferred to a hospital that carried a human product such as Prolacta. The treating neonatologist and medical center representatives testified that the fortifier made from human milk was not available during the year the baby was born. The Court disagreed and believed the presented evidence that it had been available since 2006 and, in fact, was heavily marketed and readily available in 2018.

"After the infant's death from NEC on day 78, his parents learned from reading the records that their infant had been fed a bovine-based fortifier. Furthermore, the parents believed they were deceived, as the fortifier is labeled 'Human Milk Fortifier' and is not made from human breast milk"

The plaintiff experts indicated that the defendants were legally required and had a duty to discuss the use of a bovine product with the parents prior to its use, since it significantly increased the risk of NEC. The mother had signed a consent form to use pasteurized donor milk if needed, but the increased risk of NEC when using bovine-derived formula or a fortifier was never explained to her. The treating neonatologist testified that the hospital used bovine-human milk fortifier because "it was protocol." The parents learned that their infant had been fed a bovine-based fortifier only after reading the medical records. The parents also believed they were deceived, as the fortifier labelled "Human Milk Fortifier" is not made from human breast milk. An expert witness stated that by 2018, the development of NEC was known, and the material risk of the use of bovine-based products in feeding premature babies. The expert witness indicated that the defendants were legally required and had a duty to discuss with the infant's parents prior to the use of a bovine product and that they "significantly increased the risk of developing NEC." The infant died on day 78, and the Court noted that this infant died from respiratory failure "caused by NEC."

"The plaintiff experts indicated that the defendants were legally required and had a duty to discuss the use of a bovine product with the parents prior to its use, since it significantly increased the risk of NEC. The mother had signed a consent form to use pasteurized donor milk if needed, but the increased risk of NEC when using bovine-derived formula or a fortifier was never explained to her. The treating neonatologist testified that the hospital used bovine-human milk fortifier because 'it was protocol.'"

Commentary:

The Court noted a 2012 American Academy of Pediatrics statement supporting breastfeeding and does not specifically mention the use of bovine-based fortifiers. It does state that "feeding preterm infant's human milk is associated with a significant reduction (58%) in NEC and that a study by Quigley et. al. reported a 77% reduction in NEC and that one case of NEC could be prevented for every 10 infants fed an exclusively human milk diet (2). It also gives guidance to pediatricians to support breast feeding. The Court commented on the fact that the infant's mother had to sign a consent for the use of donor human milk and that the form indicated that pasteurized donor human milk was a feeding option; however, her milk was in ample supply for her infant, and she was donating extra milk to a breast milk donor bank. She understood that all feeding other than her own milk required similar consent, and that the defendants did provide informed consent of the use of preterm infant formula when her own milk was being used to feed her infant. The Court noted that there is disagreement among medical experts regarding the cause of NEC. However, the defense Neonatologist opined that the use of a human-based fortifier is protective against the development of NEC but disagreed that the use of a bovine-based fortifier contributed to the development of NEC in this infant and cited the report by Quigley et al. One defense expert witness indicated that "reasonable expert minds can disagree" about whether bovine-based products increased the risk of NEC and ultimately the death of the infant. The Court concluded that bovine-based formula and fortifiers did increase the risk of NEC in this infant and questioned the expert's testimony that use of a bovine-based fortifier was a "standard option" for neonatologists, nor did this expert believe that an exclusive human milk diet was an appropriate choice for this infant. Further, the Court "did not find credible" that there is no need to obtain consent or informed consent from the parents when using bovine-based products nor his assertion that bovine-based products do not increase the risk for NEC or that a doctor

"The Court concluded that bovine-based formula and fortifiers did increase the risk of NEC in this infant and questioned the expert's testimony that use of a bovine-based fortifier was a 'standard option' for neonatologists, nor did this expert believe that an exclusive human milk diet was an appropriate choice for this infant. Further, the Court 'did not find credible' that there is no need to obtain consent or informed consent from the parents when using bovine-based products nor his assertion that bovine-based products do not increase the risk for NEC or that a doctor need not explain to a parent that a fortifier or formula is a bovine-based product associated with a higher incidence of NEC."

need not explain to a parent that a fortifier or formula is a bovine-based product associated with a higher incidence of NEC. This expert witness agreed there was nothing in the medical record that contradicted the parents' testimony, and he admitted that a human milk fortifier of human milk origin was available at the time of this infant's treatment. Expert witnesses disagreed on whether it was appropriate for the Neonatologists to fortify the mother's own milk with a bovine-based fortifier. The Court found the plaintiff's experts' testimony more credible than the defendants'. The Court also indicated that it was not logical to ask parents for consent for donor human milk and not likewise obtain consent for a bovine-fortifier. The Court received testimony regarding the infant's lost earning capacity and discredited the defendants' estimate of economic losses.

The Court determined that a civil assault occurred, consistent with Connecticut civil tort law, and that actual physical contact was not necessary to prove civil assault. The Court concluded that the defendants acted with the intention of causing harmful or offensive contact by feeding the infant bovine-derived products without any consent or informed consent of the parents and that thus the feeding resulted in NEC.

Consent:

This case addresses many issues related to consent and the duty of informed consent, alerting medical centers, NICU administrators, and neonatologists to these issues. Further, do not delegate this role to nonmedical staff or lay volunteers. Pediatricians' or neonatologists' direct communication with families that breastfeeding is a medical and health priority and should be the primary nutrition for their premature infant. The AAP's Committee on Bioethics further indicates that clinicians and families should make feeding decisions and should be individualized in the context of human milk availability, specific patient needs, and individual family preferences (3).

"Pediatricians' or neonatologists' direct communication with families that breastfeeding is a medical and health priority and should be the primary nutrition for their premature infant. The AAP's Committee on Bioethics further indicates that clinicians and families should make feeding decisions and should be individualized in the context of human milk availability, specific patient needs, and individual family preferences."

The policy decision of the AAP's Committee on Bioethics stresses that informed consent incorporates these duties; disclosure of information to parents or their surrogates for medical decision making, thus indicating that obtaining informed consent prior to ordering "special care formulas" or "human milk fortifiers" in place of mother's own or donor human milk would probably avoid allegations of malpractice (4).

National Institute of Child Health and Human Development (NICHD):

The NICHD convened an NEC working group in August 2024 that made multiple recommendations for the [then] Secretary of Health and Human Services regarding research goals to reduce the incidence of NEC These recommendations were approved by the working group on September 5, 2024 include an emphasis on education regarding the benefits of maternal breast feeding, enhanced availability of donor human milk, especially in rural areas and among minority populations, and increased research to determine "ideal" feeding practices for VLBW infants in NICUs, reducing antibiotic use and duration and the prevention of premature births (5).

"The policy decision of the AAP's Committee on Bioethics stresses that informed consent incorporates these duties; disclosure of information to parents or their surrogates for medical decision making, thus indicating that obtaining informed consent prior to ordering "special care formulas" or "human milk fortifiers" in place of mother's own or donor human milk would probably avoid allegations of malpractice."

Does this Court Decision in Connecticut have any effect in other states?

A tort ruling from one state can be used in another state primarily through the "full faith and credit clause" of the U.S. Constitution requiring states to respect other states judgments, for full enforcement often involves domesticating the judgment in the second state to access local assets, while the actual choice of law (which state's tort rules apply) depends on contracts, circumstances and state-specific conflicts-of-law rules, meaning that different states might govern different aspects of the case. Domesticating the judgment usually applies to the collection of debts from a debtor in another state (6). Determining which state's tort laws (e.g. for negligence, demand caps) apply is complex and depends on where the injury occurred, where the parties live, and the specific "contacts" each state has with the case, with some states applying one state's law for certain issues and another's for different parts and should be determined by attorneys and the Courts in another state.

Comity refers to courts of one state or jurisdiction respecting the laws and judicial decisions of other jurisdictions, whether state, federal, or international, not as a matter of obligation but out of deference and mutual respect. It is too early to determine whether similar tort claims will be brought in other states, and thus, the impact of the Connecticut decision in this case remains uncertain.

What is in the name "Human Milk Fortifier"? Or is it Product Liability?

The plaintiffs testified that they were confused and felt misled by being told that their infant was receiving a milk fortifier derived from

"Determining which state's tort laws (e.g. for negligence, demand caps) apply is complex and depends on where the injury occurred, where the parties live, and the specific 'contacts' each state has with the case, with some states applying one state's law for certain issues and another's for different parts and should be determined by attorneys and the Courts in another state."

human milk. Both Mead-Johnson and Abbott Laboratories label their fortifiers as "Human Milk Fortifier." This demonstrates how companies can shape the production, promotion, and integration of fortifiers into neonatal care and broader infant-feeding systems. Through strategies that construct marketing, leverage professional networks, and embed products within various NICUs, influencing clinical practices and consumer behaviors in ways that prioritize profit over equity. On the other hand, human milk-derived human milk fortifiers (Prolacta), which have been available and promoted since 2006, are more expensive and are not stocked or endorsed by hospital purchasers as superior to bovine-derived human milk fortifiers. Bovine and human-derived HMF are commercially available and vary in macronutrient content and the degree to which proteins are hydrolyzed (7, 8).

Although clinicians may understand that neither "Human milk fortifiers" from two prominent formula companies is of human origin, greater transparency in discussions with parents is needed to avoid misleading parents into believing their infant is receiving a human product. Changing brand names and packaging should reveal the source of the fortifier to avoid deceiving parents or mislead administrators or purchasers of healthcare products.

"The plaintiffs testified that they were confused and felt misled by being told that their infant was receiving a milk fortifier derived from human milk. Both Mead-Johnson and Abbott Laboratories label their fortifiers as 'Human Milk Fortifier.'"

Conclusions:

Nutritional and Feeding Care of the VLBW Infant, as stated in the most recent clinical report "Promoting Human Milk and Breastfeeding for Very Low Birth Weight Infant: Clinical report" (2025), stresses that "local pasteurized donor human milk policies are needed to achieve consistency among staff regarding infant eligibility, duration of use, and consenting or assenting procedures.' As a part of the consenting or assenting procedures, families must be informed that 1) mother's own milk provides superior overall health benefits compared to pasteurized donor human milk (PDHM); 2) PDHM is associated with a reduced risk of NEC; and 3) PDHM can serve as a nutritional bridge until MOM becomes available.

"...human milk-derived human milk fortifiers (Prolacta), which have been available and promoted since 2006, are more expensive and are not stocked or endorsed by hospital purchasers as superior to bovine-derived human milk fortifiers."

Families need to be informed about how pasteurization ensures safety and the planned duration of PDMH use. These discussions need to be documented in the medical record (9). It is logical that if parents are required to consent or give assent to PHMF, a reasonable person would expect the same regarding milk fortification.

"Nutritional and Feeding Care of the VLBW Infant, as stated in the most recent clinical report 'Promoting Human Milk and Breastfeeding for Very Low Birth Weight Infant: Clinical report' (2025), stresses that 'local pasteurized donor human milk policies are needed to achieve consistency among staff regarding infant eligibility, duration of use, and consenting or assenting procedures.' As a part of the consenting or assenting procedures, families must be informed that 1) mother's own milk provides superior overall health benefits compared to pasteurized donor human milk (PDHM); 2) PDHM is associated with a reduced risk of NEC; and 3) PDHM can serve as a nutritional bridge until MOM becomes available."

Update:

Yale University and the New Haven Hospital asked the Court to reconsider the award from $32 million down to $2 million because it was reasonable that the doctor was not legally obligated to discuss a risk that he believed did not exist (the association of cow's milk or fortifier), and NEC did not exist. Lawyers for Yale and New Haven Hospital asserted that "if the infant's family

believes that the doctor's medical knowledge was deficient, they should pursue a medical malpractice claim instead" (10). The hospital's motion said that the judge misapplied the legal definition of battery, which they stated generally refers to the intentional infliction of physical harm without consent. They further asserted that many other factors "besides just a cow-based fortifier could have contributed to the infant's development of NEC (10). These attorneys failed to consider or reference the most recent meta-analysis documenting that an exclusive human milk diet, including mother's own or donor milk, and a human milk-derived fortifier, significantly reduced NEC, including surgical NEC, among infants ≤1250 grams at birth in 25 studies, including 5 randomized clinical trials and 15 observational trials of 4754 very low birth weight infants (11). As of February 9, 2026, no decision has been made by the judge regarding these motions.

"Families need to be informed about how pasteurization ensures safety and the planned duration of PDMH use. These discussions need to be documented in the medical record. It is logical that if parents are required to consent or give assent to PHMF, a reasonable person would expect the same regarding milk fortification."

References:

1. Docket No: NNH-CV21-6110213S Superior Court December 12, 2025
2. Quigley MA, Kelly YJ, Sacker A. Breastfeeding and hospitalization for diarrheal and respiratory infections in the United Kingdom Millennium Cohort Study Pediatrics 2007;119(4).
3. Katz A, Macauley M, Mercurio O. et. al. Committee on Bioethics: Informed Consent in Decision-Making in Pediatric Practice. Pediatrics. 2016;138(2):e20161484. (reaffirmed in 2023).
4. Merritt TA, Hillyer K, Hageman, J. Ongoing Litigation Regarding the Use of Cow's Milk Formulas and Necrotizing Enterocolitis: Issues of Product Liability and Proposed Requirement for Informed Consent. Breastfeeding Med. 2025;20(1):1–5.
5. Report to Secretary, Department of Health and Human Services. 2024. Necrotizing Enterocolitis (NEC) in Preterm Infants Working Group of the National Advisory Council of Child Health and Human Development https://www.nichd.nih.gov/about/advisory/council/NEC-working-group-of-council).
6. Cornell Law, Conflicts of Law. 2023. https://www.law.cornell.edu/wex/category/conflicts-law.
7. Liu TT, Dang D, Lv XM, Wang TF, Du JF, et al. Human milk fortifier with high versus standard protein content for promoting growth of preterm infants: A meta-analysis. J Int Med Res. 2015;43(3)279–289.
8. Kim JH, Chan BM, Schanler R. et. al. Growth and tolerance of preterm infants fed a new extensively hydrolyzed liquid human milk fortifier. J. Pediatr. Gastroenterol Nutr. 2015;61(6):665–671.
9. Parker MG, Stillwagen L, Miller ER, Noble, L, Corkins MR, et al. Promoting Human Milk and Breastfeeding for Very Low Birth Weight Infant: Clinical Report. Pediatrics 2025;156(4): e2925073625.).
10. Viswanatha, H. (February 3, 2026). YNHH asks to reduce $32 million penalty in infant death Suit. Yale Daily News. https://yaledailynews.com/articles/yale-hospital-asks-to-reduce-32-million-penalty-in-infants-death-suit.
11. Reyes SM, Paul T, Ferry J. Human milk fortification and Necrotizing Enterocolitis in Very Low Birth Weight Infants: State of the Evidence and Systematic Review and Meta-Analysis. Nutrients. 2025;17(21):3384.

Disclosures: Neither author has any financial relationship with producers of bovine or human-sourced human milk fortifiers.

NT

Corresponding Author

Maureen E. Sims, M.D.
Professor of Pediatrics
Geffen School of Medicine
University of California, Los Angeles
Los Angeles, California
email: mes@g.ucla.edu

Corresponding Author

T.Allen Merritt, MD, MHA
Professor of Pediatrics
Loma Linda University School of Medicine
Division of Neonatology
Department of Pediatrics
email: allenmerritt.md@gmail.com

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

RSV is a respiratory virus with cold-like symptoms that causes 90,000 hospitalizations and 4,500 deaths per year in children 5 and younger. It's 10 times more deadly than the flu. For premature babies with fragile immune systems and underdeveloped lungs, RSV proves especially dangerous.

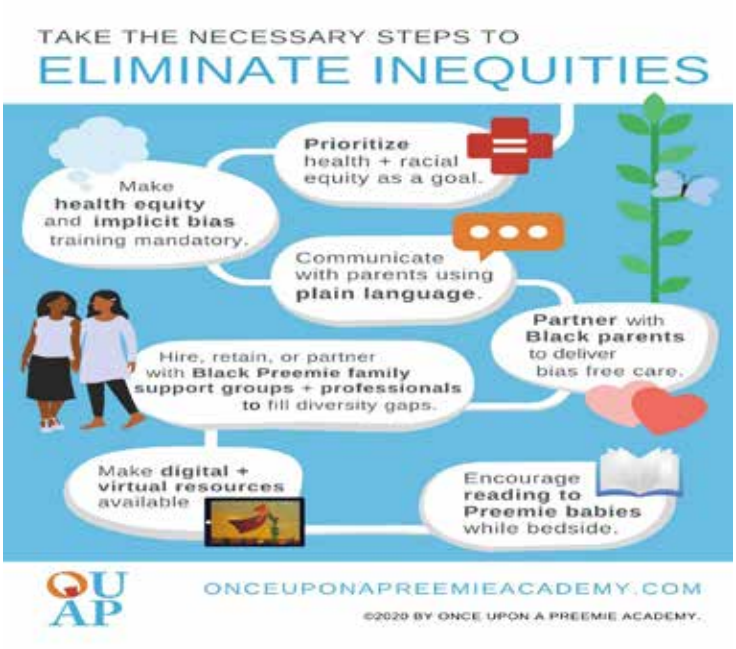
But risk factors associated with RSV don't touch all infants equally.*

*Source: Respirator Syncytial Virus and African Americans

Caucasian Babies	Risk Factor	African American Babies
11.6%	Prematurity	18.3%
58.1%	Breastfeeding	50.2%
7.3%	Low Birth Weight	11.8%
60.1%	Siblings	71.6%
1%	Crowded Living Conditions	3%

AFRICAN AMERICAN BABIES bear the brunt of RSV. Yet the American Academy of Pediatrics' restrictive new guidlines limit their access to RSV preventative treatment, increasing these babies' risk.

AfPA
Alliance for Patient Access



NICUriosities: The Curious Case of Pallor in a Neonate with Emesis

Shaina Khan Lodhi, MD

"A male infant presented to the ED at 25 days of age with a 1-week history of non-bloody, non-bilious emesis. In the days leading up to presentation, emesis became more frequent, and the day before presenting to the ED, he had emesis with every feed, decreased appetite, and decreased wet diapers."

Presentation:

A male infant presented to the ED at 25 days of age with a 1-week history of non-bloody, non-bilious emesis. In the days leading up to presentation, emesis became more frequent, and the day before presenting to the ED, he had emesis with every feed, decreased appetite, and decreased wet diapers.

He did not have fevers, respiratory symptoms, or sick contacts. Stools were loose at baseline with no recent changes, and he was feeding soy formula. He had never been given cow's milk-based formula, as his older sibling had not tolerated it.

He had been born at 40w4d gestation via spontaneous vaginal delivery, weighing 3.135 kg. He had an uneventful course in the newborn nursery and was discharged at 2 days of life. Family history was significant for trisomy 21 in a sibling and an aunt.

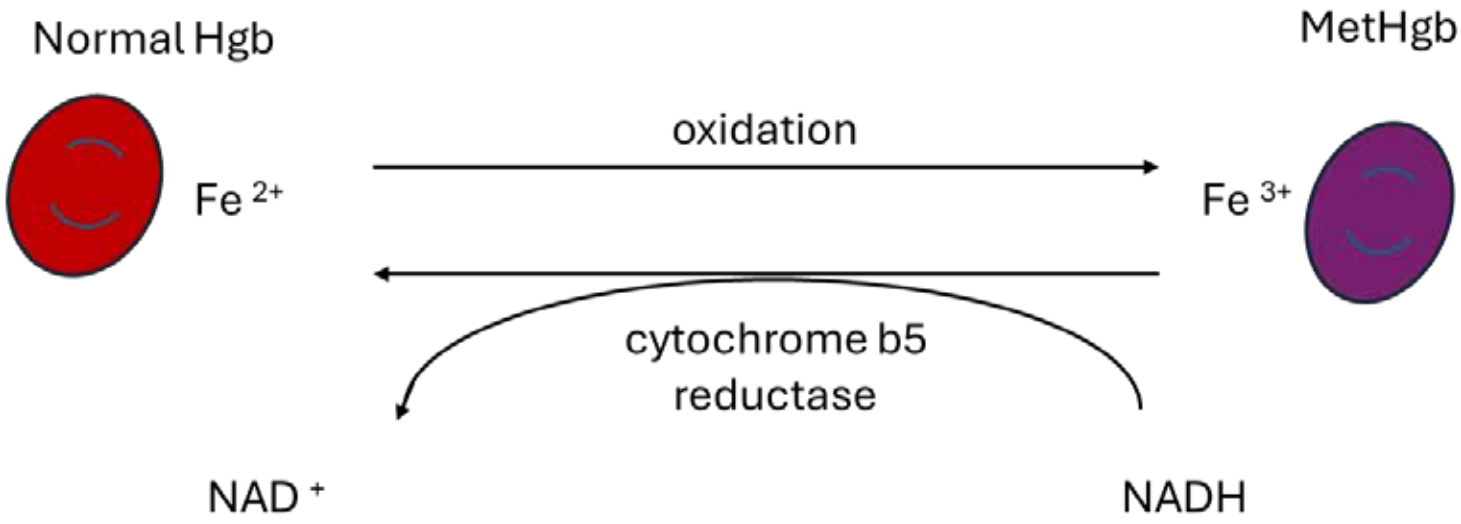
On presentation, his weight was 3.88 kg, temperature was 37.2 C, heart rate was 157 bpm, respiratory rate was 42/min, and oxygen saturation was 88%. He was started on a 4L high-flow nasal cannula due to desaturations. On exam, he was noted to be pale. He underwent laboratory testing in the ED and was found to have mild leukocytosis with a white blood cell count (WBC) of 19.28 bil/L, including 8% bands and 41% segmented neutrophils. His absolute neutrophil count was 10.2 bil/L, and mild thrombocytosis was noted with platelets of 488 bil/L. He was admitted to the NICU for further evaluation and management. A basic metabolic panel (BMP) showed an anion gap metabolic acidosis with a bicarbonate of 16 mMol/L. Abdominal ultrasound was performed and ruled out intussusception and pyloric stenosis. He was given a normal saline bolus at 5 ml/kg and started on maintenance IV fluids. He was admitted to the NICU for further evaluation and management.

In the NICU, a respiratory viral panel (RVP) and chest X-ray were performed, and were negative. He required a low-flow nasal cannula in the NICU and was weaned to room air on admission day 2. He was initially kept nil per os (NPO) and started on parenteral nutrition. Once abdominal imaging was normal, he was started on oral feeds on day 2 of admission. Due to borderline leukocytosis, an infectious workup was initiated, including blood culture, urinalysis, and urine culture. C-reactive protein (CRP) was high at 3.5 mg/dL. Urinalysis showed few bacteria and 39 WBCs/hpf, and he was started on antibiotics for the suspicion of urosepsis. Eventually, urine culture and blood culture were negative, the suspicion for an infectious process remained high as the infant continued to appear sick and CRP continued to rise, with a peak of 6.8 mg/dL on day 3 of admission. At the same time, the acidosis continued to worsen with a nadir bicarbonate of 8 mMol/L on day of admission 4. Lactate was intermittently elevated, with a peak of 6.1 mMol/L on day 6 of admission. A lumbar puncture was performed on admission day 4, and antibiotics were changed. Lumbar puncture results were not consistent with meningitis. Blood and urine cultures were repeated, and while the urinalysis still showed 38 WBCs/hpf, the culture eventually returned negative. The suspicion of a viral illness persisted, and CMV titers in urine and TORCH IgM and IgG were sent to rule out TORCH infections.

"Due to worsening metabolic acidosis despite improvement in emesis and hydration status, the team consulted Metabolics/Genetics with the suspicion of an inborn error of metabolism. Ammonia and pyruvate levels returned to normal, and plasma amino acid and urine organic acid screens were sent. Given the lactic acidosis with metabolic acidosis with an anion gap, the workup for a mitochondrial disease was started."

Due to worsening metabolic acidosis despite improvement in emesis and hydration status, the team consulted Metabolics/Genetics with the suspicion of an inborn error of metabolism. Ammonia and pyruvate levels returned to normal, and plasma amino acid and urine organic acid screens were sent. Given the lactic acidosis with metabolic acidosis with an anion gap, the workup for a mitochondrial disease was started. Pediatric Nephrology was also consulted with suspicion of Fanconi anemia, but it was ruled out.

Meanwhile, the CRP started trending down, and with a potassium acetate drip, the metabolic acidosis gradually improved. While the infant clinically improved, pallor was consistently noted, described as pale skin with a bluish-gray discoloration. A venous blood gas



Pathophysiology of methemoglobinemia.

was performed, which indicated the cause of the pallor.

Diagnosis

A venous blood gas was done on admission day 5, which showed an elevated methemoglobin level of 4.4%, then increased to 9.5% on admission day 7. Methemoglobinemia has been seen in other infants and children who presented with pallor in the presence of an infective process or gastrointestinal symptoms.

"Due to the infant's elevated methemoglobin levels, Pediatric Hematology/Oncology was consulted. A cytochrome b5 reductase activity assay was sent, and his methemoglobin level was trended using pulse CO-oximetry to monitor methemoglobin levels noninvasively. Because methemoglobin levels did not exceed the treatment threshold, he never required methylene blue."

Continued Clinical Course:

Due to the infant's elevated methemoglobin levels, Pediatric Hematology/Oncology was consulted. A cytochrome b5 reductase activity assay was sent, and his methemoglobin level was trended using pulse CO-oximetry to monitor methemoglobin levels noninvasively. Because methemoglobin levels did not exceed the treatment threshold, he never required methylene blue. Over the next week, the methemoglobin level gradually decreased to 1.1% by admission day 17. Cytochrome b5 reductase activity was 8.0 U/g Hb, which was considered low normal for infants ≥ 12 months of age (normal range: 7.8-13.1 U/g Hb, Mayo Clinic Laboratories). Normal range for infants <12 months has not been established, and neonates are thought to have lower levels than adults.

Despite no definite source for infection, he remained on antibiotics due to high inflammatory markers and metabolic acidosis. Due to poor weight gain, his formula was concentrated to 24 kcal/oz using soy-based liquid concentrate. On admission day 8, he developed blood-streaked stool, and bubbly lucencies were seen in the right hemiabdomen. He was diagnosed with necrotizing enterocolitis, stage IIA on modified Bell's staging. He was treated medically, remained NPO on parenteral nutrition, and remained on triple antibiotics for 7 days. Following this episode, the infant improved clinically and tolerated advancing feeds with soy formula without any issues. He remained in room air throughout this time and was discharged home after 21 days in the hospital.

"Following discharge, testing for nuclear mitochondrial disorders was negative, and mitochondrial complete genome analysis revealed a variant of unknown significance. The renal tubular disorders panel was also negative. One month after discharge, repeat testing showed a normal cytochrome b5 reductase level, and the infant was thriving."

Following discharge, testing for nuclear mitochondrial disorders was negative, and mitochondrial complete genome analysis revealed a variant of unknown significance. The renal tubular disorders panel was also negative. One month after discharge, repeat testing showed a normal cytochrome b5 reductase level, and the infant was thriving.

Discussion:

Methemoglobin is formed when the iron in hemoglobin is oxidized from the ferrous (Fe^{2+}) form to the ferric (Fe^{3+}) form. Methemoglobin does not bind oxygen effectively, leading to decreased oxygen delivery to tissues. Oxidization occurs naturally in the body, and the enzyme cytochrome b5 reductase helps reduce the ferrous form back to the ferric form. (1–3) Methemoglobinemia in young children can be congenital or acquired. Congenital methemoglobinemia results from reduced activity of cytochrome b5 reductase (1,2,4), whereas acquired causes include increased oxidative stress from dehydration, infection, or exposure to oxidizing agents. (1,2,5) The most common presentation of methemoglobinemia in infants and children is the transient acquired form. Ingestion of oxidative agents, such as nitrates and nitrites, and anesthetics in teething gels is common. (1–3,5) Diarrhea and dehydration are common inciting factors for acquired methemoglobinemia in infants. (2,5–8) Infants are more susceptible to methemoglobinemia because fetal hemoglobin is more easily oxidized and their reductase systems are immature. (9)

Our patient had emesis and loose stools on admission and was notably pale, with blue/gray discoloration. Many cases of neonates or young infants with methemoglobinemia had similar presentations with gastrointestinal symptoms and pallor or cyanosis (2,4,6–8), and several were described as having gray skin. (2,5,6) Profound metabolic acidosis is common (2,6–8) as seen in our case.

Several similar cases in the literature were thought to be due to intolerance to the formula or to food protein–induced enterocolitis (FPIES) and required hydrolyzed formula prior to discharge. (2,7,8) FPIES causes increased intestinal nitrites secondary to colonic inflammation, leading to methemoglobinemia. Although the source of infection and inflammation was never definitively identified in our patient, colonic inflammation secondary to a viral gastrointestinal infection could have led to the development of methemoglobinemia. Interestingly, our patient was diagnosed with necrotizing enterocolitis during the course of his admission, a disease with overlapping clinical characteristics with FPIES. Both necrotizing enterocolitis and FPIES can present with bloody stool and pneumatosis on abdominal X-ray (10), as was seen in our patient. The proposed pathophysiology of necrotizing enterocolitis includes tissue hypoxia (11), which can result from methemoglobinemia caused by decreased oxygen delivery. In the setting of colonic inflammation and antibiotic-induced dysbiosis, this tissue hypoxia could have predisposed our infant to necrotizing enterocolitis. In our case, the infant was continued on soy-based formula, and his symptoms resolved while on the same formula, making a diagnosis of FPIES less likely.

Methemoglobinemia can be life-threatening. At the same time, skin discoloration can be seen at lower levels, levels of 20-50% usually present with more symptoms, including headaches, weakness, and lethargy. At levels of 50-70%, cardiac arrhythmias and seizures can occur, and death usually results from levels exceeding 70%. (2,5) The diagnosis of methemoglobinemia is usually made by seeing elevated levels of methemoglobin on blood gas analysis. CO-oximetry measures light absorption at multiple wavelengths and helps differentiate between types of hemoglobin. Methemoglobin interferes with traditional pulse oximetry readings, making it less reliable in infants with methemoglobinemia. (1,12) However, pulse CO-oximetry can be used to continuously and noninvasively measure methemoglobin levels. (13)

The treatment of methemoglobinemia primarily involves addressing the underlying cause and administering methylene blue. (1,2,5) Methylene blue acts as a cofactor for NADPH–dependent methemoglobin reductase to reduce iron in hemoglobin from the ferric (Fe^{3+}) form back to the ferrous form (Fe^{2+}), thus converting methemoglobin to hemoglobin. (12) Treatment with methylene blue is recommended if methemoglobin levels are greater than 20 or 30%. (1,2,5,12) It is ineffective in the absence of G6PD, and can worsen hemolysis, so should be avoided or used with caution in patients with G6PD deficiency. (1,2,5,12)

Clinical Pearls:

- Methemoglobinemia should be suspected in infants with diarrhea, vomiting, and pallor or cyanosis.
- Methemoglobinemia in neonates may be due to an acquired (more common) or congenital cause.
- Methylene blue can be used to treat methemoglobinemia if the methemoglobin level is above 20-30%.

Suggested Readings:

1. Index of Suspicion. *Pediatr Rev* July 2014; 35 (7): 311- 317. https://doi.org/10.1542/pir.35-7-311
2. Methemoglobinemia. StatPearls [Internet]. https://www.ncbi.nlm.nih.gov/books/NBK537317/

References:

1. Chen R, Nappe T. Methemoglobinemia. In: StatPearls [Internet] [Internet]. Treasure Island (FL): StatPearls Publishing; 2025. Available from: https://www.ncbi.nlm.nih.gov/books/NBK537317/
2. Index of Suspicion. Pediatrics In Review. 2014 July 1;35(7):311–7.
3. Grenz PM, Ray RN, Hardy OA, Koons AL, Katz KD, Romano TM. Altered Mental Status and Cyanosis in a Pediatric Patient with Methemoglobinemia. Case Rep Pediatr. 2020;2020:8896754.
4. Da-Silva SS, Sajan IS, Underwood JP. Congenital Methemoglobinemia: A Rare Cause of Cyanosis in the Newborn—A Case Report. Pediatrics. 2003 Aug 1;112(2):e158–61.
5. Khanapara DB. Methemoglobinemia. Medscape [Internet]. 3035 Dec 23; Available from: https://emedicine.medscape.com/article/204178-overview
6. Diarrhea and Pallor. In: Challenging Cases in Pediatric Emergency Medicine [Internet]. American Academy of Pediatrics; 2005 [cited 2026 Jan 20]. p. 45–52. Available from: https://publications.aap.org/aapbooks/book/354/chapter/5791548/Diarrhea-and-Pallor
7. Rishi M, Chaudhry S. Case 1: A blue infant with chocolate-coloured blood. Paediatr Child Health. 2011 June;16(6):333–4.
8. Chegondi M, Shaked O. Methemoglobinemia in a Neonate with Diarrhea. Pediatric Oncall [Internet]. 2014 [cited 2026 Jan 20];11(3). Available from: https://www.pediatriconcall.com/pediatric-journal/view/fulltext-articles/831/J/0/0/443/0
9. Park SM, Rhee MS. Novel hypothesis for infant

methemoglobinemia: Survival and metabolism of nitrite-producers from vegetables under gastrointestinal stress and intestinal adhesion. Food Research International. 2024 Aug;190:114582.

10. Nassar R, Biham Rochwerger K, Hazan R, Lazar I, Assi Z, Ling G, et al. Diffuse pneumatosis intestinalis caused by food protein-induced enterocolitis—a case report. 2025 [Internet]. 2025;9. Available from: https://acr.amegroups.org/article/view/11667
11. Alganabi M, Lee C, Bindi E, Li B, Pierro A. Recent advances in understanding necrotizing enterocolitis. F1000Res. 2019;8:F1000 Faculty Rev-107.
12. Wadowski B, Chang D, Khan SQ, Chadha T. Sometimes, It's Just Black and White: Dark Urine and Pallor in a 2-Year-Old Boy. Hospital Pediatrics. 2016 Sept 1;6(9):560–5.
13. Lindner G, Exadaktylos AK. How Noninvasive Haemoglobin Measurement with Pulse CO-Oximetry Can Change Your Practice: An Expert Review. Emerg Med Int. 2013;2013:701529.

Disclosures: *The authors have no disclosures*

NT

Corresponding Author

Shaina Khan Lodhi, MD
Assistant Professor of Pediatrics
Loma Linda University School of Medicine
Division of Neonatology
Department of Pediatrics Loma Linda, CA
Email: SLodhi@llu.edu

Exceptional Opportunities to Grow Your Neonatology Expertise

The Pediatrix Center for Research, Education, Quality and Safety offers educational opportunities designed to advance your expertise in neonatology.

Neonatology Grand Rounds Series

Mark your calendars for the first Wednesday of every month for our Neonatology Grand Rounds Series.

Pediatrix Continuing Education Portal

Our online learning platform is created to support health care providers with flexible continuing education, making it easy to learn wherever you are.

Sign up now for these great opportunities!

pediatrix

CENTER FOR RESEARCH, EDUCATION, QUALITY AND SAFETY

Save the date for 2027 NEO: The Conference for Neonatology!

February 17-19, 2027
Caesars Palace
Las Vegas, NV

NEO THE CONFERENCE FOR NEONATOLOGY

pediatrix

Merchak Monthly Neonatal Case Challenge Page: January 2026 Edition

Assaad Merchak, MD

"We are pleased to present the January edition of the Merchak Monthly Case Challenge, designed to foster ongoing education and excellence in neonatal care. Each month, clinicians are invited to test their knowledge, engage with real-world scenarios, and compete for prizes."

Welcome Back

We are pleased to present the January edition of the Merchak Monthly Case Challenge, designed to foster ongoing education and excellence in neonatal care. Each month, clinicians are invited to test their knowledge, engage with real-world scenarios, and compete for prizes.

"Last month's challenge featured a case in which you were invited to discuss Margaret's bloodstream infection, specifically a central line-associated bloodstream infection (CLABSI), with the hospital's infection control team."

Last month, Case Recap: Neonatal Central Line Associated Bloodstream Infection (CLABSI)

Last month's challenge featured a case in which you were invited to discuss Margaret's bloodstream infection, specifically a central line-associated bloodstream infection (CLABSI), with the hospital's infection control team. Margaret is a 6-day-old female infant, born at 26 weeks' gestational age via vaginal delivery due to preterm labor. On her fifth day of life, she developed sepsis-like symptoms. Blood cultures confirmed infection with Klebsiella pneumoniae, and she is currently receiving antibiotic therapy. Margaret has an umbilical venous catheter (UVC) placed at birth, requires increased ventilatory support, and is experiencing diminished urine output along with episodes of bradycardia.

"While often overlooked, peripheral intravenous (PIVs) catheters also pose a meaningful risk of bloodstream infection in neonates. In particular, PIVs have been associated with CoNS-related bacteremia, possibly due to their short dwell time and frequent reinsertion, which increase the risk of skin barrier disruption and contamination."

Key Learning Points: Neonatal CIABSI

- While often overlooked, peripheral intravenous (PIVs) catheters also pose a meaningful risk of bloodstream infection in neonates. In particular, PIVs have been associated with CoNS-related bacteremia, possibly due to their short dwell time and frequent reinsertion, which increase the risk of skin barrier disruption and contamination.
- **Etiology:** The most commonly reported causative pathogens include CoNS (Coagulas Negative Staphylococcus), *Staphylococcus aureus,* enterococci, *Escherichia coli*, *Pseudomonas aeruginosa,* Klebsiella species, and other Enterobacteria, as well as Candida species, with substantial variability across individual studies and network data. CoNS are the most common pathogens in high-resource settings. In contrast, Gram-negative organisms appear to predominate in reports from low- and middle-income countries.
- Povidone-iodine shows similar efficacy to alcohol-based

chlorhexidine, but its use is limited by systemic absorption of iodine and the risk of hypothyroidism.

For more details, visit the previous case presentation:

https://www.takethequiz.us/prior-case-presentation

Congratulations:

The gift card winner for last month's challenge is Denise Jones, Providence, Alaska.

This month's Challenge: Margaret's heart rate is low, and her potassium is high

This month's case focuses on Neonatal hyperkalemia and its management.

Sneak Peek Challenge question: True or false: Pharmacological interventions for the acute treatment of hyperkalemia in the neonates are well studied

Test your knowledge and participate in the challenge by visiting:

WWW.Takethequiz.US or scanning this QR code:

Stay Connected

- Download the app for updates on new cases: https://www.jotform.com/app/223386358459166
- Scan the QR code

References:

1. Dimopoulou, Varvara et al. Central line-associated bloodstream infections in newborns: From vulnerability to prevention. Seminars in Fetal and Neonatal Medicine, Volume 30, Issue 4, 101665. https://doi.org/10.1016/j.siny.2025.101665
2. Elsevier, Principles of Neonatology. Available from: Elsevier eBooks+, Elsevier - OHCE, 2023. For questions or to share feedback, please contact us at MerchakCasechallenge@gmail.com

For questions or to share feedback, please contact us at MerchakCasechallenge@gmail.com

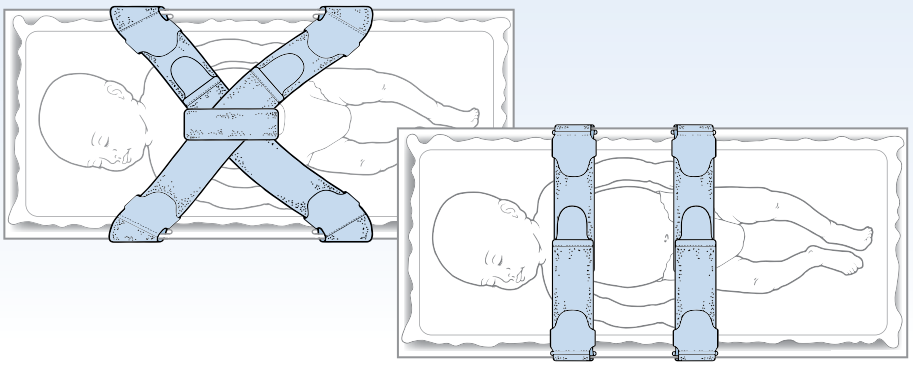
Disclosure: *The author has no conflicts of interests to disclose.*

NT

Corresponding Author

Assaad Merchak, MD
Neonatal Services Medical Director,
Summerville Medical Center.
Email: MerchakCaseChallenge@Gmail.com

Respiralogics loves babies



StatStrap® Infant Positioning Strap

Safely secures and positions newborn infants within an incubator

- Positioning aid and safety restraint for infant torso
- Easy and secure attachment to mattress tray in the incubator
- Positions infants, prevents gross body movement
- Adjustable StatStraps accommodate various sizes of infants
- Installs and removes rapidly if critical need arises

Preemie Beenie™ Poly-Lined Knit Hat

Poly-lined knit cap decreases heat loss in pre-term and full-term infants

- Soft, stretchable knit for easy application
- Snug fit to minimize movement and pressure on the head
- Latex-free, DEHP-free polyurethane liner reduces heat loss
- Three color-coded sizes to accommodate ELBW to full-term infants

To start using StatStrap and Preemie Beenie, contact us at 4info@respiralogics.com.

3545 Airway Drive, Suite 104 • Reno, NV 89511
855-473-7747 • www.respiralogics.com

respiralogics™

Pioneer Profile – George Cassady, MD

Joseph B. Philips III, MD, FAAP

Dr. Cassady is in his office. Partially seen is a portrait of President Kennedy, whose baby he helped care for while a fellow in Boston in 1963. (6)

George Edward Cassady II was born in Los Angeles, California in 1934. (1) He attended the University of Southern California but then matriculated at Duke University School of Medicine before receiving his undergraduate degree. USC later awarded him an undergraduate diploma in recognition of his overall accomplishments and contributions to USC. After receiving his MD degree in 1958, George completed residency training at Duke before serving as a clinical associate and investigator in genetics at the National Institutes of Health (NIH) from 1960 to 1962. He then spent two years at Harvard as a senior resident and fellow in neonatal physiology under the tutelage of the legendary Clement Smith, MD. (2) In 1964, Dr. Cassady moved to Birmingham, AL to become Chief of Perinatology and Director of Nurseries, thus establishing what became the Division of Neonatology within the Department of Pediatrics at the University of Alabama at Birmingham (UAB), where he remained until 1989 when he became Director of Neonatology and Chairman of Pediatrics at Children's Hospital of San Francisco. In 1993, he became Chief of Pediatrics and Director of Nurseries at St. Elizabeth's Hospital in Boston, Massachusetts, and a Special Lecturer in Pediatrics at Harvard University. Finally, in 1997, he returned to San Francisco, joining the faculty at Stanford University as a Clinical Professor of Pediatrics.

"George Edward Cassady II...spent two years at Harvard as a senior resident and fellow in neonatal physiology under the tutelage of the legendary Clement Smith, MD. In 1964, Dr. Cassady moved to Birmingham, AL to become Chief of Perinatology and Director of Nurseries, thus establishing what became the Division of Neonatology within the Department of Pediatrics at the University of Alabama at Birmingham (UAB)..."

While a resident physician at Duke, Dr. Cassady cared for several infants with congenital hepatitis and subsequently reported on "Familial Giant-Cell Hepatitis in Infancy," publishing extensive genetic and clinical findings, including pedigrees of a large family with a high frequency of the disease. (3) His time at the NIH resulted in a massive study of hereditary renal dysfunction and associated nerve deafness in five families with a total of 339 individuals. (4) This report was followed by an even larger one, including 476 members of seven families. (5)

"His time at the NIH resulted in a massive study of hereditary renal dysfunction and associated nerve deafness in five families with a total of 339 individuals. This report was followed by an even larger one, including 476 members of seven families. "

Upon his arrival at UAB, Cassady focused on improving newborn outcomes. He quickly revamped the existing nurseries. "There were four nurseries on the 5th floor of Hillman—two 'white' on one side and two 'colored' on the other side of the delivery rooms—'regular' and 'premature' nurseries. My first task was to convert the 'colored' nurseries into a single 'High Risk' nursery, which had about 1,110 admissions during its initial year of operation. The 'white' nurseries became the 'Well Baby Nursery.' The total deliveries were about 3,500 that year. Many threats to my family from the KKK for the 'integration'!!" (6) He authored periodic reports in the *Journal of the Medical Association* of the State of Alabama on such topics as management of hyaline membrane disease and the high infant mortality rates in the state. (7, 8) Dr. Cassady pioneered the regionalization of perinatal care in the area. He documented the improvement in outcomes when an

"Upon his arrival at UAB, Cassady focused on improving newborn outcomes. He quickly revamped the existing nurseries. 'There were four nurseries on the 5th floor of Hillman—two "white" on one side and two "colored'"on the other side of the delivery rooms—"regular" and "premature" nurseries. My first task was to convert the "colored" nurseries into a single "High Risk" nursery, which had about 1,110 admissions during its initial year of operation. The "white"nurseries became the "Well Baby Nursery."The total deliveries were about 3,500 that year. Many threats to my family from the KKK for the "integration"!!' "

area in west Georgia implemented a regionalization program and established an integrated community-based neonatal transport system (9, 10). These efforts led the state of Alabama to establish an official regionalization of neonatal care, and our newborn ICU was designated as a Regional Newborn Intensive Care Unit. (11) Cassady and colleagues also established a statewide continuing medical education program that significantly improved neonatal outcomes. (12)

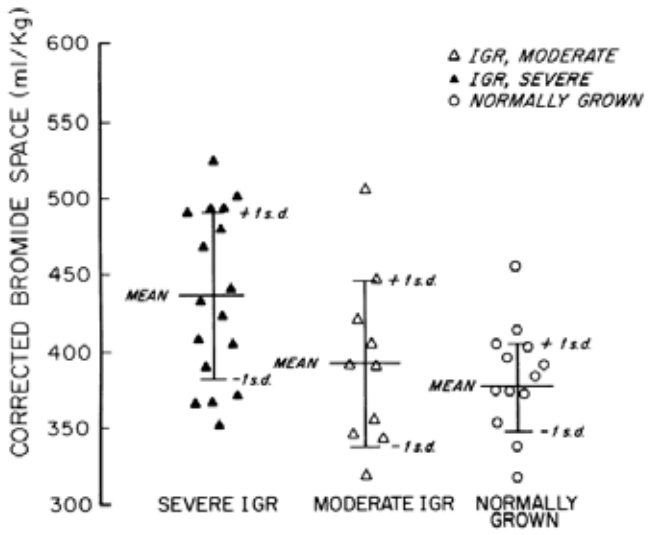
"Dr. Cassady pioneered the regionalization of perinatal care in the area. He documented the improvement in outcomes when an area in west Georgia implemented a regionalization program and established an integrated community-based neonatal transport system. These efforts led the state of Alabama to establish an official regionalization of neonatal care, and our newborn ICU was designated as a Regional Newborn Intensive Care Unit."

Dr. Cassady had a significant research interest in body composition and related topics in neonates and made seminal contributions to the field. He measured plasma volume using Evans Blue-labeled albumin in term, preterm, and intrauterine

"He measured plasma volume using Evans Blue-labeled albumin in term, preterm, and intrauterine growth-restricted (IUGR) infants and found, among other things, that plasma volume decreased with increasing birthweight in preterm infants."

growth-restricted (IUGR) infants and found, among other things, that plasma volume decreased with increasing birthweight in preterm infants. (13) Another study estimating extracellular fluid volume by the corrected bromide space method showed that most IUGR infants have higher extracellular fluid volumes. (14) He summarized these and other findings in a review article showing the differences (Figure 1). (15)

Figure 1. Corrected bromide space in growth-restricted versus normally grown infants.(15) Used with permission.



"Although not strictly a body composition study, Cassady and colleagues also showed that reticulocyte counts decline with advancing gestational age and that those in term or near-term IUGR babies are similar to those of normally grown peers."

Although not strictly a body composition study, Cassady and colleagues also showed that reticulocyte counts decline with advancing gestational age and that those in term or near-term

"A study published in The New England Journal of Medicine *(*NEJM*) refuted the widely held belief at the time that Coombs-positive babies with hemolytic anemia are hypervolemic, finding instead that they are normovolemic."*

IUGR babies are similar to those of normally grown peers. (16) An investigation of intracellular and extracellular water comparing mature infants born vaginally to those delivered by cesarean section found that the sectioned babies had an average of 250 ml higher total body water, primarily in the intracellular space. (17) A study published in *The New England Journal of Medicine* (*NEJM*) refuted the widely held belief at the time that Coombs-positive babies with hemolytic anemia are hypervolemic, finding instead that they are normovolemic. (18) A study relating arterial blood pressure to blood volume in sick, normotensive versus hypotensive infants found that the hypotensive infants were not hypovolemic and that infusions of salt-poor albumin had little effect on blood pressure but impaired oxygenation in some infants. (19) Dynamic skinfold thickness measurements were shown to be simple, non-invasive methods to measure subcutaneous fat and subcutaneous water content. (20) Another report found that open-heart surgery in infants and young children reduces intracellular water content by nearly 25% and emphasized the need for close post-operative monitoring of such infants. (21)

"A study relating arterial blood pressure to blood volume in sick, normotensive versus hypotensive infants found that the hypotensive infants were not hypovolemic and that infusions of salt-poor albumin had little effect on blood pressure but impaired oxygenation in some infants."

A further study suggested that fingernail nitrogen content could serve as a retrospective measure of intrauterine growth adequacy, as IUGR infants had lower fingernail nitrogen content than normally grown peers. (22) Serum bile salt concentrations were found to be similar to those of adults in neonatal cord blood samples but then rose quite significantly in both term and preterm infants, likely due to immaturity of hepatic clearance mechanisms. (23) Dweck and Cassady were among the first to describe hyperglycemia in very low birthweight (VLBW) babies and to link the risk of it to glucose infusion rates. (24) Cassady et al. were also among the first to use parenteral nutrition and to describe some of the metabolic derangements that can accompany its use. (25) Black-White differences in infants born to multiparous women of low socioeconomic status showed that black infants were significantly smaller in multiple measurements, including birthweight, crown-heel length, plus head, chest, and abdominal circumference. (26)

"Dweck and Cassady were among the first to describe hyperglycemia in very low birthweight (VLBW) babies and to link the risk of it to glucose infusion rates. Cassady et al. were also among the first to use parenteral nutrition and to describe some of the metabolic derangements that can accompany its use."

Neonatal and perinatal infections are another area in which Dr. Cassady made major contributions. A monumentally important study conducted with our already world-class Division of Infectious Diseases and published in *NEJM* in 1967 pioneered the use of immunoglobulins, specifically IgG and IgM, in the diagnosis of infections acquired prenatally, natively, or postnatally. (27) Another *NEJM* study documented the superiority of the IgM fluorescent treponemal antibody absorption (IgM FTA-ABS) test over other methods in the diagnosis of congenital syphilis. (28) A further report documented changes in serum IgM levels in acute neonatal infections, finding that, in general, levels were higher with viral versus bacterial infections, with the caveat that early antibiotic therapy may have blunted the response in those infants with bacterial infections. (29) A prospective study of 2,916 cord blood samples collected over one year in the mid-1960s revealed that the chances of having a congenital infection were thirtyfold higher when IgM levels surpassed 19.5 mg/dL. (30) The authors also noted that "Data indicate that subclinical congenital injections with 'silent' CNS involvement occur frequently in certain newborn groups and may be an important cause of brain damage that is currently unclassified." This finding is among those that have spawned UAB's longstanding interest in cytomegalovirus infections. Yet another important study demonstrated the utility

"Neonatal and perinatal infections are another area in which Dr. Cassady made major contributions. A monumentally important study conducted with our already world-class Division of Infectious Diseases and published in NEJM in 1967 pioneered the use of immunoglobulins, specifically IgG and IgM, in the diagnosis of infections acquired prenatally, natively, or postnatally."

of umbilical cord histology in diagnosing perinatal infections, documenting higher rates of prematurity and mortality in those infants with funisitis. (31)

The placental transfer of cephalothin was studied in 43 mother-infant dyads, showing rapid placental transfer with much lower serum levels achieved in the babies, along with rapid antibiotic clearance and no untoward effects to the infants. (32) Cassady and associates were among the first to characterize early-onset Group B Streptococcal infection in the newborn, which was a scourge of neonatology from the 1970s until the advent of effective intrapartum antibiotic prophylaxis in the early 1990s, which led to a drastic reduction in this devastating disease. (33, 34) Another report documented an outbreak and subsequent control of enteropathogenic *E. coli* infections in several nurseries in Birmingham, AL. (35) A further report also showed effective control of an outbreak of Klebsiella infections. (36) The utility of the Limulus lysate test for the diagnosis of gram-negative bacterial meningitis was also documented. (37) A prospective study investigated the impact of endotracheal intubation on bacterial colonization of the respiratory tract and subsequent systemic infection, showing that a brief course of antibiotics significantly reduced colonization and infection rates. (38) The importance of post-mortem blood and cerebrospinal fluid cultures was documented, with 41% of 126 deceased infants having one or both sites culture positive. (39) An important study showed that the cytomegalovirus (CMV) can persist in frozen human breast milk for significant lengths of time. (40) An even more important study reported in the NEJM showed that, although healthcare workers are often unknowingly exposed to CMV-shedding infants, their risk of contracting CMV is no higher than that of the general public at large. (41) A final infectious disease study found that "hyperoxia causes the persistence of *U. urealyticum* in the lungs of newborn mice, acutely potentiates the inflammatory response, and turns an otherwise self-limited pneumonia into a lethal disease." (42)

"An important study showed that the cytomegalovirus (CMV) can persist in frozen human breast milk for significant lengths of time. An even more important study reported in the NEJM showed that, although healthcare workers are often unknowingly exposed to CMV-shedding infants, their risk of contracting CMV is no higher than that of the general public at large."

Dr. Cassady also made important contributions to the field of amniocentesis and the management of Rh-sensitized pregnancies, which were common before the widespread use of Rh(D) immune globulin to prevent sensitization. An extensive review published in 1966 detailed the current state of the art for the management of the "Rh Problem," including intrauterine care, amniocentesis technique, and newborn care, including exchange transfusion. (43) The use of amniotic fluid spectrophotometry in the management of Rh-sensitized pregnancies was reviewed in a total of 367 women, 189 of whom were Rh-negative. (44) Cassady and Brakefield reported on a successful case of intraperitoneal fetal blood transfusion early in the era of such treatments. (45) He and colleagues then reviewed their experience with a total of 46 fetal transfusions in 28 pregnancies, highlighting the dangers of the procedure, in particular when the placenta is anterior and must be pierced in order to accomplish the procedure. (46) They also reported on the risk of fetal-maternal transfusion following amniocentesis and found the risk to be low and no greater than that of a normal pregnancy. (47) Another report documented amniotic fluid spectrophotometric findings similar to Rh-sensitized pregnancies in 6 of 7 pregnancies complicated by anencephaly and polyhydramnios despite a lack of sensitization. (48) Fetal gastrointestinal obstruction was also shown to cause elevated bilirubin levels in amniotic fluid. (49) Dr. Cassady published a massive review of the composition of amniotic fluid with 298 references in 1974. (50)

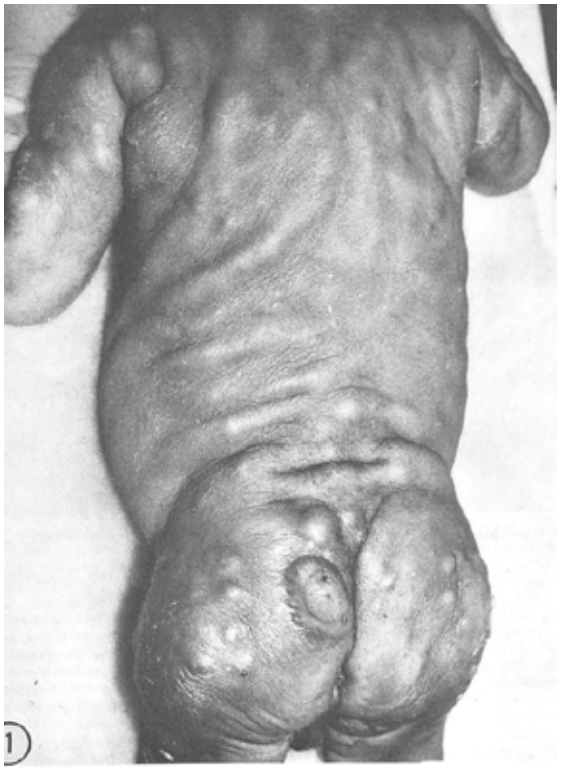
"Dr. Cassady also made important contributions to the field of amniocentesis and the management of Rh-sensitized pregnancies, which were common before the widespread use of Rh(D) immune globulin to prevent sensitization. An extensive review published in 1966 detailed the current state of the art for the management of the "Rh Problem," including intrauterine care, amniocentesis technique, and newborn care, including exchange transfusion."

Dr. Cassady and his colleagues made numerous additional contributions in multiple areas. An early report on the use of nasal continuous positive airway pressure in 30 infants with respiratory distress syndrome showed significant improvement in oxygenation and reduced need for mechanical ventilation. (51)

Analysis of umbilical cord sera from 272 consecutively delivered infants found significant levels of salicylates in 26 (9.5%) despite none of the mothers having been prescribed a salicylate. (52) Most mothers denied taking a salicylate until specific questioning about proprietary medications such as headache powders. A 74-day-old infant with failure to thrive was found to have very high lead levels resulting from its mother's long-term consumption of untaxed, moonshine whiskey. (53) An early case of umbilical catheter-related hepatic abscess was reported, concluding with sage advice still current today: "All catheters should be removed at the earliest possible time." (54) Case reports of non-immune hydrops caused by a hemangioendothelioma and paroxysmal supraventricular tachycardia were added to the literature. (55, 56) Successful use of peritoneal dialysis in two infants with acute renal failure was reported and was among the first ever reported. (57) Percutaneous cannulation of peripheral arteries was documented

in 57 infants with birthweights as low as 560 grams, with complication rates similar to those with umbilical artery catheters. (58) A striking case of subcutaneous fat necrosis in a neonate was reported with gross photographs and microscopic images of crystallized fat (Figure 2). (59) Papillary muscle necrosis was noted in 24 of 89 (29%) autopsied infants, with a higher frequency seen in higher birthweight infants with a history of perinatal asphyxia. (60)

Figure 2. Subcutaneous fat necrosis in a neonate. (59) Used with permission.

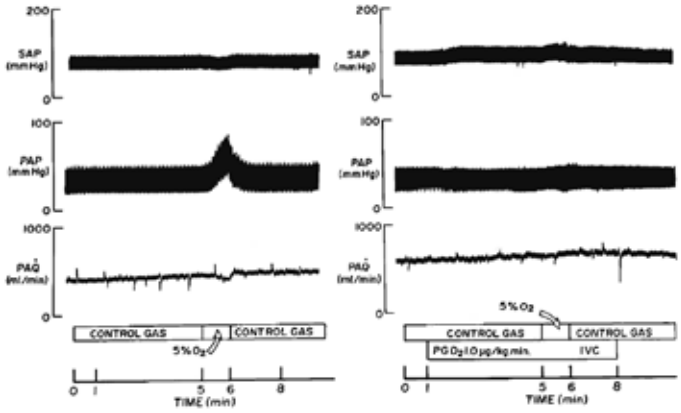


"A pair of studies evaluated the varying effects of nebulized water, humidified air, and heated or unheated gas on lung ultrastructure in ventilated rabbits, providing insight into the need to use warmed, humidified air to minimize lung injury.

Non-invasive monitoring was another interest. Indirect blood pressure measurements using an inflatable cuff and a Doppler ultrasound transducer correlated well with those obtained with indwelling arterial catheters. (61) A review of transcutaneous bilirubinometry was published, and the use of transcutaneous oxygen measurement as an aid to fluid management in infants with necrotizing enterocolitis (NEC) was documented. (62, 63) This interest culminated in a state-of-the-art review of transcutaneous monitoring of oxygen and carbon dioxide tensions and bilirubin levels in 1983. (64) An important study of unbound serum bilirubin levels showed that exchange transfusion lowered unbound bilirubin levels but did not affect serum binding properties. (65) A pair of studies evaluated the varying effects of nebulized water, humidified air, and heated or unheated gas on lung ultrastructure in ventilated rabbits, providing insight into the need to use warmed, humidified air to minimize lung injury. (66, 67)

I arrived at UAB in 1980 and published several articles with George and our colleagues. We documented that the amikacin doses recommended at the time produced excessive serum levels

Figure 3. Inhibition of hypoxic pulmonary vasoconstriction by prostaglandin D2 infusion.(70). Used with permission.



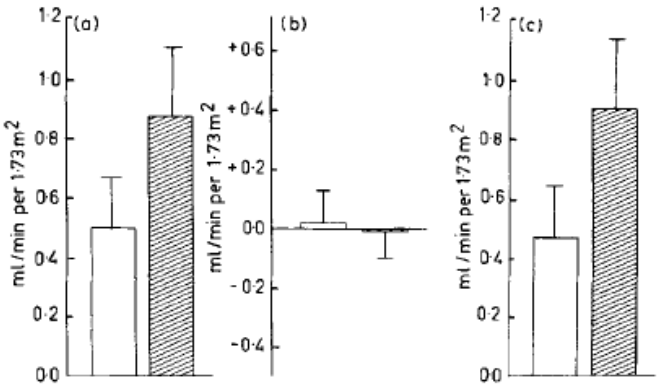
"We studied the effects of nifedipine in normoxic and hypoxic lambs and concluded that the drug would likely not be helpful in the management of persistent pulmonary hypertension of the newborn. The effects of position changes on carbon dioxide tension were studied, and we found no significant changes with prone, supine, or right-side-lying positions.

in infants weighing ≤1,000 grams and emphasized the need to monitor serum levels. (68) Cefoperazone pharmacokinetics were described in newborn infants. (69) Prostaglandin D2 was shown to inhibit hypoxic pulmonary hypertension in neonatal lambs (Figure 3). (70) We studied the effects of nifedipine in normoxic and hypoxic lambs and concluded that the drug would likely not be helpful in the management of persistent pulmonary hypertension of the newborn. (71) The effects of position changes on carbon dioxide tension were studied, and we found no significant changes with prone, supine, or right-side-lying positions. (72)

Dr. Garth I. Leslie, MB, BSc(Med) came to UAB in the early 1980s

for a remarkably productive research fellowship in collaboration with Dr. Cassady. An early study evaluated colloid osmotic pressure at birth, finding significant increases with increasing gestational age and birthweight. (73) Diuresis and natriuresis were studied in six infants with acute tension pneumothorax treated with tube thoracostomy. (74) Free water clearance increased in the eight hours post-pneumothorax due to increased osmolar clearance (Figure 4), and sodium balance was found to be negative as well.

Figure 4. Urine volume (a), free water clearance (b), and osmolar clearance (c) in the eight hours before (clear bars) and after (hatched bars) acute tension pneumothorax in 6 preterm neonates. P < 0.5 for a and c. (74) Used with permission.



"Creatinine clearance was significantly lower in the ventilated group, and urine vasopressin levels were higher, but no other significant changes were observed in any other measured variables. In another study, colloid osmotic pressure was found to be lower in mechanically ventilated babies weighing <1501 grams at birth than in spontaneously breathing babies, regardless of the indication for mechanical ventilation."

The effects of assisted ventilation on creatinine clearance and hormonal control of electrolyte balance in twenty-two infants <1,501 grams were compared to 21 spontaneously breathing but otherwise comparable infants. (75) Creatinine clearance was significantly lower in the ventilated group, and urine vasopressin levels were higher, but no other significant changes were observed in any other measured variables. In another study, colloid osmotic pressure was found to be lower in mechanically ventilated babies weighing <1501 grams at birth than in spontaneously breathing babies, regardless of the indication for mechanical ventilation. (76) The renin-angiotensin-aldosterone response was studied in 10 very low birthweight infants sustaining grade 3 or 4 intraventricular hemorrhages (IVH) and was found to be responsive, with elevated levels found in those with significantly reduced blood volume. (77) Capillary and venous bilirubin values were compared in 108 infants, and capillary values were found to underestimate venous values when the venous bilirubin exceeded 10 mg/dL. (78)

The patent ductus arteriosus (PDA) in preterm infants was another major interest of Cassady's. Radionuclide angiography was used to measure the pulmonary-to-systemic blood flow ratio (Qp/Qs) in 30 infants clinically suspected of having a PDA. (79) We found that Qp/Qs was greater than 3 to 1 in many of the infants. Surgical closure of a PDA, which was our standard of care in the 1980s, was investigated as a potential cause of IVH in 20 infants with birthweights <1,501 grams, 16 of whom weighed <1,000 grams, and no infant sustained a new bleed or extended an existing one. (80) Shortly after my arrival at UAB, we began planning an RCT of very early prophylactic PDA ligation in infants weighing ≤1,000 grams at birth who required supplemental oxygen. (81) 40 infants underwent prophylactic ligation within 24 hours of birth while 44 infants received standard care, 23 of whom were ligated later. There were no differences between the two groups in the rates of death, bronchopulmonary dysplasia (BPD), IVH, or retinopathy of prematurity (ROP). There was, however, a striking difference in the incidence of necrotizing enterocolitis: 8% of those in the ligated group developed it, compared with 30% in the control group (p <0.002). A later reanalysis of the data from this study, conducted by Ronald Clyman, MD, found that surgical ligation of the ductus is associated with a higher rate of BPD compared to infants not undergoing ligation. (82) An analysis of prospectively collected data on 295 infants born weighing <1,000 grams showed a striking increase in frequency of PDA in infants receiving phototherapy compared to those who did not. (83) Dr. Cassady also wrote an extensive review concerning the relationship between PDA and ROP. (84)

"A later reanalysis of the data from this study, conducted by Ronald Clyman, MD, found that surgical ligation of the ductus is associated with a higher rate of BPD compared to infants not undergoing ligation. An analysis of prospectively collected data on 295 infants born weighing <1,000 grams showed a striking increase in frequency of PDA in infants receiving phototherapy compared to those who did not."

Dr. Cassady also published several important articles on outcomes. An early study of 233 intrauterine growth-restricted (IUGR) babies compared with 2,814 normally grown infants born in the late 1960s showed that IUGR infants had higher rates of congenital malformations, perinatal asphyxia, hypoglycemia, and polycythemia but lower rates of hyaline membrane disease. (85) A report on the outcomes of 14 surviving infants weighing 960 to 1,100 grams at birth found that 11 (78.6%) had normal

neurodevelopmental outcomes. (86) Another early report on the long-term outcomes of preemies with birthweights <1,000 grams concluded, "It is now apparent that the tiniest, most ill infants who survive, even those subjected to the full armament of diagnostic and therapeutic maneuvers, more often than not go on to lead entirely normal lives." (87)

"Dr. Cassady also published several important articles on outcomes. An early study of 233 intrauterine growth-restricted (IUGR) babies compared with 2,814 normally grown infants born in the late 1960s showed that IUGR infants had higher rates of congenital malformations, perinatal asphyxia, hypoglycemia, and polycythemia but lower rates of hyaline membrane disease."

A secondary analysis of prospectively collected data produced by the CRYO/ROP study, representing about 15% of all infants with birthweights 1,250 grams or less born in the US over 23 months in the late 1980s, found that 28-day survival rates improved from 36.5% for infants born at 24 weeks gestation to 89.9% for those born at 29 weeks gestation. (88, 89) Infants weighing 500 to 599 grams had 30% survival, while those weighing 1,200 to 1,250 grams at birth had 91.3% survival. Twenty-eight-day outcomes for survival and survival without supplemental oxygen among 1,776 infants weighing 701–1,500 grams at birth varied significantly across 11 participating centers. (90) The authors speculated that the differences could be due to variations in patient mix but also to differences in obstetric and neonatal management. Finally, developmental outcomes of 14 "acutely asphyxiated" infants, defined as having a one-minute Apgar score <3 requiring endotracheal intubation and buffering, were examined. It was found that all 11 normally grown infants had good outcomes, while the 3 IUGR infants did not. (91)

George was never one to hold his tongue. A commentary accompanying a 1982 publication in *Pediatrics* that documented the increasing role of nurses in NICUs, including the independent performance of procedures like endotracheal intubation, lumbar puncture and exchange blood transfusion stated, "If, in fact, a nurse with a maximum of but two years of postgraduate work can do just as good a job, we certainly need to rethink our training program structure—and the architecture of patient care services as well!" (92, 93) Another commentary on a German report showing reduced BPD rates, likely due to reduced use of endotracheal intubation and mechanical ventilation in premature infants, contained the following: "The clear bias of this writer against the unlimited or routine use of ET/IMV in VLBW infants is evident in both the tone and content of this commentary.

Support for this bias is limited and speculative. The equally clear bias of many other neonatologists is evident in the epidemiologic figures, which suggest that virtually all infants weighing less than 1000 g and most VLBW infants are intubated at delivery and remain intubated and invasively mechanically ventilated for weeks to months after birth, often despite relatively normal oxygen requirements, chest radiographic features, or pulmonary compliance." (94, 95) I can attest to the veracity of this statement. As soon as I arrived at UAB, I repeatedly heard him say "ventilators are evil." He would acknowledge that they are also necessary, but he would preach extubation as soon as possible. This policy continues to this day and is likely one of the major reasons our BPD rates are among the lowest in the Neonatal Research Network (NRN).

"As soon as I arrived at UAB, I repeatedly heard him say "ventilators are evil." He would acknowledge that they are also necessary, but he would preach extubation as soon as possible. This policy continues to this day and is likely one of the major reasons our BPD rates are among the lowest in the Neonatal Research Network (NRN)."

Yet another editorial commentary came in response to a provocative article entitled "Human Rights and the Omission or Cessation of Treatment for Infants" that argued that some babies that have no hope of a "normal, productive or painless existence" have a fundamental human right to die evoked the following—"Does what he says anger you? I hope not. I hope that you tell yourself how dumb you are every time you struggle with one of these decisions." (96, 97) A letter to the editor entitled "Is Neonatology Being Abandoned by the RRC and General Pediatrics?" railed against reductions in pediatric resident exposure to neonatology. (98) Here we are again in the 2020s with a further reduction in resident experience in neonatology and a need to increase nurse practitioner involvement in neonatal intensive care.

"On the national level, he was a member of the founding committee that led to the development of the Section on Neonatal -Perinatal Medicine (SONPM) of the American Academy of Pediatrics (AAP). He served for several years on the Fetus and Newborn Committee of the AAP and on the committee that wrote questions for the early Neonatal-Perinatal Medicine board examinations."

"George was the first person in Alabama to become certified in the Neonatal Resuscitation Program (NRP). He then trained us here at UAB, and we traversed the state, training personnel at every hospital that delivered babies."

Dr. Cassady was also active at the state and national levels. I have already discussed his work in Alabama. On the national level, he was a member of the founding committee that led to the development of the Section on Neonatal -Perinatal Medicine (SONPM) of the American Academy of Pediatrics (AAP). (99) He served for several years on the Fetus and Newborn Committee of the AAP and on the committee that wrote questions for the early Neonatal-Perinatal Medicine board examinations. George was the first person in Alabama to become certified in the Neonatal Resuscitation Program (NRP). He then trained us here at UAB, and we traversed the state, training personnel at every hospital that delivered babies.

I mentioned earlier that I joined the UAB faculty in 1980, but I first met George in 1977 when I interviewed for a fellowship position. He had been up all night and had 3 deaths, so he was busy with families. I spent the morning teaching the house staff how to intubate using one of the dead babies. Yes, we did that back then. There were no baby mannequins in those days, and simulations were a thing of the future. We finally went to lunch together, and I remember two things about this encounter. First, he turned his French fries absolutely white with salt, and secondly, he told me that he had been unable to obtain funding for a fellowship, but that if I would train at the University of Florida, he would hire me when I finished. So, I did, and then he did.

Dr. Cassady was a complicated person. He was passionate and always placed his babies first, which sometimes led to conflicts with administrators. He was meticulous and demanding of house staff and allied personnel. If he liked you, life would be good. If he did not, things could get sticky. University Hospital had an early computer system that contained laboratory results. He knew every number on every baby by the time he started rounds. Woe be unto a resident who did not have a similar command of the baby's data. Fortunately, he liked me. A LOT!! In other aspects of daily life, he was less observant. He often wore a polo shirt with a knit necktie. On one occasion, all the male residents wore polo shirts with ties. Much to their dismay, he did not even notice. Another time, I shaved off the beard that I had sported since before arriving at UAB. About three weeks later, he commented, "You look different. What happened?"

George was an avid collector of Louis Carroll memorabilia and donated it to the University of Southern California. (100) It includes first editions of Carroll's major works, including *Alice's Adventures in Wonderland* and *Through the Looking-Glass*, letters and manuscripts, other ephemera, and an extensive collection of Japanese Carroll materials. As a youth, he was a piano prodigy and once performed at the Hollywood Bowl under the baton of conductor Leopold Stokowski. When I knew him, he played a mean banjo but never the piano. I asked him why not, and his response was "Because I know how it is supposed to sound, and I can't make it sound that way anymore." Typical George. If you cannot do it right, do not do it.

In my early years here, he smoked a pipe and would often enter the NICU puffing away on it. He loved fishing, and he and I enjoyed many days on the water at his lake place. Gardening was another passion, and several mornings, he presented me with freshly picked raspberries and blackberries from his garden. We swung for the fences when the NIH issued a request for proposals to establish the NRN, were included in the first round in the 1980s, and are still members today. George Cassady was the most important man in my life after my father. I still miss him every day.

References:

1. George Edward Cassady II: AL.com; 2023 [updated December 17, 2023, January 28, 2026]. Available from: https://obits.al.com/us/obituaries/birmingham/name/george-cassady-obituary?id=53819934&utm_source=chatgpt.com.
2. Philips JB, III. Pioneer Profile - Clement A. Smith, MD. Neonatology Today. 2025;20(4):36–40.
3. Cassady G. Familial "Giant-Cell Hepatitis" in Infancy; Clinical, Pathologic, and Genetic Studies on a Large Family. American Journal of Diseases of Children. 1964;107(5):456. doi: 10.1001/archpedi.1964.02080060458005.
4. Cohen MM, Cassady G, Hanna BL. A Genetic Study of Hereditary Renal Dysfunction with Associated Nerve Deafness. American Journal of Human Genetics. 1961;13(4):379-89. PubMed Central PMCID: PMCPMC1932137.
5. Cassady G, Brown K, Cohen M, Demaria W. HEREDITARY RENAL DYSFUNCTION AND DEAFNESS. Pediatrics. 1965;35(6):967–79. doi: 10.1542/peds.35.6.967.
6. History of the Division of Neonatology: University of Alabama at Birmingham Medicine; [January 27, 2026]. Available from: https://www.uab.edu/medicine/peds/neonatology/history-of-the-division-of-neonatology?utm_source=chatgpt.com.
7. Cassady G. Maternal and Child Health. Journal of the Medical Association of the State of Alabama. 1965;35(5):34–7.
8. Cassady G. Infant Death in Alabama. Journal of the Medical Association of the State of Alabama. 1968;38(3):279–82.
9. Thompson RE, Souma ML, Cassady G, Sumners J. Impact of intensive newborn care on neonatal mortality in a community hospital. Southern Medical Journal. 1976;69(6):688-690. doi:10.1097/00007611-197606000-00005
10. Sumners J, Harris HB, Jones B, Cassady G, Wirtschafter DD. Regional Neonatal Transport: Impact of an Integrated Community/Center System. Pediatrics. 1980;65(5):910-916. doi:10.1542/peds.65.5.910
11. State and Regional Perinatal Advisory Counsils, the Bueau of Family Hearth Services, Alabama Department of Public Health. Alabama Perinatal Health Act; Annual Progress Report for FY 2009; Plan for FY 2010. In: Health SoADoP, editor. 2010. p. 1–23.
12. Wirtschafter DD, Sumners J, Colvin E, Knox E, Turner M, Cassady G, et al. Continuing medical education: an assessment of impact upon neonatal care in community hospitals. Annual Conference on Research in Medical

Education. 1979;18:252–7.

13. Cassady G. Plasma volume studies in low birth weight infants. Pediatrics. 1966;38(6):1020–7. doi: 10.1542/peds.38.6.1020.

14. Cassady G. Bromide Space Studies in Infants of Low Birth Weight. Pediatric Research. 1970;4(1):14–24. doi: 10.1203/00006450-197001000-00002.

15. Cassady G. Body Composition in Intrauterine Growth Retardation. Pediatric Clinics of North America. 1970;17(1):79–99. doi: 10.1016/s0031-3955(16)32377-x.

16. Lochridge S, Pass R, Cassady G. Reticulocyte Counts in Intrauterine Growth Retardation. Pediatrics. 1971;47(5):919–23. doi: 10.1542/peds.47.5.919.

17. Cassady G. Effect of Cesarean Section on Neonatal Body Water Spaces. The New England Journal of Medicine. 1971;285(16):887–91. doi: 10.1056/NEJM197110142851604.

18. Brans YW, Milstead RR, Bailey PE, Cassady G. Blood-Volume Estimates in Coombs-Test-Positive Infants. New England Journal of Medicine. 1974;290(26):1450–2. doi: 10.1056/nejm197406272902603.

19. Barr PA, Bailey PE, Sumners J, Cassady G. Relation Between Arterial Blood Pressure and Blood Volume and Effect of Infused Albumin in Sick Preterm Infants. Pediatrics. 1977;60(3):282–9. doi: 10.1542/peds.60.3.282.

20. Brans YW, Sumners JE, Dweck HS, Cassady G. A Noninvasive Approach to Body Composition in the Neonate: Dynamic Skinfold Measurements. Pediatric Research. 1974;8(4):215–22. doi: 10.1203/00006450-197404000-00001.

21. Brans YW, Dweck HS, Harris HB, Parr GVS, Bailey PE, Kirklin JW, et al. Effect of Open-Heart Surgery on the Body Composition of Infants and Young Children. Pediatric Research. 1981;15(7):1024–8. doi: 10.1203/00006450-198107000-00009.

22. Lockard D, Pass R, Cassady G. Fingernail Nitrogen Content in Neonates. Pediatrics. 1972;49(4):618–20. doi: 10.1542/peds.49.4.618.

23. Barnes S, Berkowitz G, Hirschowitz BI, Wirtschafter D, Cassady G. Postnatal physiologic hypercholemia in both premature and full-term infants. Journal of Clinical Investigation. 1981;68(3):775–82. doi: 10.1172/jci110314.

24. Dweck HS, Cassady G. Glucose Intolerance in Infants of Very Low Birth Weight. I. Incidence of Hyperglycemia in Infants of Birth Weights 1,100 Grams or Less. Pediatrics. 1974;53(2):189–95. doi: 10.1542/peds.53.2.189.

25. Brans YW, Sumners JE, Dweck HS, Cassady G. Feeding the Low Birth Weight Infant: Orally or Parenterally? Preliminary Results of a Comparative Study. Pediatrics. 1974;54(1):15–22. doi: 10.1542/peds.54.1.15.

26. Goldenberg RL, Cliver SP, Cutter GR, Hoffman HJ, Cassady G, Davis RO, et al. Black-White Differences in Newborn Anthropometric Measurements. Obstetrics and Gynecology. 1991;78(5):782–8.

27. 27.Alford CA, Schaefer J, Blankenship WJ, Straumfjord JV, Cassady G. A Correlative Immunologic, Microbiologic and Clinical Approach to the Diagnosis of Acute and Chronic Infections in Newborn Infants. New England Journal of Medicine. 1967;277(9):437–49. doi: 10.1056/nejm196708312770901.

28. Alford CA, Polt SS, Cassady GE, Straumfjord JV, Remington JS. γm-Fluorescent Treponemal Antibody in the Diagnosis of Congenital Syphilis. New England Journal of Medicine. 1969;280(20):1086–91. doi: 10.1056/nejm196905152802002.

29. Blankenship WJ, Cassady G, Schaefer J, Straumfjord JV, Alford CA, Jr. Serum gamma-M globulin responses in acute neonatal infections and their diagnostic significance. The Journal of Pediatrics. 1969;75(6):1271–81. doi: 10.1016/s0022-3476(69)80383-5.

30. Alford CA, Jr, Foft JW, Blankenship WJ, Cassady G, Benton JW, Jr. Subclinical central nervous system disease of neonates: a prospective study of infants born with increased levels of IgM. The Journal of Pediatrics. 1969;75(6):1167–78. doi: 10.1016/s0022-3476(69)80372-0.

31. Overbach AM, Daniel SJ, Cassady G. The value of umbilical cord histology in the management of potential perinatal infection. The Journal of Pediatrics. 1970;76(1):22–31. doi: 10.1016/s0022-3476(70)80125-1.

32. Morrow S, Palmisano P, Cassady G. The placenal transfer of cephalothin. The Journal of Pediatrics. 1968;73(2):262–4. doi: 10.1016/s0022-3476(68)80082-4.

33. Quirante J. Group B β-Hemolytic Streptococcal Infection in the Newborn. American Journal of Diseases of Children. 1974;128(5):659. doi: 10.1001/archpedi.1974.02110300069009.

34. Philips JB, III. Historical Perspective: Group B Streptococcus. Neonatology Today. 2025;20(10):13–21.

35. Kaslow RA, Taylor A, Jr, Dweck HS, Bobo RA, Steele CD, Cassady G, Jr. Enteropathogenic Escherichia coli Infection in a Newborn Nursery. Archives of Pediatrics & Adolescent Medicine. 1974;128(6):797–801. doi: 10.1001/archpedi.1974.02110310045007.

36. Knight P, Cassady G. Control of infection due to Klebsiella pneumoniae in an intensive care nursery. Journal of Perinatology: Official Journal of the California Perinatal Association. 1990;10(4):357–60.

37. Dyson D, Cassady G. Use of Limulus Lysate for Detecting Gram-Negative Neonatal Meningitis. Pediatrics. 1976;58(1):105–9. doi: 10.1542/peds.58.1.105.

38. Harris H, Wirtschafter D, Cassady G. Endotracheal Intubation and Its Relationship to Bacterial Colonization and Systemic Infection of Newborn Infants. Pediatrics. 1976;58(6):816–23. doi: 10.1542/peds.58.6.816.

39. Eisenfeld L, Ermocilla R, Wirtschafter D, Cassady G. Systemic Bacterial Infections in Neonatal Deaths. Archives of Pediatrics & Adolescent Medicine. 1983;137(7):645–9. doi: 10.1001/archpedi.1983.02140330029008.

40. Dworsky M, Stagno S, Pass RF, Cassady G, Alford C. Persistence of cytomegalovirus in human milk after storage. The Journal of Pediatrics. 1982;101(3):440–3. doi: 10.1016/s0022-3476(82)80081-4.

41. Dworsky ME, Welch K, Cassady G, Stagno S. Occupational Risk for Primary Cytomegalovirus Infection among Pediatric

Health-Care Workers. New England Journal of Medicine. 1983;309(16):950–3. doi: 10.1056/nejm198310203091604.

42. Crouse DT, Cassell GH, Waites KB, Foster JM, Cassady G. Hyperoxia potentiates Ureaplasma urealyticum pneumonia in newborn mice. Infection and Immunity. 1990;58(11):3487-93. doi: 10.1128/iai.58.11.3487–3493.1990.

43. Cassady G, McCain P, Vaughan B. Management of the Rh Problem. I. Intrauterine care. II. Technique of amniocentesis. III. Neonatal care. IV. Technique of exchange transfusion. Journal of the Medical Association of the State of Alabama. 1966;36(5):534–60.

44. Cassady G, Barnett R. The Predictive Value of Amniotic Fluid Spectrophotometry. American Journal of Obstetrics and Gynecology. 1970;108(7):1010–6. doi: 10.1016/0002-9378(70)90445-x.

45. Cassady G, Brakefield W. Successful transuterine, intraperitoneal fetal transfusion--report of a case. Journal of the Medical Association of the State of Alabama. 1967;36(9):1093–6.

46. Cassady G, Barnett R, Ceballos R. Dangers of fetal transfusion: importance of placental location. American Journal of Obstetrics and Gynecology. 1971;110(5):672–3. doi: 10.1016/0002-9378(71)90251-1.

47. Cassady G, Cailleteau J, Lockard D, Milstead R. The hazard of fetal-maternal transfusion after transabdominal amniocentesis. American Journal of Obstetrics and Gynecology. 1967;99(2):284–8. doi: 10.1016/0002-9378(67)90335-3.

48. Cassady G, Cailliteau J. The amniotic fluid in anencephaly. American Journal of Obstetrics and Gynecology. 1967;97(3):395–9. doi: 10.1016/0002-9378(67)90504-2.

49. 49.Grimes LD, Cassady G. Fetal gastrointestinal obstruction. Prenatal diagnosis based on amniotic fluid analysis. American Journal of Obstetrics and Gynecology. 1970;106(8):1196–200.

50. Cassady G. Amniocentesis. Clinics in Perinatology. 1974;1(1):87–124.

51. Harris H, Wilson S, Brans Y, Wirtschafter D, Cassady G. Nasal continuous positive airway pressure. Improvement in arterial oxygenation in hyaline membrane disease. Biology of the Neonate. 1976;29(3-4):231–7. doi: 10.1159/000240868.

52. Palmisano PA, Cassady G. Salicylate Exposure in the Perinate. JAMA: The Journal of the American Medical Association. 1969;209(4):556–8. doi: 10.1001/jama.1969.03160170052017.

53. Palmisano PA, Sneed RC, Cassady G. Untaxed whiskey and fetal lead exposure. The Journal of Pediatrics. 1969;75(5):869–72. doi: 10.1016/s0022-3476(69)80313-6.

54. Brans YW, Ceballos R, Cassady G. Umbilical Catheters and Hepatic Abscesses. Pediatrics. 1974;53(2):264–6. doi: 10.1542/peds.53.2.264.

55. Daniel SJ, Cassady G. Non-immunologic Hydrops Fetalis Associated with a Large Hemangioendothelioma. Pediatrics. 1968;42(5):828–33. doi: 10.1542/peds.42.5.828.

56. Cowan RH, Waldo AL, Harris HB, Cassady G, Brans YW. Neonatal Paroxysmal Supraventricular Tachycardia With Hydrops. Pediatrics. 1975;55(3):428–30. doi: 10.1542/peds.55.3.428.

57. Lugo G, Ceballos R, Brown W, Polhill R, Cassady G. Acute Renal Failure in the Neonate Managed by Peritoneal Dialysis. American Journal of Diseases of Children. 1969;118(4):655–9. doi: 10.1001/archpedi.1969.02100040657024.

58. Barr PA, Sumners J, Wirtschafter D, Porter RC, Cassady G. Percutaneous Peripheral Arterial Cannulation in the Neonate. Pediatrics. 1977;59(6):1058–62. doi: 10.1542/peds.59.6.1058.

59. Oswalt GC, Mones LF, Cassady G. Subcutaneous Fat Necrosis of the Newborn. Journal of Cutaneous Pathology. 1978;5(4):193–9. doi: 10.1111/j.1600-0560.1978.tb00956.x.

60. Setzer E, Ermocilla R, Tonkin I, John E, Sansa M, Cassady G. Papillary muscle necrosis in a neonatal autopsy population: incidence and associated clinical manifestations. The Journal of Pediatrics. 1980;96(2):289–94. doi: 10.1016/s0022-3476(80)80832-8.

61. Dweck HS, Reynolds DW, Cassady G. Indirect blood pressure measurement in newborns. American Journal of Diseases of Children. 1974;127(4):492–4. doi: 10.1001/archpedi.1974.02110230038005.

62. Strange M, Cassady G. Neonatal Transcutaneous Bilirubinometry. Clinics in Perinatology. 1985;12(1):51–62.

63. Buntain WL, Conner E, Emrico J, Cassady G. Transcutaneous oxygen (tcPO2) measurements as an aid to fluid therapy in necrotizing enterocolitis. Journal of Pediatric Surgery. 1979;14(6):728–32. doi: 10.1016/s0022-3468(79)80254-7.

64. Cassady G. Transcutaneous monitoring in the newborn infant. The Journal of Pediatrics. 1983;103(6):837–48. doi: 10.1016/s0022-3476(83)80698-2.

65. Arkans HD, Cassady G. Estimation of unbound serum bilirubin by the peroxidase assay method: effect of exchange transfusion on unbound bilirubin and serum bindings. The Journal of Pediatrics. 1978;92(6):1001–5. doi: 10.1016/s0022-3476(78)80387-4.

66. John E, Ermocilla R, Golden J, Cash R, McDevitt M, Cassady G. Effects of Gas Temperature and Particulate Water on Rabbit Lungs During Ventilation. Pediatric Research. 1980;14(11):1186–91. doi: 10.1203/00006450-198011000-00007.

67. John E, McDevitt M, Wilborn W, Cassady G. Ultrastructure of the Lung After Ventilation. British Journal of Experimental Pathology. 1982;63(4):401–7. PubMed Central PMCID: PMCPMC2040645.

68. Philips JB, III, Satterwhite C, Dworsky ME, Cassady G. Recommended amikacin doses in newborns often produce excessive serum levels. Pediatric Pharmacology (New York, NY). 1982;2(2):121–5.

69. Philips JB, III, Braune K, Ravis W, Cassady G, Dillon H. Pharmacokinetics of cefoperazone in newborn infants. Pediatric Pharmacology (New York, NY). 1984;4(3):193–7.

70. Philips JB, III, Lyrene RK, McDevitt M, Perlis W, Satterwhite C, Cassady G. Prostaglandin D2 inhibits hypoxic pulmonary vasoconstriction in neonatal lambs. Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology. 1983;54(6):1585–9. doi: 10.1152/jappl.1983.54.6.1585.

71. Philips JB, III, Lyrene RK, Leslie GI, McDevitt M, Cassady G. Hemodynamic effects of nifedipine in normoxic and hypoxic newborn lambs. Pediatric Pharmacology (New York, NY). 1985;5(1):23–30.

72. Crane LD, Snyder JE, Knight P, Philips JB, Cassady G. Effects of position changes on transcutaneous carbon dioxide tension in neonates with respiratory distress. Journal of Perinatology: Official Journal of the California Perinatal Association. 1990;10(1):35–7.

73. Loeb P, Leslie GI, McDevitt M, Cassady G. Colloid osmotic pressure at birth. Effect of sample site, type, and mode of delivery. American Journal of Diseases of Children. 1983;137(7):674–7.

74. Leslie GI, Philips JB, III, Work J, Cassady G. Diuresis and natriuresis following acute pneumothorax in very low birthweight infants. Journal of Paediatrics and Child Health. 1985;21(4):269-72. doi: 10.1111/j.1440–1754.1985.tb00162.x.

75. Leslie GI, Philips JB, III, Work J, Ram S, Cassady G. The Effect of Assisted Ventilation on Creatinine Clearance and Hormonal Control of Electrolyte Balance in Very Low Birth Weight Infants. Pediatric Research. 1986;20(5):447–52. doi: 10.1203/00006450-198605000-00014.

76. Leslie GI, Philips JB, Cassady G. Low colloid osmotic pressure in very low birthweight infants receiving assisted ventilation. Journal of Paediatrics and Child Health. 1987;23(3):189–92. doi: 10.1111/j.1440-1754.1987.tb00243.x.

77. Leslie GI, Philips JB, III, Cassady G. Intraventricular haemorrhage and the renin-angiotensin-aldosterone system in very low birthweight infants. Early Human Development. 1989;20(2):101–7. doi: 10.1016/0378-3782(89)90051-0.

78. Leslie GI, Philips JB, III, Cassady G. Capillary and Venous Bilirubin Values. American Journal of Diseases of Children. 1987;141(11):1199–200. doi: 10.1001/archpedi.1987.04460110069024.

79. Vick GW, III, Satterwhite C, Cassady G, Philips JB, Yester MV, Logic JR. Radionuclide angiography in the evaluation of ductal shunts in preterm infants. The Journal of Pediatrics. 1982;101(2):264–8. doi: 10.1016/s0022-3476(82)80137-6.

80. Strange MJ, Myers G, Kirklin JK, Pacifico A, Braune K, Philips J, et al. Surgical closure of patent ductus arteriosus does not increase the risk of intraventricular hemorrhage in the preterm infant. The Journal of Pediatrics. 1985;107(4):602–4. doi: 10.1016/s0022-3476(85)80032-9.

81. Cassady G, Crouse DT, Kirklin JW, Strange MJ, Joiner CH, Godoy G, et al. A Randomized, Controlled Trial of Very Early Prophylactic Ligation of the Ductus Arteriosus in Babies Who Weighed 1000 g or Less at Birth. New England Journal of Medicine. 1989;320(23):1511–6. doi: 10.1056/nejm198906083202302.

82. Clyman R, Cassady G, Kirklin JK, Collins M, Philips JB, III. The role of patent ductus arteriosus ligation in bronchopulmonary dysplasia: reexamining a randomized controlled trial. The Journal of Pediatrics. 2009;154(6):873–6. doi: 10.1016/j.jpeds.2009.01.005. PubMed Central PMCID: PMCPMC2709418.

83. Barefield ES, Dwyer MD, Cassady G. Association of patent ductus arteriosus and phototherapy in infants weighing less than 1000 grams. Journal of Perinatology: Official Journal of the California Perinatal Association. 1993;13(5):376–80.

84. Cassady G. Relation between persistent patency of the ductus arteriosus and retinopathy of prematurity. Birth Defects Original Article Series. 1988;24(1):53–65.

85. Lugo G, Cassady G. Intrauterine growth retardation. Clinicopathologic findings in 233 consecutive infants. American Journal of Obstetrics and Gynecology. 1971;109(4):615–22.

86. Dweck HS, Saxon SA, Benton JW, Cassady G. Early Development of the Tiny Premature Infant. Archives of Pediatrics & Adolescent Medicine. 1973;126(1):28. doi: 10.1001/archpedi.1973.02110190024005.

87. Cassady G. Samll premature intensive care: Long-term results*. Journal of Perinatal Medicine. 1982;10(1):54–7.

88. Editorial Committee for the Cryotherapy for Retinopathy of Prematurity Cooperative Group. Multicenter Trial of Cryotherapy for Retinopathy of Prematurity. Archives of Ophthalmology. 2002;120(5):595–9. doi: 10.1001/archopht.120.5.595.

89. Phelps DL, Brown DR, Tung B, Cassady G, McClead RE, Purohit DM, et al. 28-Day Survival Rates of 6676 Neonates With Birth Weights of 1250 Grams or Less. Pediatrics. 1991;87(1):7–17. doi: 10.1542/peds.87.1.7.

90. Horbar JD, McAuliffe TL, Adler SM, Albersheim S, Cassady G, Edwards W, et al. Variability in 28-Day Outcomes for Very Low Birth Weight Infants: An Analysis of 11 Neonatal Intensive Care Units. Pediatrics. 1988;82(4):554–9. doi: 10.1542/peds.82.4.554.

91. Dweck HS, Huggins W, Dorman LP, Saxon SA, Benton JW, Jr, Cassady G. Developmental sequelae in infants having suffered severe perinatal asphyxia. American Journal of Obstetrics and Gynecology. 1974;119(6):811–5. doi: 10.1016/0002-9378(74)90094-5.

92. Harper RG, Little GA, Sia CG. The Scope of Nursing Practice in Level III Neonatal Intensive Care Units. Pediatrics. 1982;70(6):875–8. doi: 10.1542/peds.70.6.875.

93. Cassady G. Through the Looking Glass—Or, Look Before You Leap. Pediatrics. 1982;70(6):1001–3. doi: 10.1542/peds.70.6.1001.

94. Poets CF, Sens B. Changes in Intubation Rates and Outcome of Very Low Birth Weight Infants: A Population-based Study. Pediatrics. 1996;98(1):24–7. doi: 10.1542/peds.98.1.24.

95. Cassady G. If Too Much of a Good Thing Is BAD, Is Too Much of a Bad Thing BPD? Pediatrics. 1996;98(1):125–7. doi: 10.1542/peds.98.1.125.

96. Goldworth A. Human rights and the omission or cessation of treatment for infants. Journal of Perinatology: Official Journal of the California Perinatal Association. 1989;9(1):79–82.

97. Cassady G. Time to Heal? Time to Die?...Most Certainly, Time to Speak. Journal of Perinatology: Official Journal of the California Perinatal Association. 1989;9(1):83–5.

98. Harper RG, Dweck H, Yellin PB, Cassady G, Little G, Kleinman L, et al. Is Neonatology Being Abandoned by the RRC and General Pediatrics. Pediatrics. 1994;94(2):247–8. doi: 10.1542/peds.94.2.247.

99. Our Beginnings: American Academy of Pediatrics; 2022

[updated April 13, 2022January 28, 2026]. Available from: https://www.aap.org/en/get-involved/aap-sections/sonpm/sonpms-history/.

100. Masters N. In Memoriam: George Cassady, 89: Univeristy of South Carolina Libraries; 2024 [updated February 5, 2024]. Available from: https://libraries.usc.edu/article/memoriam-george-cassady-89?utm_source=chatgpt.com.

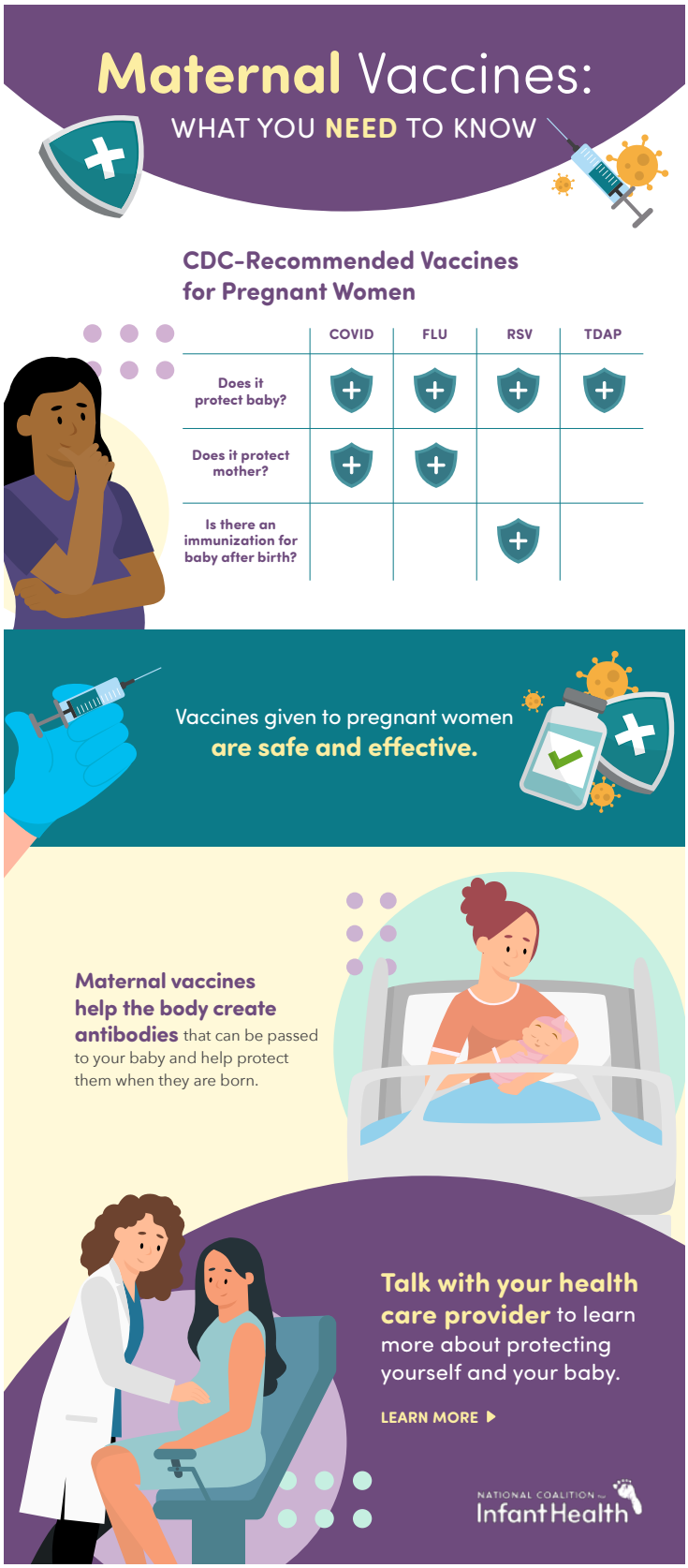
Acknowledgements—I used ChatGPT as a search engine for this article, but all words except quotes are my own. I thank Lauren McInnis, MA, for her invaluable assistance in procuring many of the references and for arranging them.

Disclosure: *The author has no conflicts of interests to disclose.*

NT

Corresponding Author

Joseph B. Philips, III, MD
Professor of Pediatrics
University of Alabama at Birmingham
Birmingham, Alabama
Email: jphilips@uabmc.edu



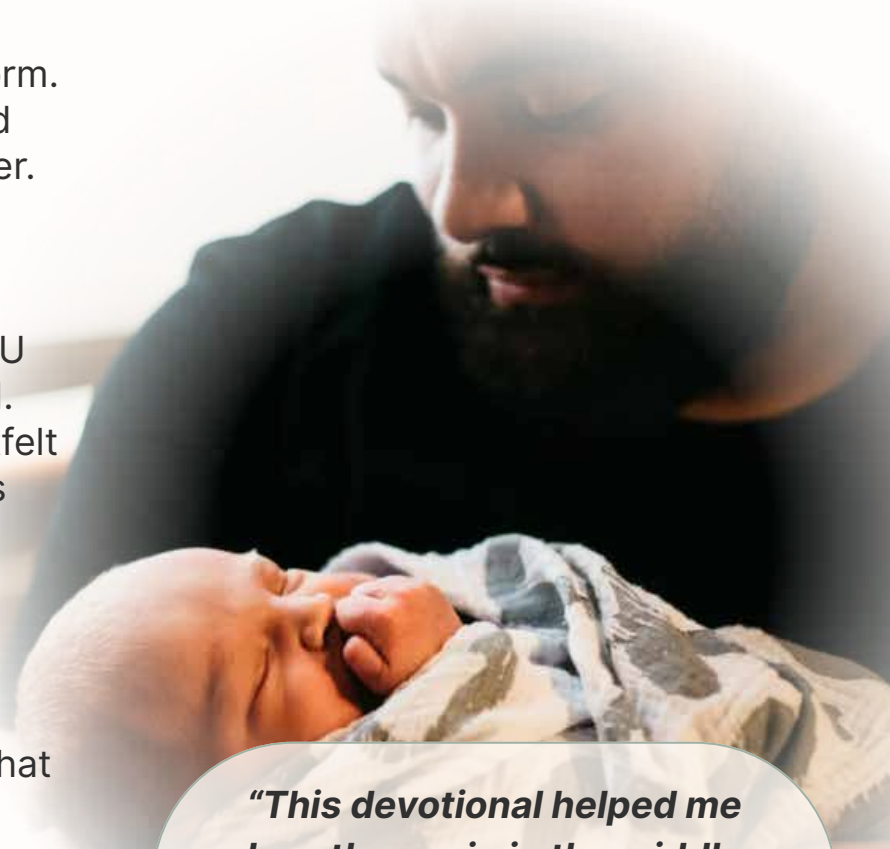
When hope feels distant, let His words anchor your heart.

A 30-Day Devotional for NICU Parents

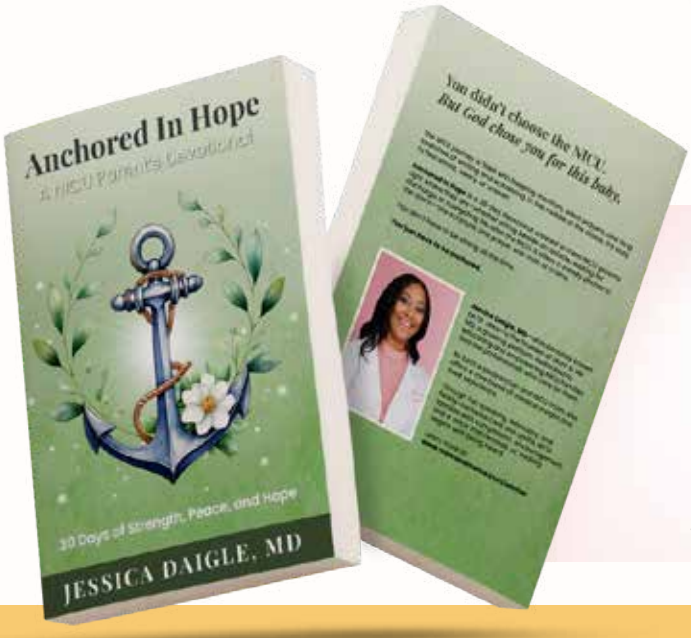
The NICU journey can feel like a storm. One filled with uncertainty, fear, and long nights that blur into one another. But even here, *you are not alone*.

Anchored In Hope was written by Dr. Jess, a physician and fellow NICU mom who knows this road firsthand. Through 30 days of scripture, heartfelt reflections, and guided prayers, this devotional helps NICU parents find calm, courage, and connection with God when life feels overwhelming.

Inside these pages, you'll feel **seen**, **understood**, and gently reminded that **hope is still present**. *Even here*.



"This devotional helped me breathe again in the middle of our NICU storm."
— A NICU Mom & Dad



Get your copy today at
momandmemd.com/anchor

Includes a bonus workbook and other resources from Dr. Jess to bring comfort when you need it most.

Faith. Healing. Hope. Anchored In His Love.

Peer Reviewed

Interpretation of Abnormal Newborn Screening Results in Preterm Infants Receiving Parenteral Nutrition

Noel D Tan, MD, Keith Bockhold, PharmD

"Abnormal newborn screening (NBS) results are frequently encountered in preterm infants hospitalized in neonatal intensive care units, particularly among those receiving parenteral nutrition (PN)."

Abstract:

Abnormal newborn screening (NBS) results are frequently encountered in preterm infants hospitalized in neonatal intensive care units, particularly among those receiving parenteral nutrition (PN). In this population, abnormal screens most often reflect physiologic immaturity, altered metabolic flux, early specimen collection, and the amino acid composition of neonatal PN rather than actual inborn errors of metabolism. State-level data, including Florida Newborn Screening annual reports, demonstrate a marked disparity between the frequency of positive screens and the actual incidence of disease. This review provides a clinically focused framework for interpreting the most commonly encountered

abnormal NBS patterns in preterm infants on PN. Findings are discussed in order of ***clinical-encounter–based frequency, with integration of relevant metabolic pathways, explanation of tandem mass spectrometry (MS/MS) screening patterns, identification of reasons for frequent false positives****, and the single most cost-effective confirmatory test. Emphasis is placed on diagnostic stewardship and practical decision-making in the NICU.*

Introduction:

Newborn screening programs are designed to identify rare but potentially catastrophic metabolic and genetic disorders before the onset of clinical symptoms. To ensure maximal sensitivity, screening thresholds are intentionally set low. While this strategy has dramatically improved outcomes for affected infants, it has also resulted in a high rate of false-positive results—most prominently among preterm infants receiving care in neonatal intensive care units (NICUs).

Preterm infants differ fundamentally from healthy term newborns. Hepatic enzyme systems, mitochondrial oxidative capacity, urea cycle coordination, renal clearance, and pancreatic function are developmentally immature. Parenteral nutrition, a cornerstone of care for very preterm and critically ill infants, further alters metabolic homeostasis by bypassing gastrointestinal and enterohepatic regulation and delivering amino acids directly into the systemic circulation. In addition, NBS specimens in NICU patients are often collected early in life, during periods of metabolic transition and physiologic stress.

Florida Newborn Screening data illustrate the practical consequence of this design: **thousands of infants are flagged annually for abnormal or borderline results, while only a small fraction are ultimately diagnosed with an actual metabolic or genetic disorder**. Understanding the physiologic, nutritional, and analytic basis of these abnormalities is essential for appropriate interpretation, efficient confirmatory testing, and effective family counseling.

"Florida Newborn Screening data illustrate the practical consequence of this design: thousands of infants are flagged annually for abnormal or borderline results, while only a small fraction are ultimately diagnosed with an actual metabolic or genetic disorder."

Why Preterm Infants on Parenteral Nutrition Have Abnormal Screens:

Abnormal NBS results in preterm infants receiving PN arise from predictable mechanisms:

1. **Developmental immaturity of metabolic pathways**, including amino acid catabolism, transsulfuration, urea cycle flux, and fatty acid oxidation.
2. **Direct intravenous substrate delivery**, which bypasses intestinal regulation and may exceed immediate metabolic clearance capacity.
3. **Altered metabolic flux during illness**, driven by hypoxia, infection, inflammation, corticosteroids, and catabolism.
4. **Early specimen collection** often occurs before complete metabolic adaptation to extrauterine life.

These mechanisms interact directly with the **composition of neonatal PN** and the **analytical features of MS/MS-based screening, resulting in** recurrent and recognizable screening patterns.

Amino Acid Composition of Neonatal Parenteral Nutrition and Screening Implications

Neonatal PN amino acid solutions are formulated to support growth and approximate fetal amino acid supply, but their **relative amino acid proportions do not align with the metabolic clearance capacity of extremely preterm infants**. Across commonly used neonatal formulations, methionine, phenylalanine, tyrosine, valine, isoleucine, threonine, and arginine collectively account for a substantial fraction of total amino acid delivery.

These same amino acids feed directly into metabolic pathways that are developmentally immature in preterm infants. As a result, the

amino acids most abundantly delivered in PN are also the ones most frequently elevated on newborn screening. This relationship explains why the same screening abnormalities recur consistently in NICU populations.

Understanding MS/MS Patterns in Newborn Screening:

Most metabolic components of newborn screening are performed using **tandem mass spectrometry (MS/MS)**. Importantly, MS/MS screening does **not diagnose disease**; instead, it detects **patterns of metabolite elevation** that suggest disruption of specific metabolic pathways.

An **MS/MS pattern** refers to a characteristic constellation of elevated amino acids or acylcarnitines that reflect increased flux through, or impaired clearance within, a metabolic pathway. For example, elevation of C3 acylcarnitine represents an increased propionyl-CoA burden, which may arise from organic acidemia; but far more commonly in preterm infants, it reflects increased amino acid delivery, mitochondrial immaturity, or vitamin B12 deficiency.

"Most metabolic components of newborn screening are performed using tandem mass spectrometry (MS/MS). Importantly, MS/MS screening does not diagnose disease; instead, it detects patterns of metabolite elevation that suggest disruption of specific metabolic pathways."

Thus, MS/MS screening identifies **biochemical signals** rather than etiologies. In preterm infants receiving PN, these signals overwhelmingly reflect physiologic and nutritional factors rather than inborn errors of metabolism.

Most Common Abnormal Newborn Screening Patterns in Preterm Infants Receiving Parenteral Nutrition:

Among preterm infants on PN, abnormal NBS findings follow a consistent hierarchy based on **clinical encounter–based frequency**, rather than disease prevalence.

The most frequently encountered abnormal screening marker is **elevated immunoreactive trypsinogen (IRT)**, used in cystic fibrosis screening. Florida data demonstrate that hundreds to over a thousand infants are flagged annually for elevated IRT, while only a few dozen are ultimately diagnosed with cystic fibrosis. In preterm infants, IRT elevation overwhelmingly reflects pancreatic immaturity, perinatal stress, hypoxia, and early specimen collection rather than CFTR dysfunction.

Accordingly, repeat IRT testing or CFTR mutation analysis is preferred, with sweat testing deferred until sufficient maturity.

Elevated methionine is the most common amino acid–based abnormality encountered in PN-fed preterm infants. Methionine enters transsulfuration and remethylation pathways that are developmentally immature, and even modest PN delivery can produce disproportionate plasma elevation. Although screening targets homocystinuria—a rare disorder—most methionine elevations in the NICU are benign. Plasma total homocysteine provides definitive discrimination.

Elevated tyrosine is another frequent finding, reflecting immature hepatic tyrosine catabolism and high protein delivery. While tyrosinemia type I is severe, it is defined by the accumulation of succinylacetone rather than tyrosine itself. Normal succinylacetone effectively excludes disease despite frequent elevations in tyrosine.

Among MS/MS-detected acylcarnitine abnormalities, **elevated C3 acylcarnitine** is the most common in PN-fed preterm infants. Valine, isoleucine, methionine, and threonine—all prominent PN components —converge on propionyl-CoA metabolism. Increased substrate delivery, mitochondrial immaturity, and vitamin B12 deficiency are commonly associated with a C3-dominant MS/MS pattern. Plasma methylmalonic acid measurement efficiently distinguishes actual disease from transient metabolic overload.

Elevated phenylalanine is less common but still common. Despite phenylketonuria being among the more prevalent disorders screened for, most phenylalanine elevations in the NICU normalize with maturation and advancement of enteral feeds. Plasma phenylalanine, together with the phenylalanine-to-tyrosine ratio, provides appropriate confirmation.

"Among MS/MS-detected acylcarnitine abnormalities, elevated C3 acylcarnitine is the most common in PN-fed preterm infants. Valine, isoleucine, methionine, and threonine—all prominent PN components —converge on propionyl-CoA metabolism. Increased substrate delivery, mitochondrial immaturity, and vitamin B12 deficiency are commonly associated with a C3-dominant MS/MS pattern. Plasma methylmalonic acid measurement efficiently distinguishes actual disease from transient metabolic overload."

Milder elevations of urea cycle intermediates, particularly **citrulline**, are intermittently observed. Arginine supplementation, combined with immature downstream enzymes, often produces modest elevations in citrulline and borderline hyperammonemia. In contrast to true urea cycle disorders, these abnormalities are typically stable or improving. Plasma ammonia trends, rather than isolated values, provide the most clinically meaningful assessment.

Less commonly encountered abnormalities include **elevated C5-OH acylcarnitine, arginine, or C8 acylcarnitine**, which screen for biotinidase deficiency, argininemia, and medium-chain acyl-CoA dehydrogenase deficiency, respectively. While clinically important when persistent, these patterns are far less frequent than amino acid–based abnormalities in PN-fed preterm infants.

"Understanding how PN composition interacts with immature metabolic pathways allows clinicians to apply targeted confirmatory testing, minimize unnecessary intervention, and preserve the lifesaving intent of newborn screening."

Summary

Abnormal newborn screening results are common in preterm infants receiving parenteral nutrition and most often reflect physiologic immaturity, altered metabolic flux, early specimen collection, and the amino acid composition of neonatal PN rather than actual inborn errors of metabolism. Florida Newborn Screening data demonstrate a profound disparity between screen positivity and true disease incidence, with thousands of infants flagged annually and only a small fraction confirmed to have metabolic or genetic disorders. These abnormalities follow predictable, pathway-based MS/MS patterns that can be interpreted using a focused, clinically grounded approach. Understanding how PN composition interacts with immature metabolic pathways allows clinicians to apply targeted confirmatory testing, minimize unnecessary intervention, and preserve the lifesaving intent of newborn screening.

References:

1. Therrell BL, Padilla CD, Loeber JG, et al. Current status of newborn screening worldwide: 2015. Semin Perinatol. 2015;39(3):171–187. https://doi.org/10.1053/j.semperi.2015.03.002 PubMed

2. Kaye CI, Committee on Genetics. Newborn screening fact sheets. Pediatrics. 2006;118(3):e934–e963. https://doi.org/10.1542/peds.2006-1783 AAP Publications+1

3. Watson MS, Mann MY, Lloyd-Puryear MA, Rinaldo P, Howell RR, et al. Newborn screening: toward a uniform screening

Table 1. Common Abnormal Newborn Screening Patterns in Preterm Infants Receiving Parenteral Nutrition

Table 1. Common Abnormal Newborn Screening Patterns in Preterm Infants Receiving Parenteral Nutrition

Approximate Encounter Rank	Screen Marker	Primary Disorder Screened	Key Pathway Involved	PN-Related Contributor	Single Most Cost-Effecctive Confirmatory Test
1	IRT	Cystic fibrosis	CFTR-dependent pancreatic ductal flow	Stress, immaturity (indirect PN effect)	Repeat IRT or CFTR mutation panel
2	Methionine	Homocystinuria	Transsulfuration / remethylation	Methionine-rich PN, slow clearance	Plasma total homocysteine
3	Tyrosine	Tyrosinemia I	Tyrosine catabolism → FAH	Immature hepatic catabolism	Succinylacetone
4	C3 acylcarnitine	MMA / PA	Propionate metabolism	Valine, isoleucine, methionine, threonine flux	Plasma methylmalonic acid
5	Phenylalanine	PKU	Phenylalanine → tyrosine	Phenylalanine-rich PN	Plasma Phe with Phe/Tyr ratio
6	Citrulline	Citrullinemia	Urea cycle	Arginine supplementation, immature enzymes	Plasma ammonia
7	C5-OH	Biotinidase deficiency	Biotin-dependent carboxylases	Functional deficiency, stress	Biotinidase activity
8	Arginine	Argininemia	Urea cycle (arginase)	Direct supplementation	Plasma ammonia
9	C8	MCAD Deficiency	Fatty acid β-oxidation	Early sampling, illness	Repeat acylcarnitine profile

panel and system. Genet Med. 2006;8(Suppl 1):1S–252S. https://doi.org/10.1097/01.gim.0000223891.82390.ad PubMed

4. Gurian EA, Kinnamon DD, Henry JJ, Waisbren SE. Expanded newborn screening for biochemical disorders: the effect of a false-positive result. Pediatrics. 2006;117(6):1915–1921. https://doi.org/10.1542/peds.2005-2294 PubMed

5. Kwon C, Farrell PM. The magnitude and challenge of false-positive newborn screening test results. Arch Pediatr Adolesc Med. 2000;154(7):714–718. https://doi.org/10.1001/archpedi.154.7.714 PubMed

6. Chace DH, Kalas TA, Naylor EW. The application of tandem mass spectrometry to neonatal screening for inherited disorders of intermediary metabolism. Annu Rev Genomics Hum Genet. 2002;3:17–45. https://doi.org/10.1146/annurev.genom.3.022502.103213 Annual Reviews

7. Cheillan D, Vercherat M, et al. False-positive results in neonatal screening for cystic fibrosis based on a three-stage protocol (IRT/DNA/IRT): Should we adjust IRT cut-off to ethnic origin? J Inherit Metab Dis. 2005;28(6):813–818. https://doi.org/10.1007/s10545-005-0067-0 PubMed

8. Karaceper MD, Chakraborty P, et al. The health system impact of false positive newborn screening results for MCAD deficiency: a cohort study. Orphanet J Rare Dis. 2016;11:12. https://doi.org/10.1186/s13023-016-0391-5 PMC

9. Valentine CJ, Fernandez S, Rogers LK, et al. Early amino-acid administration improves preterm infant weight. J Perinatol. 2009;29(6):428–432. https://doi.org/10.1038/jp.2009.51 Nature

Disclosures: *The authors have no disclosures*

NT

Corresponding Author

Noel D. Tan, MD
Neonatologist
Envision Healthcare
email: noeldtan.md@gmail.com

Keith Bockhold, PharmD
BCPPS NICU/Peds Clinical Pharmacist
HCA Florida Oakhill Hospital

Suffer the Children: The Climate Emergency: Part II: The Future

Rob Graham, RRT, NRCP

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.

"Que Sera, Sera,
Whatever will be, will be.
The future's not ours to see.
Que Sera, Sera
What will be, will be."

Jay Livingston and Ray Evans, 1955

As Doris Day sang this song to the top of the charts in the late 1950s, oil companies were already active in researching the deleterious effects of burning their products (1). Scientists have known about the impact of CO_2 on Earth's temperature since John Tyndall's experiments in the 1850s (2). While indeed an accurate description of the human condition, it is not entirely correct when it comes to climate change.

"As Doris Day sang this song to the top of the charts in the late 1950s, oil companies were already active in researching the deleterious effects of burning their products (1). Scientists have known about the impact of CO2 on Earth's temperature since John Tyndall's experiments in the 1850s (2). While indeed an accurate description of the human condition, it is not entirely correct when it comes to climate change."

Gaslighting by well-funded special interest groups (particularly the fossil fuel industry) notwithstanding (3), the reality of anthropogenic climate change is, and has been scientifically recognised for decades (4). Unfortunately, scientific consensus has not spurred effective mitigating actions by legislatures worldwide, as reflected by the ineffectiveness of the Intergovernmental Panel on Climate Change (IPCC) (5).

For humankind, when it comes to climate change, the unfortunate reality is that governments are elected by the people (although arguably not necessarily *for* the people), and the aforementioned gaslighting has had a significant effect at election time. Social media has, and continues to have, a powerful effect on public perception, partially fueled by algorithms designed to solidify (mis)beliefs and exploit susceptibility to disinformation (6). The Canadian Election Misinformation Project concluded that, while widespread, disinformation had minimal impact on the outcome of the country's 2021 election campaign (7, preprint). The results of the Canadian Federal election of 2025 cast some doubt on the project's findings.

"For humankind, when it comes to climate change, the unfortunate reality is that governments are elected by the people (although arguably not necessarily for the people), and the aforementioned gaslighting has had a significant effect at election time."

The Conservative Party of Canada's (CPC) incessant messaging that Canada's carbon tax was increasing the cost of living for all citizens failed to achieve its primary goal: winning the election. The *average* is estimated at $152-$399 annually in 2024, although 94% of households earning $50k or less received rebates greater than the carbon tax paid (8), and the carbon tax did result in a significant decrease in carbon emissions (9). The Liberal Party of Canada (LPC) retained its governing status, but the carbon tax was eliminated, even though Prime Minister Mark Carney had strongly advocated *a price on carbon* (10). In Ontario, former Premier Kathleen Wynne's cap-and-trade deal between California, Quebec, and Ontario was cancelled when (Conservative) Premier Doug Ford succeeded her in office. President Trump's disdain for climate change action was well known when he was elected to a second term. The public says climate change is a major concern, but public (in)action says otherwise. All this despite the evidence supporting the effectiveness of carbon pricing (11)!

Back to the future:

Simply put, we do not know how much higher the planetary temperature will rise. As mentioned in last month's column in *Neonatology Today*, it will very likely exceed 2°C (12). Existing studies predict temperatures with wide error bars, which are anything but reassuring. Just as with COVID-19, the precautionary principle is not part of the plan. This is important. For humanity, the difference between a 2°C and a 4°C temperature rise is catastrophic.

While a 2°C rise is hardly desirable, it is "manageable." To name a few consequences: storms will be much more severe, agricultural

yields will decrease, coastlines will flood more often, and vector-borne diseases like malaria (already the largest child killer) will become more common. Equatorial populations and those living at or near sea level will be hardest hit. Forced emigration in (already happening in some areas) will increase in a world already immigration averse, and more species will face extinction. A 4°C rise would make 2°C look like paradise by comparison.

"Simply put, we do not know how much higher the planetary temperature will rise. As mentioned in last month's column in Neonatology Today, it will very likely exceed 2°C (12). Existing studies predict temperatures with wide error bars, which are anything but reassuring. Just as with COVID-19, the precautionary principle is not part of the plan. This is important. For humanity, the difference between a 2°C and a 4°C temperature rise is catastrophic."

At 4°C, up to 90% of coral reefs will die, and many forests will be unable to adapt, with dire consequences for species (including humans) that depend on them for life. Diseases will become much more prevalent, and the loss of arable land will decrease agricultural yields (and the nutritional content of what does grow), resulting in significant increases in malnutrition. Loss of natural systems that purify our water will create a crisis for all. Economically, world GDP may decrease by 20% or more. Many nations will be unable to survive the resulting economic collapse and will fail altogether. The strain on the rest of the world's already depleted resources could threaten civilization itself (13).

Lest one think these scenarios are hysterical fantasies, may I remind you that virtually every new piece of evidence has shown that previous predictions have underestimated the rate of global temperature rise (14,15) and the regional effects thereof (16). Furthermore, speaking of those error bars, a 2005 IPCC prediction ranged from 1.1°C to 6.4°C by the end of the century (17), effects that may well be unmanageable and pose a serious threat to our species. These are *global* averages.

It is well known that polar regions are warming far faster than the rest of the planet. The consequences of polar warming should be ignored. While one comprehensive study suggests the average global temperature has been **over**estimated, it still predicts a 2.41 °C increase. More importantly, it projects a rise in Arctic temperatures of 6.6°C by 2100, with studies projecting 4°C-13°C (18). While admitting a high degree of uncertainty, these numbers are frightening. Why? Because the resulting loss of Arctic ice cover creates a feedback loop that not only increases global temperatures (darker water absorbs heat rather than reflecting it like ice), but may very well result in the collapse of the Atlantic Meridional Overturning Circulation (AMOC).

AMOC is responsible for regulating temperatures in the northern hemisphere by distributing warm water from the south Atlantic to the north and across to Europe. As denser, fresher, cold water from Arctic ice melt and Greenland glacial melting enters the ocean, it sinks and forces the warm current of water eastward (19). If there is too much cold water, fresh water meets warmer currents, and those currents are diverted southward before reaching Europe. The consequences are very significant: harsher winters in Europe (with implications for growing seasons) and disruption to monsoon patterns (20). Furthermore, while ocean arctic ice melt does not alter sea levels, glacial ice melt does, representing a threat to North American coastal regions (21). It is estimated that Greenland ice melt has increased by 2.7 times between 2000 and 2020 (22). A 2015 project found that the melt rate continued to accelerate "if current trends persist" (23), which indeed they have.

As of 2006, Greenland ice melt accounted for 25% of sea-level rise (24). If atmospheric CO_2 remains at 410 ppm and the current melt rate continues, Greenland will eventually become ice-free (25). Given that atmospheric CO_2 has reached 428 ppm at the time of writing (26) (and further rise is all but guaranteed), it may well happen sooner than forecast. The entire loss of the Greenland ice sheet will raise sea level by 6-7 metres (≈20-23 feet) (27). In a worst-case (but entirely possible) scenario, complete melting of Antarctic ice would add ≈70 metres (≈230 feet) (28), bringing the total to up to 77 metres (≈253 feet). This does not include contributions from other glaciers melting or thermal expansion. There is evidence that ice melt in both Greenland and Antarctica may have reached a self-sustaining point (29,30).

"As of 2006, Greenland ice melt accounted for 25% of sea-level rise (24). If atmospheric CO2 remains at 410 ppm and the current melt rate continues, Greenland will eventually become ice-free (25). Given that atmospheric CO2 has reached 428 ppm at the time of writing (26) (and further rise is all but guaranteed), it may well happen sooner than forecast. The entire loss of the Greenland ice sheet will raise sea level by 6-7 metres (≈20-23 feet) (27). In a worst-case (but entirely possible) scenario, complete melting of Antarctic ice would add ≈70 metres (≈230 feet) (28), bringing the total to up to 77 metres (≈253 feet)."

Our planet has experienced 5 mass extinction events, and we are living through what is commonly called the sixth great extinction event. While previous extinction events occurred over many millennia, we are currently experiencing a loss of planetary life diversity at warp speed (31). Climate change naysayers will point out that atmospheric CO_2 has been much higher in the past, reaching 1000-1500 ppm during the Eocene era (32). (That was between 34 and 56 million years ago. The neighbourhood has changed since then!) If atmospheric levels continue to increase at current levels, we may see similar concentrations by 2100 (32). Life has had millions of years to adapt to changes in atmospheric CO_2. By contrast, in less than 200 years, current CO_2 levels have risen over 50% from a pre-industrial level of ≈280 ppm, rapidly approaching a level not seen in 30 million years.

"Our planet has experienced 5 mass extinction events, and we are living through what is commonly called the sixth great extinction event. While previous extinction events occurred over many millennia, we are currently experiencing a loss of planetary life diversity at warp speed (31)."

If you have ever kept an aquarium, you are familiar with how sensitive life can be to environmental fluctuations. Change the salinity, or pH, oxygen level, or temperature of the water, no matter how slowly, and the result is dead fish. Turtles have existed for over 200 million years, surviving extinction events that killed the dinosaurs. Along with sharks and rays, crocodiles, coelacanths, Ginkgo biloba, Horsetails, and Ferns, they are the exceptions, not the rule. Man may be the most adaptable species on the planet; the ecosystems upon which man depends for survival, not so much.

If we stop dumping carbon into the atmosphere today, global temperatures will continue to rise for several reasons, assuming we have not already reached tipping points such as permafrost melting. Active removal of atmospheric CO_2 may be necessary to return to pre-industrialisation levels. It may take as long as 500 years for this to happen on its own due to oceanic release of stored CO_2 (33).

Here is the good news and the bad news. Current carbon capture processes are enormously expensive and require energy to operate, but other tools hold promise. Cement can be formulated to capture CO_2 (34), and a promising new process using manganese as a catalyst can convert CO_2 into a hydrogen storage media (format), which can then be used to supply fuel cells (35). The extreme reactivity of hydrogen, along with the energy requirements of traditional hydrogen electrolysis, has made the transition to hydrogen-based energy problematic. This could be an elegant game changer. Renewable energy sources such as wind and solar, as well as energy storage mechanisms to make them viable, are both improving and becoming financially attractive. DeepSeek® reports:

- Solar cost has decreased 90% and onshore wind power 70% since 2010
- According to BloombergNEF and IRENA, the levelized cost of energy at utility scale is now lower than new fossil fuel generating plants (in most countries)
- Battery energy storage costs have fallen by 90% since 2010, making it a viable alternative to gas-fired "peaker plants."
- Renewables are now economically competitive with fossil fuels without subsidies (even though the fossil fuel industry receives ≈ $7 trillion in subsidies according to the IMF)
- 80% of new generation facilities are renewable, often at less cost than fossil fuel plants
- Institutional capital now views renewables as stable, viable investments
- Rooftop solar is financially attractive when coupled with rebates/incentives (I am having "behind-the-meter" solar installed at my home, along with lithium-ion battery storage)
- Electric vehicles are reaching a "tipping point."

Tariffs and import restrictions (as well as lacklustre products) have hampered electric vehicle sales in North America, but Canada has just dramatically cut tariffs and is allowing Chinese electric vehicles into the country in stages. Automobile reviewers have praised the superiority of Chinese EVs relative to those manufactured in North America, and the Chinese are leading the world in battery technology. The technology exists to almost completely recycle Li-ion batteries (RecycLico™ — full disclosure: I own stock), and Chinese EV range is currently as high as 1000 km (620 miles), with evolving technology poised to surpass this.

For the sake of our children's future, we must change our ways, muster political will, and make decarbonisation as painless and economically viable as possible. Quickly. We **can** do it. We have already missed the deadline to meet Paris Accord targets. I have presented not even the tip of the proverbial iceberg, one we are currently on a collision course with, and that threatens to sink the ship we all sail on: Earth. If we continue our present course, our children and their children will suffer (undeservedly) the consequences of Earth's revenge: lower life expectancy, a lower standard of living, civil unrest, and societal decay.

"For the sake of our children's future, we must change our ways, muster political will, and make decarbonisation as painless and economically viable as possible. Quickly. We can do it."

Is that *really* what we want for them?

References:

1. Jenkins VN. The petroleum industry sponsors air pollution research. Air Repair. 1954 Feb;3(3):144-149. doi: 10.1080/00966665.1954.10467615.
2. Cox P., Williamson M., Friedlingstein P., Jones C., Rogelj J Emergent constraints on carbon budgets as a function of global warming. 2023. https://doi.org/10.21203/rs.3.rs-2384796/v1
3. Xifra J.. Climate Change Deniers and Advocacy. American Behavioral Scientist 2015;60(3):276-287. https://doi.org/10.1177/0002764215613403
4. Storch H. and Bray D Models, manifestation and attribution of climate change. Meteorology, Hydrology and Water Management 2017;5(1):47-52. https://doi.org/10.26491/mhwm/67388
5. Curry J. and Webster P.. Climate change: no consensus on consensus.. Cab Reviews Perspectives in Agriculture Veterinary Science Nutrition and Natural Resources 2013:1-9. https://doi.org/10.1079/pavsnnr20138001
6. Tenove C. and MacLellan S. Confronting Disinformation: Journalists and the Conflict over Truth in #Elxn43. 2021. https://doi.org/10.31219/osf.io/p3r8q
7. Bridgman A. , Lavigne M. , Baker M. , Bergeron T. , Bohonos D. , Burton A. et al.. Mis- and Disinformation during the 2021 Canadian Federal Election. 2022. https://doi.org/10.31219/osf.io/ubfmx
8. Canadian Parliamentary Budget Office, Statistics Canada
9. Best R., Nazifi F., Cheng H Carbon Pricing Impacts on Four Pollutants: A Cross-Country Analysis. Energies 2024;17(11):2596. https://doi.org/10.3390/en17112596
10. Carney M. Value(s): building a better world for all. Toronto: Signal Books; 2021.
11. Döbbeling N., Miersch K., Khanna T., Bachelet M., Bruns S., Callaghan M.et al.. Effectiveness of carbon pricing – A systematic review and meta-analysis of the ex-post literature. 2023. https://doi.org/10.21203/rs.3.rs-2860638/v1
12. Graham, Rob C. Suffer the Children: The Climate Emergency. Neonatology Today 2025; 20(12):46-51
13. Nordhaus W.. The "Stern Review" on the Economics of Climate Change. 2006. https://doi.org/10.3386/w12741
14. Fu C., Qian C., Wu Z. Projection of global mean surface air temperature changes in the next 40 years: Uncertainties of climate models and an alternative approach. Science China Earth Sciences 2011;54(9):1400-1406. https://doi.org/10.1007/s11430-011-4235-9
15. Alessi M. and Rugenstein M Surface Temperature Pattern Scenarios Suggest Higher Warming Rates Than Current Projections. Geophysical Research Letters 2023;50(23). https://doi.org/10.1029/2023gl105795
16. Tsai I., Hsieh P., Cheng C., Tung Y., Lin L., Hsu H Impacts of 2 and 4°C global warming on extreme temperatures in Taiwan. International Journal of Climatology 2022;43(2):702-719. https://doi.org/10.1002/joc.7815
17. Bhattarai K. and Upadhyay T Rhododendron species richness patterns and impacts of global warming on its distribution in Central Himalayas, Nepal. Botanica Orientalis Journal of Plant Science 2015;9:12-19. https://doi.org/10.3126/botor.v9i0.21009
18. Chýlek P., Folland C., Klett J., Wang M., Lesins G., & Dubey M. Why Does the Ensemble Mean of CMIP6 Models Simulate Arctic Temperature More Accurately Than Global Temperature?. Atmosphere 2024;15(5):567. https://doi.org/10.3390/atmos15050567
19. Lee S. and Wang C Delayed Advective Oscillation of the Atlantic Thermohaline Circulation. Journal of Climate 2010;23(5):1254-1261. https://doi.org/10.1175/2009jcli3339.1
20. Monahan, A. H. (2002). Correlation Effects in a Simple Stochastic Model of the Thermohaline Circulation. Stochastics and Dynamics, 02(03), 437-462. https://doi.org/10.1142/s0219493702000510
21. Tesfay D., Serdukova L., Zheng Y., Wei P., Duan J., Kurths J Influence of extreme events modeled by Lévy flight on global thermohaline circulation stability. 2020. https://doi.org/10.5194/npg-2020-31
22. Peña S. , Howat I. , Nienow P. , Broeke M. , Mosley-Thompson E. , Price S. et al.. Changes in the firn structure of the western Greenland Ice Sheet caused by recent warming. The Cryosphere 2015;9(3):1203-1211. https://doi.org/10.5194/tc-9-1203-2015
23. Khan S. , Aschwanden A. , Bjørk A. , Wahr J. , Kjeldsen K. , & Kjær K.. Greenland ice sheet mass balance: a review. Reports on Progress in Physics 2015;78(4):046801. https://doi.org/10.1088/0034-4885/78/4/046801
24. Nerem R., Leuliette E., & Cazenave A Present-day sea-level change: A review. Comptes Rendus Géoscience 2006;338(14-15):1077-1083. https://doi.org/10.1016/j.crte.2006.09.001
25. Kühne R Greta Thunberg Came Too Late: Greenland Ice and West Antarctic Ice Will Completely Melt. 2022. https://doi.org/10.31219/osf.io/s7w5g
26. https://gml.noaa.gov/ccgg/trends/weekly.html
27. Cuffey K. and Marshall S. Substantial contribution to sea-level rise during the last interglacial from the Greenland ice sheet. Nature 2000;404(6778):591-594. https://doi.org/10.1038/35007053
28. Kreuzer M., Albrecht T., Nicola L., Reese R., & Winkelmann R Oceanic gateways in Antarctica – Impact of relative sea-level change on sub-shelf melt. 2023. https://doi.org/10.5194/egusphere-2023-2737
29. Feldmann J. and Levermann A Collapse of the West Antarctic Ice Sheet after local destabilization of the Amundsen

Basin. Proceedings of the National Academy of Sciences 2015;112(46):14191-14196. https://doi.org/10.1073/pnas.1512482112

30. Klose A., Donges J., Feudel U., & Winkelmann R Rate-induced tipping cascades arising from interactions between the Greenland Ice Sheet and the Atlantic Meridional Overturning Circulation. 2023. https://doi.org/10.5194/esd-2023-20

31. UN Report: Nature's Dangerous Decline' Unprecedented'; Species Extinction Rates 'Accelerating'. Sustainable Development Goals; 2019, May 6. https://www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report/#:~:text=The%20Intergovernmental%20Science%2DPolicy%20Platform%20on%20Biodiversity%20and,consumption%20of%20materials%20has%20increased%20since%201980

32. Goudsmit B., Winter N., Vellekoop J., Wesselingh F., Witbaard R., & Ziegler M Reconstructing Seasonality in Northwest Europe during the Early to Middle Eocene using Clumped Isotope Thermometry on Fossil Mollusks. 2025. https://doi.org/10.5194/egusphere-egu25-5563

33. Koeve W., Landolfi A., Oschlies A., Frenger I Marine carbon sink after temperature overshoot is dominated by biological pump carbon. 2024. https://doi.org/10.21203/rs.3.rs-3921898/v1

34. Zając M., Skoček J., Skibsted J., Haha M CO2 mineralization of demolished concrete wastes into a supplementary cementitious material – a new CCU approach for the cement industry. Rilem Technical Letters 2021;6:53-60. https://doi.org/10.21809/rilemtechlett.2021.141

35. Wedal JC, Virtue KB, Bernskoetter WH, Hazari N, Mercado BQ, Piekut N. Improving productivity and stability for CO2 hydrogenation by using pincer-ligated Mn complexes with hemilabile ligands. Chem. 2026 Jan 5;12(1). doi: 10.1016/j.chempr.2025.102833.

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

NT

Corresponding Author

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

"The Nose Knows": Principles of Nasal Prong Placement and Functional Assessment During Bubble Continuous Positive Airway Pressure Therapy

Mitchell Goldstein, MD, MBA, CML, T. Allen Merritt, MD, MBA, MHA

"Effective delivery of bubble continuous positive airway pressure (BCPAP) depends on precise nasal prong placement and ongoing functional assessment. (1) Suboptimal positioning can result in inadequate pressure transmission, air leak, nasal trauma, and diminished respiratory support. (1, 2) "

Effective delivery of bubble continuous positive airway pressure (BCPAP) depends on precise nasal prong placement and ongoing functional assessment. (1) Suboptimal positioning can result in inadequate pressure transmission, air leak, nasal trauma, and diminished respiratory support. (1, 2) The following discussion outlines a structured, physiology-based approach to assessing nasal prong position and seal, emphasizing that all components are essential and interdependent rather than hierarchical. (3)

"A reproducible and straightforward bedside technique to assess prong patency and placement involves targeted auscultation of airflow. Using the diaphragm of a neonatal stethoscope, the clinician should first position the diaphragm over the nasal bridge to appreciate overall airflow, then sequentially over each naris."

Auscultatory Assessment of Nasal Airflow ("The Nose Knows"):

A reproducible and straightforward bedside technique to assess prong patency and placement involves targeted auscultation of airflow. Using the diaphragm of a neonatal stethoscope, the clinician should first position the diaphragm over the nasal bridge to appreciate overall airflow, then sequentially over each naris. Airflow should be symmetric bilaterally.

Interpretation of findings integrates airflow with observed bubbling:

- Adequate airflow with continuous bubbling indicates patent nasal prongs, appropriate positioning, and an effective seal.
- Diminished airflow with intermittent bubbling suggests suboptimal prong position and/or an air leak, most commonly at the mouth.
- Absent airflow with absent bubbling indicates prongs are not seated within the nares, are displaced, or that a significant leak is present.

During auscultation, gentle rolling or micro-adjustment of the nasal prongs can often restore proper alignment and improve airflow, highlighting the dynamic nature of optimal positioning. (4)

Assessment of Oral Leak:

Because oral leak can significantly reduce delivered airway pressure, the mouth should also be assessed. Auscultation over the mouth with a stethoscope allows detection of air escaping. If a leak persists or intermittent bubbling remains despite adequate nasal positioning, a chin strap should be applied to promote gentle mouth closure and improve pressure stability.

"Nasal prongs should rest lightly within the nares without exerting excessive pressure. Visually, the prongs should lie horizontally across the philtrum or "mustache" area, while the circuit should align perpendicular to the prongs, often described as resembling a football goalpost."

Anatomical Alignment and Mechanical Considerations:

Nasal prongs should rest lightly within the nares without exerting

excessive pressure. Visually, the prongs should lie horizontally across the philtrum or "mustache" area, while the circuit should align perpendicular to the prongs, often described as resembling a football goalpost. Deviation from this alignment increases the risk of septal pressure injury and uneven sealing at the level of the turbinates. Careful readjustment can redistribute forces, improve symmetry, and enhance seal integrity. (1, 2)

Nasal CPAP devices that obscure or completely cover the nasal bridge require closer observation, as nasal flow cannot be effectively assessed with this method.

"Appropriate prong size selection is critical at initiation of BCPAP. Clinicians should use established weight-based guidelines and nasal sizing tools to select prongs that adequately fill the nares and create an initial seal. As therapy progresses, nasal mucosal dilation commonly occurs, allowing the prongs to migrate slightly into the nasal vestibule and form a more effective seal at the turbinates."

Prong Sizing and Evolution Over Time:

Appropriate prong size selection is critical at initiation of BCPAP. Clinicians should use established weight-based guidelines and nasal sizing tools to select prongs that adequately fill the nares and create an initial seal. As therapy progresses, nasal mucosal dilation commonly occurs, allowing the prongs to migrate slightly into the nasal vestibule and form a more effective seal at the turbinates. Gentle rocking of the prongs facilitates this transition without causing trauma.

Importantly, nasal anatomy and fit evolve during the course of BCPAP therapy. Prongs often require upsizing to maintain an effective seal and consistent pressure delivery. Regular reassessment is therefore essential to ensure ongoing efficacy and to minimize complications.

"Auscultation-based assessment provides a low-cost, bedside method to integrate physiologic feedback with visual inspection, reinforcing the principle that "the nose knows" when support is being delivered effectively."

Summary:

BCPAP effectiveness relies not only on device settings but on meticulous attention to nasal prong placement, airflow symmetry, seal integrity, and evolving anatomical fit. (1-4) Auscultation-based assessment provides a low-cost, bedside method to integrate physiologic feedback with visual inspection, reinforcing the principle that "the nose knows" when support is being delivered effectively.

References:

1. Massa-Buck B, Rastogi D, Rastogi S. Complications associated with incorrect use of nasal CPAP. J Perinatol. 2023 Aug;43(8):975-981. doi: 10.1038/s41372-023-01700-w. Epub 2023 May 25. PMID: 37231122.

2. Kahn DJ, Courtney SE, Steele AM, Habib RH. Unpredictability of delivered bubble nasal continuous positive airway pressure: role of bias flow magnitude and nares-prong air leaks. Pediatr Res. 2007 Sep;62(3):343-7. doi: 10.1203/PDR.0b013e318123f702. PMID: 17622958.

3. Baldursdottir S, Falk M, Donaldsson S, Jonsson B, Drevhammar T. Basic principles of neonatal bubble CPAP: effects on CPAP delivery and imposed work of breathing when altering the original design. Arch Dis Child Fetal Neonatal Ed. 2020 Sep;105(5):550-554. doi: 10.1136/archdischild-2019-318073. Epub 2020 Feb 11. PMID: 32047029; PMCID: PMC7547905.

4. Sahni R, Schiaratura M, Polin RA. Strategies for the prevention of continuous positive airway pressure failure. Semin Fetal Neonatal Med. 2016 Jun;21(3):196-203. doi: 10.1016/j.siny.2016.02.008. Epub 2016 Feb 28. PMID: 26936186.

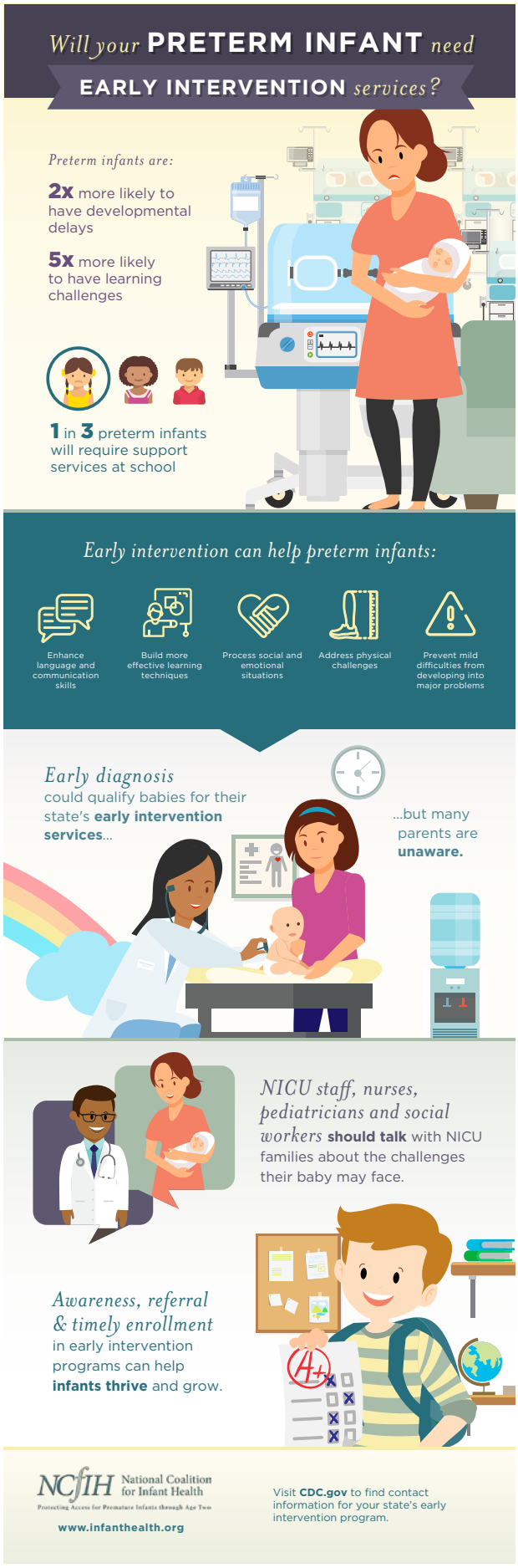
Disclosures: *The authors have no relevant disclosures.*

NT

Corresponding Author

Mitchell Goldstein, MD, MBA, CML
Professor of Pediatrics
Division of Neonatology
Department of Pediatrics
Loma Linda University School of Medicine
*Email:*mgoldstein@llu.edu

T.Allen Merritt, MD, MHA
Professor of Pediatrics
Loma Linda University School of Medicine
Division of Neonatology
Department of Pediatrics
email: allenmerritt.md@gmail.com



5 THINGS YOU CAN DO TO CELEBRATE NICU AWARENESS

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

2 Post on Social Media
See examples at nicuawareness.org and nationalperinatal.org/NICU_Awareness

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

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

5 Join Our Community
Get involved. Become a member of our organizations and share your talents.

This project is a collaboration between

Project Sweet Peas + National Perinatal Association

www.nicuawareness.org
www.nationalperinatal.org/NICU_Awareness

Exceptional Opportunities to Grow Your Neonatology Expertise

The Pediatrix Center for Research, Education, Quality and Safety offers educational opportunities designed to advance your expertise in neonatology.

Neonatology Grand Rounds Series

Mark your calendars for the first Wednesday of every month for our Neonatology Grand Rounds Series.

Pediatrix Continuing Education Portal

Our online learning platform is created to support health care providers with flexible continuing education, making it easy to learn wherever you are.

Sign up now for these great opportunities!

pediatrix

CENTER FOR RESEARCH, EDUCATION, QUALITY AND SAFETY

Save the date for 2027 NEO: The Conference for Neonatology!

February 17-19, 2027
Caesars Palace
Las Vegas, NV

NEO THE CONFERENCE FOR NEONATOLOGY

pediatrix

Peer Reviewed

Deficient Clinical Records: A Sign of Faulty Critical Thinking

Jaques Belik, MD

Abstract:

Hospital clinical notes form the backbone of patient care documentation and serve as a vital communication tool among healthcare providers. Yet, clinical records are often written in haste, poorly composed, incomplete, and lacking clear diagnostic and management information.

I propose that deficient documentation commonly reflects the clinician's limited competence in analytical and critical reasoning. Educational strategies to address these faulty skills, not only among junior clinicians but also among senior clinicians, would enhance healthcare and documentation practices. Recognition that poor clinical documentation reflects limited analytical and reasoning competencies is a necessary step toward corrective approaches.

The Current State of Clinical Notes:

Hospital clinical notes, including those from physicians, nurse practitioners, other health professionals, and trainees, often follow a formulaic structure that highlights key clinical examination findings, vital signs, ancillary laboratory test results, and imaging findings. Frequently, there is a discrepancy between the information the writer provides and what the reader expects: a clear understanding of the patient's diagnosis and the management plan.

"Hospital clinical notes, including those from physicians, nurse practitioners, other health professionals, and trainees, often follow a formulaic structure that highlights key clinical examination findings, vital signs, ancillary laboratory test results, and imaging findings. Frequently, there is a discrepancy between the information the writer provides and what the reader expects: a clear understanding of the patient's diagnosis and the management plan. "

Providing medical expert consultation in malpractice cases enabled me to review clinical records critically. Typically, such a review involves a challenging and frustrating task of identifying the relevant clinical information and the rationale for the listed diagnoses and therapeutic strategies.

"Whereas reviewing older medical records is often hindered by the difficulty of deciphering handwritten notes, the current availability of electronic ones has brought new challenges. These include scanning multiple pages of non-pertinent or non-filled template fields that contain minimal free-flowing entries to provide readers with insight into the writer's diagnostic thinking process."

Whereas reviewing older medical records is often hindered by the difficulty of deciphering handwritten notes, the current availability of electronic ones has brought new challenges. These include scanning multiple pages of non-pertinent or non-filled template fields that contain minimal free-flowing entries to provide readers with insight into the writer's diagnostic thinking process.

In academic institutions, these shortcomings are often observed in trainees' written notes and are attributed to their limited skills. But the senior supervising clinicians also err by merely acknowledging the trainees' notes without providing further diagnostic insight or contributing to the generation of well-reasoned therapeutic strategies.

My purpose in this commentary is to address the following conundrum. Does this reality reflect poor charting hospital practices or deficient gathering and processing of data by clinical professionals lacking insight into its importance and knowledge of how to address it?

What Contributes to the Clinical Record Deficiencies:

Time constraints and misperception of its clinical importance:

"My purpose in this commentary is to address the following conundrum. Does this reality reflect poor charting hospital practices or deficient gathering and processing of data by clinical professionals lacking insight into its importance and knowledge of how to address it?"

Clinical documentation is time-consuming. First-year American Internal Medicine trainees spent 66% of their time on indirect patient care, primarily encompassing clinical documentation and data retrieval from medical records. Only 13% of observed time was spent in direct patient care. (1)

A recently published study surprisingly found that, compared with regular-hours charting, medical notes written overnight by on-call physicians were of superior quality. The proposed justification was that clinicians during on-call periods had more time to gather relevant information and analyze its clinical significance. Likely for similar reasons, reducing trainees' workload led to higher-quality hospital discharge summaries. (2)

"A recently published study surprisingly found that, compared with regular-hours charting, medical notes written overnight by on-call physicians were of superior quality. The proposed justification was that clinicians during on-call periods had more time to gather relevant information and analyze its clinical significance. Likely for similar reasons, reducing trainees' workload led to higher-quality hospital discharge summaries."

The demanding work pace of certain neonatal intensive care units leaves clinicians with little time for reflective analysis and critical thinking. The urgent nature of care in specific high-acuity units (i.e., intensive care, emergency room, postoperative) prioritizes intuitive, immediate interventions over thoughtful deliberation. In general, the greater the patient's care urgency, the lower the quality of the available records.

The clinician's limited appreciation of the importance of accurate and complete note generation is the other challenge. Time constraints, the absence of validation among healthcare team members, external distractions, and fatigue all negatively impact clinical reasoning. Clinical documentation is often perceived as an administrative-legal necessity, failing to recognize its communicative, diagnostic, and therapeutic importance.

"The clinician's limited appreciation of the importance of accurate and complete note generation is the other challenge. Time constraints, the absence of validation among healthcare team members, external distractions, and fatigue all negatively impact clinical reasoning. Clinical documentation is often perceived as an administrative-legal necessity, failing to recognize its communicative, diagnostic, and therapeutic importance."

A significant shortcoming of many records is the lack of attention to the analysis of available clinical data. For example, while a note might meticulously record vital signs, laboratory results, and imaging findings, it seldom integrates these pieces of information to construct a comprehensive clinical picture of the patient's illness, differential diagnoses, and management strategy. Conflicting or missing data are often left unaddressed. In general, there is no interpretation of the significance of the patient's findings towards their clinical context.

The differential diagnosis section of medical notes often exemplifies the shortcomings of documentation practices. While a list of potential diagnoses is typically included, it rarely explores the supportive and dismissive value of each one or justifies the preferred diagnosis with sufficient reasoning.

"A well-constructed differential diagnosis should evaluate each entity based on the available evidence, highlighting its strengths and weaknesses. It should also consider alternative diagnoses and address any conflicting data that might challenge the primary hypothesis. Unfortunately, this level of detail is seldom observed in clinical documentation, which often settles for superficial lists devoid of meaningful discourse."

A well-constructed differential diagnosis should evaluate each entity based on the available evidence, highlighting its strengths and weaknesses. It should also consider alternative diagnoses and address any conflicting data that might challenge the primary hypothesis. Unfortunately, this level of detail is seldom observed in clinical documentation, which often settles for superficial lists devoid of meaningful discourse. This lack of critical analysis also undermines the educational and practical value of the notes, leaving them a mere checklist rather than a diagnostic refinement tool.

Another pervasive issue with hospital records is the selective nature of the information included in the notes.

Either due to perceived irrelevance or time constraints, clinicians often prioritize certain aspects of a patient's history or examination findings while omitting others that are potentially relevant. This selectivity biases the clinical record, leading to an incomplete (or erroneous) depiction of the patient's condition, diagnostic inaccuracy, and, ultimately, therapeutic mismanagement.

A health professional's progress note might emphasize findings that support a particular diagnosis while neglecting conflicting data or alternative possibilities. Diagnostic hypotheses, alternative pathologies, and missing information are often overlooked, leading to significant gaps in the clinician's narrative. This note-generating, faulty approach may stem from cognitive biases or a desire to streamline the narrative.

Selective documentation risks perpetuating diagnostic errors, as vital clues may be overlooked or dismissed by the original admission note taker and rarely corrected in subsequent records. This deficiency can hinder both the note-generating author's and the reader's ability to appreciate the significance of the already collected data and to identify potentially helpful but missing information.

"Selective documentation risks perpetuating diagnostic errors, as vital clues may be overlooked or dismissed by the original admission note taker and rarely corrected in subsequent records."

Inadequate competency training and mentorship:

Clinical trainees, who are often the ones tasked with clinical charting, face unique challenges and external pressures. Their limited experience and diagnostic acumen, coupled with insufficient feedback from their supervisors, result in superficial content and scant diagnostic analysis. A common complaint among junior medical trainees is the limited feedback and education in note-writing provided by their mentors. (3)

Whether the most responsible clinicians consistently serve as good models for patients' documentation is a matter of debate. Notes written by the most senior clinicians often focus narrowly on management rather than critical interpretations of the available clinical data. Studies that comparatively addressed the quality of medical notes written by trainees and their supervising physicians are informative.

"Clinical trainees, who are often the ones tasked with clinical charting, face unique challenges and external pressures. Their limited experience and diagnostic acumen, coupled with insufficient feedback from their supervisors, result in superficial content and scant diagnostic analysis."

A review of the clinical documentation from a general pediatric service program related to abdominal pain evaluation revealed that only 67% and 77% of the residents' and attending physicians' notes, respectively, included a complete differential diagnosis. More concerning was the fact that the percentage of residents' and attending physicians' notes inadvertently lacking a life-threatening diagnosis was similarly high (57% and 60%, respectively). (4)

The Implications of Poor Documentation:

A poorly constructed clinical note is more than just a charting deficiency. It often reflects a clinician's limited understanding of the patient's clinical issues and diagnostic complexities.

"A poorly constructed clinical note is more than just a charting deficiency. It often reflects a clinician's limited understanding of the patient's clinical issues and diagnostic complexities."

Although documenting available data is vital, solely focusing on cataloging it can lead to a fragmented understanding of the patient's condition, hindering deeper analytical reasoning in clinical care.

This deficiency carries real risks, including: 1) Improper diagnoses or misdiagnoses with potentially severe consequences for patients whose conditions often demand precise and timely interventions; 2) Incomplete or biased documentation leading to delayed management and suboptimal outcomes; 3) Legal liability arising from poorly documented notes exposing clinicians and institutions to legal scrutiny and tort awards.

Strategies for Improvement:

The act of writing notes should be viewed as an integral part of the critical diagnostic and clinical management process. It should allow for a mental review of available patient data, analysis of its significance, synthesis of a coherent clinical picture, and generation of an effective management and treatment plan. For the reader, a well-crafted note provides valuable insights into the clinician's thought process, offering a transparent rationale for diagnoses and management decisions.

"The act of writing notes should be viewed as an integral part of the critical diagnostic and clinical management process. It should allow for a mental review of available patient data, analysis of its significance, synthesis of a coherent clinical picture, and generation of an effective management and treatment plan. For the reader, a well-crafted note provides valuable insights into the clinician's thought process, offering a transparent rationale for diagnoses and management decisions."

Comprehensive clinical analysis :

Clinical reasoning is a healthcare process that relies on prior biomedical knowledge, involves identifying pertinent clinical information, formulating a diagnostic hypothesis to inform a therapeutic management strategy, and aims to validate or refute that hypothesis. The competence in self-reflection, analysis, synthesis, and the expression of one's thoughts and ideas constitutes critical thinking skills.

Effective clinical reasoning is the goal of adequate critical thinking. It requires synthesizing data from multiple sources, identifying patterns, and exploring potential inconsistencies. Suggested strategies to address these needs, such as cognitive time-out, have been described by asking questions such as "What other potential causes can account for the patient's condition?"

"Effective clinical reasoning is the goal of adequate critical thinking. It requires synthesizing data from multiple sources, identifying patterns, and exploring potential inconsistencies."

Others have pointed out that, unlike the traditional hypothetico-deductive physician-focused method, inductive and probabilistic (Bayesian) reasoning approaches are complementary but are rarely used among clinicians. (5)

Scientific experimentation offers a potentially helpful paradigm for clinical management. That is enunciating a soundly constructed hypothesis, determining the preferred and feasible hypothesis-testing strategy, and conducting a critical analysis of the findings. The experiment's ultimate goal is to confirm or reject the initial hypothesis.

In the clinical setting, the commonly referred-to "working diagnosis" would be viewed as a hypothesis-testing exercise. The clinician would not only formulate the "working diagnosis" but also justify it and propose a clinically sound strategy to evaluate it. Similar to experimental research, gathering data may prove the working diagnosis false. Acknowledging this outcome and seeking an alternative hypothesis (diagnosis) rather than eliciting criticism of the previously discarded one would enhance the record's content quality.

"In the clinical setting, the commonly referred-to 'working diagnosis' would be viewed as a hypothesis-testing exercise. The clinician would not only formulate the 'working diagnosis' but also justify it and propose a clinically sound strategy to evaluate it. Similar to experimental research, gathering data may prove the working diagnosis false. Acknowledging this outcome and seeking an alternative hypothesis (diagnosis) rather than eliciting criticism of the previously discarded one would enhance the record's content quality."

Cognitive bias and medical uncertainty:

One of the greatest challenges to analytical thinking is the influence of previously acquired or triggered biases when evaluating a patient. In medical-legal cases, cognitive biases account for approximately 70% of diagnostic errors. (6)

"One of the greatest challenges to analytical thinking is the influence of previously acquired or triggered biases when evaluating a patient. In medical-legal cases, cognitive biases account for approximately 70% of diagnostic errors."

Several types of cognitive biases may interfere with clinical reasoning. These include the following.

Overconfidence in one's diagnosis, whether based on how the relevant clinical features are structured to rationalize the chosen hypothesis or on unjustified disregard for alternative pathologies, accounts for some biases. Sticking to an early working diagnosis based on salient information, even after opposing data becomes available, is another manifestation of overconfidence and limited self-criticism.

Anchoring bias, introduced by salient or distracting features during a clinical case presentation, can lead to diagnostic errors. A phenomenon increasingly common in the current digital age is the confirmatory bias. This is brought about by selectively identifying clinical publications supportive of one's diagnosis.

Others have demonstrated the difficulty in revising an initial erroneous diagnosis. (7) Cognitive biases thus negatively impact clinical reasoning and have been shown to contribute to the majority of diagnostic errors. (8)

To remind clinicians of and prompt them to minimize the biases, three simple questions to improve analytical reasoning were suggested: 1) What else could this be? 2) Is there something that does not fit? 3) Is there more than one diagnosis? (4)

Medical uncertainty, most often related to proposing a differential diagnosis, is another important aspect of clinical documentation. Because it is initially present in most patient-clinician encounters, it requires acknowledgment and proper documentation. Addressing diagnosis uncertainty in medical notes is an effective strategy to remind the writer and warn readers of alternative pathological processes that may explain the elicited clinical findings.

"Addressing diagnosis uncertainty in medical notes is an effective strategy to remind the writer and warn readers of alternative pathological processes that may explain the elicited clinical findings."

Enhanced Training, Educational Strategies, and Mentorship:

One of the major challenges is to sensitize trainees and some senior clinicians about the importance of medical documentation training. The focus of such training should be on developing competency in clinical diagnostic reasoning.

Medical schools mostly emphasize knowledge acquisition during the students' formative years. Residency and fellowship training programs recognize their importance but often fail to elicit and develop trainees' clinical reasoning skills effectively. Graduates of such programs usually master critical thinking skills independently or acquire them during clinical training.

Medical students' and clinicians' reasoning training interventions that focused solely on cognitive factors showed a modest improvement in diagnostic accuracy. (9). Multiple techniques have been proposed to promote clinical reasoning among students and trainees. (5)

Including "catchy" acronyms to remind health professionals of the necessary elements of clinical reasoning and note-taking is a helpful strategy. Another one, entitled SNAPPS, stands for Summarize, Narrow, Analyze, Probe, Plan, and Self-study. Family medicine trainees who employed such a technique provided a concise clinical presentation that included more alternative diagnoses and a clear rationale. (10)

"...one, entitled SNAPPS, stands for Summarize, Narrow, Analyze, Probe, Plan, and Self-study. Family medicine trainees who employed such a technique provided a concise clinical presentation that included more alternative diagnoses and a clear rationale."

Another interesting concept for improving the quality of clinical reasoning is 'concept maps.' (11) Pictorial diagrams linking the available clinical information to basic pathophysiological mechanisms enable refinement of critical thinking toward a correct diagnosis and management plan. This approach requires the clinician to first visually elaborate the diagnostic hypotheses to explore strengths and weaknesses before (or during) the note-writing process.

"Another interesting concept for improving the quality of clinical reasoning is 'concept maps.' Pictorial diagrams linking the available clinical information to basic pathophysiological mechanisms enable refinement of critical thinking toward a correct diagnosis and management plan."

Elements of a Well-Constructed Clinical Note:

A clinical note should include the following elements:

- Comprehensive Data Analysis: Integration of clinical findings, laboratory results, imaging studies, and other relevant data to form a cohesive diagnostic hypothesis.
- Critical Diagnostic Reasoning: Considering alternative pathologies and identifying significant gaps and inconsistencies in the available data.
- Justification of Management Decisions: Management strategies informed by a well-constructed working diagnosis and succinct but clear explanations for proposed treatments, grounded in evidence-based practices.
- Revisiting the initial diagnoses and critical follow-up: The daily progress notes should objectively document the patient's progress, continue to challenge the "working diagnosis," and justify changes in clinical management strategies.

Mentorship programs can play a pivotal role in fostering these competencies, ensuring that junior clinicians receive constructive feedback on their notes. Regular workshops, peer reviews, and recognition of exemplary notes can help reinforce good clinical note writing.

"Mentorship programs can play a pivotal role in fostering these competencies, ensuring that junior clinicians receive constructive feedback on their notes. Regular workshops, peer reviews, and recognition of exemplary notes can help reinforce good clinical note writing."

Institutional awareness and practice change implementation:

Institutional leadership must be sensitized to shift the perception of medical documentation from a mere bureaucratic chore to a critical-reasoning clinical activity.

"Institutional leadership must be sensitized to shift the perception of medical documentation from a mere bureaucratic chore to a critical-reasoning clinical activity."

Hospitals should implement policies that allow clinicians sufficient time to reflect on their patients and produce thorough, accurate, and meaningful documentation. This may involve redistributing workloads or integrating dedicated documentation periods into daily schedules.

Advancements in electronic health records (EHRs) can support clinicians in organizing and analyzing patient data. If properly designed and implemented, decision-support systems embedded within EHRs can prompt clinicians to consider alternative diagnoses and highlight missing information, enhancing the quality of their documentation.

Artificial intelligence should not substitute for, but guide the clinician through, the often complex data analysis, differential diagnosis, and decision-making regarding adequate management. Unfortunately, artificial intelligence is seen by many hospital administrators as a means to shorten clinicians' involvement with their patients.

"Artificial intelligence should not substitute for, but guide the clinician through, the often complex data analysis, differential diagnosis, and decision-making regarding adequate management. Unfortunately, artificial intelligence is seen by many hospital administrators as a means to shorten clinicians' involvement with their patients."

Conclusion:

Clinical admission and progress notes are invaluable tools for patient care, education, and communication. However, their descriptive nature, selective inclusion of facts, and limited analytical depth often detract from their utility. By reframing note writing as an essential component of clinical reasoning, we can ensure that patients receive the thoughtful care they deserve.

Health care workers and their institutions must recognize that every note written is an opportunity to review the available clinical information and reevaluate the patient care goals. Ultimately, medical notes should serve not only as a record of observations but as a dynamic tool for critical reasoning, collaboration amongst health professionals, and learning.

"Health care workers and their institutions must recognize that every note written is an opportunity to review the available clinical information and reevaluate the patient care goals. Ultimately, medical notes should serve not only as a record of observations but as a dynamic tool for critical reasoning, collaboration amongst health professionals, and learning."

Addressing the systemic and educational issues underlying poor documentation practices is not just about improving medical records—it is a crucial step toward better clinical outcomes, reduced legal risks, and enhanced professional integrity.

References:

1. Chaiyachati KH, Shea JA, Asch DA, Liu M, Bellini LM, Dine CJ, et al. Assessment of inpatient time allocation among first-year internal medicine residents using time-motion observations. JAMA Internal Medicine. 2019;179(6):760–7.
2. Coit MH, Katz JT, McMahon GT. The effect of workload reduction on the quality of residents' discharge summaries. Journal of General Internal Medicine. 2011;26(1):28–32.
3. Rowlands S, Coverdale S, Callen J. Documentation of clinical care in hospital patients' medical records: a qualitative study of medical students' perspectives on clinical documentation education. Health Information Management Journal. 2016;45(3):99–106.
4. Kasick RT, Melvin JE, Perera ST, Perry MF, Black JD, Bode RS, et al. A diagnostic time-out to improve differential diagnosis in pediatric abdominal pain. Diagnosis. 2021;8(2):209–17.
5. Richards JB, Hayes MM, Schwartzstein RM. Teaching

clinical reasoning and critical thinking: from cognitive theory to practical application. Chest. 2020;158(4):1617–28.

6. Tehrani ASS, Lee H, Mathews SC, Shore A, Makary MA, Pronovost PJ, et al. 25-Year summary of US malpractice claims for diagnostic errors 1986–2010: an analysis from the National Practitioner Data Bank. BMJ quality & safety. 2013;22(8):672–80.

7. Mamede S, Zandbergen A, de Carvalho-Filho MA, Choi G, Goeijenbier M, van Ginkel J, et al. Role of knowledge and reasoning processes as predictors of resident physicians' susceptibility to anchoring bias in diagnostic reasoning: a randomised controlled experiment. BMJ Quality & Safety. 2024;33(9):563–72.

8. Saposnik G, Redelmeier D, Ruff CC, Tobler PN. Cognitive biases associated with medical decisions: a systematic review. BMC medical informatics and decision making. 2016;16:1–14.

9. Staal J, Hooftman J, Gunput ST, Mamede S, Frens MA, Van den Broek WW, et al. Effect on diagnostic accuracy of cognitive reasoning tools for the workplace setting: systematic review and meta-analysis. BMJ Quality & Safety. 2022;31(12):899–910.

10. Wolpaw T, Papp KK, Bordage G. Using SNAPPS to facilitate the expression of clinical reasoning and uncertainties: a randomized comparison group trial. Academic Medicine. 2009;84(4):517–24.

11. Daley BJ, Torre DM. Concept maps in medical education: an analytical literature review. Medical education. 2010;44(5):440–8.

Conflict of Interest Statement: The author reports no conflict of interest

Disclosures: *The author has no disclosures*

NT

Corresponding Author

Dr. Jaques Belik
Emeritus Professor of Pediatrics
University of Toronto
The Hospital for Sick Children
Peter Gilgan Centre for Research and Learning
Toronto, Ontario, M5G 0A4 Canada
Email: jaques.belik@utoronto.ca

Readers can also follow

NEONATOLOGY TODAY

via our Twitter Feed

@NEOTODAY

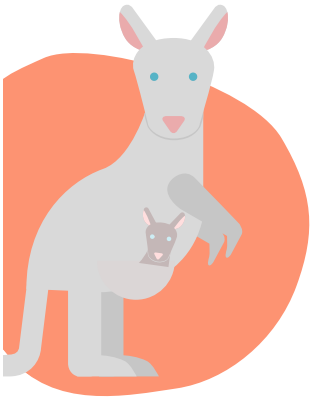
New subscribers are always welcome!

NEONATOLOGY TODAY

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

SUPPORTING KANGAROO CARE

SKIN-TO-SKIN CARE DURING COVID-19



GET INFORMED ABOUT THE RISKS + BENEFITS

work with your medical team to create a plan

GET CLEAN

WASH YOUR HANDS, ARMS, and CHEST

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

PUT ON FRESH CLOTHES

change into a clean gown or shirt.

IF COVID-19 + WEAR A MASK

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

National Perinatal Association

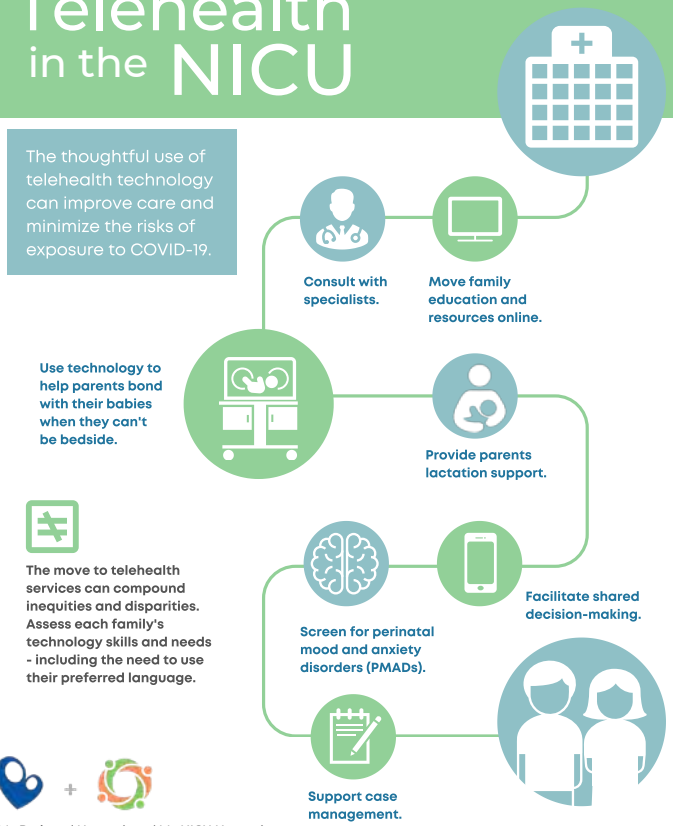
nicuparentnetwork.org

NPN NICU PARENT NETWORK

nationalperinatal.org/skin-to-skin

Telehealth in the NICU

The thoughtful use of telehealth technology can improve care and minimize the risks of exposure to COVID-19.



The move to telehealth services can compound inequities and disparities. Assess each family's technology skills and needs - including the need to use their preferred language.

My Perinatal Network and My NICU Network are products of a collaboration between National Perinatal Association (NPA) and NICU Parent Network (NPN).

myNICUnetwork.org

National Network of NICU Psychologists

NICU MENTAL HEALTH

nationalperinatal.org/psychologists

The Gravens Conference
on the Environment of Care for High Risk Newborns

39TH INTERNATIONAL GRAVENS CONFERENCE

SENSITIVE ISSUES IN SENSATIONAL TIMES

June 16-18
2026

University of Notre Dame
South Bend Indiana

POWER OF BELONGING TRAVEL SCHOLARSHIP

LET US HELP YOU ATTEND GRAVENS 2026!!

Grow your expertise!

Hear from leading national and international experts!

Opportunities to network with diverse professionals committed to advancing health equity for infants and families in the intensive care unit!

APPLY NOW!

Have questions? Please email:

Christie Lawrence
(Christie_Lawrence@rush.edu
Kelly McGlothen-Bell
(mcglothen@uthscsa.edu))

Navigating toward Neonatology: Interview with Dr. Douglas Deming

Benjamin Hopkins, DO, Douglas Deming, MD

"Welcome back to another installment. My name is Benjamin Hopkins, and I am currently a post-graduate year two pediatric resident at the University of California, San Francisco—Fresno. 'When I grow up, I want to be a Neonatologist.' Look at previous months' journals for my earlier articles, and follow along with this column as I navigate my way to becoming a neonatologist."

Welcome back to another installment. My name is Benjamin Hopkins, and I am a post-graduate year two pediatric resident at the University of California, San Francisco—Fresno. When 'I grow up,'' I want to be a Neonatologist. Look at previous months' journals for my earlier articles, and follow along with this column as I navigate my way to becoming a neonatologist.

I had the privilege of speaking with Dr. Douglas Deming, a neonatologist, researcher, and mentor. We discussed what makes an excellent neonatologist, his journey into neonatology, how to engage medical students and residents to spark their interest in neonatology, and what a future neonatologist should prioritize in their training.

"I had the privilege of speaking with Dr. Douglas Deming, a neonatologist, researcher, and mentor."

1. What qualities are most essential to excel in as a neonatologist?

I'm going to start with curiosity; wanting to understand what's happening, why it's happening, and how it's happening. Along with that is being willing to be honest with yourself and say, "I don't have a clue; let me figure it out." The people I worry about most are those who lack curiosity and are unwilling to look, thinking they already know everything that's going on. When I look at myself, some of my most significant learning experiences have been when I'm willing to say I don't have a clue what's happening here, let's work on figuring it out, and trying to understand.

Indeed, one aspect that aligns with the theme of curiosity and a lack of understanding is pulmonary hypertension. Early in my career, we didn't yet have echocardiography, and pulmonary hypertension was called persistent fetal circulation. If you had a baby with that, you guaranteed that you'd never see your pillow for the next 36 hours. There were all sorts of jerry-rigging that we did, but we didn't understand the disease, and we didn't have good therapy for it.

"I'm going to start with curiosity; wanting to understand what's happening, why it's happening, and how it's happening. Along with that is being willing to be honest with yourself and say, 'I don't have a clue; let me figure it out.'"

This was before nitric oxide, before ECMO, and the primary drug we had was tolazoline. Fortunately, it's no longer on the market. Part of the problem with tolazoline was that it has at least five different mechanisms of action. You couldn't predict which one was going to be activated in any given baby until you tried it, so it may have harmed more babies than it helped. Still, it was the only therapeutic intervention other than not touching the baby; don't let them be hypoxic; don't let them be cold; don't let them be hypoglycemic; don't let them be anything bad because there wasn't much we could do about it.

Lastly, a library. As an intern, my senior resident in pediatrics would often grab me, even if I was half-asleep, when something new or different showed up as an admission. We would go down to the pediatric library in the research wing and browse through journals at 2 or 3 in the morning, which I must admit I appreciate now. At the time, I was deeply underwhelmed, but I learned a lot from this experience. The baby looks like this, or the child does, and this is what we find in the literature.

"Lastly, a library. As an intern, my senior resident in pediatrics would often grab me, even if I was half-asleep, when something new or different showed up as an admission. We would go down to the pediatric library in the research wing and browse through journals at 2 or 3 in the morning, which I must admit I appreciate now. At the time, I was deeply underwhelmed, but I learned a lot from."

There's still a lot of that curiosity required, because the information needs to be learned and discovered, then made available to

others. When I was at UCSF, long before computers had entered my life, I would review articles for my own research projects. You'd spend two or three days going through Index Medicus, pulling articles, reviewing their references, and trying to figure out what was really going on. Now, you could do in a couple of hours what took me eight days to do before.

"You'd spend two or three days going through Index Medicus, pulling articles, reviewing their references, and trying to figure out what was really going on. Now, you could do in a couple of hours what took me eight days to do before."

2. What caused you to pursue a career in neonatology?

I had a wildly convoluted pathway into neonatology. When I started medical school, I wanted to be a CT (Cardiothoracic) surgeon because that's what my uncle was, and I had looked up to and admired him since grade school. I reached my junior year in medical school, during a surgery rotation, and it became clear that I would never be a surgeon. The biggest reason for that was that I didn't think like them. I didn't solve problems like them. This was already my junior year, and I needed to change my career path. I grew up in the Pacific Northwest. I was born and raised there and hadn't lived in California until I came to medical school. I'd had this vision of returning to the Pacific Northwest. I decided on internal medicine because they think and solve problems in much the same way I do. I went to a Kaiser and did a month of internal medicine. I chose the Kaiser deliberately because practicing at the university wasn't the kind of practice I would have up in the Northwest. As a general internist out in a community, you aren't going to be dealing with all the rare, weird, unusual things. You'll be dealing with common, everyday internal medicine issues. It was the most boring month of my life, and the fact was that the problem with the patients wasn't their disease; it was their age. They were getting older and on this pathway towards dying.

Then I thought of pediatrics because they have a similar thinking and problem-solving process to internists. Yet, most of their patients get over their disease, get better, grow up, and become adults. That sounded much more fun, so that's why I went into pediatrics.

I graduated from the medical school, and at that time, they had just started three-year classes. My class started late September, and we went three continuous years around the calendar. There weren't many places that offered January 1st start dates, and Loma Linda was one of those. I started pediatrics here at Loma Linda, and when I was working towards the end of residency, I was out looking for job opportunities back in the Pacific Northwest. The places that I was interested in weren't hiring, and the areas that were hiring, I wasn't all that interested in.

I decided to do a year of neonatology. What sparked my interest in that is the person who started the NICU here at Loma Linda: Dr. Chul Cha. He was one of Marshall Klaus's fellows and a co-fellow with Avroy Fanaroff. I liked his attitude about babies and how they interact and bond. 6 months into it, I realized that neonatology is a whole lot more fun than the pediatrics I had already experienced. I signed up for the rest of the fellowship. In that process, the department chairman at Loma Linda was John Mace, who was really dedicated to establishing an academic department. He was sending trainees to other places for additional training. I was privileged to be one of those, and that's when I went to San Francisco, UCSF, and the Cardiovascular Research Institute, where I did another 18 months.

" I realized that neonatology is a whole lot more fun than the pediatrics I had already experienced. I signed up for the rest of the fellowship."

I run into students nowadays who already know what neonatology is, and that's what they are going to be. I hadn't even heard the word neonatology when I was in medical school. I had no clue what it was, but I'm glad for where I'm at.

3. How can NICU programs draw more people toward neonatology due to the current decreased interest in the field?

The first is that the interest in a particular field is cyclical. It comes, and it goes, and it will come again, and it will go again. I was the fellowship program director for 20 years earlier in my career, and we would be in this hysterical mode of "Are we going to fill, what happens if we don't fill?" and it has come and gone. Right now, psychiatry is popular. Many of the students that I interact with are so keen on psychiatry. But, I remember 15 to 20 years ago, when no one would go into psychiatry. It's going to change again.

"The first is that the interest in a particular field is cyclical. It comes, and it goes, and it will come again, and it will go again."

I don't know what will make it change. The things that come to mind are introducing something new and novel into a therapeutic environment that has a significant impact. My career has spanned a long enough time that I've witnessed neonatology undergo enormous changes. In neonatology, one such thing is genetic manipulation. Of all the disease processes in humans, neonatology has the best platform for doing that kind of thing. If you had a gene that you could alter lung development, if you had a gene that you could prevent intraventricular hemorrhage, if you could change something in the newborn that would improve their life in 70, 80, 90 years, that would be really exciting. These developments won't happen instantly, but we're getting closer to them. That's one of the things that will attract people to go into neonatology.

Another thing that will attract people is the fact that babies grow up. They become children, then adults. I went into neonatology because I wanted to make a difference in a patient population that has the potential to grow up, change, get over their disease, and thrive. There are going to be other people like me wandering around lost out there that are going to come in.

One thing that scares people away from neonatology is the fact that it's an ICU. When you look at ICUs, they typically require work outside of regular work hours. There is a particular type of person who's willing to do that, and not everybody is. When I talk to medi-

cal students nowadays, many of them are deeply interested in lifestyle and work-life balance. All of those things are important, and indeed, training programs and practice venues have changed since I was training or early in practice.

"Of all the disease processes in humans, neonatology has the best platform for doing that kind of thing. If you had a gene that you could alter lung development, if you had a gene that you could prevent intraventricular hemorrhage, if you could change something in the newborn that would improve their life in 70, 80, 90 years, that would be really exciting. These developments won't happen instantly, but we're getting closer to them. That's one of the things that will attract people to go into neonatology."

When I was an intern, I got to go home when my work was done. If that took 36 hours, you got 12 hours off before you came back and did it again. Nobody, not even surgeons, does that anymore. When you view neonatology as a lifestyle, most practices now operate on a shift basis. There are many different practice environments and styles. I'm particularly talking to fellows and trainees in neonatology about making sure they understand that this is what life in this practice environment will be like. Neonatology is never going to be like dermatology or psychiatry, but it takes a different kind of person to want to do that. Some people accuse us of being adrenaline junkies, which I suppose is partly true. There are very few things as exciting as "I did something, and this baby is alive because I did that something."

"One thing about neonatology is the attention to micro-details. There are no other specialty in medicine that pay as close attention to little details like neonatology."

One thing about neonatology is the attention to micro-details. There are no other specialty in medicine that pay as close attention to little details like neonatology. I continually harp on people who have to do rounds with me: what's the weight, what's the head circumference, what's the length, what do these growth curves look like? Are they going up? If they're not going up, we need to figure out why and help this baby grow up.

4. What are you currently working on?

PDA closure is the focus of my current research, specifically, the outcomes of ductus closure. In short, we don't have a clue. That's the bottom line. I have about 200 to 250 articles in a file that I give to my research team to review and decide what to do with them. However, I can prove any point of view you want. It doesn't matter what it is. It starts with: should you undergo surgery, use pharmacology, or do nothing and leave it alone? Choose any of them, and I can prove any point for it. The scientist in me looks at that and says, "We're asking the wrong question. We're barking up the wrong tree. There's something else that we're missing." Somebody younger, brighter, and more put together than me will figure it out, because I'm beyond that now.

"PDA closure is the focus of my current research, specifically, the outcomes of ductus closure. In short, we don't have a clue. That's the bottom line."

This particular project, which we've been working on for 13 years now, has involved comparing pharmacologic versus surgical approaches, pharmacologic versus catheter-based methods, and surgical versus catheter-based methods. Currently, we've been examining doing nothing, yet we still achieve the same outcomes. It doesn't matter how I start with it. I cannot see an improvement in the relationships, no matter what I do. Now I'm waiting for someone to be bright and ask the right question that causes me to say, "Oh, wow, why didn't I see that?" Currently, that has not happened.

"Learn how to do a good newborn physical exam. People aren't doing those anymore...Every once in a while, I'd get up, look at the baby, and then sit down and do another few rows. Nowadays, physicians have become so attached to the computer that they no longer look at the baby."

5. What would you encourage a future neonatologist to prioritize and be involved in?

Learn how to do a good newborn physical exam. People aren't doing those anymore. Back in those days, when it was pulmonary hypertension, we didn't have a thing that we could do for it. You sat out at the bedside for hours. There are still tales running around in every NICU I worked in of me sitting in a rocking chair in the middle of the room doing cross-stitch. Every once in a while, I'd get up, look at the baby, and then sit down and do another few rows. Nowadays, physicians have become so attached to the computer that they no longer look at the baby.

My mentor's mentor, Marshall Klaus, would say, "If you want to

know what a baby is doing, go look at them. Don't look at the labs. Don't look at the EKG. Go look at the baby, and they will tell you more than anything else." One of the things I admired and wanted to be like was that he could spend five minutes just sitting there, not touching, just watching the baby, and then he could tell you that baby's life story. He was rarely wrong. He would discover everything just by his physical exam.

"My mentor's mentor, Marshall Klaus, would say, "If you want to know what a baby is doing, go look at them. Don't look at the labs. Don't look at the EKG. Go look at the baby, and they will tell you more than anything else.""

My priority would be to learn how to perform a thorough physical examination of newborns. The second thing is that, if you look on YouTube, you will find several videos by T. Berry Brazelton, who was at Harvard and one of the pioneers in developmental pediatrics at its inception. Those videos show the way the baby communicates with the parent.

"The third thing is fetal and newborn physiology. I realize people don't buy textbooks anymore. Whether you buy a textbook or do it by some other means, you must learn normal and abnormal physiology. The fetus and the newborn do not have the same physiology as the child. When I was a pediatric resident, the saying was that a child is not a small adult. However, a newborn is not a small child."

Preterm babies communicate with the world around them. They don't do it verbally. They do it through their actions and behaviors. In addition to a good physical exam, you have to know what a normal baby looks like. You have to understand what a normal baby looks like at different gestational ages. Then you can start looking at what this baby is doing to communicate its needs to me, the caregiver.

The third thing is fetal and newborn physiology. I realize people don't buy textbooks anymore. Whether you buy a textbook or do it by some other means, you must learn normal and abnormal physiology. The fetus and the newborn do not have the same physiology as the child. When I was a pediatric resident, the saying was that a child is not a small adult. However, a newborn is not a small child.

Choose an organ system. Mine is the lung, with a little bit of the heart. I wave off at things like the gut and the kidney. I've had a nephrologist trying to teach me kidney physiology for 40 years. It's like I understand it perfectly when she's standing in front of me, and I turn around, and it's all gone. I don't care which branch you look at, but learn the physiology of the fetus and newborn. Learn it so well that you can recite it in your sleep.

During my training, I used the book *Physiology of the Fetus and Newborn* by Smith and Nelson. There was a section in the lung circulation physiology part of that book that didn't make sense. I read it 25–30 times. Then all of a sudden it made sense. I tell my scientific writing students that if an intelligent person can't read and understand what you're writing, you've written it wrong. It's essential to understand physiology. Then, once you have learned that, start learning about the diseases.

Disclosures: *The authors have no disclosures*

NT

Corresponding Author

Benjamin Hopkins, DO
Pediatric Resident
University of California, San Francisco
Community Regional Medical Center
Valley Children's Hospital
Email: Benjamin.hopkins@ucsf.edu

Douglas D. Deming, MD
Professor of Pediatrics
Division of Neonatology
Loma Linda School of Medicine

POLICY • EQUITY • INCLUSION

alliance
FOR BLACK NICU FAMILIES

FREE Wearable Breast Pump to a BLACK NICU BIRTHING PERSON

NO INCOME REQUIREMENT!

PUMP PARTNERSHIP FORM

SCAN HERE

NICU PARTNER PROGRAM

Join our coalition of NICUs across the country! It is also FREE.

JOIN NOW

ELIGIBILITY

Sign up today and you get direct access to the private request form, resources and more to help YOUR Black NICU Families.

In Unity,
Ashley, Deb & Jenny

CONTACT US

blacknicufamilies.org @ blacknicufamilies 571.520.NICU

The Indirect Impact of **RSV**

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

OVERVIEW

RSV impacts not only infants and young children, but also entire families.

The National Coalition for Infant Health and the Alliance for Patient Access sought to examine the multifaceted burden that RSV places on families and to identify potential policy solutions.

Two surveys were conducted, one of parents who had at least one child contract RSV and one of health care providers who treat infants and children with RSV.

Both surveys were conducted with YouGov, a global public opinion and data company. Parents and providers were recruited from a pool of pre-selected respondents to ensure they met the survey's requirements. Participants received an honorarium.

RSV PARENT SURVEY

340 parents who had at least 1 child sick with RSV

67% of parents said their child was hospitalized for RSV

RSV HEALTH CARE PROVIDER SURVEY

175 health care providers across various pediatric and neonatal subspecialties

67% worked in an outpatient facility

33% worked in a hospital

RESULTS

FINANCIAL BURDEN

More than ⅔ of parents said the costs of RSV posed a financial burden or financial crisis.

7% of parents said they were fired as a result of caring for their child with RSV.

32% of parents reported losing potential income while their child had RSV.

EMOTIONAL BURDEN

68% of parents said watching their child suffer affected their mental health.

69% of parents felt guilty that they could not do more to prevent their child's RSV.

When parents found out there was no treatment for RSV, only supportive care:

- **48%** felt angry
- **46%** felt helpless

SOCIAL BURDEN

43% of parents had never heard of RSV before finding out their child was sick.

54% of parents had to rely on family and friends for sibling care, transportation and other responsibilities.

42% of parents said they struggled to care for their other children when one faced RSV.

RESULTS

PARENT EDUCATION & AWARENESS

86% of providers said they include RSV education as part of routine care.

99% of providers agreed that parents need more information about RSV.

TREATMENT CHALLENGES

Nearly ⅓ of providers have been reluctant to test for RSV because no treatment exists.

48% of providers said it was difficult to decide whether to send an infant or child with RSV to the emergency room.

92% agreed that if an immunization were available, it should be added to the Vaccines for Children program's list of pediatric vaccines.

MISCONCEPTIONS

A majority of providers (60%) explained that around 50% or more of the babies they see hospitalized for RSV were born healthy, despite many people thinking severe RSV only impacts premature infants or those with preexisting conditions.

CONCLUSION

Both surveys highlighted that the burden of RSV extends well beyond its physical symptoms.

The virus may lead to:

- **Long-lasting health challenges** for babies and young children
- **Financial, social and emotional burdens** for families
- **Frustration for providers,** who lack a cure or viable preventive interventions

This burden is not experienced by the few. Most infants and children contract RSV by the time they are two, and challenges that accompany RSV may impact anyone who has been affected.

Moving forward, the many burdens of RSV demonstrate the need for:

- **More RSV education**
- **Research and innovation** for preventive interventions
- **Access to prevention and treatment** for all babies and children

The challenges caused by RSV can reach far and wide, and its indirect impacts often leave families struggling.

infanthealth.org

Peer Reviewed

The Annual Reset: Why High-Performing Professionals Must Reassess Personal and Professional Goals Every Year

Rody Azar, MHA, RRT-NPS, FAAR

"This paper explores the importance of structured annual reassessment for professionals and leaders, with a particular emphasis on sales enablement and leadership development. Drawing on goal-setting theory, adult learning principles, and organizational psychology, the paper argues that consistent reassessment strengthens alignment, increases adaptability, mitigates burnout, and sustains long-term performance."

Abstract:

In rapidly evolving professional environments, static goal-setting models are increasingly insufficient. Annual goal reassessment, both personal and professional, has emerged as a critical leadership and performance discipline rather than a reflective luxury. This paper explores the importance of structured annual reassessment for professionals and leaders, with a particular emphasis on sales enablement and leadership development. Drawing on goal-setting theory, adult learning principles, and organizational psychology, the paper argues that consistent reassessment strengthens alignment, increases adaptability, mitigates burnout, and sustains long-term performance. Practical frameworks are offered to guide professionals and organizations in conducting effective annual reviews that integrate performance outcomes, personal values, and future-focused capability building.

Introduction:

Goal setting has long been recognized as a cornerstone of professional success. From early career planning to executive leadership development, individuals and organizations rely on goals to create direction, measure progress, and evaluate performance. Nevertheless, while much emphasis is placed on setting ambitious objectives, far less attention is given to the equally important practice of reassessing those goals regularly.

In many organizations, particularly in sales-driven environments, goals are established annually and pursued relentlessly, often without structured reflection on whether those goals remain relevant, aligned, or sustainable. Professionals are encouraged to "push through," even as market conditions shift, personal priorities evolve, and organizational strategies change. Over time, this misalignment can lead to diminished engagement, reduced performance, and professional burnout.

This paper contends that annual reassessment of both professional and personal goals is not merely a reflective exercise, but a strategic imperative for high-performing professionals. Reassessment enables individuals to recalibrate their priorities, refine their strategies, and realign their efforts with evolving values and organizational realities. For sales enablement coaches and leaders, fostering this discipline can unlock higher levels of motivation, resilience, and sustained excellence across teams.

"This paper contends that annual reassessment of both professional and personal goals is not merely a reflective exercise, but a strategic imperative for high-performing professionals."

The Case for Annual Goal Reassessment:

Goals Exist in Dynamic Systems: Traditional goal-setting models often assume relative stability. However, modern professional environments are anything but static. Market volatility, technological disruption, regulatory changes, and evolving customer expectations continuously reshape performance landscapes. Annual reassessment allows professionals to adapt goals in response to these shifts rather than remain anchored to outdated assumptions.

Research in organizational psychology demonstrates that goals must be periodically reviewed to maintain relevance and effectiveness. Without reassessment, goals risk becoming misaligned with strategic priorities or operational realities, reducing their motivational impact.

Personal and Professional Goals Are Interdependent: Professional goals do not exist in isolation. Career aspirations, tolerance for workload, family responsibilities, health, and personal values all influence performance capacity. Ignoring the personal dimension of goal reassessment often leads to unsustainable expectations and diminished long-term effectiveness.

Annual reassessment provides an opportunity to examine how professional objectives intersect with personal priorities. This integration fosters greater authenticity, clarity, and commitment, qualities consistently associated with high performance and leadership credibility.

Goal-Setting Theory and the Need for Reflection:

Locke and Latham's Goal-Setting Theory: Goal-setting theory establishes that specific, challenging goals improve performance when individuals are committed and receive feedback. However, the theory also emphasizes the importance of feedback loops. Without structured feedback and reflection, goals lose their capacity to drive learning and improvement.

Annual reassessment functions as a macro-level feedback loop. It allows individuals to evaluate not only outcomes but also assumptions, behaviors, and contextual factors influencing results. This reflective process transforms goal setting from a static exercise into an adaptive learning system.

Reflection as a Performance Multiplier: Adult learning theory underscores that experience alone does not drive improvement; reflection on experience does. High performers distinguish themselves not solely through effort but through disciplined reflection that informs future action. Annual goal reassessment institutionalizes reflection, turning experience into insight and insight into strategy.

The Risks of Not Reassessing Goals:

Misalignment and Diminished Engagement: When goals remain unchanged amid evolving realities, professionals often feel disengaged. Effort becomes transactional rather than purposeful. Over time, individuals may continue executing tasks without a clear sense of relevance or meaning, leading to reduced discretionary effort.

"Reflection as a Performance Multiplier: Adult learning theory underscores that experience alone does not drive improvement; reflection on experience does. High performers distinguish themselves not solely through effort but through disciplined reflection that informs future action."

Burnout and Unsustainable Performance: Burnout is frequently less about workload and more about misalignment. Professionals who pursue goals that no longer align with their values or capacities often experience emotional exhaustion and reduced effectiveness. Annual reassessment creates space to adjust expectations, redistribute effort, and protect long-term performance sustainability.

Stagnation and Skill Obsolescence: In rapidly evolving fields such as sales, healthcare, and technology, skills can quickly become outdated. Without reassessment, professionals may continue pursuing performance targets without investing in the capabilities required for future success. Annual reviews help identify emerging skill gaps and recalibrate development priorities.

Reassessing Professional Goals: A Structured Framework:

Effective annual reassessment requires structure. The following framework offers a practical approach for professionals and sales enablement leaders:

1. *Outcome Review:* Evaluate quantitative and qualitative outcomes from the prior year. What goals were achieved? Which were missed? More importantly, why?
2. *Behavioral Analysis*: Examine the behaviors, habits, and strategies that contributed to outcomes. High performers focus less on results alone and more on repeatable behaviors.
3. *Contextual Evaluation:* Assess external factors, market changes, organizational shifts, and resource constraints that influence performance. This prevents over-attribution to personal success or failure.
4. *Strategic Realignment*: Determine whether current goals remain aligned with organizational direction and personal aspirations. Adjust scope, timelines, or focus areas accordingly.

"Stagnation and Skill Obsolescence: In rapidly evolving fields such as sales, healthcare, and technology, skills can quickly become outdated. Without reassessment, professionals may continue pursuing performance targets without investing in the capabilities required for future success."

Reassessing Personal Goals: The Often-Ignored Dimension:

Professional excellence is difficult to sustain without personal clarity. Annual reassessment should include deliberate evaluation of personal well-being, relationships, health, and fulfillment.

- Personal goal reassessment encourages professionals to ask difficult but necessary questions:
- Are my professional goals enhancing or undermining my quality of life?
- Have my values or priorities shifted?
- Am I investing in the relationships and health that enable long-term success?

Research consistently shows that individuals who align goals with intrinsic values demonstrate higher resilience, persistence, and satisfaction. For leaders, this alignment also enhances authenticity and trust with teams.

The Role of Leaders and Sales Enablement Coaches:

Sales enablement leaders are uniquely positioned to normalize and institutionalize annual goal reassessment. Rather than focusing solely on performance metrics, effective coaches create space for reflection, learning, and recalibration.

Leaders who model reassessment signal psychological safety and growth orientation. They demonstrate that adjusting goals is not a sign of weakness but a mark of strategic maturity. This cultural shift encourages continuous improvement rather than rigid

compliance.

Enablement programs that incorporate structured annual reviews, integrating performance data, capability development, and personal alignment, produce more engaged, adaptable, and resilient teams.

"Leaders who model reassessment signal psychological safety and growth orientation. They demonstrate that adjusting goals is not a sign of weakness but a mark of strategic maturity. This cultural shift encourages continuous improvement rather than rigid compliance."

From Reassessment to Action:

Reassessment without action risks becoming performative. The value lies in translating insight into intentional change. Effective annual reviews conclude with:

- Clearly articulated priorities
- Adjusted performance goals
- Defined development objectives
- Explicit personal commitments
- This clarity transforms reassessment from reflection into momentum.

Conclusion:

The Discipline of the Annual Reset

In an era defined by change, the ability to reassess is a competitive advantage. Annual goal reassessment is not about abandoning ambition; it is about refining it. It ensures that effort remains aligned, meaningful, and sustainable.

For professionals, reassessment provides clarity and renewal. For leaders, it creates resilient, engaged teams capable of sustained excellence. Moreover, for organizations, it fosters cultures of learning rather than compliance.

The most successful professionals are not those who rigidly pursue goals year after year, but those who pause, reflect, recalibrate, and move forward with renewed intention. The annual reset is not a break from performance; it is what makes performance possible.

References

1. Drucker, P. F. (2005). Managing Oneself. Harvard Business Review. (PDF Link)
2. Goldsmith, M. (2007). What Got You Here Won't Get You There. Hyperion. *Excerpt*. (PDF Link)
3. Ryan, R. M., & Deci, E. L. (2000). Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. Contemporary Educational Psychology, 25(1), 54–67. (PDF Link)

Disclosures: *The author has no disclosures*

NT

Corresponding Author

Rody Azar, MHA, RRT-NPS
Vice President of Sales and Clinical
Organizational Leadership Coach
Email: rodyazar@icloud.com

Rody Azar Bio:

With over 20 years of leadership experience, Rody has a proven track record of driving results and developing high-performance teams. A staunch believer in fostering strong, trusting relationships, he advocates for servant leadership and is passionate about nurturing talent and human asset development. Rody emphasizes the importance of effective people leadership in guiding teams to deliver exceptional results. He has successfully promoted leaders into key mid-management and senior roles, significantly contributing to organizational success and enhancing shareholder value.

Currently, Rody serves as the Vice President of Sales and Clinical at a leading medical device manufacturing company in Orange County, CA. He is also an Organizational Leadership Coach and a faculty member in clinical education. As a proud member of the American College of Healthcare Executives (ACHE) and the American Association for Respiratory Care (AARC), he remains committed to advancing healthcare leadership and education.

NPA 2026 INTERDISCIPLINARY CONFERENCE

UNITING for IMPACT

Advancing Rural-Urban Collaboration and Innovation in Perinatal and Infant Health

DEADLINE Wednesday, Oct. 15, 2025

CALL for POSTERS

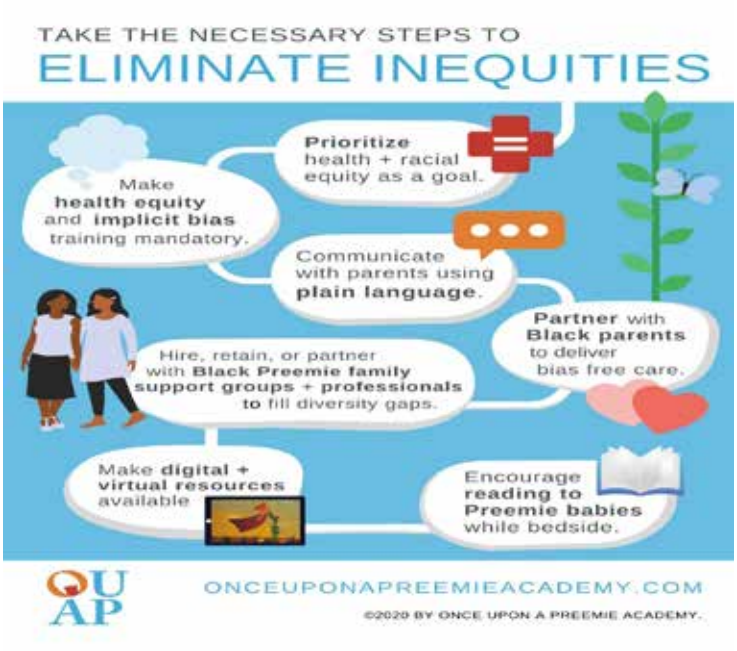
- Innovative Models of Care
- Applied or Basic Research
- Policies and Initiatives

npaconference.org/poster

National Perinatal Association

March 25-27

in Coeur d'Alene, ID



INFANT AND FAMILY-CENTERED DEVELOPMENTAL CARE (IFCDC)

STANDARDS AND SAMPLE RECOMMENDATIONS FOR INFANTS IN THE INTENSIVE CARE UNIT

SYSTEMS THINKING IN COMPLEX ADAPTIVE SYSTEMS

- Are the baby and family central to the mission, values, environment, practice & care delivery of IFCDC in the unit?
- Are the parents of each baby fully integrated into the team and treated as essential partners in decision-making and care of the infant?
- What are the strategies and measurements used to improve and sustain IFCDC in the unit?

POSITIONING & TOUCH FOR THE NEWBORN

- Are the positioning plans therapeutic and individualized, given the care needs and development of the baby?
- Are the positioning and touch guidelines continually reviewed by the team, including the parents, and adapted to meet the changing comfort needs of the baby?

SLEEP AND AROUSAL INTERVENTIONS FOR THE NEWBORN

- Can the team confidently describe the "voice" or behavioral communication of the baby?
- Are the baby's unique patterns of rest, sleep, and activity documented by the team and protected in the plan of care?

SKIN-TO-SKIN CONTACT WITH INTIMATE FAMILY MEMBERS

- Is the practice of skin-to-skin contact supported and adjusted to the comfort needs of each baby, parent, & family member?
- Are the parents & family members supported to interact with the baby to calm, soothe, & connect?

REDUCING AND MANAGING PAIN AND STRESS IN NEWBORNS AND FAMILIES

- Are parents supported to be present and interactive during stressful procedures to provide non-pharmacologic comfort measures for the baby?
- Are there sufficient specialty professionals to support the wellbeing of the team, including parents, families, and staff? Examples include mental health, social, cultural, & spiritual specialists.

MANAGEMENT OF FEEDING, EATING AND NUTRITION DELIVERY

- Are the desires of the m/other central to the feeding plan? Is this consistently reflected in documentation with input of the m/other?
- Does the feeding management plan demonstrate a feeding & nutrition continuum from in-hospital care through the transition to home & home care?

WANT TO KNOW MORE ABOUT THE STANDARDS AND RECOMMENDATIONS? VISIT: HTTPS://NICUDESIGN.ND.EDU/NICU-CARE-STANDARDS/

The Gravens Conference
on the Environment of Care for High Risk Newborns

39TH INTERNATIONAL GRAVENS CONFERENCE

SENSITIVE ISSUES IN SENSATIONAL TIMES

June 16-18
2026

University of Notre Dame
South Bend Indiana

POWER OF BELONGING TRAVEL SCHOLARSHIP

LET US HELP YOU ATTEND GRAVENS 2026!!

Grow your expertise!

Hear from leading national and international experts!

Opportunities to network with diverse professionals committed to advancing health equity for infants and families in the intensive care unit!

APPLY NOW!

Have questions? Please email:

Christie Lawrence
(Christie_Lawrence@rush.edu
Kelly McGlothen-Bell
(mcglothen@uthscsa.edu))

Ethics and Wellness: Totally Correct, Entirely Unhelpful

Mitchell Goldstein, MD, MBA, CML, Carolyn TenEyck, RN, Eric Leung, MD

"From the beginning of their medical training, every nurse and physician is taught a sacred rule: never remove hope. Hope, though it may seem like just a word, carries immense gravity; it shapes perception, sustains endurance, and transforms outcomes. To wield it carelessly is to misunderstand its power. (1-2)"

From the beginning of their medical training, every nurse and physician is taught a sacred rule: never remove hope. Hope, though it may seem like just a word, carries immense gravity; it shapes perception, sustains endurance, and transforms outcomes. To wield it carelessly is to misunderstand its power. (1-2)

Few moments in medicine are more difficult than the exchange that is technically correct yet functionally useless, the kind that satisfies accuracy but starves understanding. In critical care environments like the Neonatal Intensive Care Unit (NICU), these moments unfold daily. (3)

"Few moments in medicine are more difficult than the exchange that is technically correct yet functionally useless, the kind that satisfies accuracy but starves understanding."

Imagine a parent in the delivery room — exhausted, anxious, and trembling with anticipation. After a long and uncertain journey, they ask the simplest of questions: "Is it a boy or a girl?" The provider replies, without irony, "Yes." The answer is indisputably correct and utterly meaningless. It acknowledges knowledge but withholds truth. No parent would accept that in the delivery room, yet in the NICU, versions of this exchange recur constantly. (4)

The modern NICU, with all its technology and precision, trains its clinicians to be exact, cautious, and defensible. Their words are measured, compliant, and billable. In striving for precision, however, they too often lose sight of the purpose of communication: not to prove correctness, but to foster understanding and sustain hope. (5)

Parents do not ask questions to test a provider's intellectual rigor; they ask because fear demands reassurance. When faced with responses that are accurate but inconclusive, clinicians often meet their professional standards while failing the family's emotional standards. (1, 2, 4) It is a delicate and dangerous gap.

"Parents do not ask questions to test a provider's intellectual rigor; they ask because fear demands reassurance. When faced with responses that are accurate but inconclusive, clinicians often meet their professional standards while failing the family's emotional standards. (1, 2, 4) It is a delicate and dangerous gap."

Consider the phrases so often employed in clinical conversation:

"We are cautiously optimistic."

"There is no evidence of that right now."

"This is within the expected range."

Each is clinically sound, yet to a parent, each might mean nothing at all. Optimistic about what? Expected for whom? No evidence yet, or no evidence ever? Providers often leave the interaction believing they have communicated, when in reality they have only spoken. The family walks away no wiser, their anxiety intact. (4)

"Longer notes, thicker handouts, and discharge packets rarely solve this. Clarity, after all, is not a matter of word count. Meaning is a living thing; it depends on tone, culture, and context. Even the most precise medical explanation can fail if it does not meet the listener where they are."

Longer notes, thicker handouts, and discharge packets rarely solve this. Clarity, after all, is not a matter of word count. Meaning is a living thing; it depends on tone, culture, and context. Even the most precise medical explanation can fail if it does not meet the listener where they are.

The challenge deepens when language barriers come into play. Some parents hesitate to speak English, not solely because of a lack of fluency, but also because of fear of judgment, past dismissal, or shame. Others decline interpreters to maintain dignity; some accept them and still walk away confused. Words do not always travel cleanly across languages or worlds. In English, "once" means one time. In Spanish, "once" means eleven. A small example, yet it captures a profound truth: accuracy does not equal understanding. (4)

"Others decline interpreters to maintain dignity; some accept them and still walk away confused. Words do not always travel cleanly across languages or worlds. In English, "once" means one time. In Spanish, "once" means eleven. A small example, yet it captures a profound truth: accuracy does not equal understanding. (4)"

Even skilled interpreters must make split-second choices about tone, emphasis, and phrasing. Nuance is filtered, sometimes softened, sometimes sharpened. The message that leaves a provider's mouth is rarely identical to the one that reaches a parent's heart.

In this fractured linguistic and emotional terrain, clinicians face two parallel dangers: saying too little out of fear of overpromising; alternatively, saying too much that means too little. Both erode trust. Both widen the chasm between expertise and empathy. (5)

The NICU already overwhelms the senses. It is a cold, tone deaf symphony of monitors, alarms, and acronyms. Parents, often sleep-deprived and grieving the loss of a normal birth experience, are asked to comprehend a universe of physiology while holding their breath over a life that fits in their palms. When the answers they receive are correct but incomprehensible, the burden becomes unbearable. (1-5)

"The NICU already overwhelms the senses. It is a cold, tone deaf symphony of monitors, alarms, and acronyms. Parents, often sleep-deprived and grieving the loss of a normal birth experience, are asked to comprehend a universe of physiology while holding their breath over a life that fits in their palms."

This is not an argument for false optimism or oversimplification. Neonatology is complex, and honesty remains non-negotiable. But honesty without helpfulness is compassion's half-measure. After every explanation, a clinician must ask: Did this help? Not, was it accurate? That is the baseline. However, did it ease confusion? Did it honor the question? Did it preserve hope? (5)

"Sometimes it means abandoning comfortable, rehearsed phrases in favor of authentic ones. Sometimes it simply means sitting in silence long enough for a parent to summon the question behind all others, the one about fear, not facts. (4)"

Sometimes this means pausing to ask, "Can you tell me what you heard me say?" Sometimes it means abandoning comfortable, rehearsed phrases in favor of authentic ones. Sometimes it simply means sitting in silence long enough for a parent to summon the question behind all others, the one about fear, not facts. (4)

In medicine, correctness is essential. Nevertheless, in the NICU, correctness without clarity serves no one. "Yes" can be the correct answer. It is rarely a sufficient one.

References:

1. Charchuk M, Simpson C. Hope, disclosure, and control in the neonatal intensive care unit. Health Commun. 2005;17(2):191-203. doi: 10.1207/s15327027hc1702_5.

PMID: 15718196.

2. Pergert P, Lützén K. Balancing truth-telling in the preservation of hope: a relational ethics approach. Nurs Ethics. 2012 Jan;19(1):21-9. doi: 10.1177/0969733011418551. Epub 2011 Dec 2. PMID: 22140184.

3. Lantos JD. Ethical Problems in Decision Making in the Neonatal ICU. N Engl J Med. 2018 Nov 8;379(19):1851-1860. doi: 10.1056/NEJMra1801063. PMID: 30403936.

4. Grignoli N, Wullschleger R, Di Bernardo V, Amati M, Zanini C, Malacrida R, Rubinelli S. Hope and therapeutic privilege: time for shared prognosis communication. J Med Ethics. 2020 Oct 14:medethics-2020-106157. doi: 10.1136/medethics-2020-106157. Epub ahead of print. PMID: 33055136.

5. Green J, Darbyshire P, Adams A, Jackson D. Balancing hope with reality: how neonatal nurses manage the uncertainty of caring for extremely premature babies. J Clin Nurs. 2015 Sep;24(17-18):2410-8. doi: 10.1111/jocn.12800. Epub 2015 Mar 4. PMID: 25737201.

Disclosures: The authors have no disclosures

NT

Corresponding Author

Mitchell Goldstein, MD, MBA, CML
Professor of Pediatrics
Loma Linda University School of Medicine
Division of Neonatology
Department of Pediatrics
Loma Linda University Childrens Hospital
Loma Linda, CA
Email: mgoldstein@llu.edu

Carolyn TenEyck, RN
Advocacy Director
Neonatology Today
Lake Worth, Florida

Eric Leung, MD
Assistant Professor of Pediatrics
Loma Linda University School of Medicine
Division of Neonatology
Department of Pediatrics
Loma Linda University Childrens Hospital
Loma Linda, CA

REGISTER

$500 EARLY BIRD
thru Sept. 30
then $675

2026 NPA's ANNUAL INTERDISCIPLINARY CONFERENCE

UNITING for IMPACT

Advancing Rural-Urban Collaboration and Innovation in Perinatal and Infant Health

WHEN: March 25- 27

WHERE: Coeur d'Alene Resort in Idaho

OBJECTIVES:

- Foster rural and urban collaborations to advance perinatal & infant health
- Improve access to medical and psychosocial care in healthcare deserts
- Explore innovative technology and models of care

* Continuing Education credits available at no additional cost.

National Perinatal Association

WWW.NPACONFERENCE.ORG

The Rider, The Elephant, and The Path…Change in the NICU

Colonel Robert Erick Ridout, U.S. Army, Retired

"POKE is a team-based, patient-centered care ecosystem where ALL are empowered to contribute actively, surface safety concerns, experience deep respect, relentlessly eliminate waste, and help patients, their families, and caregivers feel safe, valued, and loved. In previous columns, I discussed the origin story of POKE, expounded on cultivating a culture of pain elimination in the service of the newborn brain, and touched on the essential nutrients of self-determination."

POKE is a team-based, patient-centered care ecosystem where ALL are empowered to contribute actively, surface safety concerns, experience deep respect, relentlessly eliminate waste, and help patients, their families, and caregivers feel safe, valued, and loved. In previous columns, I discussed the origin story of POKE, expounded on cultivating a culture of pain elimination in the service of the newborn brain, and touched on the essential nutrients of self-determination.

Over the years, I have had the opportunity to share our journey, POKE measurement system, and cultural elements with organizations considering embracing the learned principles in their Newborn Intensive Care Units. One thing is common among these organizations: embracing components of, or the entirety of, POKE requires individuals to change how they think, feel, and, ultimately, how they act. Many organizations struggle navigating this change management process, thus, to understand why change in high-stakes environments often stalls, we can look to the psychological framework pioneered by Jonathan Haidt and later operationalized by Chip and Dan Heath. Haidt›s *The Happiness Hypothesis* introduced the metaphor of the **Rider** (our rational, analytical mind) and the **Elephant** (our powerful, instinctual emotions) (1).

While the Rider may intellectually grasp the need to measure every POKE seeking to reach the newborn and eliminate those that will fail to add value, it is the Elephant that provides the actual energy for implementation and organizational/practice change. As the Heath brothers argue in *Switch*, successful transformation requires a dual-pronged approach: we must provide the Rider with clear direction to prevent analysis paralysis, while simultaneously 'motivating the Elephant' through emotional resonance. However, even a willing Rider and an energized Elephant will fail if the environment—or the **Path**—is cluttered with systemic obstacles. To see this dynamic in action, I will reference the iterative steps we undertook in the early years of our POKE journey using the framework: Rider, Elephant, and Path (2).

"Considering the Rider and Elephant first, more foundational information may be illustrative. The Triune Brain Theory divides the brain into: the brainstem, the limbic system, and the Cortex (3). The brainstem is important for maintaining body functions, instinctive behaviors, and routing ascending and descending information. The Limbic system supports primitive survival functions and emotions, such as feeding, reproduction, and parenting."

Considering the Rider and Elephant first, more foundational information may be illustrative. The Triune Brain Theory divides the brain into: the brainstem, the limbic system, and the Cortex (3). The brainstem is important for maintaining body functions, instinctive behaviors, and routing ascending and descending information. The Limbic system supports primitive survival functions and emotions, such as feeding, reproduction, and parenting. Finally, the Cortex is responsible for complex processes such as perception, planning, novel thinking, and language. The Brain Stem and Limbic System are grouped into the subconscious or Emotional Mind, while the Cortex is the Conscious or Rational Mind. The Rider represents the Rational Mind, while the Elephant represents the Emotional Mind. The Rider loves to contemplate and analyze, has a negative bias, is frustrated by uncertainty, is easily exhausted, and thinks he is in control by virtue of holding the reins. The Elephant is very powerful, has great endurance, is non-verbal, stubborn, needs reassurance, is easily spooked (triggers fear and stress), and is concerned with survival - not changing unless compelling reason. To effect change in clinical practice, we must appeal to both the Rider and the Elephant.

Additionally, the environment must be optimized. Even when the Rider and Elephant cooperate, there must be clarity and direction, thus, the Path. Negative forces on the path may include: Punitive Culture, distractions, barriers, and/or "too many clicks." Positive forces on the path may include: removing friction to do the right thing, Just Culture, and recognition and praise.

Impediments to successful change from the Rider's perspective often look like resistance; however, the problem is typically a lack of clarity. When the Elephant resists, it is often due to emotional exhaustion or fatigue. When assessing difficulty with change, we often blame people, even though the real culprit is a suboptimal environment.

"Impediments to successful change from the Rider's perspective often look like resistance; however, the problem is typically a lack of clarity. When the Elephant resists, it is often due to emotional exhaustion or fatigue. When assessing difficulty with change, we often blame people, even though the real culprit is a suboptimal environment."

What follows is an overlay of the work we did during the evaluation of POKE on Dr. Haidt's model, along with the modifications thereto by the Heath Brothers. The first step is to direct the Rider with clear instructions, leaving no room for ambiguity, thus avoiding analysis paralysis. First, find the Bright Spots by looking for what is working well and doing more of that practice. In 2014, our NICU was found to comply with agreed-upon transfusion criteria but transfused RBCs at a lower rate than our peers, related to our embrace of POKE and minimizing phlebotomy-related anemia (4). This finding served as a Brightspot and a catalyst for the lateral deployment of POKE within the system. Second, the Rider enjoys crystal clear instructions. The Heath Brothers encourage scripting the critical moves to remove excess decisions and focus on specific behaviors. We scripted the 4 critical moves for scrubbing the hub to avoid introducing infection through central line access (5).

Additionally, we provided clear standard-work instructions in our monthly newsletter on how to capture POKEs and surface them on rounds/whiteboards/, as well as in the parent handbook. Thirdly, the Rider must be encouraged through a regular cadence of pointing to the journey's destination: where we are going, why it is worth it. Our destination was: In the service of the newborn brains we are entrusted to protect, our Patients will only experience noxious stimuli if they ask for it, it advances wellness, and there is no other option. In summary, to direct the Rider: Leverage Bright Spots, Script the Critical Moves, and Point to the Destination.

Motivating the Elephant involves tapping into emotion and avoiding exhaustion. The Heath Brothers suggest the following three steps: Finding the Feeling by Motivating with emotion; Shrinking the Change through immediate gratification; and relentlessly growing our people by having a growth mindset towards them. First, we are motivated by emotion when we align the change with our self-image. Aggregating and showing the 1,300 POKEs one of our 23-week preterm infants experienced during her NICU stay provided a powerful emotional catalyst to improving the care experience for every baby thereafter. Second, we sought to shrink the change through small wins and immediate gratification. We started by capturing POKEs every 12 hours and immediately celebrating POKEs avoided over the past 12 hours, 24 hours, and since admission. This drove excitement to capture the data and eliminate care that was non-value added (not in the service of the newborn brain). Finally, we sought to develop a culture where every individual showed up to the NICU, seeking to add value to every other member of the team, seeing them through a growth mindset lens to become the full expression of themselves. We leveraged SBAR to great effect to accomplish this goal with the "A" component critical to surfacing and cultivating each individual's critical thinking.

"Finally, the Heath Brothers encourage making the Path clear and easy - optimizing the situation and environment to accomplish the goal of sending everyone home safe, valued, and loved. The steps include: modifying the environment, building habits, and rallying the herd. In the early days of POKE, as was discussed in a previous column, we captured the POKEs on paper."

Finally, the Heath Brothers encourage making the Path clear and easy - optimizing the situation and environment to accomplish the goal of sending everyone home safe, valued, and loved. The steps include: modifying the environment, building habits, and rallying the herd. In the early days of POKE, as was discussed in a previous column, we captured the POKEs on paper. To fine-tune the environment, effectively make the path seem like it was "downhill", the data capture was iteratively improved: database with manual entry → database with pre-populated fields adjusted by exception → automatic data pulled from EMR (zero additional effort to gain the information). Next, we sought to build habits so that any order for a care experience that could harm or fail to add value would be vetted through our decision tree, with many of these care experiences modified or eliminated. By reinforcing the importance of vetting the decisions through our process, the process became hardwired in the thought processes and actions of every member of the care team - it became habit…it became skill-based. Finally, we sought to rally the herd, recognizing that behavior is contagious. We used our huddles and huddle board to recognize and celebrate each incremental POKE eliminated across the board. A culture of praise and recognition was key to publicly celebrating, by name, each team member and their thought process or actions that resulted in a POKE being

eliminated before it reached the bedside.

"While change can be difficult, there are ways to leverage our neurology to achieve the goal of babies and caregivers only ever experiencing care delivery free from harm. By appealing to the logical, emotional, and environmental aspects of each individual, we can nudge them to be the best version of themselves and send them home safe, valued, and loved."

While change can be difficult, there are ways to leverage our neurology to achieve the goal of babies and caregivers only ever experiencing care delivery free from harm. By appealing to the logical, emotional, and environmental aspects of each individual, we can nudge them to be the best version of themselves and send them home safe, valued, and loved.

References:

1. Haidt, J. (2006). The happiness hypothesis: Finding modern truth in ancient wisdom. Basic Books.
2. Heath, C., & Heath, D. (2010). Switch: How to change things when change is hard. Broadway Books.
3. MacLean, P. D. (1973). A triune concept of the brain and behaviour. University of Toronto Press.
4. Henry, E., Christensen, R. D., Sheffield, M. J., Eggert, L. D., Carroll, P. D., Minton, S. D., Lambert, D. K., & Ilstrup, S. J. (2015). Why do four NICUs using identical RBC transfusion guidelines have different gestational age-adjusted RBC transfusion rates? *Journal of Perinatology*, *35*(2), 132–136. https://doi.org/10.1038/jp.2014.150
5. O'Grady, N. P., Alexander, M., Burns, L. A., Dellinger, E. P., Garland, J., Heard, S. O., Lipsett, P. A., Masur, H., Mermel, L. A., Pearson, M. L., Raad, I. I., Randolph, A. G., Rupp, M. E., & Saint, S. (2011). Guidelines for the prevention of intravascular catheter-related infections. *American Journal of Infection Control*, *39*(4), S1–S34. https://doi.org/10.1016/j.ajic.2011.01.003

Disclosures: *The author has no disclosures*

NT

Corresponding Author

Colonel Robert Erick Ridout, MD, U.S. Army, Retired, FAAP
Clinical Associate Professor, Department of Pediatrics, John A. Burns School of Medicine at the University of Hawai'i at Manoa. Honolulu, Hawaii
Neonatologist, Hawaii Pacific Health
Neonatologist, St George Regional Hospital
Phone: 4357059208
Email: ridoutre72@gmail.com

Erick Ridout, M.D., is blessed to be the dad to two amazing kids, granddaddy to three extraordinary grandsons and two granddaughters, and currently serves the babies, their families, and the caregivers in the Newborn ICU in Southwestern Utah and Honolulu, Hawaii, and as Vermont Oxford Network Faculty. Additionally, Colonel Ridout proudly served in the United States Army for 23 years, including 11 years as the State Surgeon for the Nevada Army National Guard. He was among the first Army Medical Corps Officers to become a Lean Six Sigma Green Belt and has applied the learned principles to relentlessly eliminate patient, staff, and organizational harm in all its forms. He has lectured nationwide on Just Culture, Harm Reduction, Value-Added Care, and Servant Leadership. He passionately believes that all patients and caregivers deserve care delivery free of harm. To that end, he seeks to influence MEDICINE to embrace the principles of servant leadership and team-based family-centered care, to send all members of the care team home each day feeling Safe, Valued, and Loved, returning to the bedside fully engaged with heart and mind, all the while seeking to only do for the patient and never to the patient.

Brilliant! Dr. Bell bridges the journey from grief to growth. This is classic wisdom on healing from our heartbreaks and ultimately enjoying a fulfilling life.

– Christine Theard, M.D.

Post-Traumatic Thriving

The Art, Science, & Stories of Resilience

Randall Bell, Ph.D.

First Candle: Grief Does Not Pause, So We Do Not Either

Alison Jacobson

Saving babies. Supporting families.

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

"We heard from a grandfather whose grandchild died while in his care. From a teenager who was watching her baby sister when she died.From a mother who is alone in this country, grieving without family or support nearby."

Over the holidays, while much of the world slowed down, we did not stop hearing from families.

We heard from a grandfather whose grandchild died while in his care. From a teenager who was watching her baby sister when she died. From a mother who is alone in this country, grieving without family or support nearby.

Babies do not stop dying on holidays. And, grief does not pause when the calendar does.

Every loss looks different. Every family carries it in their own way. But one thing remains true — everyone needs someone to talk to, someone to lean on, someone who will be there.

That is why we never stop working.

At First Candle, we answer calls, listen, and support families through the moments that feel unbearable — because no one should have to carry this kind of loss alone.

"At First Candle, we answer calls, listen, and support families through the moments that feel unbearable — because no one should have to carry this kind of loss alone."

If someone you know has experienced the death of a baby, either through miscarriage, stillbirth, or infant loss, here are a few ways you can help, even when you do not know what to say:

Be okay with just listening. You do not need the right words or advice. Presence matters more than solutions.

Do not ask, "What can I do to help?" In deep grief, that question can feel overwhelming. Instead, take gentle initiative. Do a load of laundry, shovel the driveway, or watch siblings for a few hours.

Remember that support is needed long after the immediate loss. Many people show up in the first days or weeks. Fewer do months later, when life moves on, but grief remains. That is often when support matters most.

"Remember that support is needed long after the immediate loss. Many people show up in the first days or weeks. Fewer do months later, when life moves on, but grief remains. That is often when support matters most."

Showing up does not require perfection. It requires care.

And for families who are grieving, whether your loss was recent or long ago, please know this: support is here. You do not have to walk this alone.

This work cannot happen without your help. Please give today to keep our grief line staffed and train more peer

support volunteers.

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

NT

Corresponding Author

Alison Jacobson
Chief Executive Officer
First Candle
49 Locust Avenue, Suite 2B
New Canaan, CT 06840
Telephone: 1-203-966-1300
For Grief Support: 1-800-221-7437
alison@firstcandle.org
www.firstcandle.org

About First Candle:

First Candle, based in New Canaan, CT, is a 501c (3) committed to eliminating Sudden Unexpected Infant Death while providing bereavement support for families who have suffered a loss. Sudden Unexpected Infant Death (SUID), which includes SIDS and Accidental Suffocation and Strangulation in Bed (ASSB), remains the leading cause of death for babies one month to one year of age, resulting in 3,700 infant deaths nationwide per year. It was also the host of the 2025 International Society for the Study and Prevention of Perinatal and Infant Death (ISPID) Conference in Houston from October 7 – 10.

firstcandle

LET'S TALK Community Chats IN THE NICU

We are thrilled to expand our ongoing efforts surrounding safe sleep in the Grady Memorial Hospital NICU by bringing Let's Talk Community Chats to our families. This is especially important given the significantly higher rates of Sudden Unexpected Infant Death in premature babies, and to help expand our work to ensure optimal health to all babies, both in the NICU and after discharge home."

Dr. Mattie Feasel Wolf,
Division of Neonatal-Perinatal Medicine
at Emory University School of Medicine

FEEDBACK FROM LET'S TALK COMMUNITY CHATS IN THE NICU:

- **Nearly all participants (98%) reported an increase in their confidence to apply safe sleep practices, and all also found the breastfeeding information provided to be helpful or very helpful (96%).**
- **Additionally, most participant (98%) felt that the products and recommendations shared were relevant to their needs.**
- **94% percent of respondents reported having a plan for where they would place their baby to sleep upon bringing them home after attending the event.**
- **All participants (100%) shared that they felt comfortable and supported, and that facilitators respected their cultural values.**
- **Almost all participants (82%) who had specific questions indicated that their specific questions and concerns were fully addressed.**

LEARN HOW YOU CAN BRING LET'S TALK TO YOUR NICU.

Email alison@firstcandle.org or scan the QR code for more information

Fathers Can Experience

Postpartum Depression

Becoming a father is an exciting and significant life event.

While it's well known that mothers can face postpartum depression, new fathers are at risk too.

1 in 10 men experience postpartum depression

Up to 7% of fathers may experience PTSD after the birth of their child

If their baby was born **preterm or the birth was traumatic,** their risk of postpartum depression and PTSD increases

Signs and symptoms a father may be struggling include:

Mood swings

Trouble sleeping

Anger

Withdrawing from family and friends

Difficulty bonding with their baby

Raising awareness about paternal postpartum depression can:

Reduce stigma

Help dads recognize the symptoms

Eliminate barriers to screening and treatment

New dads deserve their mental health to be taken seriously.

Hand to Hold. NEED BABIES · PARENT SUPPORT

National Coalition for Infant Health

NICU Impact

on Fathers' Mental Health

Fathers can face mental health challenges after the birth of their child.

Having a baby in the NICU increases the risk that fathers will face these challenges.

Around **17% of fathers** suffer from depression and 18% suffer from anxiety

Up to **⅓ of NICU fathers** suffer from PTSD

Fathers can do several things to support their mental health while their baby is in the NICU.

Lean on family and friends for support

Prioritize self-care by balancing time between the NICU and home, exercising and getting enough sleep

Seek help from a mental health professional or peer support group

Health care providers can take steps to help fathers in the NICU.

Include fathers in NICU care and bonding

Implement regular mental health screenings for fathers

Provide support groups and education tailored to fathers

Together, we can provide NICU fathers the support they deserve.

Hand to Hold. NEED BABIES · PARENT SUPPORT

National Coalition for Infant Health

Maternal Vaccines:

WHAT YOU NEED TO KNOW

CDC-Recommended Vaccines for Pregnant Women

	COVID	FLU	RSV	TDAP
Does it protect baby?	+	+	+	+
Does it protect mother?	+	+		
Is there an immunization for baby after birth?			+	

Vaccines given to pregnant women **are safe and effective.**

Maternal vaccines help the body create antibodies that can be passed to your baby and help protect them when they are born.

Talk with your health care provider to learn more about protecting yourself and your baby.

LEARN MORE ▶

NATIONAL COALITION for Infant Health

Telehealth in the NICU

The thoughtful use of telehealth technology can improve care and minimize the risks of exposure to COVID-19.

Consult with specialists.

Move family education and resources online.

Use technology to help parents bond with their babies when they can't be bedside.

Provide parents lactation support.

The move to telehealth services can compound inequities and disparities. Assess each family's technology skills and needs - including the need to use their preferred language.

Screen for perinatal mood and anxiety disorders (PMADs).

Facilitate shared decision-making.

Support case management.

My Perinatal Network and My NICU Network are products of a collaboration between National Perinatal Association (NPA) and NICU Parent Network (NPN).

myNICUnetwork.org

Advancing Neonatal-Perinatal Care: SONPM Chair Update- January 2026, #2

Clara H. Song, MD, FAAP

"Your more-than-monthly update from SONPM to keep us all connected and informed!"

For SONPM Listserv distribution:

Your SONPM more-than-monthly update to keep us all in the loop!

More details on upcoming events, webinars and due date details on the #AAPneonatal ***Calendar***

Peruse ***the #AAPneo photo gallery*** *for SONPM event highlights* ***(Password: SONPMc3 to download pics)***

Welcome to our end of January update

1- SONPM Shout-out : **Dr. Suzanne Whitbourne**! Dr. Whitbourne is a neonatal intensivist with Pediatrix Medical Group; Assistant Professor, Burnett School of Medicine at TCU; NICU Medical Director, Cook Children's Medical Center, Prosper, Texas. She is a current faculty speaker for the SONPM Fellows Career Conference in Santa Fe. Dr. Whitbourne is also the creator of NICUrounds.com and the talent behind @ NeoCookieMom

" Mr Jim Couto, who staffs SONPM and COFN as the Director of Perinatal & Neonatal Initiatives will retire from the AAP on Jan 2. SONPM plans to celebrate Jim and his many years of dedication at the upcoming 2026 Workshop in Neonatal-Perinatal Practice Strategies in Tucson, AZ, March 13-15, 2026."

NeoCookieMom (@neocookiemom) • Instagram photos and videos

instagram.com

2- **Reminder of Items Due January 31**, 2026!:

- **SONPM Newsletter Editor**: Call for Applications! CV and brief letter of interest. Due **Jan 31**

Login to the AAP Collaboration site to check out past SONPM Newsletters

https://collaborate.aap.org/Pages/AAP-Collaborate.aspx

- **2026 SONPM Awards- Apgar, Education, Pioneer, Landmark,** Oh My! Call for Nominations- Due **Jan 31**:

https://linkprotect.cudasvc.com/url?a=https%3a%2f%2fform.jotform.com%2f253025025616044&c=E,1,xhiMVvegpqAjdU7eLHWhxKqpadjY4XiPC46UPu7B8jN3_xoq5m1M0kjuiCN58ERRv5XM60DIWB3gTZq4YMOUWDeP5rzh--TIbI5TKMngR4IgTa4Hjq_724k,&typo=1

- **Calling all Trainee Researchers! Marshall Klaus Perinatal Research grant** applications- Due **Jan 31**

https://www.aap.org/en/get-involved/aap-sections/sonpm/marshall-klaus-perinatal-research-awards/?srsltid=AfmBOoqIS9Q_cOSEuRaZD-Gpv-6T-6VbXI-qWwjawiFMlMvmUF7IZVVu

- **AAP SONPM District Grants**- Call for Applications! Check in with your friendly neighborhood District Rep! Due **Jan 31**

- **AAP SONPM Travel Scholarship**: **CPT & RUC Advocacy** Opportunity! Due **Jan 31**

For **SONPM Members** who are interested in advancing fair payment for neonatal care through national advocacy and coding education! SONPM is offering two (2) travel scholarships to support attendance at 2026 AMA CPT and RUC meetings (one for each meeting)—where neonatal services are defined, valued, and reimbursed. This opportunity directly advances the SONPM

Fair Payment Agenda by developing future leaders in payment advocacy. **Applications:** Email lnavarro@aap.org with **CV and Letter of Interest**

The SONPM Fair Payment Agenda matters for our workforce, profession and, ultimately, for our patients. This scholarship opportunity aligns to the goals of our Agenda.

- **From the AAP: Call for AAP Journal Editorial Board-Applications** due **Jan 31**

"*AAP is currently accepting applications for editorial board positions for Pediatrics, Hospital Pediatrics, Pediatrics in Review, and NeoReviews. A link to the landing page containing information and applications is below.*

https://publications.aap.org/journals/pages/Editorial_Board "

3- From the AAP Board: Call for **National Committee** Member Appointments!

"The AAP Board of Directors is soliciting nominations to fill member vacancies in the following AAP national committees & board-appointed councils for terms beginning July 1, 2026:

Please visit the Committee/Council Member Nominations website for additional information: ***https://collaborate.aap.org/Lead/Pages/CommitteesCouncilsSections.aspx*** *(member log-in required)*

The deadline for nominations is ***February 13, 2026.*** *Nominees must submit the completed application package to their Chapter President and the AAP Nominations Team (nominations@aap.org). The AAP Board of Directors will meet in May 2026 to review nominations and make final appointments.*

Please email any questions to ***nominations@aap.org***."

5- From the AAP National Nominating Committee: AAP **At-Large Board** Member 2026 Election Cycle, due **March 1**

"The American Academy of Pediatrics (AAP) is accepting applications for the AAP Board of Directors At-Large Seat C (Fellow or Specialty Fellow). All applicants must be a current or past Committee Chair, Committee Member, or Section/Council Executive Committee Member and must be able to highlight their national pediatric leadership experience and qualifications. The position qualifications can be accessed by clicking this link. In alignment with the AAP Equity Agenda, the NNC is committed to presenting a diverse set of candidates for elections and to making the pathways to leadership transparent.

Members interested in this At-Large seat should complete the biographical summary, and submit a letter of support from a committee, council, or section member with whom they served. Application materials must be received by ***March 1****, 2026 at 11:59PM CT. Contact nationalelections@aap.org with any questions.*

The National Nominating Committee will select two candidates from among the applicants in early April 2026 and the campaign will officially begin May 18, 2026. If elected, the one position per person rule would apply, which would require stepping down from any other AAP leadership positions.

Thank you for your interest and for everything you do on behalf of children and families everywhere."

6- 2026 **Spring Workshop** in Neonatal-Perinatal Practice Strategies in **Tucson**: Registration is OPEN!

Big Bonus: Join our celebration of Mr. **Jim Couto**, who will retire from his position as AAP Director of Perinatal & Neonatal Initiatives. We will celebrate Jim and his many years of dedication to SONPM and COFN at the upcoming 2026 Workshop in Neonatal-Perinatal Practice Strategies in Tucson, AZ, **March 13-15,** 2026. Be there or be square!

And our 2025 Apgar Awardee will be delivering the annual Joseph Butterfield lecture.

7- From SONPM with support from AAP: **Payment Transparency for Neonatal Codes** https://pediatricsupport.com/analysis-of-codes-affecting-neonatology

SONPM and AAP have partnered to aggregate negotiated payment information from 4 common commercial payers for 65 neonatal codes.

In 2022, HHS mandated the public disclosure of machine-readable files of in-network coverage rates for all health plan services. https://www.cms.gov/priorities/healthplan-price-transparency/overview/use-pricing-information-published-under-transparency-coverage-final-rule

SONPM and AAP purchased the organization of this publicly available information for the benefit of AAP SONPM members. We hope that having this data will serve our members in advocacy efforts and negotiations for optimal and fair payment. https://pediatricsupport.com/analysis-of-codes-affecting-neonatology

8- **Coding Corner: Critical Care Transfer to Different Group-** Submitted by David Kanter, MD, MBA, CPC(david.kanter@pediatrix.com) on behalf of the SONPM Coding Committee.

Presentation: at a Level 2 facility, a neonatologist attends a 1kg28 week C/S where the physician places the baby on nasal CPAP and admits to the NICU. In the NICU, the baby has persistent retractions along with a CXR consistent with RDS. The neonatologist administers surfactant using feeding tube LISA technique, maintains nasal CPAP, places a UAC and UVC, and requests same-day transfer to a Level 3 facility staffed by a different neonatology group. After subtracting time spent attending the delivery and performing separately reported procedures, the sending neonatologist documents 80 minutes total floor-unit time on the day of transfer providing bedside care, coordinating transfer, documenting the medical record, and counseling the parents. How should the sending, transferring neonatologist report these services?

Approach:

a) **Delivery attendance**: report 99464 (Attendance at delivery when requested by the delivering physician or other qualified health care professional). CPAP alone does not support reporting the higher level 99465 positive pressure ventilation resuscitation code.

b) **Daily care prior to transfer**: report 99291 (Critical care, first 30-74 minutes), and also report add-on code +99292(each additional 30 minutes) x 1 unit. In using time-based codes,

the sending neonatologist documents total floor-unit time in the medical record such as, *"I spent 80 minutes total floor-unit critical care time on this day of service which excluded the time I spent performing separately reportable services."* In contrast to non-critical Hospital Care codes which assign time based on total time spent on the entire day of service, time-based critical care restrictions assigned time to only that time spent on the patient's floor or unit. As the sending neonatologist performing critical care, the neonatologist reports time-based critical care rather than a 99468 daily global initial critical care code consistent with CPT which states, *"When critical care services are provided to neonates or pediatric patients less than 6 years of age at two separate institutions by an individual from a different group on the same date of service, the individual from the referring institution should report their critical care services with the time-based critical care codes (99291, 99292) and the receiving institution should report the appropriate initial day of care code."* CPT provides a table guiding the number of 99292 ad-on units based on floor-unit time, as in:

- 30-74 min: 99291 x 1
- 75-104 min: 99291 x 1 and 99292 x 1
- 105-134 min: 99291 x 1 and 99292 x 2
- And so on

c) **UAC (36660) and UVC (36510**): unlike the bundling of these procedures with global daily codes such as 99468, the neonatologist can separately bill these procedures when reporting time-based critical care. The neonatologist subtracts the time spent performing these procedures from the total floor-unit time used to code units of 99291/99292.

d) **Surfactant administration** (94610, Intrapulmonary surfactant administration through endotracheal tube). In contrast to global daily critical care, 94610 is separately reportable with time-based critical care. Using LISA technique, the work of instilling surfactant directly into the trachea through a feeding tube is at least equivalent to instilling surfactant into the trachea through a previously inserted endotracheal tube, so it's reasonable that 94610 could be reported with LISA. A question arises whether one could also report 31500 endotracheal intubation. As stated clearly by CPT, 31500 can be separately reported with 94610 so long as there are no bundling conflicts such as with global daily 99468 which bundles both 94610 and 31500. But in the LISA scenario, the neonatologist is not explicitly performing endotracheal intubation with an ET tube, and thus many neonatologists would be reluctant to also bill 31500 with the LISA technique. Instead, reporting direct laryngoscopy (31515) would be more reasonable to represent LISA direct feeding tube administration in association with 94610.

Sending (transferring) neonatologist CPT coding for this patient:

- 99464 (delivery attendance)
- 99291 x 1 and 99292 x 1 (time based critical care for 75-104 minutes)
- 36660 (UAC placement)
- 36510 (UVL placement)
- 94610 (surfactant administration)

"For SONPM Members who are interested in advancing fair payment for neonatal care through national advocacy and coding education! The AAP Section on Neonatal-Perinatal Medicine (SONPM) is offering two (2) travel scholarships to support attendance at the 2026 AMA CPT and RUC meetings (one for each meeting)—where neonatal services are defined, valued, and reimbursed."

- 31515 (direct laryngoscopy)

ICD10 codes for this patient:

- P22.0 Respiratory distress syndrome of newborn
- P07.14 Other low birth weight newborn, 1000-1249 grams
- P07.31 Preterm newborn, gestational age 28 completed weeks
- Z38.01 Single liveborn infant, delivered by cesarean

Our current SONPM focus goal of Payment Parity for 2024-2026 aligns with the AAP Payment Transformation Agenda.

Action plans for NICU-specific payment advocacy:

1- Payer data transparency

2- Coding Education to ensure full payment

3- DRG payments for optimal NICU payment

****Fair payment ➔ improved salary:FTE ratio ➔ improved staffing ➔ decreased burnout ➔ increased workforce ➔ maintain health of our profession****

"Ultimately, payor reform will be needed to sustain growth in subspecialty compensation."

- Robin & Satyan.

On behalf of your #SONPMexec comm:

Past Chair Munish Gupta @munishguptamd

Chair Elect Alexis Davis @AlexisDNeoMD

District 1 Rep Wendy Timpson @TimpsonWendy

D2 Shetal Shah @NICUBatman

D3 Sara DeMauro

D4 Misty Good @mistygoodlab

D5 Heather Kaplan

D6 Emily Fishman

D7 John Loyd

D8 Jessica Davidson @JessDavMD

D9 Christine Bixby

D10 Ravi Patel @ravimpatelmd

Of Counsel Marilyn Escobedo @Mokcita

AAP Sr Manager Joie Frankovich

Chair Clara Song @songMD

Clara H. Song, MD, FAAP

Neonatal Intensivist, Southern California Permanente Medical Group

Chair| American Academy of Pediatrics, Section on Neonatal-Perinatal Medicine

Lean Six Sigma Black Belt

M 310.806.0907

W 949.512.0737

E clara.h.song@kp.org

T @songMD

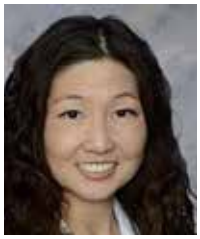
With warm regards,

Clara H. Song, MD, FAAP

Disclosures: No conflicts noted

NT

Corresponding Author



Clara H. Song, MD, FAAP
Neonatal Intensivist, Southern California Permanente Medical Group
Chair Elect, Communication & Digital Media Chair; Women In Neonatology Steering Committee, All Pathways group Co-Chair: District IX California Chapter 4 Council Representative,
Chair, American Academy of Pediatrics, Section on Neonatal-Perinatal Medicine
Lean Six Sigma Black Belt
Email: E clara.h.song@kp.org

American SIDS Institute
528 Raven Way, Naples, Florida 34110, 239-431-5425, prevent@sids.org

REQUEST FOR RESEARCH GRANT LETTER OF INTENT (LOI)
Submission Deadline March 1, 2026

The American SIDS Institute invites qualified investigators to submit a Letter of Intent (LOI) for a research grant related to sudden unexpected infant death (SUID). Applicants must have a faculty appointment or the equivalent at a U.S. based university, hospital, research institution, or medical examiner office, with one exception. Graduate students enrolled in a postdoctoral program may also apply as the PI, BUT the faculty advisor must be a Co-Investigator, with a biosketch and letter of support included. Topics of interest include, but are not limited to, pathology, physiology, neonatology, cardiology and epidemiology. The intent of this funding opportunity is to support innovative research leading to subsequent extramural grant funding regarding SUID or related causes of sudden unexpected death.

Priority will be given to research proposals related to one of the top ten US research priorities identified by the Global Action and Prioritization of Sudden Infant Death (GAPS) Project. These include:

1. Physiological mechanisms leading to death and how they interact with behavioral risk factors, e.g. prone (front)-sleeping.
2. The role of genetic factors in SUID.
3. Social and cultural factors affecting parental choices in sleep practices and responses to risk reduction campaigns.
4. Role of abnormal or immature brain anatomy and physiology.
5. Systematic collection and sharing of death scene data from SUID and non-SUID deaths to allow better case control studies
6. How infants control oxygen desaturation and arousal to allow a better understanding of SUID mechanisms.
7. Mechanisms for SUID at different ages.
8. Developing and evaluating new ways to make safe sleep campaigns more effective.
9. Identifying specific biomarkers to differentiate between natural causes, accidental asphyxia, and SIDS.
10. Better understanding of the risks of sharing any sleep surface with an infant, notably how it interacts with other factors, including feeding practices, to make it more or less risky.

Proposals related to the study of sudden unexpected intrauterine death, sudden death in children, or sudden death in epilepsy may also be responsive. However, applicants will need to clearly explain how their proposal will advance the understanding of SUID. Although priority will be given to human studies, animal studies may be responsive if justified and related to an animal model relevant to the research priorities listed above. Proposals for the development of new physiologic monitoring equipment or devices to facilitate safe sleep position or reduction of other sleep environment-related risks will not be responsive.

These grant awards are intended to be self-contained studies with a well-defined targeted hypothesis. Budgets may include technical salary support, but principal investigator salary support and indirect costs may not be requested. Awards will be for 2 years and limited to a total of $80,000.

REQUIREMENTS FOR LOI

PROPOSAL

The proposal is limited to **2 pages**. Preliminary data strengthen the proposal but are not required. Each proposal should include the following:

1. Title of LOI proposal and name of P.I.
2. Scientific rationale, specific aim(s) and hypotheses
3. Approach (Methods)
4. Anticipated outcomes; how this research will advance the knowledge base of SUID

IN ADDITION TO 2-PAGE PROPOSAL

Biosketch using NIH format for PI and all Co-Investigators and other Key Personnel
When completing the personal statement section of the biosketch, please name and describe the roles of any mentors who will support you in the work.

SUBMISSION

The LOI including the proposal and other required items should be submitted as a single PDF email attachment to the American SIDS Institute at: research@sids.org.

REVIEW PROCESS

Submitted LOI will be evaluated by the American SIDS Institute Research Advisory Council. In addition to scientific merit, reviewers will also consider:

1. Responsiveness to requirements in this announcement
2. Potential for results leading to subsequent extramural research funding
3. Potential for subsequent peer-review publication

Applicants with well-defined, high priority LOI proposals will be invited to submit a complete research grant application.

AMERICAN SIDS INSTITUTE CONTACT

We encourage inquiries and welcome the opportunity to answer questions from potential applicants. Contact Betty McEntire at bmcentire@sids.org.

Federation of Pediatric Organizations

Executive Office: 6728 Old McLean Village Drive, McLean, VA 22101

Call for Nominations for the 2026 Joseph W. St. Geme, Jr. Leadership Award

The death of Joseph W. St. Geme, Jr., MD, in 1986, removed from American pediatrics a leader with vision and selfless dedication to the ideal of excellence. His concern for the patient and the future of health care was well known. Certainly, he was a leader in the forums addressing issues concerning the future of pediatric education and research. It seemed appropriate, therefore, to honor his memory in a manner that would remind present and future generations of pediatricians that one individual can make a difference, and all should try, when the health care of children is at stake.

The member societies of the Federation of Pediatric Organizations established an endowment fund for what is now the Joseph W. St. Geme, Jr. Leadership Award. Dr. St. Geme's stature in pediatrics was reflected by his meaningful participation in all facets of pediatrics as demonstrated by the sponsorship of this award by these societies:

Academic Pediatric Association
American Academy of Pediatrics
American Board of Pediatrics
American Pediatric Society
Association of Medical School Pediatric Department Chairs
Association of Pediatric Program Directors
Society for Pediatric Research

This award was established as an effort on the part of these organizations to honor the life, work, and memory of Joe St. Geme and to memorialize his many contributions to and his aspirations for pediatrics. Many of Dr. St. Geme's friends and colleagues have contributed to this award as well as major contributions from Ross Laboratories, Hoechst Roussel Pharmaceuticals, Inc., Connaught Laboratories, Inc., Merck & Company, Inc., and Mead Johnson Nutrition.

Criteria for Selection

1. The individual must be a pediatrician who is perceived as a role model for others to emulate, as a clinician, an educator, and/or an investigator.

2. The individual must be a leader who has "created a future" for pediatrics and for children and has played an active role in one or more organizations sponsoring this award.

3. The individual should preferably have a record of broad sustained contributions to pediatrics that have had or will have a major impact on child health.

4. The individual must be currently active in pediatrics. **what defines "active" is at the discretion of each of the 7 organizations.*

5. The individual can be a retired member of any of the pediatric organizations sponsoring this award.

6. The individual must **not** be an active FOPO Board member.

Call for Nominations!

Section on Neonatal-Perinatal Medicine Executive Committee: District Representatives from Districts III, VI, and IX

One of the most significant opportunities to engage with the Section on Neonatal-Perinatal Medicine (SONPM) is to serve on the SONPM Executive Committee (EC). The EC consists of one representative from each of the 10 AAP Districts, in addition to chair, chair-elect, past-chair, of-counsel advisor, and AAP section manager (currently Jim Couto). District representatives serve 3-year terms, and are eligible to serve a second term.

District representatives to the EC are responsible for representing all neonatologists working in their AAP districts. The district representative is a liaison between district neonatologists and the SONPM, providing members direct input into SONPM and conveying section activities and opportunities back to the members. More specifically, responsibilities of EC members include the following:

Within executive committee and SONPM broadly:

1. Attend two **required** EC meetings annually, at Scottsdale spring workshop and at NCE;
2. Attend the full SONPM program at Scottsdale spring workshop and NCE meetings annually;
3. Participate in periodic virtual SONPM EC meetings (generally once or twice per month);
4. Review and score abstract submissions to NCE and review poster and oral presentations at NCE meeting, including scoring for SONPM Young Investigator Award;
5. Suggest and select annual SONPM honorary lecturers, including the Cone, Merenstein, Butterfield and Silverman speakers;
6. Solicit and review nominations for annual SONPM awards, including the Apgar, Education, Landmark and Pioneer awards, and select awardees;
7. Participate in planning and execution of national meetings, including section program at NCE, Scottsdale conference, and NeoPREP;
8. Review applications and determine awardees for the Section Strategic Grant Program, currently offered every two years;
9. Review and provide feedback on AAP policy statements, clinical reports, and guidelines as they pertain to newborn care;
10. Participate in and support AAP and SONPM advocacy efforts, including AAP Days of Action;
11. Participate in section committees, groups, and task forces based on interest and need;
12. Participate in SONPM strategic leadership, including implementation of goals of strategic plan; and
13. Participate in SONPM administration, including maintenance and updating of section manual of operations and section budget planning.

Within district:

1. Solicit updates from district members for inclusion in section newsletter twice annually;
2. Allocate annual SONPM district grants by soliciting and evaluating grant proposals;
3. Provide regular updates to district members on relevant aspects of section activities;
4. Provide regular updates to section on district activities and needs of district members;
5. Actively participate in district activities, including attendance at regional conferences; and
6. Encourage AAP and SONPM membership from representative's district, including trainees.

The core executive committee is a productive group! Participation on the executive committee does require a commitment of time and effort, but it is a highly rewarding experience.

Call for 2026 District Grants

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN®

AAP Section on Neonatal-Perinatal Medicine
District Grant

The Section on Neonatal-Perinatal Medicine offers grants for educational or organizational purposes within the individual perinatal districts of the Academy. The grant award is up to $6,000 per district. This $6,000 grant may be distributed among several applicants in the same district. Applicants must be members of the Section on Neonatal Perinatal Medicine and of the respective district. Submission due is January 31, 2026.

The following guidelines should be followed when submitting for funding:

1. The grant may be used to promote neonatal-perinatal health and education within the district, including, but not limited to:
   a. continuing education programs for neonatal-perinatal medicine health care professionals within the district.
   b. programs designed to improve quality of neonatal- perinatal care delivered within the district.
   c. communication initiatives or other organizational support which could promote improved regional neonatal- perinatal health.
   d. programs for young investigators to foster further training and investigation in the area of perinatal/neonatal health.
2. Priority will be given to programs with specific objectives with measurable outcomes. These should be stated in the application. Other factors that will be considered include impact, sustainability, and geographic distribution of registrants.
3. Grants may be used jointly by neighboring districts.
4. ***Please submit request your application via this online form*. Be sure to include your institution letterhead, include title, purpose, specific objectives, target audience, proposal/program content, and budget. Applications should be discussed with your District Representative on the Section's Executive Committee prior to submission.**

Applications must be accompanied by a supporting letter from your SONPM District Rep

5. The planned activity may occur anytime between July 1, 2026, and June 30, 2027. The activity should not conflict with the AAP National Conference & Exhibition (Fall of 2027) or the SONPM Spring Workshop (March 2027).
6. **District Grant funds will become available after July 1, 2026.**
7. Following the sponsored program, a copy of the brochure, number of people attending, and their professional affiliations and program evaluations results should be submitted as soon as possible after the meeting or by June 1, 2026, electronically via the application form.
8. The submission deadline is January 31, 2026.

A letter of support from your District Representative on the Executive Committee of the Section on Neonatal - Perinatal Medicine is necessary for the application to be considered.

SONPM Fellow Education co-Chairs – for Research & Career Conferences

We are in search of a Fellows Research Conference co-Chair!
The SONPM Fellow Education co-Chairs provide primary oversight for the SONPM fellow research and career education conferences. These conferences have been a foundation of SONPM and the neonatology community for decades, and have helped shape careers and collaborations for thousands of neonatal intensivists. They continue to be a highlight of annual SONPM activities. The conferences include the research-focused Perinatal and Developmental Medicine Symposia (three per year, supported by Reckitt/Mead Johnson) and the career-focused Seminars on Neonatal-Perinatal Medicine (two per year, supported by Abbott).

The Fellow Education co-Chairs represent the SONPM at these conferences by providing overall strategic planning, adjusting content and format, and introducing innovations based on fellow feedback and SONPM priorities. Each conference is organized by a planning committee with defined membership and terms; the Fellow Education co-Chairs solicit and select new members of these committees, ensuring appropriate diversity and expertise, and provide support for the planning committees throughout the year. The Fellow Education co-Chairs should be vocal champions for the conferences, leading efforts that align with SONPM, ONTPD, and TECaN to ensure all fellows seek the opportunity for participation.

The Fellow Education co-Chairs serve as liaisons to the SONPM executive committee and other external organizations, and are expected to attend the annual SONPM executive meeting each spring.

The Fellow Education co-Chairs should be familiar with both the research and career conferences, and should have served on the planning committee or faculty for at least one of the respective conferences. The Fellow Education co-Chairs should be an experienced neonatologist with substantial leadership experience, and, for the Research Conference co-Chair, should have an accomplished publication record. To facilitate identification of program committee members and conference faculty, the Fellow Education co-Chair should have a national reputation.

Apply via JotForm. For questions: lnavarro@aap.org or clarasong@me.com

2026.02.05

Letters to the Editor

Letter to the Editor: "The Sordid Recent History of Botulism Contamination of ByHeart Formula: Another Reason to Promote Breastfeeding"

Dear Editor,

I appreciate this thorough and well-documented manuscript detailing the contamination of ByHeart infant formula and the resulting nationwide outbreak of infant botulism. The chronology and regulatory context associated with the ByHeart corporation outlined is deeply concerning and underscores a pattern of manufacturing oversight failures that place infants, our most vulnerable, at unnecessary risk.

" The chronology and regulatory context associated with the ByHeart corporation outlined is deeply concerning and underscores a pattern of manufacturing oversight failures that place infants, our most vulnerable, at unnecessary risk."

The detailed description of the plant's unsanitary manufacturing processes is particularly alarming. Employees admitting to "practices such as using a cardboard funnel retrieved from the trash to funnel coconut oil, a formula ingredient, into a tank during the production of the company's Pure Bliss Similac Organic brand, is shocking. Such practices would be unacceptable in any household setting and are indefensible within a federally regulated manufacturing environment tasked with producing food for newborns. Further FDA findings showed "the plant was using lax cleaning practices, falsifying records, and releasing untested infant formula for use in infants. -

"FDA inspectors found leaking equipment valves, standing water, and a type of bacteria at the plant, Cronobacter sakazakii, that can be lethal to newborns." Together, these findings reflect a profound breakdown in quality control and regulatory compliance."

However, more importantly, this manuscript effectively demonstrates that the failures that lead to infant harm are systemic and extend well beyond the manufacturing and regulatory levels. After the contamination was confirmed, recalls were issued, but ByHeart formula remained on retail shelves for weeks. It continued to circulate throughout communities, in donation programs set up for vulnerable families in need of support. The instance of a 10-month-old infant in Oregon who developed severe infant botulism after ingesting recalled formula highlights the critical systems failure that occurred from the top down. This case demonstrates that recall effectiveness hinges on both regulatory action and timely compliance by retailers, public health agencies, and community-health distribution networks.

"However, it is essential to recognize that exclusive breastfeeding is not feasible for all families due to medical, pharmacologic, or social circumstances, and that this message be carefully framed. For some families, commercially produced infant formula is an essential source of nutrition rather than an elective alternative. Responsibility for ensuring infant safety must rest primarily with manufacturers and regulatory agencies, rather than with families."

The authors appropriately emphasize the protective role of human breast milk against infant botulism and reaffirm the established American Academy of Pediatrics guidance supporting breastfeeding. However, it is essential to recognize that exclusive breastfeeding is not feasible for all families due to medical, pharmacologic, or social circumstances, and that this message be carefully framed. For some families, commercially produced infant formula is an essential source of nutrition rather than an elective alternative. Responsibility for ensuring infant safety must rest primarily with manufacturers and regulatory agencies, rather than with families.

To lessen the risks associated with formula production, families would benefit from expanded federal support for donor human milk programs as a clinically appropriate alternative when maternal milk is unavailable.

This paper beautifully underscores the need for enhanced FDA oversight of infant formula production and rapid enforcement of recalls. A breadth of required system-level interventions is essential to reducing risk and ensuring safe nutrition for infants across diverse clinical and social contexts.

I thank you for this engaging addition to Neonatology Today.

Best,

Aerin Mellott

OMS-3

Western University of Health Sciences

Dear Aerin Mellott, OMS-3,

Thank you for the thoughtful and meticulously reasoned letter in response to this important manuscript. Your commentary reinforces the manuscript's central premise: that infant formula safety is not merely a matter of manufacturing technique but of ethical responsibility, regulatory rigor, and system-wide accountability.

Your emphasis on the gravity of the reported practices, particularly the use of unsanitary equipment in the production of infant formula, including products such as "Similac Organic Pure Bliss," appropriately underscores the profound breach of trust involved. The presence of *Cronobacter sakazakii* in a manufacturing facility producing food for newborns is not simply a regulatory lapse; it is a direct threat to infant life. As you note, the reported falsification of records, lax sanitation, and release of untested product represent a systemic collapse of quality assurance processes that should be non-negotiable in infant nutrition manufacturing.

"Your commentary reinforces the manuscript's central premise: that infant formula safety is not merely a matter of manufacturing technique but of ethical responsibility, regulatory rigor, and system-wide accountability."

Your discussion of recall inefficiencies is equally important. A recall's effectiveness is determined not only by issuance but by execution, by the speed and completeness with which products are removed from shelves, donation channels, and community distribution systems. The tragic case of the Oregon infant illustrates that breakdowns in communication and compliance can render regulatory action insufficient if downstream systems fail to respond promptly.

" We are grateful for your engagement with this manuscript and for elevating the discussion beyond individual error to structural accountability. Protecting infants requires vigilance at every level, from plant floor to federal oversight to community implementation. Your contribution meaningfully advances that dialogue."

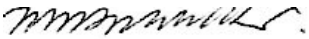
We also appreciate your nuanced framing of breastfeeding advocacy. While the AAP guidance strongly supports human milk feeding for its protective benefits, including reduced risk of severe infections, it is critical to acknowledge that exclusive breastfeeding is not universally feasible. As you emphasize, commercially produced infant formula is not a lifestyle choice for many families; it is a medical and social necessity. The burden of safety must rest squarely with manufacturers and regulators, not with parents navigating constrained circumstances.

Your call for expanded federal support of donor human milk programs is both clinically sound and aligned with neonatal best practices. Strengthening access to safe, pasteurized donor milk, particularly for medically fragile infants, offers a meaningful adjunct to broader reforms in formula oversight.

We are grateful for your engagement with this manuscript and for elevating the discussion beyond individual error to structural accountability. Protecting infants requires vigilance at every level, from plant floor to federal oversight to community implementation. Your contribution meaningfully advances that dialogue.

Thank you for your continued commitment to infant health and to the mission of *Neonatology Today.*

Sincerely,



Mitchell Goldstein, MD, MBA, CML

Editor in Chief

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

Published monthly.

www.NeonatologyToday.net

Twitter: www.Twitter.com/NeoToday

NT

Letters to the Editor

Letter to the Editor: "When the Tool Fails the Baby: Why Eat-Sleep-Console Is Not the Universal Answer"

From an anonymous reader,

I just wanted to send you a quick message to thank you for your article in the November issue of Neonatology Today. I am the Infant Developmental Specialist in a Level IV NICU, and we have been strongly encouraged to initiate ESC in our NICU to align with some of the surrounding Level III NICUs. I think in a perfect world where all the pieces fall into place, this approach is absolutely beautiful for these babies and families. I do not doubt the efficacy at all. But what a couple of my peers and I have been trying to communicate is that this cannot be a replacement for Finnegan scoring for every infant we see who has a NAS/NOWS diagnosis.

"I think in a perfect world where all the pieces fall into place, this approach is absolutely beautiful for these babies and families. I do not doubt the efficacy at all. But what a couple of my peers and I have been trying to communicate is that this cannot be a replacement for Finnegan scoring for every infant we see who has a NAS/NOWS diagnosis."

I feel so validated by your article, as I have been saying the same things and sharing similar concerns regarding the nurses' inability to provide this level of care in the absence of parents. Not because theydo not want to or do not know how, but because the system is not set up to support 1:1 care.

Thank you so much for sharing this heartbreaking story and reinforcing the importance of prioritizing individualized care for these precious, vulnerable humans.

It is so nice to know I am not alone when advocating in this way. I hope you know you are not alone either.

Happiest of holidays to you and yours,

Anonymous

Dear Reader,

Thank you for this deeply thoughtful note. It means more than you know.

"Rather, it was to give voice to clinicians like you who understand that implementation science matters as much as the intervention itself. When the structural supports are absent such as adequate staffing ratios, reliable parental presence, and institutional commitment to individualized developmental care, any model, no matter how elegant in theory, risks misapplication."

One of the central purposes of that November piece in *Neonatology Today* was not to undermine Eat, Sleep, Console (ESC) as a model, nor to dismiss the very real progress it represents in the care of infants with NAS/NOWS. Rather, it was to give voice to clinicians like you who understand that implementation science matters as much as the intervention itself. When the structural supports are absent such as adequate staffing ratios, reliable parental presence, and institutional commitment to individualized developmental care, any model, no matter how elegant in theory, risks misapplication.

"The concern you describe, nurses being expected to operationalize a relational model within a system designed for task-based efficiency, is not a failure of bedside commitment. It is a systems issue."

Your articulation captures precisely the tension we hoped to validate: ESC can be beautiful and effective in the right context, but it cannot be treated as a universal substitute for comprehensive assessment tools such as the Finnegan Neonatal Abstinence Scoring System when the clinical environment does not allow true relational, 1:1 care. That is not resistance to change. It is clinical

integrity.

The concern you describe, nurses being expected to operationalize a relational model within a system designed for task-based efficiency, is not a failure of bedside commitment. It is a systems issue. And naming that truth is not obstructionism; it is advocacy for both infants and staff.

"I am especially grateful that the manuscript offered validation. Too often, clinicians who raise implementation concerns are framed as "not embracing progress," when in fact they are protecting the fidelity of care. Developmental specialists in Level IV NICUs see the long arc of neurobehavioral outcomes."

I am especially grateful that the manuscript offered validation. Too often, clinicians who raise implementation concerns are framed as "not embracing progress," when in fact they are protecting the fidelity of care. Developmental specialists in Level IV NICUs see the long arc of neurobehavioral outcomes. Your perspective is essential, not peripheral.

Please know that you are not alone in this advocacy. There is a growing recognition that individualized care requires infrastructure, not just philosophy. When thoughtful clinicians like you speak up, it strengthens the field.

Thank you for the work you do, and for having the courage to say, respectfully and persistently, that systems must match intentions if we are to serve these vulnerable infants well.

Sincerely,

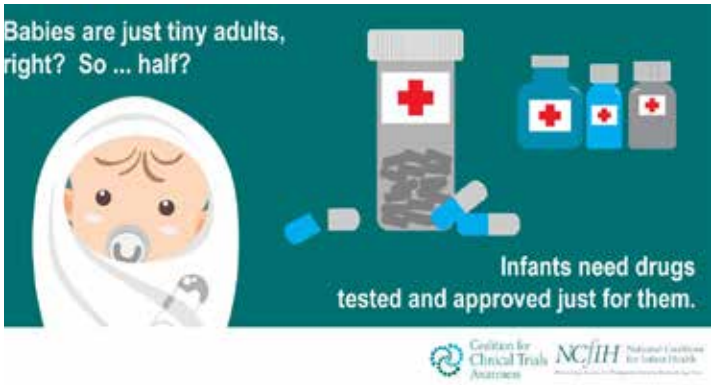
Danielle Groot, MSN, NNP-BC, RNC-NIC

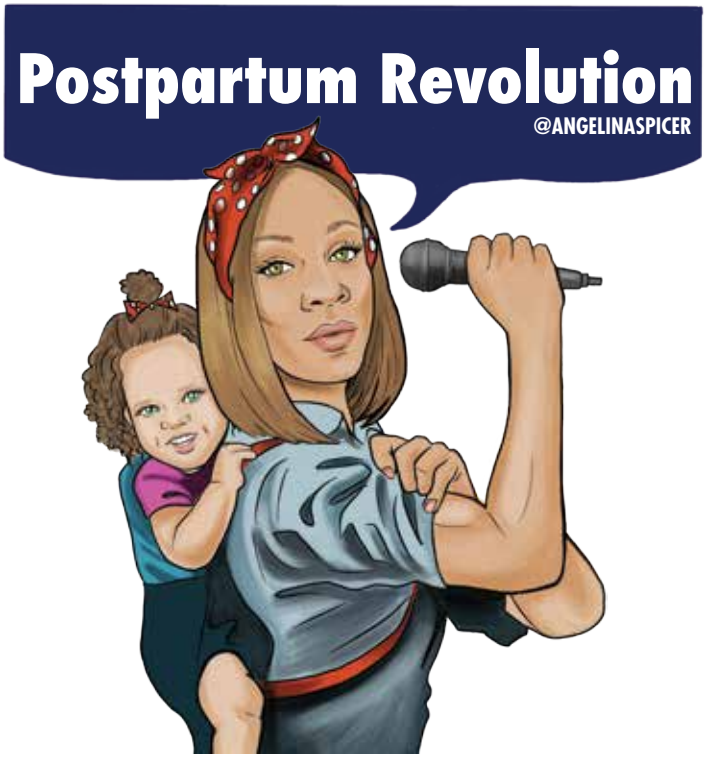
11234 Anderson Ave

Loma Linda, CA 92354

Tel: +1 (909) 558-4403 x41777

NT





Letters to the Editor

Letter to the Editor: "Accuracy of a Wireless Vital Sign Monitoring Platform in an Inpatient Pediatric Post-Acute Care Facility"

Dear Editor,

Thank you for the opportunity to review the manuscript entitled **"Accuracy of a Wireless Vital Sign Monitoring Platform in an Inpatient Pediatric Post-Acute Care Facility."** I found this to be a well-executed, timely, and clinically relevant study that addresses an important and evolving area of pediatric care.

"The authors should be commended for both the strength of their study design and the clarity of their presentation. The manuscript is well organized, easy to read, and written clearly and concisely, which allows the key findings to be understood without unnecessary complexity."

The authors should be commended for both the strength of their study design and the clarity of their presentation. The manuscript is well organized, easy to read, and written clearly and concisely, which allows the key findings to be understood without unnecessary complexity. This direct and focused writing style makes the paper particularly accessible to a broad clinical audience.

"The use of correlation analysis, root-mean-square differences, and Bland–Altman plots provides a thorough and thoughtful evaluation of agreement between the wireless monitoring platform and conventional wired monitoring. These statistical methods are well chosen and clearly explained, allowing the reader to interpret the accuracy and reliability of the wireless system confidently. "

From a methodological standpoint, the analytic approach is strong and appropriate for the study objectives. The use of correlation analysis, root-mean-square differences, and Bland–Altman plots provides a thorough and thoughtful evaluation of agreement between the wireless monitoring platform and conventional wired monitoring. These statistical methods are well chosen and clearly explained, allowing the reader to interpret the accuracy and reliability of the wireless system confidently. The results show a clear correlation between wireless sensors and clinically acceptable oxygen saturation readings compared to those recorded with the traditional monitor. All in all, a very organized and informative study.

"This manuscript is especially relevant as healthcare continues to move toward more technologically advanced, data-driven, and AI-supported models of care. Wireless monitoring platforms such as the one evaluated in this study provide a critical foundation for future artificial intelligence applications."

This manuscript is especially relevant as healthcare continues to move toward more technologically advanced, data-driven, and AI-supported models of care. Wireless monitoring platforms such as the one evaluated in this study provide a critical foundation for future artificial intelligence applications. By demonstrating both feasibility and accuracy in a pediatric setting, this work supports the growing role of innovative monitoring technologies in improving patient outcomes.

Overall, this is a strong, clearly written, and impactful manuscript that makes a meaningful contribution to the pediatric and neonatal monitoring literature. With only minor editorial revisions for clarity, I believe it will be a great addition to *Neonatology Today*.

Sincerely,

Priyanka Soni, OMSIII

Western University of Health and Sciences

Dear Priyanka Soni, OMSIII,

Thank you for your thoughtful and carefully constructed review of the manuscript, **"Accuracy of a Wireless Vital Sign Monitoring Platform in an Inpatient Pediatric Post-Acute Care Facility."** We appreciate the time and analytic rigor you devoted to evaluating this work.

Your assessment appropriately highlights several of the manuscript's core strengths. In particular, your attention to the statistical framework—particularly the use of correlation coefficients, root-mean-square differences, and Bland–Altman analysis—underscores the methodological soundness of the authors' approach. As you note, agreement analysis rather than simple association is essential when evaluating interchangeability between monitoring modalities. The inclusion of Bland–Altman plots, with clear delineation of the limits of agreement, provides

readers with a clinically interpretable assessment of measurement bias and precision, which is central to bedside implementation.

"This manuscript is especially relevant as healthcare continues to move toward more technologically advanced, data-driven, and AI-supported models of care. Wireless monitoring platforms such as the one evaluated in this study provide a critical foundation for future artificial intelligence applications."

We also agree with your observation that clarity of presentation is not incidental but foundational. Emerging monitoring technologies often generate enthusiasm; however, without transparent methodology and disciplined interpretation, such work can be difficult for clinicians to operationalize. The manuscript's structured presentation allows readers across pediatric, neonatal, and post-acute care settings to appraise both the feasibility and performance characteristics without overextending the findings.

"Your commentary on the broader implications of technologically integrated, AI-supported care is particularly well taken. Reliable upstream physiologic data acquisition is a prerequisite for any downstream predictive analytics, early warning systems, or machine-learning–driven decision support. Demonstrating acceptable agreement in a pediatric post-acute population meaningfully advances the discussion from theoretical promise to practical applicability."

Your commentary on the broader implications of technologically integrated, AI-supported care is particularly well taken. Reliable upstream physiologic data acquisition is a prerequisite for any downstream predictive analytics, early warning systems, or machine-learning–driven decision support. Demonstrating acceptable agreement in a pediatric post-acute population meaningfully advances the discussion from theoretical promise to practical applicability. At the same time, as with all monitoring innovations, continued evaluation in diverse clinical environments and across varying acuity levels will remain important.

We appreciate your recommendation for minor editorial refinement and will communicate these suggestions to the authors to ensure maximal clarity prior to publication.

Thank you again for your scholarly review and for contributing to the rigorous peer review process that strengthens *Neonatology Today*.

Sincerely,

Mitchell Goldstein, MD, MBA, CML

Editor in Chief

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

Published monthly.

www.NeonatologyToday.net

Twitter: www.Twitter.com/NeoToday

NT

Erratum (Neonatology Today December, 2025)

There are no erratum to report for December, 2025

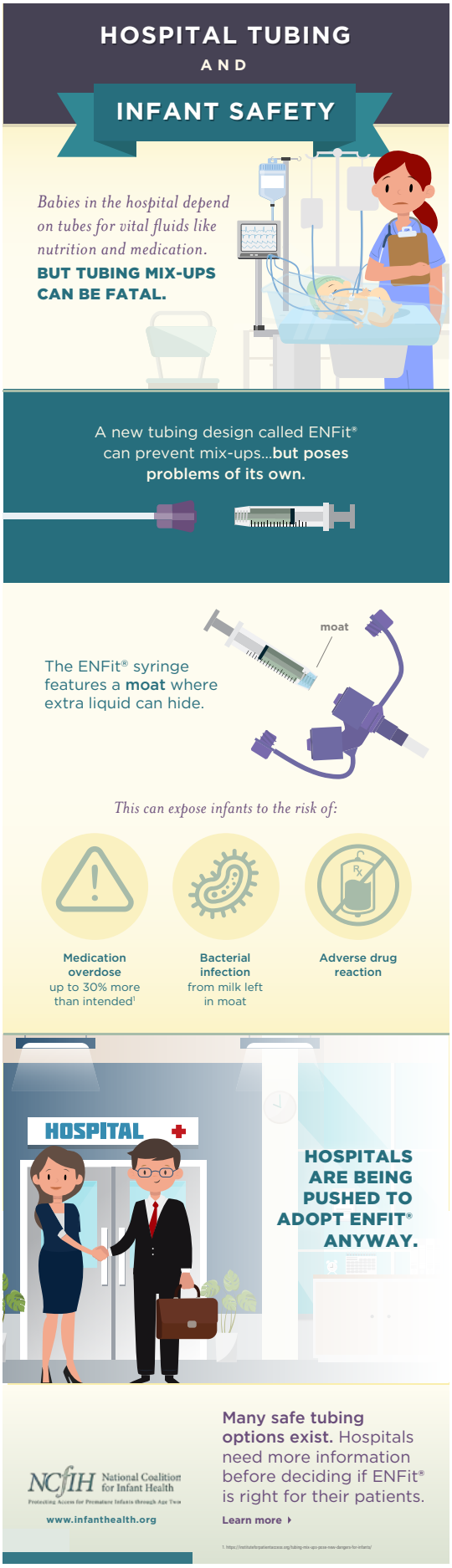
Corrections can be sent directly to LomaLindaPublishingCompany@gmail.com. The most recent edition of Neonatology Today including any previously identified erratum may be downloaded from www.neonatologytoday.net.

NT

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.

NT



ONCE UPON A PREEMIE ACADEMY

eLearning Courses

Health and Racial Equity Continuing Education Courses

+ An Intro to Health and Racial Equity and Implicit Bias
+ Solutions for Addressing Inequities and Implicit Bias In the NICU
+ Black NICU Mother's Mental and Emotional Health
+ Black Preemie Parents as Partners in Preemie Care

Register at OnceUponAPreemieAcademy.com

$150
physicians
$175

equity-focused solutions for healthcare professionals

The first and only virtual training academy focused on delivering health and racial equity educational programs for perinatal and neonatal healthcare professionals. Our purpose is to raise awareness and offer real-time solutions for addressing health and racial equity.

+ Earn Continuing Education Credits
+ Learn from nationally recognized perinatal and neonatal professionals and preemie parents
+ Gain actionable tools to drive health and racial equity solutions in your organization!

pac-lac Continuing Education Partner, paclac.org/continuing-education

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN®

SAVE THE DATE!

NEONATAL-PERINATAL CME COURSES

2026 NeoPREP:
An Intensive Review and Update of Neonatal-Perinatal Medicine

January 25-29, 2026
Denver, CO

2026 NeoCram Virtual Course

February 21-22, 2026

2026 Workshop on Neonatal-Perinatal Practice Strategies

March 13-15, 2026
Tucson, AZ

shopAAP

aap.org/shopaap

866-843-2271

aap.org/shopaap-live-activities

LEARN MORE:

Respiratory Syncytial Virus

Really Serious Virus

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

Coughing that gets worse and worse

Breathing that causes their ribcage to "cave-in"

Rapid breathing and wheezing

Bluish skin, lips, or fingertips

RSV can be deadly. If your baby has these symptoms, don't wait. Call your doctor and meet them at the hospital.

Thick yellow, green, or grey mucus

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

Fever that is more than 101° Fahrenheit

101°

which is especially dangerous for babies younger that 3 months

National Perinatal Association

www.nationalperinatal.org/rsv

Why Pregnant and Nursing Women Need Clear Guidance on

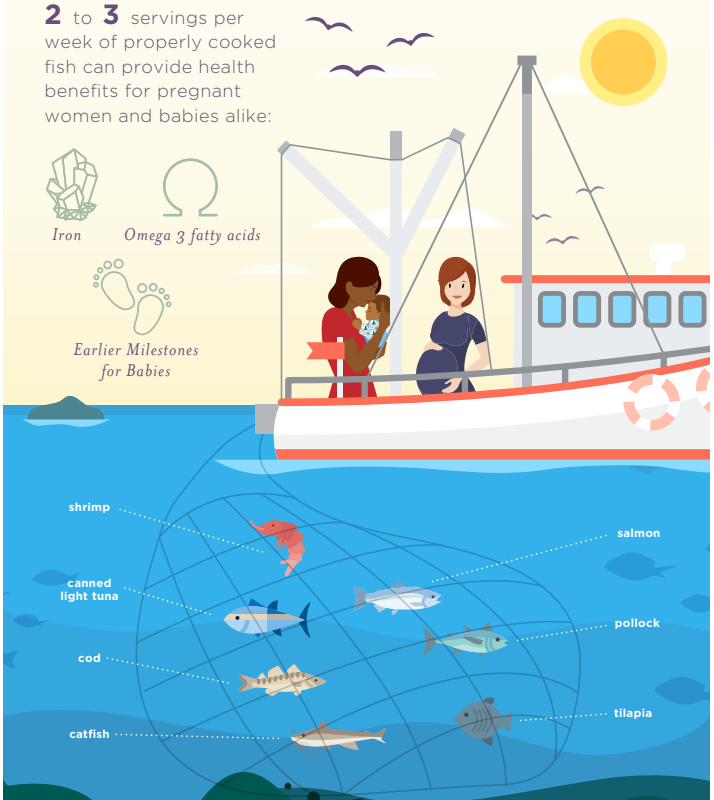
THE NET BENEFITS OF EATING FISH

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.

NCfIH National Coalition for Infant Health

LEARN MORE

pac-lac

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

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.

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

In Loving Memory

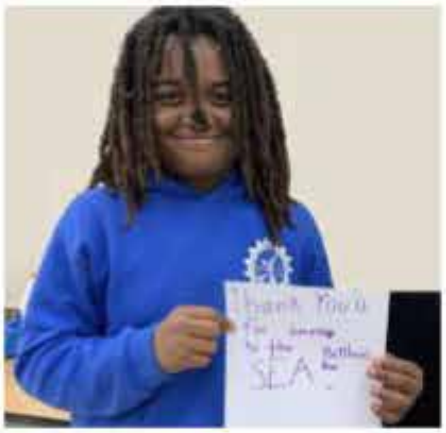
August 9, 1996 - April 3, 2010

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

Make a Difference in the Life of a Student in Need Today!
Please visit emilyshane.org

Sponsor a Child in the SEA Program

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



1 session	$15
1 week	$30
1 month	$120
1 semester	$540
1 year	$1,080
Middle School	$3,240

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

The Village Son

A Life's Journey

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

Houchang D. Modanlou

Peer Reviewed

Gravens by Design: Strategies for Introducing NICU Couplet Care when You Cannot Build a New NICU (yet): A Call to Action

Robert White, MD, Mitchell Goldstein, MD, MBA, CML

"NICU Couplet Care refers to a model of care in which a newly delivered mother remains in the same physical space as her infant, who requires Neonatal Intensive Care Unit (NICU) services, with the explicit goal of minimizing maternal–infant separation during a critical and often highly stressful period of physiologic and emotional transition."

NICU Couplet Care refers to a model of care in which a newly delivered mother remains in the same physical space as her infant, who requires Neonatal Intensive Care Unit (NICU) services, with the explicit goal of minimizing maternal–infant separation during a critical and often highly stressful period of physiologic and emotional transition. This approach seeks to preserve the dyadic relationship at a time when bonding, lactation initiation, parental confidence, and neurodevelopmental trajectories may be particularly vulnerable to disruption.

Historically, NICUs evolved from specialized rooms within traditional newborn nurseries, where infants requiring closer observation or medical intervention could receive focused care. Like standard nursery spaces of the era, these early NICUs were typically multi-bed rooms located separately from postpartum units. Maternal access to infants was limited, often restricted to viewing through corridor windows, and direct contact was minimal, not only for critically ill newborns but even for otherwise healthy infants. This practice, emblematic of mid-20th-century hospital culture, was memorably illustrated and gently satirized in several iconic *Saturday Evening Post* covers by Norman Rockwell.

As breastfeeding advocacy gained momentum in the 1970s, hospitals increasingly faced pressure to allow healthy newborns to "room in" with their mothers. By the 1990s, nearly all U.S. hospitals had abandoned the practice of housing healthy infants in centralized nurseries. In contrast, NICUs largely continued to operate under a congregate care model, with multiple infants cared for in shared rooms. At the time, this approach was driven by practical constraints, most notably the absence of sophisticated monitoring systems capable of reliably alerting caregivers to clinical instability without direct visual or auditory proximity. Even after advances in monitoring technology allowed alarms and physiologic data to be transmitted to remote devices, congregate care remained the dominant model in many NICUs, supported by workflow familiarity, staffing patterns, and entrenched cultural norms.

Over time, however, NICU design has gradually shifted. Since approximately 2000, new NICU construction has increasingly incorporated single-family rooms (SFRs), in which each infant has a private room equipped with the space and amenities necessary for parents to remain at the bedside for prolonged periods. This design aligns NICU care more closely with standards applied to nearly all other hospitalized patients and reflects a growing emphasis on family-centered care.

While the adoption of SFRs represents a significant step forward, the next logical progression, NICU couplet care, in which postpartum maternal care is delivered in the same room as the NICU infant, has been considerably slower to gain traction. The rationale for NICU couplet care is multifactorial. First, uninterrupted infant–parent bonding is preserved during a period when attachment and emotional regulation are critically important. Second, parental stress is reduced through continuous proximity and improved real-time awareness of the infant's condition and care. Third, NICU clinicians are more consistently oriented toward viewing the infant as an integral member of a family unit rather than as an isolated patient, reinforcing the principles of relational and developmentally supportive care.

"First, uninterrupted infant–parent bonding is preserved during a period when attachment and emotional regulation are critically important. Second, parental stress is reduced through continuous proximity and improved real-time awareness of the infant's condition and care. Third, NICU clinicians are more consistently oriented toward viewing the infant as an integral member of a family unit rather than as an isolated patient, reinforcing the principles of relational and developmentally supportive care."

Despite these benefits, two major barriers have limited the widespread implementation of NICU couplet care. The first is structural: virtually no NICUs constructed before 2015, and only a small number built since, were designed to accommodate simultaneous care for a postpartum mother and a critically ill infant in the same room. The second barrier is professional scope and training: the nursing competencies required to care for a postpartum mother differ substantially from those required to

manage a medically fragile neonate. These challenges raise an important question: whether NICU couplet care is an unrealistic aspiration in the absence of new construction and significant caregiver retraining. In many settings, the answer is regrettably yes. However, there are notable and instructive exceptions that warrant serious consideration as transitional strategies.

Level II NICUs often provide the most feasible entry point for introducing NICU couplet care, primarily because the postpartum unit is more likely to be nearby. In its simplest form, this model can be applied to infants who are clinically stable "feeder-growers"—patients whose respiratory and intravenous fluid needs have resolved and who require ongoing monitoring and partial gavage feeding. With the availability of wireless monitoring technologies, such infants can safely receive NICU-level oversight within a postpartum room.

"In this model, the mother typically remains an inpatient only for the first few days following delivery; however, the postpartum room can continue to serve as the family's space until the infant's discharge. Care initially occurs as true couplet care while the mother remains hospitalized, and then transitions seamlessly to a single-family room model once she is discharged, but she continues to room in with her infant. Importantly, this approach requires minimal additional training for NICU nurses."

In this model, the mother typically remains an inpatient only for the first few days following delivery; however, the postpartum room can continue to serve as the family's space until the infant's discharge. Care initially occurs as true couplet care while the mother remains hospitalized, and then transitions seamlessly to a single-family room model once she is discharged, but she continues to room in with her infant. Importantly, this approach requires minimal additional training for NICU nurses. Postpartum nurses can manage maternal care during hospitalization and remain available to address maternal needs after discharge, while NICU nurses continue to oversee the infant's care. This "hybrid" strategy has been successfully implemented in several Level II NICUs across the United States and has demonstrated safety, practicality, and strong family acceptance; the author can personally attest to its effectiveness in one local Level II NICU.

Implementing NICU couplet care in large Level III or IV NICUs presents greater challenges, particularly in the absence of new construction and targeted cross-training of caregivers. Feasibility is highest in hospitals where the maternity service is located within reasonable proximity to the NICU, perhaps on different floors or separated by long corridors, but still within easy walking distance. In such settings, NICU couplet care may be feasible for selected patients if dedicated spaces within the NICU are designated for mother–infant dyads. While some structural modifications would likely be necessary, these changes would not require a full-scale rebuild.

For large NICUs co-located with maternity services, there is substantial value in prototyping NICU couplet care on a limited scale. Doing so allows institutions to identify and address structural, operational, and cultural challenges in advance of future construction or significant renovation. Lessons learned during this prototyping phase can meaningfully inform design decisions, staffing models, and training priorities. Moreover, early experience with couplet care often replaces caregiver uncertainty with confidence and enthusiasm, facilitating broader adoption over time.

"Ultimately, thoughtful exploration and incremental implementation of NICU couplet care can significantly enhance both the physical design of future NICUs and the lived experience of families and clinicians alike, even before construction has started. By embedding family-centered care principles at every stage of the NICU journey, institutions can move closer to making NICU couplet care the exception rather than the standard."

Ultimately, thoughtful exploration and incremental implementation of NICU couplet care can significantly enhance both the physical design of future NICUs and the lived experience of families and clinicians alike, even before construction has started. By embedding family-centered care principles at every stage of the NICU journey, institutions can move closer to making NICU couplet care the exception rather than the standard.

References:

1. Committee to Establish Recommended Standards for NICU Design. Standard 7. https://nicudesign.nd.edu/
2. Jaeger CB, Altimier L. NICU Couplet Care: metrics to guide an evolving model of care. J Perinatol 2023; Suppl 1: 30-34
3. White RD. Couplet Care – The next frontier of care in the newborn intensive care unit. Crit Care Nurs Clin North Am 2024; 36:35-9.
4. Klemming S, Lillieskold S, Westrup B. Mother-Newborn Couplet Care from theory to practice to ensure zero separation for all newborns. https://doi.org/10.1111/apa.15997
5. Salaberry J, Hait, V, Thorton K, et al. Journey to mother baby care: Implementation of a combined care/couplet model in a Level 2 neonatal intensive care unit. Birth Defects Res. 2019; 111:1060-1072.

Disclosures: *The authors have no disclosures*

NT

Corresponding Author

Robert D. White, MD
Director, Regional Newborn Program
Beacon Children's Hospital
615 N. Michigan St.
South Bend, IN 46601
Phone: 574-647-7141
Fax: 574-647-3672
Email: Robert_White@pediatrix.com

Mitchell Goldstein, MD
Professor of Pediatrics
Loma Linda University School of Medicine
Division of Neonatology
Department of Pediatrics
Email: mgoldstein@llu.edu

INFANT AND FAMILY-CENTERED DEVELOPMENTAL CARE (IFCDC)

STANDARDS AND SAMPLE RECOMMENDATIONS FOR INFANTS IN THE INTENSIVE CARE UNIT

SYSTEMS THINKING IN COMPLEX ADAPTIVE SYSTEMS

- Are the baby and family central to the mission, values, environment, practice & care delivery of IFCDC in the unit?
- Are the parents of each baby fully integrated into the team and treated as essential partners in decision-making and care of the infant?
- What are the strategies and measurements used to improve and sustain IFCDC in the unit?

POSITIONING & TOUCH FOR THE NEWBORN

- Are the positioning plans therapeutic and individualized, given the care needs and development of the baby?
- Are the positioning and touch guidelines continually reviewed by the team, including the parents, and adapted to meet the changing comfort needs of the baby?

SLEEP AND AROUSAL INTERVENTIONS FOR THE NEWBORN

- Can the team confidently describe the "voice" or behavioral communication of the baby?
- Are the baby's unique patterns of rest, sleep, and activity documented by the team and protected in the plan of care?

SKIN-TO-SKIN CONTACT WITH INTIMATE FAMILY MEMBERS

- Is the practice of skin-to-skin contact supported and adjusted to the comfort needs of each baby, parent, & family member?
- Are the parents & family members supported to interact with the baby to calm, soothe, & connect?

REDUCING AND MANAGING PAIN AND STRESS IN NEWBORNS AND FAMILIES

- Are parents supported to be present and interactive during stressful procedures to provide non-pharmacologic comfort measures for the baby?
- Are there sufficient specialty professionals to support the wellbeing of the team, including parents, families, and staff? Examples include mental health, social, cultural, & spiritual specialists.

MANAGEMENT OF FEEDING, EATING AND NUTRITION DELIVERY

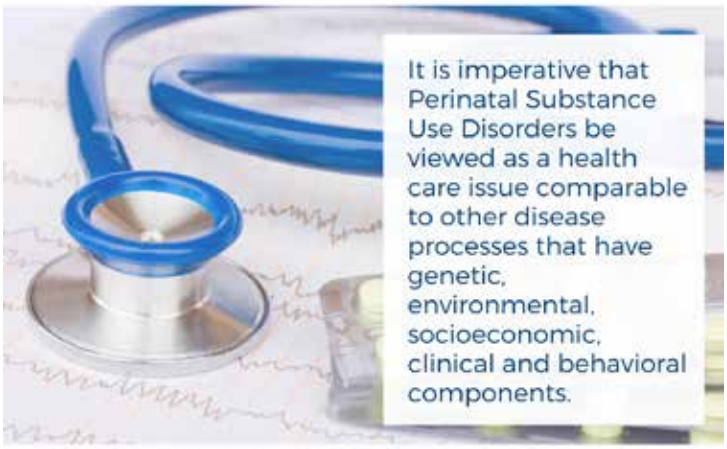
- Are the desires of the m/other central to the feeding plan? Is this consistently reflected in documentation with input of the m/other?
- Does the feeding management plan demonstrate a feeding & nutrition continuum from in-hospital care through the transition to home & home care?

WANT TO KNOW MORE ABOUT THE STANDARDS AND RECOMMENDATIONS?
VISIT: HTTPS://NICUDESIGN.ND.EDU/NICU-CARE-STANDARDS/

National Perinatal Association

PERINATAL SUBSTANCE USE

nationalperinatal.org/advocacy
www.nationalperinatal.org/substance-use



Educate. Advocate. Integrate.

Readers can also follow

NEONATOLOGY TODAY

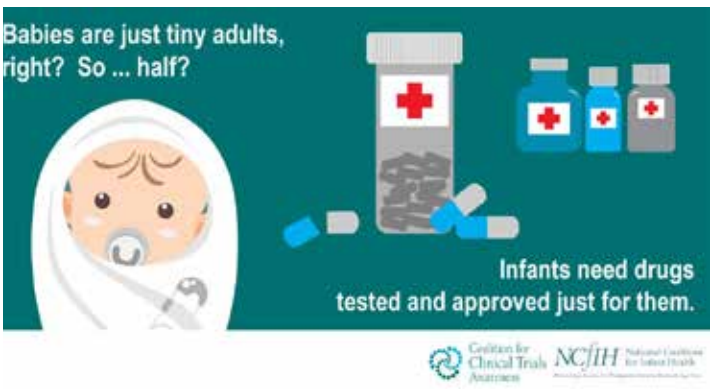
via our Twitter Feed

@NEOTODAY

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



2024

Keeping Your Baby Safe

from respiratory infections

RSV
COVID-19
colds
flu

How to protect your little one from germs and viruses

This year's cold and flu season may be a dangerous one - especially for vulnerable infants and children. Fortunately, there are proven protective measures that we can take to stay healthy.

Here's what you can do...

Wash Your Hands

- This is the single, most important thing you can do to stop the spread of viruses.
- Use soap.
- Wash for more than 20 seconds.
- Use alcohol-based sanitizers.

Limit Contact with Others

- Stay home when you can.
- Stay 6 feet apart when out.
- Wear a face mask when out.
- Change your clothes when you get home.
- Tell others what you're doing to stay safe.

Provide Protective Immunity

- Hold baby skin-to-skin.
- Give them your breast milk.
- Stay current with your family's immunizations.

Take Care of Yourself

- Stay connected with your family and friends.
- Sleep when you can.
- Drink more water and eat healthy foods.
- Seek mental health support.

Immunizations Vaccinations save lives. Protect your baby from flu, pertussis, RSV, and COVID-19 by getting your immunizations.

WARNING

Never Put a Mask on Your Baby

- Because babies have smaller airways, a mask makes it hard for them to breathe.
- Masks pose a risk of strangulation and suffocation.
- A baby can't remove their mask if they're suffocating.

If you are positive for COVID-19

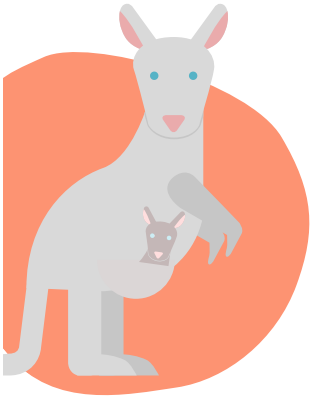
- Wash with soap and water and put on fresh clothes before holding or feeding your baby.
- Wear a mask to help stop the virus from spreading.
- Watch out for symptoms like fever, confusion, or trouble breathing.
- Ask for help caring for your baby and yourself while you recover.

We can help protect each other.
Learn more
www.nationalperinatal.org/rsv

National Perinatal Association

SUPPORTING KANGAROO CARE

SKIN-TO-SKIN CARE DURING COVID-19



GET INFORMED ABOUT THE RISKS + BENEFITS

work with your medical team to create a plan

GET CLEAN

WASH YOUR HANDS, ARMS, and CHEST

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

PUT ON FRESH CLOTHES

change into a clean gown or shirt.

IF COVID-19 + WEAR A MASK

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

National Perinatal Association

nicuparentnetwork.org

NPN NICU PARENT NETWORK

nationalperinatal.org/skin-to-skin

ONCE UPON A PREEMIE ACADEMY

eLearning Courses

Health and Racial in the NICU

Meet Our Faculty

+ Jenné Johns, MPH
Once Upon A Preemie Academy

+ Dawn Godbolt, Ph.D.
National Birth Equity Collaborative

+ Chavis A. Patterson, Ph.D.
Children's Hospital of Philadelphia

+ Shanté Nixon
Connect2NICU

+ Deidre McDaniel, MSW, LCSW
Health Equity Resources and Strategies

+ Dalia Feltman, MD, MA, FAAP
Univ. of Chicago Pritzker School of Medicine

+ Terri Major- Kincade, MD, MPH
Pediatrician and Neonatologist

+ Ashley Randolph
Glo Preemies

REGISTER TODAY
OnceUponAPreemieAcademy.com

Health and Racial Equity + On-Demand Continuing Education

The first and only virtual training academy focused on delivering health and racial equity educational programs for perinatal and neonatal healthcare professionals. Our purpose is to raise awareness and offer real-time solutions for addressing health and racial equity.

pac-lac

Continuing Education Partner, paclac.org/continuing-education

Raising Global Awareness of RSV

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

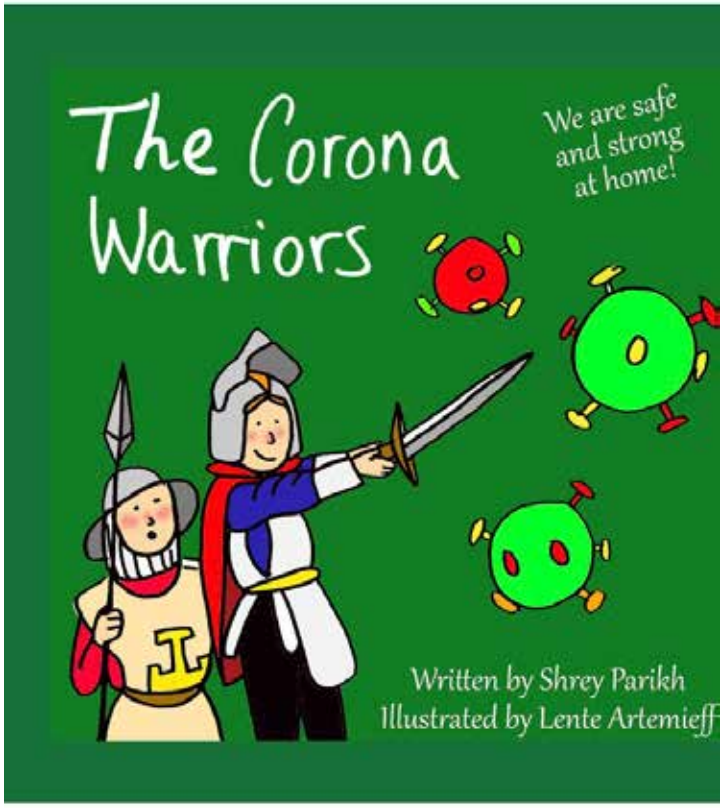
The RSV Research Group from professor Louis Bont, pediatric infectious disease specialist in the University Medical Centre Utrecht, the Netherlands, has recently launched an RSV Mortality Awareness Campaign during the 5th RSV Vaccines for the World Conference in Accra, Ghana.

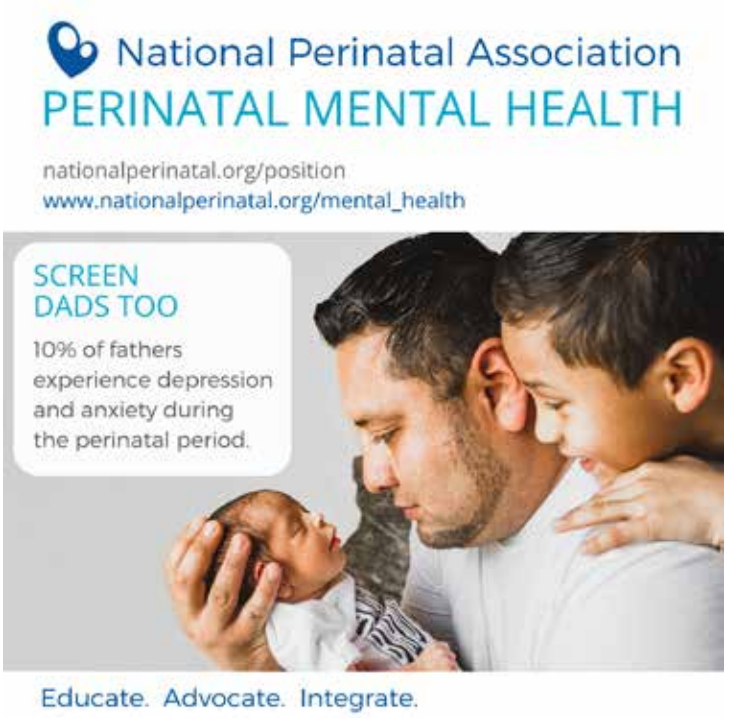
They have produced a personal video entitled "*Why we should all know about RSV*" about Simone van Wyck, a mother who lost her son due to RSV. The video is available at www.rsvgold.com/awareness and can also be watched using the QR code on this page. Please share the video with your colleagues, family,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

RSV GOLD

A Global Mortality Database for Children with RSV Infection

The RSV awareness video was produced in collaboration with the Bill & Melinda Gates Foundation



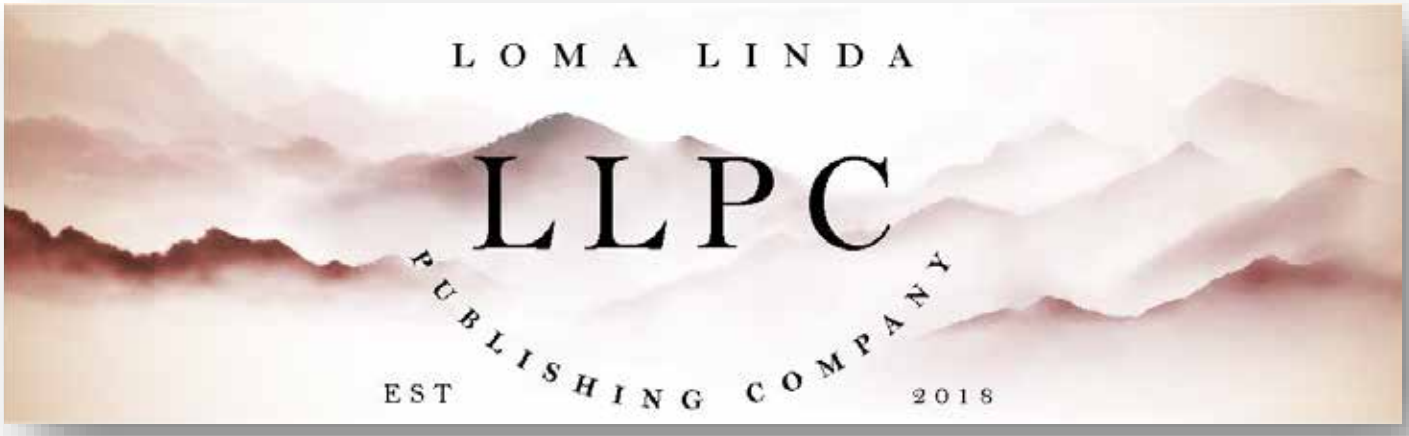


Readers can also follow

NEONATOLOGY TODAY

via our Twitter Feed

@NEOTODAY



National Coalition for Infant Health: Welcoming Kristen Santiago as Executive Director of the National Coalition for Infant Health

Mitchell Goldstein, MD, MBA, CML

NATIONAL COALITION for Infant Health

The National Coalition for Infant Health is a collaborative of more than 200 professional, clinical, community health, and family support organizations focused on improving the lives of premature infants through age two and their families. NCfIH's mission is to promote lifelong clinical, health, education, and supportive services needed by premature infants and their families. NCfIH prioritizes safety of this vulnerable population and access to approved therapies.

"Under Ms. Hepworth's guidance, NCfIH elevated the voices of clinicians, families, and advocates, ensuring that infant health policy remained firmly grounded in science, ethics, and the lived experiences of those most affected. We extend our sincere gratitude to Ms. Hepworth for her years of service and dedication, and we look forward with confidence to the Coalition's continued evolution under Kristen's leadership."

Neonatology Today is pleased to welcome Kristen Santiago to her new role as Executive Director of the National Coalition for Infant Health (NCfIH). Kristen succeeds Susan Hepworth, whose steady and principled leadership strengthened NCfIH's national presence and reinforced its role as a trusted, bipartisan advocate for policies that protect America's most vulnerable infants. Under Ms. Hepworth's guidance, NCfIH elevated the voices of clinicians, families, and advocates, ensuring that infant health policy remained firmly grounded in science, ethics, and the lived experiences of those most affected. We extend our sincere gratitude to Ms. Hepworth for her years of service and dedication, and we look forward with confidence to the Coalition's continued evolution under Kristen's leadership.

"Kristen brings more than 20 years of experience in strategic advocacy, stakeholder engagement, and public policy, with deep and sustained expertise in patient- and caregiver-centered support, coalition leadership, and program development."

Kristen brings more than 20 years of experience in strategic advocacy, stakeholder engagement, and public policy, with deep and sustained expertise in patient- and caregiver-centered support, coalition leadership, and program development. Throughout her career, she has demonstrated a rare ability to operate effectively at the intersection of policy, practice, and lived experience, building durable public–private partnerships, analyzing complex policy landscapes, and translating stakeholder insights into actionable strategies that inform legislation, regulatory engagement, and national initiatives. These capabilities closely align with NCfIH's

mission to advance policies that ensure infants have timely access to medically necessary, evidence-based care while supporting families during periods of extraordinary vulnerability.

Currently based in Washington, DC, Kristen serves as Senior Director of Health Care Advocacy at Woodberry Associates and has held the role of Deputy Executive Director of the National Coalition for Infant Health since early 2026, providing continuity and institutional knowledge as she transitions into the Executive Director role. In parallel, she serves as Executive Director of the Headache and Migraine Policy Forum, reflecting both her breadth of leadership and her ability to guide organizations through complex, highly regulated policy environments. These concurrent roles underscore the trust placed in her judgment and strategic vision by diverse advocacy communities.

"In parallel, she serves as Executive Director of the Headache and Migraine Policy Forum, reflecting both her breadth of leadership and her ability to guide organizations through complex, highly regulated policy environments. These concurrent roles underscore the trust placed in her judgment and strategic vision by diverse advocacy communities."

Prior to joining NCfIH, Kristen held senior leadership positions at the LUNGevity Foundation, including Senior Director of Care Partner Initiatives and Senior Director of Public Policy Initiatives. At LUNGevity, she developed and implemented a comprehensive policy agenda, expanded grassroots and national advocacy efforts, and strengthened relationships with regulators, legislators, professional societies, and industry partners. Her work included developing the *Lung Cancer Scorecard*, an innovative state-by-state assessment of policies affecting access to optimal care, designed to drive accountability and reform. Equally important was her leadership in elevating the caregiver voice—conducting landscape analyses of survivor and caregiver needs, developing meaningful programming for national summits, and ensuring that policy and programmatic decisions reflected the realities faced by patients and families across the continuum of care.

"Kristen's earlier career further reflects a consistent commitment to collaborative, patient-centered advocacy. At the Cancer Support Community, she led national policy and advocacy efforts, engaged in federal regulatory discussions, and supported innovative partnerships across the public and private sectors."

Kristen's earlier career further reflects a consistent commitment to collaborative, patient-centered advocacy. At the Cancer Support Community, she led national policy and advocacy efforts, engaged in federal regulatory discussions, and supported innovative partnerships across the public and private sectors. Her work at C-Change focused on large-scale strategic initiatives addressing value in cancer care, workforce sustainability, patient navigation, and caregiver support—efforts that helped shape national conversations and catalyze long-term change. Earlier roles in state government and the pharmaceutical industry provided her with a sophisticated understanding of legislative processes, regulatory frameworks, and the responsibilities inherent in cross-sector collaboration.

"Kristen holds a Master of Science in Health Promotion Management from American University and a Bachelor of Arts in Speech, Language, and Hearing Sciences from The George Washington University. She resides in Washington, DC, with her husband and two children, though she proudly considers her native Philadelphia home, which continues to shape her values around community, resilience, and advocacy."

Kristen holds a Master of Science in Health Promotion Management from American University and a Bachelor of Arts in Speech, Language, and Hearing Sciences from The George Washington University. She resides in Washington, DC, with her husband and two children, though she proudly considers her native Philadelphia home, which continues to shape her values around community, resilience, and advocacy.

As Executive Director of the National Coalition for Infant Health, Kristen assumes leadership at a pivotal moment for neonatal care and infant health policy. Ongoing challenges related to access to therapies, health equity, regulatory decision-making, and family-centered care require thoughtful, evidence-informed advocacy and strong coalition leadership. Kristen's experience in regulatory engagement, caregiver advocacy, and national program development positions her exceptionally well to advance NCfIH's priorities and to ensure that infant health remains a national imperative.

"We look forward to continued collaboration and to the Coalition's sustained impact under her leadership, as it works to ensure that every infant has the opportunity for the healthiest possible start in life."

On behalf of the neonatal community, *Neonatology Today* warmly welcomes Kristen Santiago as Executive Director of the National Coalition for Infant Health. We look forward to continued collaboration and to the Coalition's sustained impact under her leadership, as it works to ensure that every infant has the opportunity for the healthiest possible start in life.

Disclosures: The authors have no relevant disclosures.

NT

Corresponding Author

Mitchell Goldstein, MD
Professor of Pediatrics
Loma Linda University School of Medicine
Division of Neonatology
Department of Pediatrics
Email: 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.

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

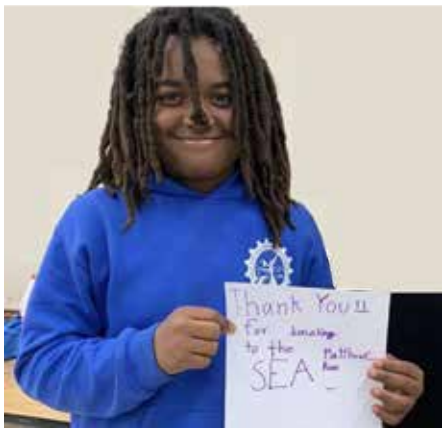
Thirteen-year-old Emily Rose Shane was tragically murdered on April 3, 2010 on Pacific Coast Highway in Malibu, CA. Our foundation exists to honor her memory.

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

Make a Difference in the Life of a Student in Need Today!
Please visit emilyshane.org

Sponsor a Child in the SEA Program

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



1 session	$15
1 week	$30
1 month	$120
1 semester	$540
1 year	$1,080
Middle School	$3,240

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

National Coalition for Infant Health: Pediatric Immunizations Under Threat

Susan Hepworth, Mitchell Goldstein, MD, MBA, CML

The National Coalition for Infant Health is a collaborative of more than 200 professional, clinical, community health, and family support organizations focused on improving the lives of premature infants through age two and their families. NCfIH's mission is to promote lifelong clinical, health, education, and supportive services needed by premature infants and their families. NCfIH prioritizes safety of this vulnerable population and access to approved therapies.

The Centers for Disease Control and Prevention recently announced it would discontinue recommending several routine childhood immunizations, triggering widespread concern across the public health community. (1)

"The Centers for Disease Control and Prevention recently announced it would discontinue recommending several routine childhood immunizations, triggering widespread concern across the public health community. (1)"

Age-based recommendations for six pediatric vaccines, including influenza, COVID-19, hepatitis A and B, rotavirus, and meningococcal disease, were replaced with a shared clinical decision-making framework that calls for patient-clinician discussion and individual choice. (1-2) Furthermore, the recommendation for RSV immunization was limited to high-risk populations.

While officials say insurance will still cover immunizations, the rapid alteration of longstanding guidance weakens trust in vaccines proven to protect children.

Vaccination Rates Likely to Decline:

Public health experts warn that the change is likely to reduce vaccine uptake. (3-4) This is especially true in families that lack resources, including access to reliable medical information and consistent health care. Immunization schedules serve as trusted roadmaps for parents, and changing those roadmaps without a strong scientific basis could cost lives. (5)

"Public health experts warn that the change is likely to reduce vaccine uptake. (3-4) This is especially true in families that lack resources, including access to reliable medical information and consistent health care. Immunization schedules serve as trusted roadmaps for parents, and changing those roadmaps without a strong scientific basis could cost lives. (5)"

Evidence That Prevention Works:

Weakening vaccine recommendations could reverse progress made against infectious diseases. The number of infants hospitalized with respiratory syncytial virus, or RSV, dropped dramatically when immunizations were administered during pregnancy or just after birth. (6-7) Higher RSV hospitalization rates are a foreseeable consequence of this policy shift, and infants who are too young to advocate for themselves are likely to bear the cost.

A Call for Unified Guidance:

Medical experts and patient advocacy groups have each strongly opposed the decision. Safeguarding children›s health requires consistent messaging, public trust, and continued access for the most vulnerable families. (8) Vaccine recommendations support all three goals.

"In the meantime, clinicians and parents can work together to ensure their children receive full protection against vaccine-preventable illnesses. Protecting the power of childhood immunization — a legacy measured by the millions of lives saved — will require new vigilance. "

In the meantime, clinicians and parents can work together to ensure their children receive full protection against vaccine-preventable illnesses. Protecting the power of childhood immunization — a legacy measured by the millions of lives saved — will require new vigilance.

We are monitoring for updates from the February ACIP meeting.

References:

1. https://www.hhs.gov/press-room/cdc-acts-presidential-memorandum-update-childhood-immunization-schedule.html
2. https://www.cdc.gov/acip/vaccine-recommendations/shared-clinical-decision-making.html
3. https://www.aap.org/en/news-room/news-releases/aap/2025/aap-opposes-federal-health-officials-unprecedented-move-to-remove-universal-childhood-immunization-recommendations/
4. https://www.nytimes.com/2026/01/06/well/cdc-vaccine-schedule-recommendations.html
5. https://vaccinateyourfamily.org/updated-schedule/
6. https://www.medscape.com/viewarticle/real-world-data-nirsevimab-maternal-rsv-vaccine-show-2025a1000v29
7. https://www.cdc.gov/rsv/hcp/vaccine-clinical-guidance/pregnant-people.html
8. https://www.aap.org/en/news-room/news-releases/aap/2025/aap-opposes-federal-health-officials-unprecedented-move-to-remove-universal-childhood-

immunization-recommendations/

Disclosures: The authors have no relevant disclosures.

NT

Corresponding Author

Susan Hepworth
Director
National Coalition for Infant Health
2020 K Street NW, Suite 505
Washington, DC 20006
Email: info@infanthealth.org

Mitchell Goldstein, MD
Professor of Pediatrics
Loma Linda University School of Medicine
Division of Neonatology
Department of Pediatrics
Email: mgoldstein@llu.edu

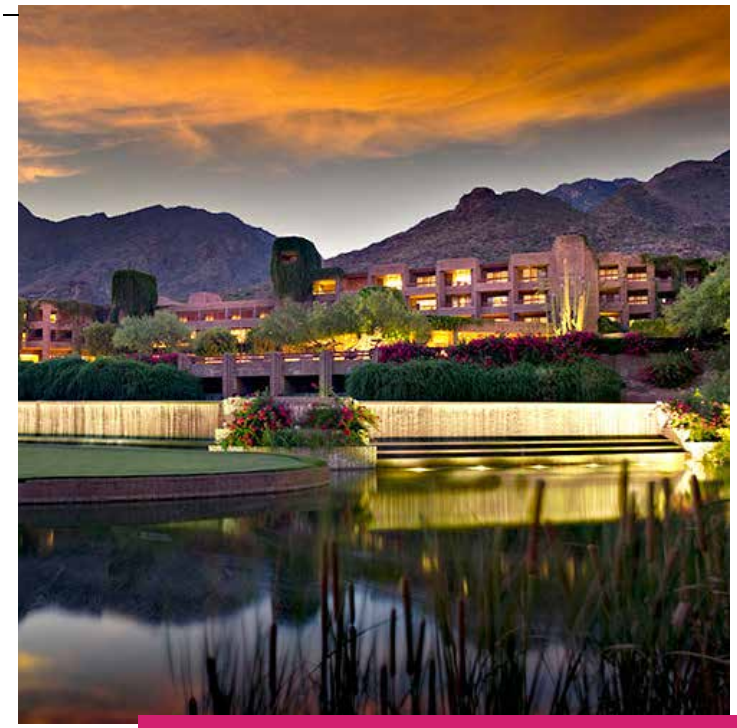
National Coalition for Infant Health Values (SANE)

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.

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



shopAAP
aap.org/shopaap

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN®

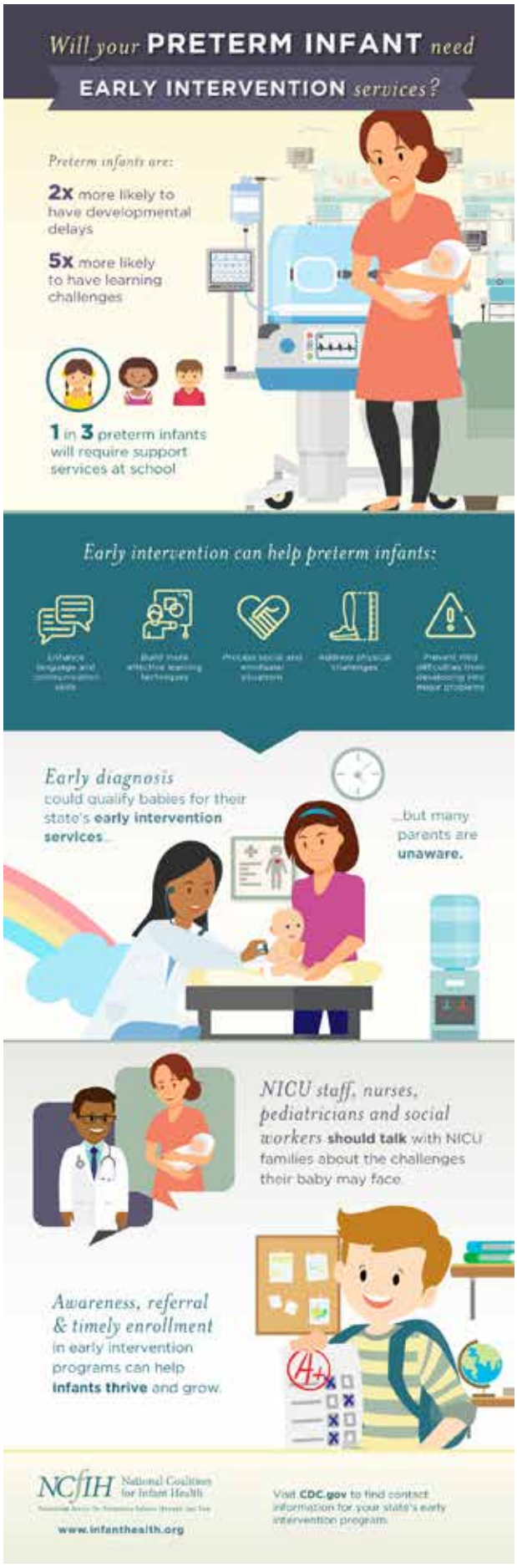
EXCITING NEW LOCATION:

LOEWS VENTANA CANYON RESORT TUCSON, AZ

2026 WORKSHOP ON NEONATAL-PERINATAL PRACTICE STRATEGIES

SAVE THE DATE!

March 13-15, 2026
Tucson, AZ


Will your PRETERM INFANT need
EARLY INTERVENTION services?
Preterm infants are:
2x more likely to have developmental delays
5x more likely to have learning challenges
1 in 3 preterm infants will require support services at school
Early intervention can help preterm infants:
Early diagnosis could qualify babies for their state's early intervention services...but many parents are unaware.
NICU staff, nurses, pediatricians and social workers should talk with NICU families about the challenges their baby may face.
Awareness, referral & timely enrollment in early intervention programs can help infants thrive and grow.
NCFIH National Coalition for Infant Health
www.infanthealth.org
Visit CDC.gov to find contact information for your state's early intervention program.


WHY INFANTS NEED THE
Vitamin K Shot
Newborn babies need vitamin K to help with proper blood clotting and protect them from vitamin K deficiency bleeding.
This type of bleeding is dangerous and can lead to:
Internal bleeding, including in the brain and other organs
Brain damage
Death
One out of every five babies with vitamin K deficiency bleeding dies.
Babies don't get vitamin K from their moms before they are born.
But vitamin K deficiency bleeding is easily preventable with a shot at birth.
Newborns who do not get a vitamin K shot are 81 times more likely to develop severe bleeding.
The vitamin K shot is:
Safe and effective
Routinely given to newborns
Recommended by the American Academy of Pediatrics
Not a vaccine
Protect infants from life-threatening bleeding with a vitamin K shot at birth.
National Coalition for Infant Health

Your Pregnancy and Substance Use

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

Get Prenatal Care

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

Reduce Your Use

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

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

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

Use Medications for Opioid Use Disorder (MOUD) if you are opioid dependent

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

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

Take Good Care of Yourself

You deserve a healthy pregnancy & childbirth.

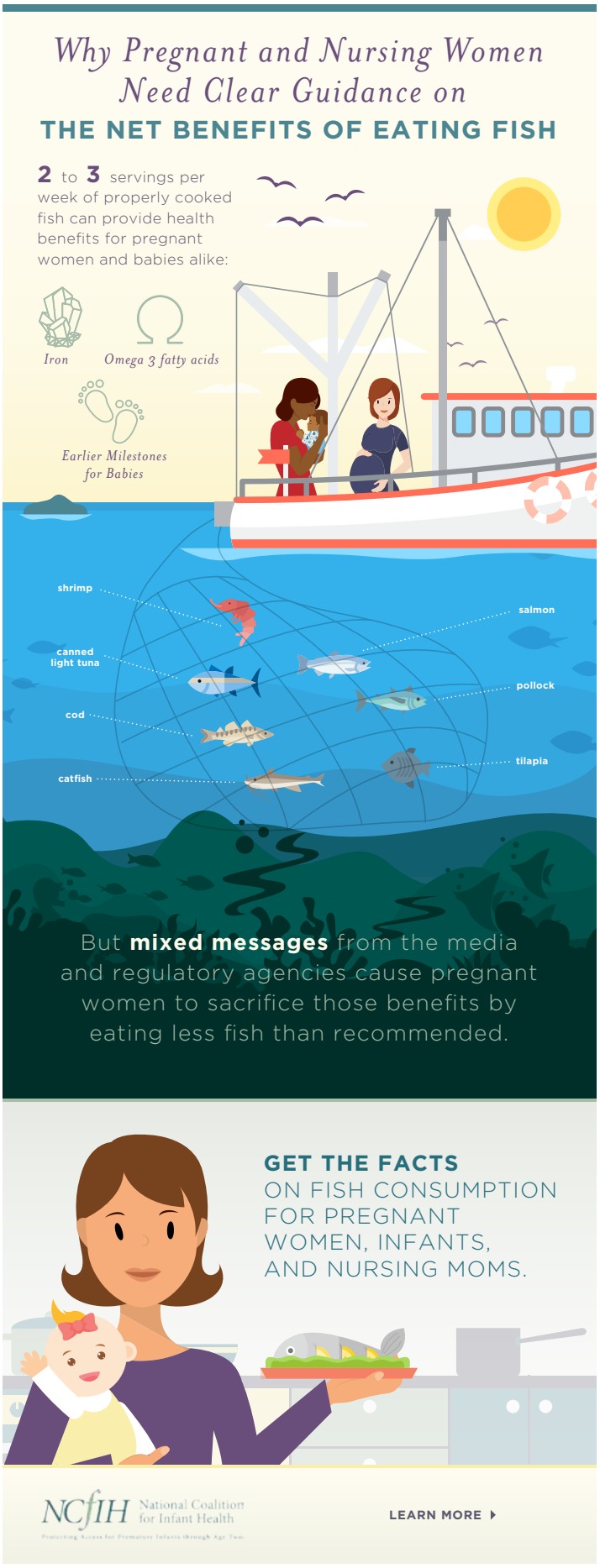
- Eat healthy and take your prenatal vitamins
- Find the right balance of rest and exercise
- Surround yourself with people who care

Your Health Matters

Academy of Perinatal Harm Reduction

National Perinatal Association

www.perinatalharmreduction.org | www.nationalperinatal.org



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

KEEPING MOTHERS + INFANTS TOGETHER

Means balancing the risks of...

- HORIZONTAL INFECTION
- SEPARATION AND TRAUMA

EVIDENCE

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

PARTNERSHIP

What is the best for this unique dyad?

SHARED DECISION-MAKING

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

TRAUMA-INFORMED

Both parents and providers are confronting significant...

- FEAR
- GRIEF
- UNCERTAINTY

LONGITUDINAL DATA

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

- MENTAL HEALTH
- POSTPARTUM CARE DELIVERY

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

Partnering for patient-centered care when it matters most.

nann.org nationalperinatal.org

National Association of Neonatal Nurses

National Perinatal Association

Infant and Family Centered Developmental Standards Implementation: Support for Early Signaling Behavior in Babies' First Six Months

Joy V. Browne, Ph.D., PCNS, IMH-E

"Recent research provides new insights into significant brain and behavioral changes in the baby's first six months after birth, laying a foundation for later physical, cognitive, and social development. (1-5) Preparation in utero leads to infant behavioral responses that ensure survival, and the caregiving environment provides safety and protection during these early months. (6)"

New insights into brain and behavior development:

Recent research provides new insights into significant brain and behavioral changes in the baby's first six months after birth, laying a foundation for later physical, cognitive, and social development. (1-5) Preparation in utero leads to infant behavioral responses that ensure survival, and the caregiving environment provides safety and protection during these early months. (6) Brain development accelerates, and regulation of biophysiology is demonstrated in respiratory, cardiovascular, and gastrointestinal systems, as well as in behavior.

Newborns and young infants often exhibit behaviors that signal caregivers to provide protective and nurturing responses. (7) Caregivers, usually the baby's parents, typically respond to the baby's signaling. Mutual reinforcement of behavior leads to the dyad becoming adapted and regulated in early infancy. Mismatches in the baby's explicit behavioral signaling and/or challenges in the caregiver's reading and/or responding to the baby's behavior in these early formative months can affect later social, emotional, and cognitive development. (8-10)

"Signaling behaviors such as crying, vocalizations, alertness, and face scanning prompt interaction with others. Crying signals distress and is likely to promote immediate caregiver response. Facial expressions, such as smiling, brow knitting, and pouting, often elicit an emotional response from the baby's caregiver. The resulting dyadic exchanges promote ongoing social interaction."

Signaling behavior:

Signaling behaviors such as crying, vocalizations, alertness, and face scanning prompt interaction with others. Crying signals distress and is likely to promote immediate caregiver response. Facial expressions, such as smiling, brow knitting, and pouting, often elicit an emotional response from the baby's caregiver. The resulting dyadic exchanges promote ongoing social interaction. As brain development proceeds at a rapid pace, the transition from reflexive to volitional behaviors typically occurs around 2-4 months. These more intentional behaviors lead to more sophisticated behavioral repertoires and social bids. (6, 11)

The responsive caregiving environment and mutual interaction between caregivers and their baby during this time contribute to the development of increasingly regulated behavior. Caregivers of newborn and very young infants need support to understand

babies' available signaling behaviors, as these behaviors have a significant impact not only on early caregiving relationships but also on brain development. (12, 13)

"Early-born or sick newborns are at a disadvantage in the development of signaling behavior. Their experience as a fetus and during delivery can interfere with the development of or overwhelm effective behavioral communication. Early-born babies have not had experiences during the last weeks of their fetal life that contribute to more organized behavioral responses."

Signaling behavior of hospitalized babies:

Early-born or sick newborns are at a disadvantage in the development of signaling behavior. Their experience as a fetus and during delivery can interfere with the development of or overwhelm effective behavioral communication. Early-born babies have not had experiences during the last weeks of their fetal life that contribute to more organized behavioral responses. Their reflexes may be weak or hard to elicit, arousal and visual regard may be limited, and physiologic instability may affect responsiveness. Necessary medical support may also overwhelm their meager energy and/or fail to recognize their efforts to signal.

"Each of the six evidence-based areas of developmental care emphasizes the importance of understanding the baby's behavioral communication to fashion an individualized approach to their caregiving experience. Additionally, each of the six areas includes an emphasis on supporting the baby's primary caregivers, typically the parents, to observe, interpret, and respond to the baby's behavioral signals."

In addition to early birth and/or medical concerns, the caregiving environment in intensive care is vastly different from the "expected" one for a more typically developing baby and can thus affect foundational brain and behavioral development. (14) It is well known that long-term effects on brain development, social/emotional, and cognitive development in babies hospitalized at birth are recognized as less than optimal. (15)

Early birth, medical issues, and hospitalization can interfere not only with a baby's ability to provide clear signals but also with caregivers' ability to interpret them. (16, 17) Intensive care professionals are typically trained in medical assessment and intervention, which until recently have not included behavioral assessment. Berry Brazelton was a pediatrician who took the lead in understanding the behavioral repertoire of newborn babies. Heidelise Als, one of his protégés, extended that understanding to babies born early. She developed the Newborn Individualized Developmental Care and Assessment Program (NIDCAP) and emphasized observing and interpreting babies' behavior. (18-20) Based on those assessments, caregiving recommendations are developed to help the baby achieve regulated behavior and thus achieve their own developmental goals. Since her early work, most NICUs now incorporate identification of at least some behavioral signals and implement strategies to support babies' development. (21)

IFCDC standards provide a foundation for supporting signaling behavior:

At the center of the IFCDC standards concept model (Figure 1) is an emphasis on the baby as an interactor in their relationship with their primary caregiver, typically the mother. (22) Woven into each of the other principles is the understanding that the baby influences how they are cared for both by family members and by intensive care professionals. The model implies that the baby's individualized interaction with the environment of care influences their physical, social, emotional, and cognitive development.

"Each of the six evidence-based areas of developmental care emphasizes the importance of understanding the baby's behavioral communication to fashion an individualized approach to their caregiving experience. Additionally, each of the six areas includes an emphasis on supporting the baby's primary caregivers, typically the parents, to observe, interpret, and respond to the baby's behavioral signals."

Each of the six evidence-based areas of developmental care emphasizes the importance of understanding the baby's behavioral communication to fashion an individualized approach to their caregiving experience. Additionally, each of the six areas includes an emphasis on supporting the baby's primary caregivers, typically the parents, to observe, interpret, and respond to the baby's behavioral signals. Early-born and medically fragile babies' signals can be challenging to interpret. Professional staff must have a thorough understanding of the baby's signaling behavior to

provide individualized caregiving and support parents in knowing how best to care for thei

"Additionally, each of the six areas includes an emphasis on supporting the baby's primary caregivers, typically the parents, to observe, interpret, and respond to the baby's behavioral signals. Early-born and medically fragile babies' signals can be challenging to interpret. Professional staff must have a thorough understanding of the baby's signaling behavior to provide individualized caregiving and support parents in knowing how best to care for their baby. "

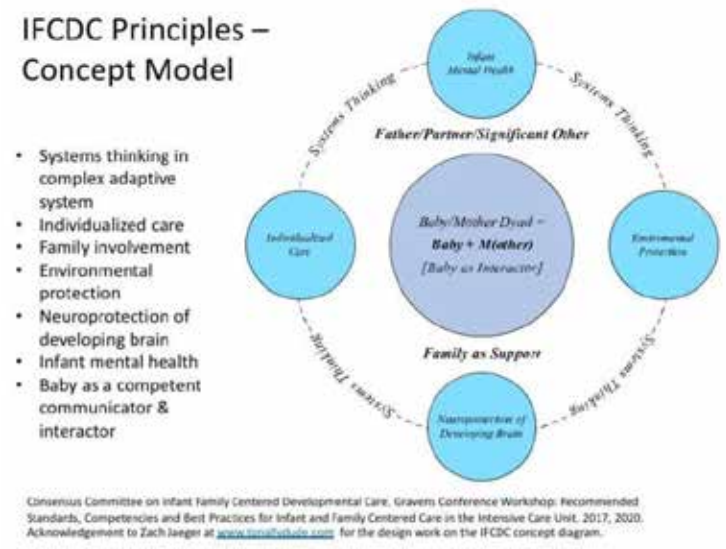


Figure 1. IFCDC Concept Model

The continuum after discharge:

Leaving intensive care marks a transition into early infancy and involves a multitude of brain and behavioral changes. (6, 23) During these foundational months, rapid brain development is reflected in significant behavioral changes. As noted above, reflexes become modified into volitional events, and signaling behaviors become dependent on the baby's environment of care. As the medically fragile or early-born baby becomes more physiologically and behaviorally regulated, their signaling becomes more socially responsive.

The primary caregiver, on the other hand, may still be affected by the intensive care experience and be hesitant to interact with their previously fragile baby vigorously. It is postulated that as the baby becomes clearer in their communication, more intentional, and ready to interact, the parent can be less responsive to their bids. (24)

Although targeted interventions for caregivers in their early relationships with their baby begin in the NICU, they must be continued after discharge, as behavioral changes in the first months are rapid, and it is often difficult to understand how best to respond.

Caregivers' understanding of their baby's signaling behavior as it changes over time must be supported and reinforced by knowledgeable professionals for at least the first six months of the baby's corrected age, and sometimes longer, depending on the baby's adaptation during this period. (23) As brain and behavior, as well as parenting skills, are still developing, individualized dyadic care should be provided early and frequently after discharge and should continue for at least six months. (25-27).

Conclusion:

The continuum of brain and behavior development from the fetal to the newborn to the early infancy period evolves in the context of the baby's environment of care. The behavior the baby uses to signal their need for caregiving changes dramatically over the first six months, and caregiving responses that regulate the baby's behavior lay the foundation for later physical, cognitive, and social-emotional development. Babies born preterm or medically fragile are typically less effective in their signaling behavior. Due to the altered environment in which they develop and the myriad factors that influence their parents' responsiveness to their behavior, they and their parents need supportive measures to assess, interpret, and provide support for early development. The current IFCDC standards incorporate supportive strategies into both the concept model and the evidence-based practice areas. Because brain and behavior are particularly vulnerable during the first six months, there is a need not only to understand and respond to their behavior in intensive care but also to continue this understanding and response after discharge for at least the first six months.

Selected References

1. Ford A, Ammar Z, Li L, Shultz S. Lateralization of major white matter tracts during infancy is time-varying and tract-specific. Cerebral Cortex. 2023;33(19):10221–33.
2. Holland D, Chang L, Ernst TM, Curran M, Buchthal SD, Alicata D, et al. Structural growth trajectories and rates of change in the first 3 months of infant brain development. JAMA neurology. 2014;71(10):1266–74.
3. Li Q, Fu Z, Walum H, Seraji M, Bajracharya P, Calhoun V, et al. Deciphering Multiway Multiscale Brain Network Connectivity: Insights from Birth to 6 Months. bioRxiv. 2025.
4. Marshall PJ, Meltzoff AN. Body maps in the infant brain: implications for neurodevelopmental disabilities. Developmental medicine and child neurology. 2020;62(7):778–83.
5. Risk B, Li L, Jones W, Shultz S. Dynamics of infant white matter maturation from birth to 6 months. bioRxiv. 2025.
6. Meredith Weiss S, Aydin E, Lloyd-Fox S, Johnson MH.

Trajectories of brain and behaviour development in the womb, at birth and through infancy. Nature Human Behaviour. 2024;8(7):1251–62.

7. Xie W, Mallin BM, Richards JE. Development of brain functional connectivity and its relation to infant sustained attention in the first year of life. Developmental science. 2019;22(1):e12703.

8. Wenzel A, Monk C, Hane AA. 2014.

9. Litt JS, Ho T, Obregon E, Patel P, Ziyeh T, McCormick MC. Characterizing Early State Regulation in Preterm Infants. Journal of developmental and behavioral pediatrics: JDBP. 2019;40(4):293–300.

10. Webb SJ, Monk CS, Nelson CA. Mechanisms of postnatal neurobiological development: implications for human development. Developmental Neuropsychology. 2001;19(2):147–71.

11. Monk C, Hane AA. Fetal and infant neurobehavioral development: Basic processes and environmental influences. 2016.

12. Hodel AS. Rapid Infant Prefrontal Cortex Development and Sensitivity to Early Environmental Experience. Dev Rev. 2018;48:113–44.

13. Shultz S, Klin A, Jones W. Neonatal Transitions in Social Behavior and Their Implications for Autism. Trends Cogn Sci. 2018;22(5):452–69.

14. Kersbergen KJ, Leroy F, Isgum I, Groenendaal F, de Vries LS, Claessens NH, et al. Relation between clinical risk factors, early cortical changes, and neurodevelopmental outcome in preterm infants. Neuroimage. 2016.

15. Kelly MM, Arcoleo K, D'Agata AL, Sullivan MC. A test of differential susceptibility in behavior trajectories of preterm infants from preschool to adulthood. Research in nursing & health. 2023;46(1):80–92.

16. Holditch-Davis D, Bartlett TR, Blickman AL, Miles MS. Posttraumatic stress symptoms in mothers of premature infants. Journal of obstetric, gynecologic, and neonatal nursing : JOGNN / NAACOG. 2003;32(2):161–71.

17. Chertok IR, McCrone S, Parker D, Leslie N. Review of interventions to reduce stress among mothers of infants in the NICU. Advances in neonatal care : official journal of the National Association of Neonatal Nurses. 2014;14(1):30–7.

18. Als H. The newborn communicates. J Commun. 1977;27(2):66–73.

19. Als H. Earliest Intervention for Preterm Infants in the Newborn Intensive Care Unit. In: Guralnick M, editor. The Effectiveness of Early Intervention. Baltimore: Brookes Publishing Co.; 1996. p. 47–76.

20. Als H. Neurobehavioral Development of the Preterm Infant. In: Fanaroff AA, Martin RJ, editors. Neonatal-Perinatal Medicine. 2. St. Louis: Mosby; 1997. p. 964–89.

21. Merenstein GB. Individualized developmental care. An emerging new standard for neonatal intensive care units? Jama. 1994;272(11):890–1.

22. Jaeger CB, Browne JV. The infant and family-centered developmental care standards for babies in intensive care and their families. In: Kenner C, McGrath JM, editors. Developmental Care of Newborns and Infants: A Guide for Health Professionals. Philadelphia: Wolters Kluwer; 2023. p. 18–34.

23. Browne JV. Fragile Infant Forums for Implementation of IFCDC Standards: Continuity and Discontinuity: Birth to Intensive Care to Home. Neonatology Today. 2025;20(5).

24. Barnard KE, Bee HL, Hammond MA. Developmental changes in maternal interactions with term and preterm infants. Infant Behavior and Development. 1984;7(1):101–13.

25. Orton J, Doyle LW, Tripathi T, Boyd R, Anderson PJ, Spittle A. Early developmental intervention programmes provided post hospital discharge to prevent motor and cognitive impairment in preterm infants. Cochrane Database of Systematic Reviews. 2024(2).

26. Maitre NL, Duncan AF. The Future of High-Risk Infant Follow-Up. Clinics in perinatology. 2023;50(1):281–3.

27. Litt JS, Halfon N, Msall ME, Russ SA, Hintz SR. Ensuring Optimal Outcomes for Preterm Infants after NICU Discharge: A Life Course Health Development Approach to High-Risk Infant Follow-Up. Children (Basel). 2024;11(2).

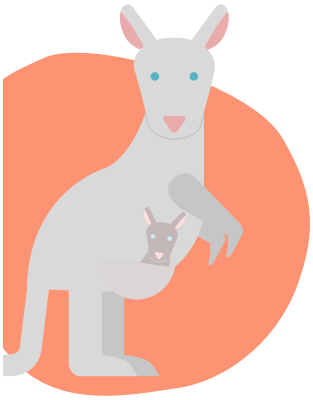
Disclosures: *The authors have no disclosures*

NT

Joy Browne, Ph.D., PCNS, IMH-E(IV)
Clinical Professor of Pediatrics and Psychiatry
University of Colorado School of Medicine
Aurora, Colorado
Telephone: 303-875-0585
Email: Joy.browne@childrenscolorado.org

SUPPORTING KANGAROO CARE

SKIN-TO-SKIN CARE DURING COVID-19



GET INFORMED ABOUT THE RISKS + BENEFITS

work with your medical team to create a plan

GET CLEAN

WASH YOUR HANDS, ARMS, and CHEST

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

PUT ON FRESH CLOTHES

change into a clean gown or shirt.

IF COVID-19 + WEAR A MASK

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

National Perinatal Association

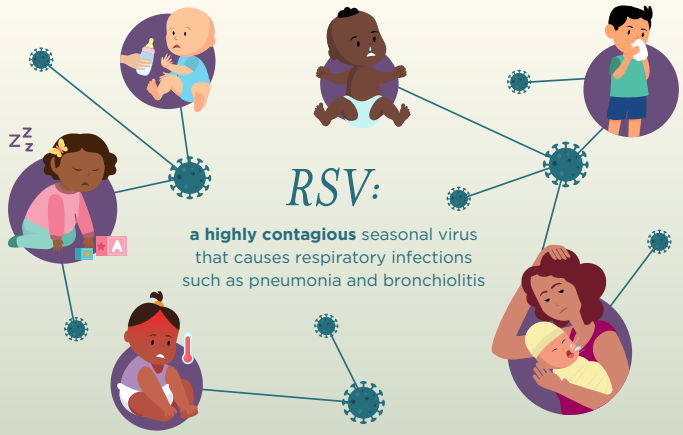
nicuparentnetwork.org

NPN NICU PARENT NETWORK

nationalperinatal.org/skin-to-skin

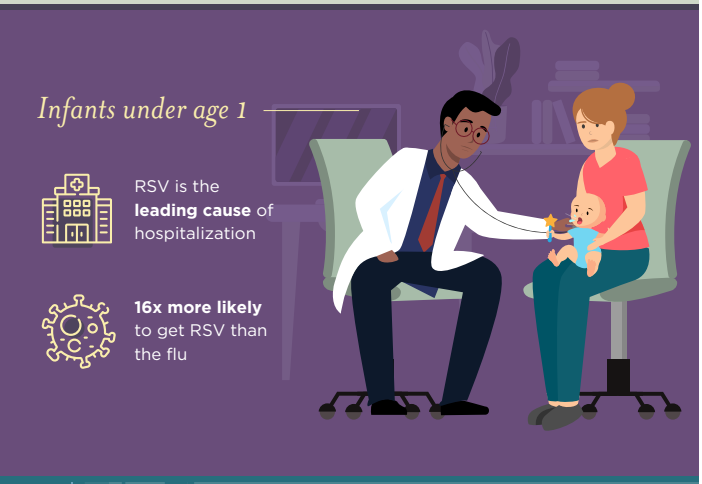
Respiratory Syncytial Virus

DID YOU KNOW?



RSV:

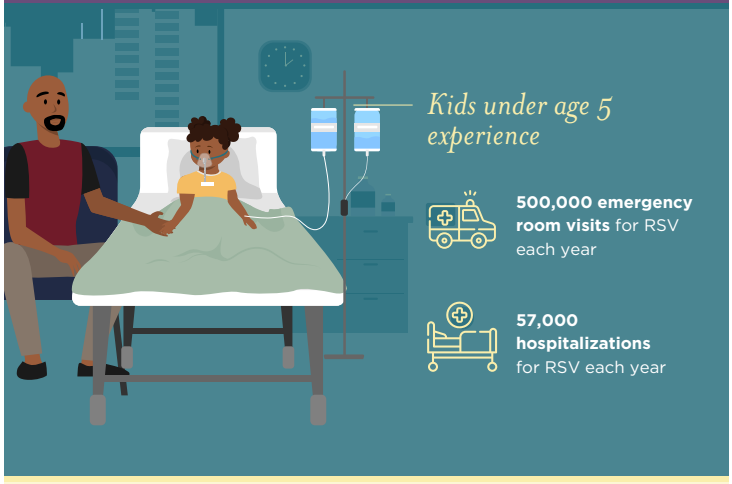
a highly contagious seasonal virus that causes respiratory infections such as pneumonia and bronchiolitis



Infants under age 1

RSV is the **leading cause** of hospitalization

16x more likely to get RSV than the flu



Kids under age 5 experience

500,000 emergency room visits for RSV each year

57,000 hospitalizations for RSV each year

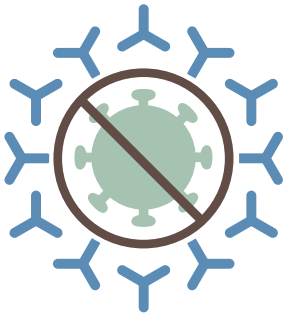
NCIIH National Coalition for Infant Health

Protecting Access for Premature Infants through Age Two

LEARN MORE

Protecting your baby and family from

Respiratory Viruses:



What parents need to know this RSV and flu season

Like COVID-19, RSV (Respiratory Syncytial Virus) and flu affect the lungs and can cause serious breathing problems for children and babies. Talk to your family about the risks.

Certain diagnoses can make children and babies more vulnerable for serious complications from respiratory viruses - including prematurity, chronic lung disease, and heart conditions.

You can limit the spread of viruses by wearing a mask, washing your hands with soap & water, using an alcohol-based hand sanitizer, and getting vaccinated.

The fewer germs your baby is exposed to, the less likely they are to get sick. Let people know you need their help to stay well. Limit visitors. Avoid crowds. Stay away from sick people.

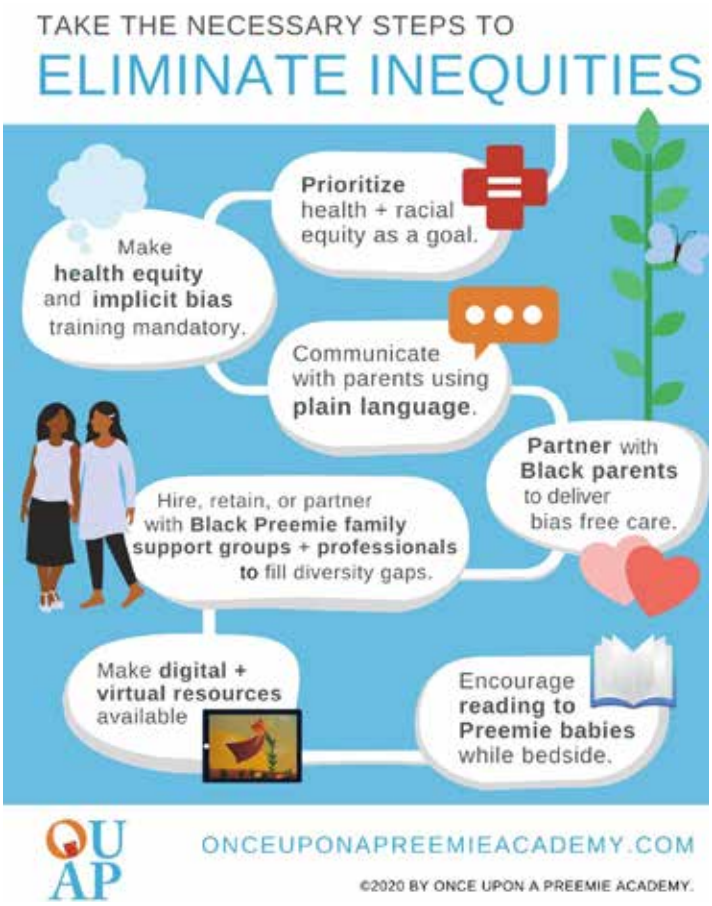
Immunizations save lives. Stay up-to-date with your family's flu vaccinations and COVID-19 boosters. This helps our community stay safe by stopping the spread of deadly viruses.

Babies older than 6 months can get a flu shot and COVID-19 vaccinations. There is no vaccine for RSV, but monthly antibody shots during RSV season can help protect them.

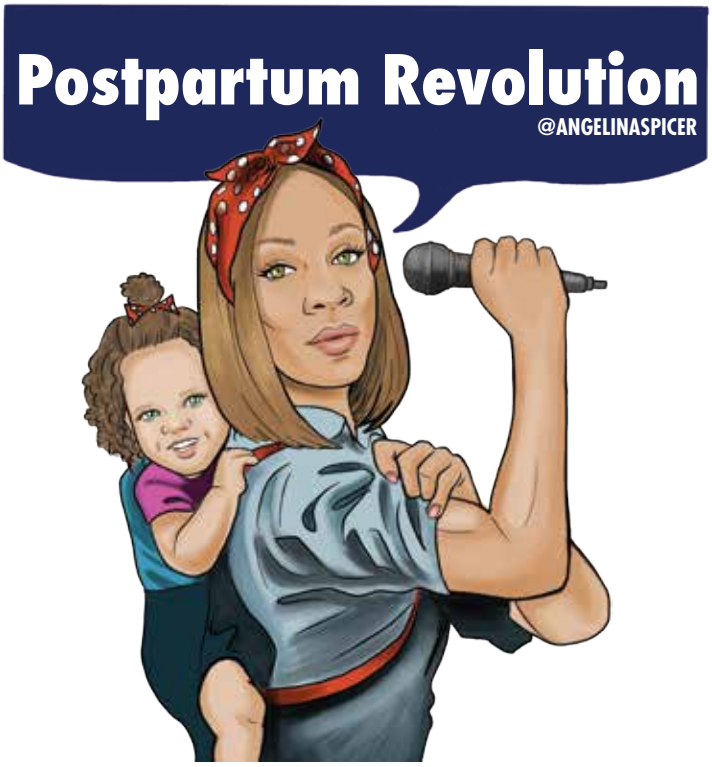
WE CAN HELP PROTECT EACH OTHER.

National Perinatal Association

www.nationalperinatal.org/rsv



The Gap Baby: An RSV Story



Please Help Fund

NEONATOLOGY TODAY

Your Donation is Tax Deductible

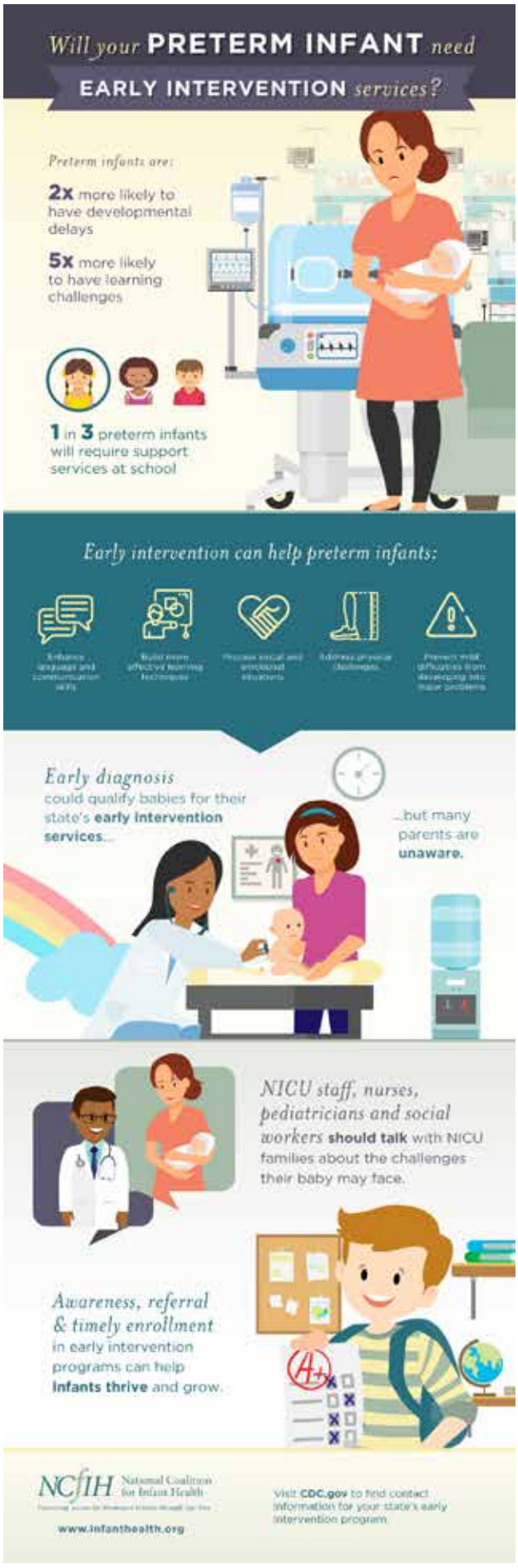
Click here or scan the QR Code

Readers can also follow

NEONATOLOGY TODAY

via our Twitter Feed

@NEOTODAY



Which Infants are More Vulnerable to Respiratory Syncytial Virus?

RSV is a respiratory virus with cold-like symptoms that causes 90,000 hospitalizations and 4,500 deaths per year in children 5 and younger. It's 10 times more deadly than the flu. For premature babies with fragile immune systems and underdeveloped lungs, RSV proves especially dangerous.

But risk factors associated with RSV don't touch all infants equally.*

*Source: Respirator Syncytial Virus and African Americans

Caucasian Babies	Risk Factor	African American Babies
11.6%	Prematurity	18.3%
58.1%	Breastfeeding	50.2%
7.3%	Low Birth Weight	11.8%
60.1%	Siblings	71.6%
1%	Crowded Living Conditions	3%

AFRICAN AMERICAN BABIES bear the brunt of RSV. Yet the American Academy of Pediatrics' restrictive new guidlines limit their access to RSV preventative treatment, increasing these babies' risk.

AfPA
Alliance for Patient Access

Readers can also follow

NEONATOLOGY TODAY

via our Twitter Feed

@NEOTODAY

Practical Data Analytics for Innovation in Medicine:

Building Real Predictive and Prescriptive Models in Personalized Healthcare and Medical Research Using AI, ML, and Related Technologies

Second Edition

Gary D. Miner, Linda A. Miner, Scott Burk, Mitchell Goldstein, Robert Nisbet, Nephi Walton, Thomas Hill

Cambridge Scholars Publishing

Lady Stephenson Library
Newcastle upon Tyne
NE6 2PA
United Kingdom

admin@cambridgescholars.com
www.cambridgescholars.com

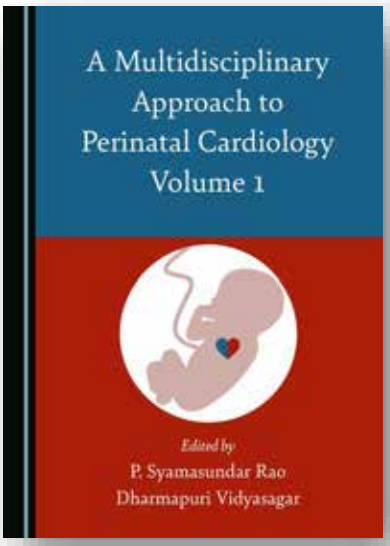
Fax +44 (0)191 265 2056

Cambridge Scholars Publishing is registered in the United Kingdom.

Companies House Reg. Number: 4333775.
VAT Number: 108280727.

A Multidisciplinary Approach to Perinatal Cardiology *Volume 1*

Edited by P. Syamasundar Rao and Dharmapuri Vidyasagar



Hardback

ISBN-13:
978-1-5275-6722-1

ISBN-10:
1-5275-6722-2

Date of Publication:
24/04/2021

Pages / Size:
794 / A5

Price:
£99.99

Book Description

Recent developments in diagnostic and therapeutic aspects of cardiac and neonatal issues have advanced the care of the newborn. To achieve excellence in cardiac care, however, close interaction and collaboration of the pediatric cardiologists with neonatologists, pediatricians, general/family practitioners (who care for children), anesthesiologists, cardiac surgeons, pediatric cardiac intensivists, and other subspecialty pediatricians is mandatory. This book provides the reader with up-to-date evidence-based information in three major areas of neonatology and prenatal and neonatal cardiology. First, it provides an overview of advances in the disciplines of neonatology, prenatal and neonatal cardiology, and neonatal cardiac surgery in making early diagnosis and offering treatment options. Secondly, it presents a multidisciplinary approach to managing infants with congenital heart defects. Finally, it provides evidence-based therapeutic approaches to successfully treat the fetus and the newborn with important neonatal issues and congenital cardiac lesions. This first volume specifically explores issues related to perinatal circulation, the fetus, ethics, changes in oxygen saturations at birth, and pulse oximetry screening, diagnosis, and management.

About the Editors

Dr P. Syamasundar Rao, MD, DCH, FAAP, FACC, FSCAI, is Professor of Pediatrics and Medicine and Emeritus Chief of Pediatric Cardiology at the University of Texas-Houston Medical School. He received his medical degree from Andhra Medical College, India, and subsequently received post-graduate training both in India and the USA before joining the faculty at the Medical College of Georgia, USA, in 1972. He has also served as Chairman of Pediatrics at King Faisal Specialist Hospital and Research Center, Saudi Arabia, and Professor and Director of the Division of Pediatric Cardiology at the University of Wisconsin and St. Louis University, USA. He has authored 400 papers, 16 books and 150 book chapters, and is a recipient of numerous honors and awards.

Dr Dharmapuri Vidyasagar, MD, MSc, FAAP, FCCM, PhD (Hon), is currently Professor Emeritus in Pediatrics at the University of Illinois, Chicago, where he served as Professor of Pediatrics for four decades. He is a graduate of Osmania Medical College, India. He has published over 250 papers and authored several books with a focus on prematurity, neonatal pulmonary diseases and neonatal ventilation. His goal is to reduce neonatal mortality in the USA and around the world, and he has received multiple awards and honors including the Ellis Island Award.

A Multidisciplinary Approach to Perinatal Cardiology Volume 1 is available now in Hardback from the Cambridge Scholars website, where you can also access a free 30-page sample.

My NICU Network
My Perinatal Network

National Perinatal Association + NICU Parent Network

Online L&D Staff Education Program

Caring for Pregnant Patients & Their Families:

Providing Psychosocial Support During Pregnancy, Labor and Delivery

WWW.MYPERINATALNETWORK.ORG

Continuing education credits provided by

pac-lac

About the Program

- **WHO SHOULD TAKE THE PROGRAM?** This program is designed for both office and hospital staff in all disciplines that interact with pregnant patients and their families. A key focus is recognizing risk factors for perinatal mood and anxiety disorders, and mitigating their impact through provision of trauma-informed care.

- **WHY TAKE THE PROGRAM?** Families will benefit when staff have improved skills, through enhanced parental resilience and better mental health, and improved parent-baby bonding leading to better developmental outcomes for babies. Benefits to staff include improved skills in communicating with patients; improved teamwork, engagement and staff morale; reduced burnout, and reduced staff turnover.

- **HOW DOES THE PROGRAM ACHIEVE ITS GOALS?** Program content is representative of best practices, engaging and story-driven, resource-rich, and developed by a unique interprofessional collaboration of obstetric and neonatal professionals and patients. The program presents practical tips and an abundance of clinical information that together provide solutions to the emotional needs of expectant and new parents.

- **HOW WAS THE PROGRAM DEVELOPED?** This program was developed through collaboration among three organizations: a multidisciplinary group of professionals from the National Perinatal Association and Patient + Family Care, and parents from the NICU Parent Network. The six courses represent the different stages of pregnancy (antepartum, intrapartum, postpartum), as well as perinatal mood and anxiety disorders, communication techniques, and staff support.

Program Objectives

- Describe principles of trauma-informed care as standards underlying all communication during provision of maternity care in both inpatient and outpatient settings.
- Identify risk factors, signs, and symptoms of perinatal mood and anxiety disorders; describe treatment options.
- Define ways to support pregnant patients with high-risk conditions during the antepartum period.
- Describe obstetric violence, including ways that providers may contribute to a patient's experience of maternity care as being traumatic; equally describe ways providers can mitigate obstetric trauma.
- Describe the importance of providing psychosocial support to women and their families in times of pregnancy loss and fetal and infant death.
- Define the Fourth Trimester, and identify the key areas for providing psychosocial support to women during the postpartum period.
- Identify signs and symptoms of burnout as well as their ill effects, and describe both individual and systemic methods for reducing burnout in maternity care staff.

Continuing education credits will be provided for physicians, clinic and bedside nurses, social workers, psychologists, and licensed marriage and family therapists. CEUs will be provided by Perinatal Advisory Council: Leadership, Advocacy, and Consultation.

PROGRAM CONTENT

COMMUNICATION SKILLS CEUs offered: 1

Learn principles of trauma-informed care, use of universal precautions, how to support LGBTQ patients, obtaining informed consent, engaging in joint decision-making, delivering bad news, dealing with challenging patients.

Faculty: Amina White, MD, MA, Clinical Associate Professor, Department of OB/Gyn, University of North Carolina, Chapel Hill, NC; Sue Hall, MD, MSW, FAAP, St. John's Regional Medical Center, Oxnard, CA; Karen Saxer, CNM, MSN, University of North Carolina Maternal-Fetal Medicine, UNC Women's Hospital, Chapel Hill, NC; Tracy Pella, Co-Founder & President, Connected Forever, Tecumseh, NE.

PERINATAL MOOD AND ANXIETY DISORDERS CEUs offered: 1

Identify risk factors for and differential diagnosis of PMADs (perinatal mood and anxiety disorders), particularly perinatal depression and/or anxiety and posttraumatic stress syndrome. Learn the adverse effects of maternal depression on infant and child development, and the importance of screening for and treating PMADs.

Faculty: Linda Baker, PsyD, psychologist at Unstuck Therapy, LLC, Denver, CO; Sue Hall, MD, MSW, FAAP, neonatologist at St. John's Regional Medical Center, Oxnard, CA; Angela Davids, Founder of Keep 'Em Cookin', Baltimore, MD; Brittany Boet, Founder of Bryce's NICU Project, San Antonio, TX.

PROVIDING ANTEPARTUM SUPPORT CEUs offered: 1

Identify psychosocial challenges facing high risk OB patients, and define how to provide support for them, whether they are inpatient or outpatient. Recognize when palliative care is a reasonable option to present to pregnant patients and their families.

Faculty: Amina White, MD, MA, Clinical Associate Professor, Department of OB/Gyn, University of North Carolina, Chapel Hill, NC; Sue Hall, MD, MSW, FAAP, neonatologist at St. John's Regional Medical Center, Oxnard, CA; Angela Davids, Founder of Keep 'Em Cookin', Baltimore, MD; Erin Thatcher, BA, Founder and Executive Director of The PPROM Foundation, Denver, CO.

PROVIDING INTRAPARTUM SUPPORT CEUs offered: 1

Describe how to manage patient expectations for labor and delivery including pain management; identify examples of obstetric violence, including identification of provider factors that may increase patients' experience of trauma; learn how to mitigate patients' trauma, and how to provide support during the process of labor and delivery.

Faculty: Sara Detlefs, MD, Fellow in Maternal-Fetal Medicine, Baylor College of Medicine, Houston, TX; Jerry Ballas, MD, MPH, Associate Clinical Professor, UCSD Health System, Maternal-Fetal Medicine, Department of Obstetrics, Gynecology and Reproductive Sciences, University of California at San Diego, San Diego, CA; MaryLou Martin, MSN, RNC-NIC, CKC, Women's and Children's Services Nurse Educator, McLeod Regional Medical Center, McLeod, SC; Claire Hartman, RN, IBCLC, Labor & Delivery, University of North Carolina Hospital, Chapel Hill, NC; Crystal Duffy, Author of Twin To Twin (from High Risk Pregnancy to Happy Family), and NICU Parent Advisor, Houston, TX; Erin Thatcher, Founder and Executive Director of The PPROM Foundation, Denver, CO.

PROVIDING POSTPARTUM SUPPORT CEUs offered: 1

Define the 4th Trimester and the importance of follow-up especially for high risk and minority patients, learn to recognize risk factors for traumatic birth experience and how to discuss patients' experiences postpartum; describe the application of trauma-informed care during this period, including support for patients who are breastfeeding and those whose babies don't get to go home with them.

Faculty: Amanda Brown, CNM, University of North Carolina Hospital, Chapel Hill, NC; ; Sue Hall, MD, MSW, FAAP, neonatologist at St. John's Regional Medical Center, Oxnard, CA; Crystal Duffy, Author of Twin To Twin (from High Risk Pregnancy to Happy Family), and NICU Parent Advisor, Houston, TX.

SUPPORTING STAFF AS THEY SUPPORT FAMILIES CEUs offered: 1

Define burnout and compassion fatigue; identify the risks of secondary traumatic stress syndrome to obstetric staff; describe adverse impacts of bullying among staff; identify the importance of both work-life balance and staff support.

Faculty: Cheryl Milford, EdS, Consulting NICU and Developmental Psychologist, Director of Development, National Perinatal Association, Huntington Beach, CA; Sue Hall, MD, MSW, FAAP, neonatologist at St. John's Regional Medical Center, Oxnard, CA; Erin Thatcher, BA, Founder and Executive Director, The PPROM Foundation, Denver, CO

Cost

- RNs: $10/CEU; $60 for the full program
- Physicians, licensed clinical social workers (LCSWs), licensed marriage and family therapists (LMFTs): $35/CEU; $210 for the full program
- Although PACLAC cannot award CEs for certified nurse midwives, they can submit certificates to their own professional organization to request credit. $35/CEU; $210 for the full program

Contact help@myperinatalnetwork.org to learn more.

Faculty

Linda Baker, PsyD
Psychologist at Unstuck Therapy, LLC, Denver, CO.

Jerasimos (Jerry) Ballas, MD, MPH
Associate Clinical Professor, UCSD Health System, Maternal-Fetal Medicine, Department of Obstetrics, Gynecology and Reproductive Sciences, University of California at San Diego, San Diego, CA.

Amanda Brown, CNM, MSN, MPH
University of North Carolina-Chapel Hill Hospitals, Chapel Hill, NC.

Sara Detlefs, MD
Fellow in Maternal-Fetal Medicine, Baylor College of Medicine, Houston, TX.

Sue L. Hall, MD, MSW, FAAP
Neonatologist, Ventura, CA.

Claire Hartman, RN, IBCLC
Labor & Delivery, University of North Carolina Hospital, Chapel Hill, NC.

MaryLou Martin, MSN, RNC-NIC, CKC
Women's and Children's Services Nurse Educator, McLeod Regional Medical Center, McLeod, SC.

Cheryl Milford, EdS.
Former NICU and Developmental psychologist, in memoriam.

Karen Saxer, CNM, MSN
University of North Carolina Maternal-Fetal Medicine, UNC Women's Hospital, Chapel Hill, NC.

Amina White, MD, MA
Clinical Associate Professor, Department of Obstetrics and Gynecology, University of North Carolina, Chapel Hill, NC.

Parent/Patient Contributers:

Brittany Boet
Founder, Bryce's NICU Project, San Antonio, TX.

Angela Davids
Founder, Keep 'Em Cookin', Baltimore, MD.

Crystal Duffy
Author of Twin To Twin (from High Risk Pregnancy to Happy Family), and NICU Parent Advisor, Houston, TX.

Tracy Pella, MA
Co-Founder and President, Connected Forever, Tecumseh, NE.

Erin Thatcher, BA
Founder and Executive Director, The PPROM Foundation, Denver, CO.

CANCELLATIONS AND REFUNDS

- For Individual Subscribers:
  - If you elect to take only one course, there will be no cancellations or refunds after you have started the course.
  - If you elect to take more than one course and pay in advance, there will be no cancellations or refunds after payment has been made unless a written request is sent to help@myperinatalnetwork.com and individually approved.
- For Institutional Subscribers:
  - After we are in possession of a signed contract by an authorized agent of the hospital and the program fees have been paid, a 50% refund of the amount paid will be given if we are in receipt of a written request to cancel at least 14 (fourteen) days prior to the scheduled start date for your hospital's online program.
  - Refunds will not be given for staff members who neglect to start the program. Also, no refunds for those who start the program, but do not complete all 6 courses within the time frame allotted.

For Physicians: This activity has been planned and implemented in accordance with the Institute for Medical Quality and the California Medical Association's CME Accreditation Standards (IMQ/CMA) through the Joint Providership of the Perinatal Advisory Council: Leadership, Advocacy and Consultation (PAC/LAC) and the National Perinatal Association. PAC/LAC is accredited by the Institute for Medical Quality/California Medical Association (IMQ/CMA) to provide continuing education for physicians. PAC/LAC takes responsibility for the content, quality and scientific integrity of this CME activity. PAC/LAC designates this activity for a maximum of 6 *AMA PRA Category 1 Credit(s)TM*. Physicians should only claim 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*.

For 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. When taken as a whole, this program is approved for 7 contact hours of continuing education credit.

For CAMFT: Perinatal Advisory Council: Leadership, Advocacy, and Consultation (PAC/LAC) is approved by the California Association of Marriage and Family Therapists to sponsor continuing education for LMFTs and LCSWs. CE Provider #128542. PAC/LAC maintains responsibility for the program and its content. Program meets the qualifications for 6 hours of continuing education credit for LMFTs and LCSWs as required by the California Board of Behavioral Sciences. You can reach us at help@myperinatalnetwork.org.

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

KEEPING MOTHERS + INFANTS TOGETHER

Means balancing the risks of...

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

EVIDENCE

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

PARTNERSHIP

What is the best for this unique dyad?

SHARED DECISION-MAKING

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

TRAUMA-INFORMED

Both parents and providers are confronting significant...

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

LONGITUDINAL DATA

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

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

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

Partnering for patient-centered care when it matters most.

nann.org nationalperinatal.org

National Association of Neonatal Nurses

National Perinatal Association

FREE ONLINE EDUCATION

Coping with COVID-19

A viral pandemic

A racial pandemic within a viral pandemic

Will mental illness be the next inevitable pandemic?

WWW.MYNICUNETWORK.ORG

and

National Perinatal Association
NICU Parent Network

Alliance for Patient Access: Centers for Disease Control Vaccine Committee Revisits Hepatitis B

Josie Cooper

The Alliance for Patient Access (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.

AfPA | Alliance for Patient Access

IfPA | Institute for Patient Access

"A recent decision by the Advisory Committee on Immunization Practices downgrades the recommendation for hepatitis B vaccination at birth, which had been the standard of care since 1991."

A recent decision by the Advisory Committee on Immunization Practices downgrades the recommendation for hepatitis B vaccination at birth, which had been the standard of care since 1991.

The committee no longer recommends the vaccination for all newborns. In instances where the infant's mother is not positive for hepatitis B, the committee instead recommends that parents engage in individual-based decision-making. Consultation with a clinician is recommended as parents explore the risks and benefits for their infant.

A Proven Public Health Tool in Jeopardy:

More than 2 million people in the United States live with hepatitis B, and the recommended vaccination schedule for infants is a crucial component of public health protection. Given the pervasive risk of the virus, pregnant mothers could initially test negative early in their pregnancy and unknowingly pass it to their baby later. The prophylactic dose administered within 24 hours of birth serves as a safeguard against a mostly silent and symptomless killer.

"Given the pervasive risk of the virus, pregnant mothers could initially test negative early in their pregnancy and unknowingly pass it to their baby later. The prophylactic dose administered within 24 hours of birth serves as a safeguard against a mostly silent and symptomless killer. "

Infants infected with hepatitis B in the womb or at birth face a 90% chance of chronic infection, with long-term risks that include liver disease and cancer. Vaccination promptly after birth has been shown to reduce the risk of infection and later complications.

Patient Advocates Sound the Alarm:

More than 40 leading advocacy organizations representing clinicians and patients have signed a statement attesting to the vaccine's safety and effectiveness. They cite potential risks to newborns and disruptions to continuity of care. The birth dose has long functioned as a safety net, protecting infants regardless of future access to care and the reliability of maternal screening.

"Shared decision-making and informed consent are key drivers of modern health care. While parental engagement is vital, variability in vaccine timing may introduce new challenges for both pediatric care teams and children who become infected. Careful attention will be required to ensure that newborns remain protected during a uniquely vulnerable period of life."

Balancing Choice and Prevention:

Shared decision-making and informed consent are key drivers of modern health care. While parental engagement is vital, variability in vaccine timing may introduce new challenges for both pediatric

care teams and children who become infected. Careful attention will be required to ensure that newborns remain protected during a uniquely vulnerable period of life.

Reference:

1. https://www.cdc.gov/media/releases/2025/2025-acip-recommends-individual-based-decision-making-for-hepatitis-b-vaccine-for-infants-born-to-women.html
2. https://www.hepb.org/what-is-hepatitis-b/what-is-hepb/facts-and-figures/?gad_source=1&gad_campaignid=22227069567&gbraid=0AAAACv7FDutHXSSMxtIZJt26DgvjrnGr&gclid=CjwKCAiA55rJBhByEiwAFkY1QFk_7yR_sKOjBOul0A0tIcsBgzztw7_NhbkzAsOycxnB_liAo8M7PBoCB0oQAvD_BwE
3. https://www.immunize.org/wp-content/uploads/protect-newborns/guide/chapter2/give-birth-dose.pdf

Disclosure: Josie Cooper is the Executive Director of the Alliance for Patient Access. This article was also published at healthpolicytoday.org.

NT

Corresponding Author

Josie Cooper
Executive Director
Institute for Patient Access
2020 K Street NW, Suite 505
Washington, DC 20006
Telephone: (202) 951-7095
Email: jcooper@woodberryassociates.com

Immunizing Yourself Against **COVID-19**

COVID-19 vaccines have been shown to:

- Lessen the severity of symptoms[1]
- Reduce disease transmission[3]
- Reduce risk of mortality[2]
- Make communities healthier and safer[4]

Understanding the Options

COVID-19 vaccines are available for children, adolescents and adults. There are 3 types to choose from.

mRNA VACCINES

New to market, but research has been ongoing since the 1990s.

HOW THEY WORK: **Instruct cells to make COVID-like proteins that trigger the immune system to fight the virus.**

PROTEIN SUBUNIT VACCINES

Used for three decades against the flu, whooping cough and hepatitis B.

Deliver harmless versions of the COVID protein that train the immune system to fight the virus.

VECTOR VACCINES

Used for decades against chickenpox, malaria and tuberculosis.

Use a modified virus, such as a common cold, to teach the body to fight off COVID.

COVID vaccines are recommended for everyone ages 6 months and older, and boosters for everyone ages 5 years and older, if eligible.[5]

Safe and Sound

COVID vaccines have been:

- **Thoroughly tested** through multi-phase trials with tens of thousands of participants[6]
- **Proven safe and effective** for adults as well as children[7]
- **Vetted and approved** by the US FDA and EMA and endorsed by the WHO[8-10]

Get Your Jab

Vaccines are available at your:

- **Doctor's office**
- **Neighborhood pharmacy**
- **Community health center**

Talk to your **health care provider** or **pharmacist** about which vaccine is right for you.

1. https://www.mayoclinic.org/diseases-conditions/coronavirus/symptoms-causes/syc-20479963
2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8782520/
3. https://www.nejm.org/doi/full/10.1056/nejmc2107717
4. https://royalsocietypublishing.org/doi/full/10.1098/rsif.2020.0683
5. https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html
6. https://doh.wa.gov/emergencies/covid-19/vaccine-information/safety-and-effectiveness
7. https://doh.wa.gov/emergencies/covid-19/vaccine-information/safety-and-effectiveness
8. https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/covid-19-vaccines
9. https://www.ema.europa.eu/en/human-regulatory/overview/public-health-threats/coronavirus-disease-covid-19/treatments-vaccines/vaccines-covid-19/covid-19-vaccines-authorised
10. http://www.bccdc.ca/Health-Info-Site/Documents/COVID-19_vaccine/WHO-EUA-qualified-covid-vaccines.pdf

GAfPA Global Alliance for Patient Access

NCPA NATIONAL COMMUNITY PHARMACISTS ASSOCIATION

Still a **Preemie?**

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.

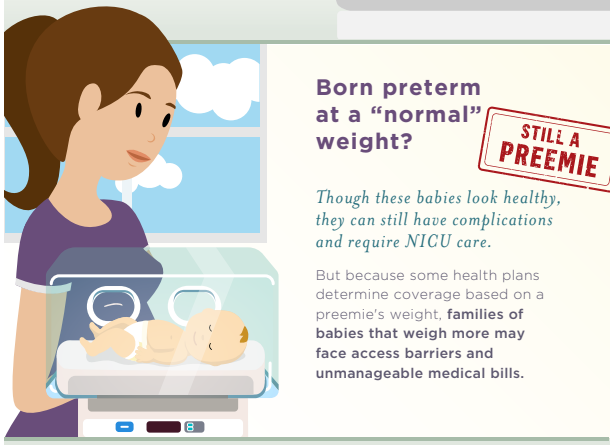
Born between 34 and 36 weeks' gestation?

STILL A PREEMIE

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 PREEMIE

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

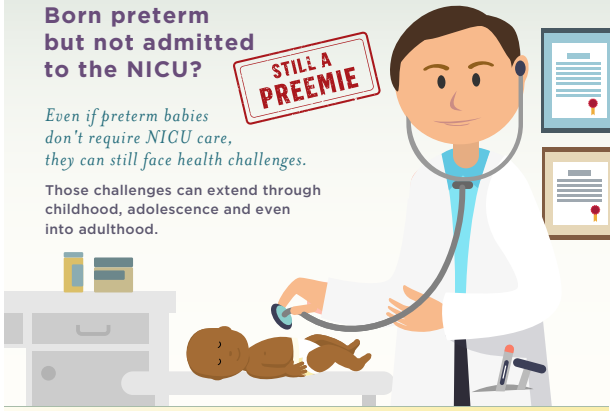
But because some health plans determine coverage based on a preemie's weight, **families of babies that weigh more may face access barriers and unmanageable medical bills.**

Born preterm but not admitted to the NICU?

STILL A PREEMIE

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 Preemies

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

All Preemies

- 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

The Gap Baby: An RSV Story

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

The National Coalition for Infant Health advocates for:

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

www.infanthealth.org

iCAN: Newsletter: A New Year and Mission-Driven Action: iCAN youth members brave January's chill to Jumpstart a Year of Empowerment

Abby Clark

iCAN, the International Children's Advisory Network, is the premier global pediatric platform working to empower the patient voice in healthcare, driven by youth for youth. As a worldwide network of 40+ KIDS (Kids Impacting Disease through Science) advisory groups spanning four continents (and virtually), iCAN's dedicated youth member groups work in unison to provide a voice for children and families in medicine, research, science, and innovation. With the goal of fostering greater global understanding about the importance of the pediatric patient and caregiver voice in healthcare, clinical trials, and research, iCAN's young people continue to drive incredible change in the global health landscape.

Get involved today and Join the iCAN Parent Council!

"As iCAN approaches the end of the first month of 2026, we want to express our admiration for the enthusiasm of our young people. Looking ahead to a much-anticipated Summit in July, iCAN's youth members have been busy bees - working in their individual chapters to enact change by sharing their voices, learning from experts, and supporting their local communities."

As iCAN approaches the end of the first month of 2026, we want to express our admiration for the enthusiasm of our young people. Looking ahead to a much-anticipated Summit in July, iCAN's youth members have been busy bees - working in their individual chapters to enact change by sharing their voices, learning from experts, and supporting their local communities. Together, they are making waves in the global healthcare space. More than ever, the youth voice is present in patient care, and iCAN cannot be prouder!

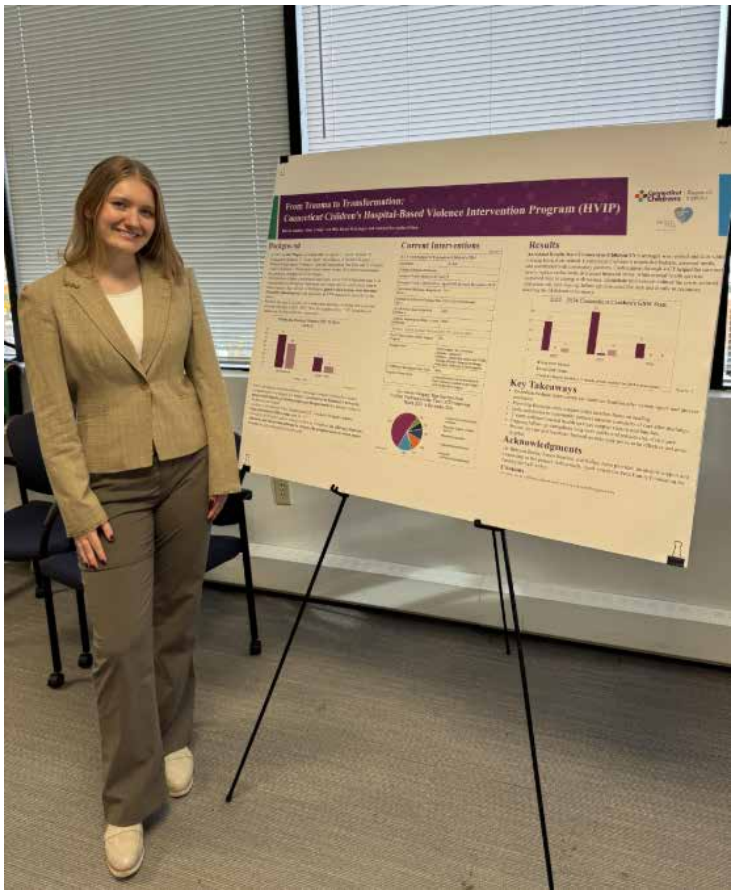
What is iCAN?

Empowering Pediatric Patients Worldwide

"On average, our youth are between the ages of eight and eighteen years old, most of whom are living with chronic, rare, and complicated diagnoses; although, not all of iCAN's youth members have a medical diagnosis or medical condition. iCAN celebrates the understanding that all patients, even the youngest, have valuable insights into improving the healthcare experience."

On average, our youth are between the ages of eight and eighteen years old, most of whom are living with chronic, rare, and complicated diagnoses; although, not all of iCAN's youth members have a medical diagnosis or medical condition. iCAN celebrates the understanding that all patients, even the youngest, have valuable insights into improving the healthcare experience. All children, regardless of where they live, are welcome to participate in iCAN's programming. iCAN also supports young adults and the

Separately, she is involved in other noteworthy activities, including leading the Medical Humanitarian Alliance Club at Trinity College and being nominated for the Truman Scholarship by her school! We are so proud of her and wish her the best as she studies abroad in Denmark this semester.



iCAN KIDS Chapter Spotlight (KIDS Rady):

KIDS Rady, based in San Diego, CA, continues to impact its local communities in profound ways! We are excited to spotlight their initiatives in Summit fundraising as well as community outreach. Taking the initiative to support the Summit and local environmental efforts, KIDS Rady youth members painted trash cans and placed them around the hospital to encourage canned donations!

Additionally, they were able to come together as a group and tour new spaces at the Rady Children's Hospital. This afforded them a greater understanding of the changes necessary to ensure top-notch care for patients. They learned about what planning was needed before the project started, how the project was funded, and even new construction techniques.

"This afforded them a greater understanding of the changes necessary to ensure top-notch care for patients. They learned about what planning was needed before the project started, how the project was funded, and even new construction techniques."

"Seeing the foundation in how our hospitals are built was an extraordinary experience, and our chapter is so grateful for this opportunity to understand this important aspect of healthcare!"

Upcoming Ask the Experts: Mark your calendars- iCAN invites you to another installment of Ask the Experts on February 21!

voices of parents and siblings. We continue to be an ecosystem of schools, children's hospitals, academia, and other like-minded non-profits.

"Our mission is to ensure that youth are placed in positions where their voices are heard and make a difference in pediatric healthcare through interactions with industry professionals, presenting original research at conferences, innovating new solutions, and sharing their stories."

Our mission is to ensure that youth are placed in positions where their voices are heard and make a difference in pediatric healthcare through interactions with industry professionals, presenting original research at conferences, innovating new solutions, and sharing their stories. iCAN continues to empower the pediatric patient voice through community partnerships with organizations such as the FDA, Everylife Foundation for Rare Diseases, PFMD, MRCT, iSPI, and AAP.

Whether a patient, family member, friend, healthcare professional, or just an individual looking to make a difference, you are welcome to visit our website at www.icanresearch.org to explore our mission, programs, and initiatives. Join us today in ensuring that every child's voice is enshrined in the effort to improve healthcare for all pediatric patients.

iCAN Impact - KIDS Research Hosts MRCT Program Director!

iCAN's KIDS Research chapter was honored to host Sylvia Baedor Kassis, MPD (Program Director from the Multi-Regional Clinical Trials Center of Brigham and Women's Hospital and Harvard) this month as their guest speaker. A chapter that focuses on making understanding clinical research more accessible for young people, KIDS Research brings in speakers from all sectors of healthcare to highlight the incredible work they do to ensure patients receive the best care.

Appropriately titled "The Importance of Making Clinical Research Information Easy to Understand!", the session emphasised the integral role of health literacy in clinical research and its critical role in understanding the broader picture of healthcare research. Sylvia also highlighted why clear, accessible research communication matters and offered practical strategies for developing research content that serves people of all ages, knowledge levels, and backgrounds.

" Sylvia also highlighted why clear, accessible research communication matters and offered practical strategies for developing research content that serves people of all ages, knowledge levels, and backgrounds."

iCAN Youth Member Spotlight: Ella Schaffer (YPN Co-Chair):

This month, iCAN is proud to spotlight our very own Young Professionals Co-Chair - Ella Schaffer! As an alumnus of the iCAN (International Children's Advisory Network) KIDS

In the Walter-Payton chapter, Ella has continued to empower pediatric patients by serving as Co-Chair of the iCAN Youth Council from 2023- 2025, followed by her role as Co-Chair of the iCAN Young Professionals Program (2025 - Current).

As Co-Chair, Ella has expertly navigated working with diverse stakeholders in the healthcare advocacy space, including iCAN board members, industry leaders, and regulatory partners, and has provided unique insights that have resulted in positive program changes. Additionally, she was instrumental in the creation and submission of the YPN's "Open Letter to the FDA," which was submitted to the FDA's "Interested Parties Meeting: Implementation of the Best Pharmaceuticals for Children Act and Pediatric Research Equity Act."

"In the Walter-Payton chapter, Ella has continued to empower pediatric patients by serving as Co-Chair of the iCAN Youth Council from 2023- 2025, followed by her role as Co-Chair of the iCAN Young Professionals Program (2025 - Current)."

Next Episode: February 21 at 10 a.m. EST on the CEE YOU! (Critical Ethical Engagement with YOUth!) project and the FER-Youth Course (Linda Nguyen, PhD

Assistant Professor Azrieli Accelerator | Faculty of Social Work | University of Calgary) and Sakiko Yamaguchi, PhD (postdoctoral researcher at the School of Physical and Occupational Therapy, Knowledge Mobilization Program of CHILD-BRIGHT Network).

In February, iCAN will host Sakiko, and Linda will discuss their work researching how researchers can work with young people with diverse health and social conditions so that their diverse voices can make a positive impact on health services, systems, and policy.

Session Details:

Date: Saturday, February 21,

Time: 7:00 AM PST / 10:00 AM EST

Ask the Experts brings in speakers every month to answer your questions about medicine, healthcare, research, innovation, and much more! Check out the ATE page on the iCAN Website to view previous recordings.

"Our annual Summit serves as a transformative platform for innovation, compassion, and collaboration in pediatric healthcare. The shifting healthcare landscape has made an in-person Summit for 2026 uncertain. The lasting impact of this annual event on the youth who attend, the iCAN Network, and the wider healthcare community cannot be measured."

The 2026 iCAN Summit

Our annual Summit serves as a transformative platform for innovation, compassion, and collaboration in pediatric healthcare. The shifting healthcare landscape has made an in-person Summit for 2026 uncertain. The lasting impact of this annual event on the youth who attend, the iCAN Network, and the wider healthcare community cannot be measured. Together, we continue to impact pediatric healthcare in tangible ways. By giving every kid a seat at the table through discussion and co-creation, current and future pediatric patients are both empowered and transformed. We invite you to be part of this life-changing event by contributing in three meaningful ways:

1. Sponsor the 2026 Summit: Your sponsorship will play a crucial role in ensuring an impactful experience for all attendees.
2. Sponsor a Child to Attend: Your sponsorship directly impacts a child's life by granting them the opportunity to attend the Summit. Your support will cover travel, accommodation, and participation, offering them a world of learning and empowerment.

   Together, we are shaping a brighter future for pediatric healthcare. Your contribution—big or small—makes a significant difference in prioritizing the patient voice and driving positive change. Your generosity and dedication are deeply valued. Let us unite to create a summit experience that empowers the pediatric community for years to come.
3. Contribute to the GoFundMe for the iCAN 2026 Summit: We want our next Summit to be in person—and we can only do that with your support! Our goal is to raise $200,000 by December 1, 2025. Please share or donate to our GoFundMe:

- https://gofund.me/525439b3
- www.icanresearch.org

Let us work together to make our 2026 Summit even bigger by bringing more kids to share their voices! To contribute to the funding for next year's Summit, please click here to sponsor or make a donation.

Disclosures: *There are no reported disclosures*

NT

Corresponding Author

Abby Clark
Director of Operations, iCAN
Website: www.icanresearch.org
Phone: (+1)228.343.0961
Email: abbyclark@icanresearch.org

Stan and Mavis Graven Award for Leadership

Nominating leaders past, present, and future

The Stan and Mavis Graven Leadership Award for Enhancing the Environment of Care for High Risk Babies and Families highlights leaders (both clinical and non-clinical) that are working to enhance the physical and developmental environments for high-risk infants and families. Leaders who show exemplary contributions in any of these areas qualify to be nominated:

- Family-Centered Care
- Developmental Care
- Physical Environment/Design
- Equity, Diversity, Inclusion, and Belonging

Please use the QR code to nominate yourself or another amazing leader!
Email us at thegravensaward@thegravensconference.org with questions

To learn more about the legacy of Stan Graven go to www.thegravensconference.org

Deadline to apply is March 15, 2026

PORTO ELOUNDA
GOLF & SPA RESORT

WESTIN
HOTELS & RESORTS
The Westin Long Beach

MARRIOTT
Beverly Hills Marriott

DELTA
HOTELS
MARRIOTT
Delta Hotels Montreal

cancúncards

Zachari Dunes

DOUBLETREE
by Hilton
Ontario

SOUTH POINT

MIRACLE SPRINGS
RESORT & SPA

PORTER VALLEY
COUNTRY CLUB

THE ACADEMY of MAGICAL ARTS
AT THE MAGIC CASTLE

PEJU
NAPA VALLEY

LA OPERA

Pacific Symphony
CARL ST.CLAIR MUSIC DIRECTOR

CRUISE COMPETE

Dunes West
GOLF & RIVER CLUB

AMERICA'S RAILROAD
DURANGO & SILVERTON
NARROW GAUGE RAILROAD

BEVERLY HILLS
Plastic Surgery Group

SABAN THEATRE
Powered by STERLING VENUE VENTURES

LONG BEACH
SYMPHONY
ECKART PREU, MUSIC DIRECTOR

FLAPPERS
COMEDY CLUB
AND RESTAURANT
BURBANK

Pacific
Chorale

GEFFEN PLAYHOUSE

LINKSOUL

CHANCE
THEATER @ Bette Aitken theater arts Center

lucky feet
shoes

THE
SORAYA

TAHOE DONNER

PEPPERDINE
Lisa Smith Wengler Center for the Arts

SMOKE
HOUSE
Established 1948

VERDE CANYON
RAILROAD

ISLAND PACKERS

citycruises

ILLUSION
MAGIC LOUNGE

LA MIRADA THEATRE
FOR THE PERFORMING ARTS

LAGUNA
PLAYHOUSE

HAGAFEN
FAMILY OWNED
EST. 1979

Jack
in the box

aNoiseWithin
Classic Theatre, Modern Magic

PASADENA
PLAYHOUSE

DiscoveryCube
OC & LA

tieks
by Gavrieli

Murad

RESTAURANT
GREEN STREET

WHEEL FUN
RENTALS

gorjana

USS Midway
MUSEUM

AMERICA'S LIVING
SYMBOL OF FREEDOM

KINGS ICE

California
BOTANIC GARDEN

Betty Up

Raising
Cane's
CHICKEN FINGERS

BATTLESHIP
IOWA
LOS ANGELES

NEW WEST SYMPHONY
MICHAEL CHRISTIE | Music Director

PHILHARMONIC
SOCIETY
presents

NEWPORT
LANDING

THE MISSION INN FOUNDATION
RIVERSIDE
VISITOR CENTER + MUSEUM

Fiesta Village
Family Fun Park

WILLOW BROOK
THEATRICUM · BOTANICUM

CPH CORONADO
PLAYHOUSE

Irvine Lanes

Hollywood
WAX MUSEUM

SANTA
MONICA
PLAYHOUSE

SIMMS
RESTAURANTS

THE HUNTINGTON

SANTA ANITA
PARK

Go Kart World

OLIO E LIMONE
RISTORANTE

DOMENICO'S
RESTAURANT

ENJOY DELIGHT. YOU DESERVE IT.

Brent's

CHIPOTLE
MEXICAN GRILL

Panera
BREAD

Caroline Arnold, Author

BARK BOX

PETERSEN
AUTOMOTIVE MUSEUM

Want to Strengthen your NICU's Safe Sleep Efforts?
LET'S TALK IN THE NICU: PREPARING FAMILIES FOR SAFE SLEEP AT HOME

HOW CAN ONE CONVERSATION CHANGE EVERYTHING?

Let's Talk Community Chats are now in the NICU—bringing culturally responsive, judgment-free safe sleep and breastfeeding education directly to families before discharge.

Led by **community peers trained by First Candle** and adhering to AAP Guidelines, these sessions empower NICU parents with knowledge, support, and resources to help protect their most vulnerable babies.

Learn how you can bring Let's Talk to your NICU.

Email alison@firstcandle.org for more information

firstcandle LET'S TALK Community Chats IN THE NICU

Pictured: Baby Kole with his Dad

Save the Date!

Join us for the 39th Annual Gravens Conference

"Sensitive Issues in Sensational Times"

New date & location, same great topics, workshops, abstracts, and networking for those who work in Newborn Intensive Care Units.

Come learn with us!

June 15th Preconference,
June 16th, 17th, and 18th, 2026
at University of Notre Dame
Notre Dame, Indiana

UNIVERSITY OF NOTRE DAME

LOMA LINDA LLPC

Loma Linda Publishing Company

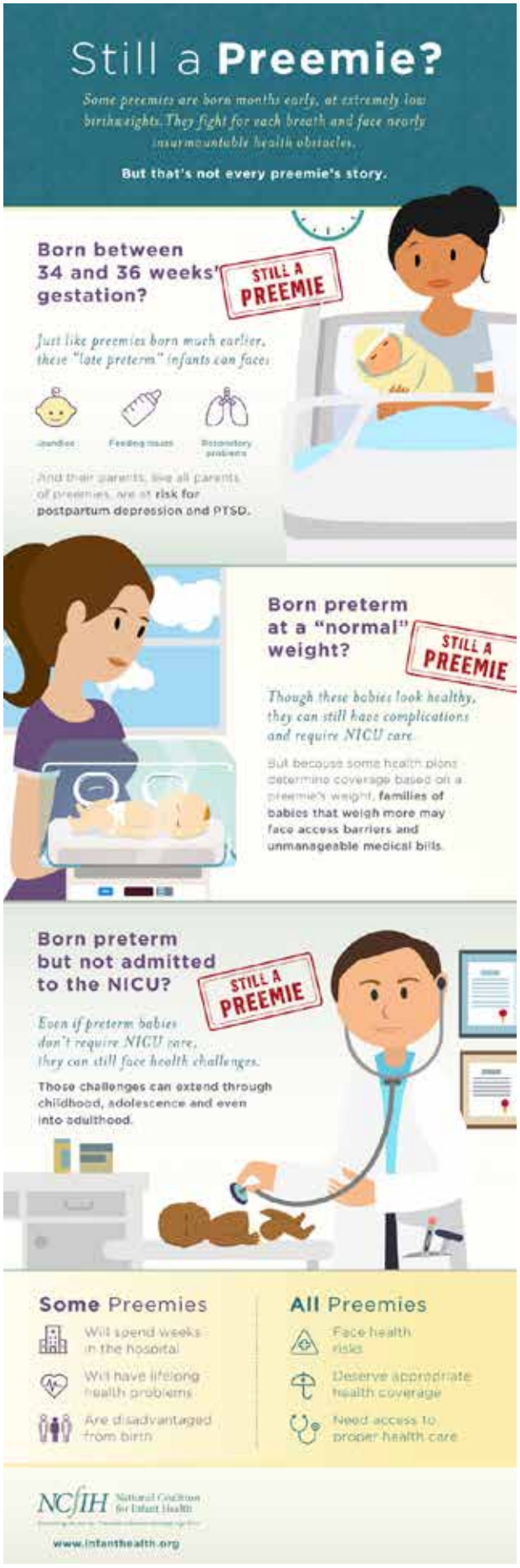
NT

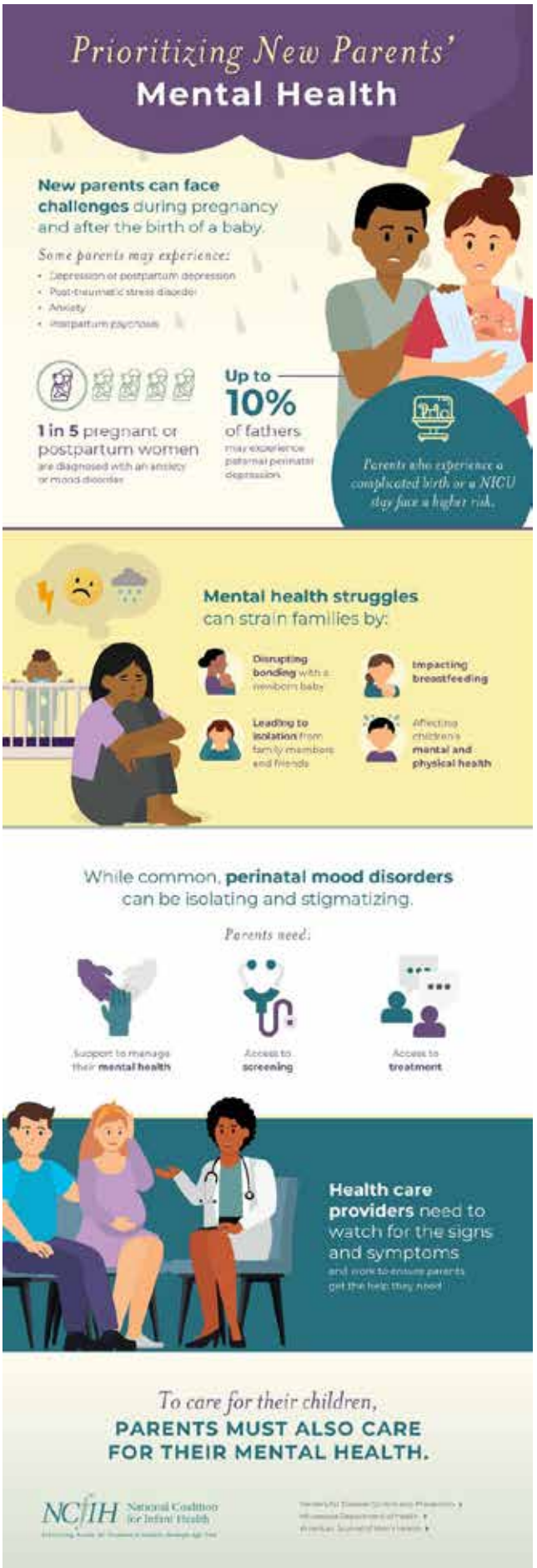
nidcap FEDERATION INTERNATIONAL voice of the newborn

Endorsed by the NIDCAP© Federation International, Inc

Abstracts Due
March 15th, 2026
(Date extended)

To learn more and register, visit our website:


Still a Preemie?
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 PREEMIE
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 PREEMIE
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 PREEMIE
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 Preemies
Will spend weeks in the hospital
Will have lifelong health problems
Are disadvantaged from birth
All Preemies
Face health risks
Deserve appropriate health coverage
Need access to proper health care
NCIIH National Coalition for Infant Health
www.infanthealth.org


Prioritizing New Parents' Mental Health
New parents can face challenges during pregnancy and after the birth of a baby.
Some parents may experience:
Depression or postpartum depression
Post-traumatic stress disorder
Anxiety
Postpartum psychosis
1 in 5 pregnant or postpartum women are diagnosed with an anxiety or mood disorder
Up to 10% of fathers may experience paternal perinatal depression
Parents who experience a complicated birth or a NICU stay face a higher risk.
Mental health struggles can strain families by:
Disrupting bonding with a newborn baby
Impacting breastfeeding
Leading to isolation from family members and friends
Affecting children's mental and physical health
While common, perinatal mood disorders can be isolating and stigmatizing.
Parents need:
Support to manage their mental health
Access to screening
Access to treatment
Health care providers need to watch for the signs and symptoms and work to ensure parents get the help they need
To care for their children,
PARENTS MUST ALSO CARE FOR THEIR MENTAL HEALTH.
NCIIH National Coalition for Infant Health

Join iCAN's Virtual Focus Group!

We warmly welcome all individuals within the age ranges of 8-10 and 12-18, including those with:

- Learning disabilities (example: dyslexia)
- Speech or language disabilities (examples: stuttering, understanding others, hearing)
- Physical disabilities (examples: epilepsy, cystic fibrosis)
- Autism Spectrum Disorder (ASD) or Attention-Deficit/Hyperactivity Disorder (ADHD)

Every voice counts!

It's a one-minute survey to see if you qualify for a one-hour focus group to be scheduled at a later date.

Survey Link: bit.ly/icanxkismet

Fill out the recruitment survey now and let your voice be heard! Together, we can make a real difference in pediatric healthcare!

iCAN
International Children's Advisory Network

Education. Anytime, Anywhere.

Academy of Neonatal Care

The Academy of Neonatal Care serves to educate Respiratory Therapists, Nurses, and Doctors in current and best practices in Neonatal ICU care. We prepare RT's new to NICU to fully function as a bedside NICU RT. Our goal is to enrich NICU care at all levels. Beginner to Advanced Practice, there is something for you at:

www.AcademyofNeonatalCare.org.

Keeping Your Baby Safe
from respiratory infections

RSV
COVID-19
colds
flu

How to protect your little ones from germs and viruses

This year is an especially dangerous cold and flu season - especially for vulnerable infants and children. Fortunately, there are proven protective measures that we can take to stay healthy.

Here's what you can do...

Wash Your Hands

- This is the single, most important thing you can do to stop the spread of viruses.
- Use soap.
- Wash for more than 20 seconds.
- Use alcohol-based sanitizers.

Limit Contact with Others

- Stay home when you can.
- Stay 6 feet apart when out.
- Wear a face mask when out.
- Change your clothes when you get home.
- Tell others what you're doing to stay safe.

Provide Protective Immunity

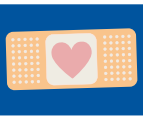
- Hold your baby skin-to-skin.
- Give them your breast milk.
- Stay current with your family's immunizations.

Take Care of Yourself

- Stay connected with your family and friends.
- Drink more water and eat healthy foods.
- Seek mental health support.
- Sleep when you can.

Get Immunized

Vaccinations save lives. Protecting your baby from COVID-19, flu and pertussis lowers their risks for complications from respiratory infections.



WARNING

Never Put a Mask on Your Baby

- Because babies have smaller airways, a mask makes it hard for them to breathe.
- Masks pose a risk of strangulation and suffocation.
- A baby can't remove their mask if they're suffocating.

If you feel sick or are positive for COVID-19

- Wash with soap and water and put on fresh clothes before holding or feeding your baby.
- Wear a mask to help stop the virus from spreading.
- Watch out for symptoms like fever, confusion, or trouble breathing.
- Ask for help caring for your baby and yourself while you recover.

We can help protect each other.
www.nationalperinatal.org/rsv

National Perinatal Association

Briefly Legal: The Missing Link Connecting Obstetrical and Neonatal Care

Barry Schifrin, MD, Maureen Sims, MD

"Be careful about reading health books. You may die of a misprint." Mark Twain

In November 2025, two articles about electronic fetal monitoring (EFM) appeared: one, by the American College of Obstetricians and Gynecologists (ACOG) (1), published in a respected medical journal (**Guidelines**); the other, by Sarah Kliff, writing in The New York Times (**NYT Article**). (2) We believe that neither publication serves the best interests of expectant mothers, their fetuses, their care providers, or society.

"In November 2025, two articles about electronic fetal monitoring (EFM) appeared. One, by the American College of Obstetricians and Gynecologists (ACOG) (1), published in a respected medical journal (Guidelines). The other, by Sarah Kliff, writing in The New York Times (NYT Article). (2) We believe that neither publication serves the best interests of expectant mothers, their fetuses, their care providers, or society."

The **NYT Article** reports on the presumed impact of EFM on the (unnecessary) rise in the cesarean section rate and, in doing so, shares the negative, if not harmful, views of EFM from a vocal portion of the obstetrical and lay communities. The article's title conveys its core conclusion: EFM is medicine's "worst test."

The **NYT Article** does not advocate abandoning the technique, nor does it provide even a taste of EFM's potential benefits or even a balanced understanding of the rising cesarean section rate (to be considered in a subsequent article). The author shows no appreciation that the EFM device's output represents the fetus's voice. To the trained observer, it is an intelligible language—even if far from complete--offered by an organism that has not yet learned to lie, and who has no plausible interest in misleading its care provider. To obtain valuable, actionable information from those fetal utterances, however, requires that the obstetrical care provider interrogate the output of the device intelligently.

Following the organizational **Guidelines**, ironically, (perversely) may lead to the very criticisms voiced in the **NYT Article**. Despite 50+ years of implementation, the Guidelines concede, there is yet "*an urgent need for standardized EFM interpretation and management strategies that are applied consistently.*" To fulfill that need, the **Guidelines** propose "*to provide obstetric care clinicians with an evidence-based framework for evaluation and management of intrapartum FHR patterns*" with the understanding that *the intended benefit of EFM is to identify fetal hypoxia, intervene, and prevent the transition to acidemia or expedite delivery in the setting of acidemia, thereby reducing adverse neonatal outcomes.*

By this approach, the **Guidelines** treat fetal surveillance during labor as a monolithic search for hypoxia and prime the caretaker to expedite delivery where there is sufficient concern (ill-defined) for "fetal acidemia". Unfortunately, this approach portrays EFM as an instrument of rescue—a way to deal with emergencies—rather than as a means to prevent them. Such an approach also (3) likely increases the need for intervention, the risk of adverse outcomes, and the likelihood of substandard care, while simultaneously diminishing accountability for those outcomes. Thus, it is necessary to examine where the **Guidelines** get it wrong in their response to, or perhaps in their correction of, some of the criticisms in the **NYT article.**

"Unfortunately, this approach portrays EFM as an instrument of rescue—a way to deal with emergencies—rather than as a means to prevent them. Such an approach also (3) likely increases the need for intervention, the risk of adverse outcomes, and the likelihood of substandard care, while simultaneously diminishing accountability for those outcomes. Thus, it is necessary to examine where the Guidelines get it wrong in their response to, or perhaps in their correction of, some of the criticisms in the NYT article."

The **Guidelines** retain the much-maligned 3-tier Classification system for identifying fetal heart rate (FHR) patterns, especially the unworkable Category II pattern (deemed "indeterminate"). This category includes a disparate range of FHR patterns, a heterogeneity that not only limits its ability to predict "current or impending acidemia". However, this does not exclude severe fetal acidosis or neurological injury. To assist the provider in identifying "*those (Category II) tracings that may benefit most from intervention*", the **Guidelines** call attention to certain "high-risk features" of category II tracings. More appropriately, these features should have escalated the classification to Category III –demanding immediate intervention – a hesitation likely related to organizational reluctance to identify a tracing as "ominous" for medico-legal reasons.

The 3-tier Category system contains no information on fetal behavior, the evolution of FHR patterns, or the use of the fetus as its own control; bradycardia and tachycardia are defined in absolute terms rather than in terms of rate evolution over time. (4,5) The 3-tier classification provides no information on the mechanisms of fetal injury, including head compression or other non-hypoxic causes of fetal compromise. It provides no information on patterns of fetal injury prior to admission or the pattern of injury developing during labor and delivery. (6-8)

"The Guidelines offer suggestions for intrauterine resuscitation, including maternal position changes, amnioinfusion, maternal intravenous fluids, and reduction or cessation of augmentation or induction agents (Oxytocin), without defining the limits on the duration of these efforts or vouching for any benefit of EFM on newborn outcome."

The **Guidelines** offer suggestions for intrauterine resuscitation, including maternal position changes, amnioinfusion, maternal intravenous fluids, and reduction or cessation of augmentation or induction agents (Oxytocin), without defining the limits on the duration of these efforts or vouching for any benefit of EFM on newborn outcome.

The **Guidelines** perpetuate the illusion of proper surveillance of uterine contractions with a contrived, single-term definition of excessive uterine activity, "tachysystole," that makes no mention of important surveillance features such as safe intervals between contractions or elevated resting uterine tone. Indeed, one of the most troubling recommendations in the **Guidelines** deals with the response to "tachysystole". The **Guidelines** call for intervening for tachysystole ***ONLY*** when it is associated with Category III or Category II FHR tracings with "high-risk features." There is NO recommendation for what to do when tachysystole occurs with a Category I (normal) tracing. Since the frequent contractions do not yet challenge the baby, the **Guidelines** permit, if not encourage, the continuation of Pitocin until the fetus responds adversely, at which point guidance is offered. To nurses caring for the patient, this is the strategy of "Pit (Pitocin) to distress."

With respect, that strategy is equivalent to driving above the speed limit or tailgating, in the belief that one can always slam on the brakes to stop the car before hitting someone or something. A more reasonable approach is to drive carefully (avoid speeding or reckless driving) and to use the brakes proactively to maintain a safe distance from the car in front. Imagine how much differently we would drive if we did not have reliable brakes.

The Guidelines do not refer to recent publications using a more physiological approach, which uses the fetus as its own control and relies on the fetus's recovery from a deceleration, including the newly designated "zigzag" pattern, to assess the ability of the fetus to compensate for provocation and reduces the maximum number of contractions allowed in "normal tracings". (9-11)

Perhaps there should be greater focus on the **Guideline's** unstated objective: Using vague terms and definitions to protect the physician from allegations of negligence. There is no evidence that any classification of FHR patterns can simultaneously protect the fetus from harm and the physician from the allegation of malpractice; the outcome statistics support this notion. Too many cesarean sections, too many fetal injuries, too many lawsuits.

The best defense, perhaps achievable with stricter, more coherent guidelines, is a normal, safeguarded neonatal outcome. The physician who is properly interacting with the previously normal fetus metaphorically asks, "How did you (the fetus) like that contraction with its mechanical effects and temporary restriction of oxygen?" There is simply no evidence that the normal, neurologically responsive fetus, subjected to threatening forces, will fail to immediately manifest a FHR response corresponding to both the mechanism and severity of the assault. There is little evidence that the care provider has used the information.

"There is simply no evidence that the normal, neurologically responsive fetus, subjected to threatening forces, will fail to immediately manifest a FHR response corresponding to both the mechanism and severity of the assault. There is little evidence that the care provider has used the information."

If one searches the **Guidelines** or the medical records of those frequent, too often emergent cesarean sections, one finds such justifications for intervention as "fetal intolerance to labor", "non-reassuring fetal status" (see above), or "threatening FHR pattern" or "abnormal fetal heart rhythm", with no physiological insight. Even the term "fetal distress" has been officially disallowed by the ACOG.

Imagine now that the newborn baby goes to the NICU for care, accompanied not by the tracing (often unavailable or withheld), but by these uninformative notes, designed to justify the intervention in a general way while protecting against allegations of negligence. The neonatologist, unaware of information from the tracing, is handicapped in his/her approach to the baby concerning providing neuroprotection (cooling) and also compromised in his/her discussions with the parents. Too often, especially in cases of "mild" encephalopathy, this results in significant head scratching about the timing and mechanism of any impairment, in turn, prompting an expensive, time-consuming search for a metabolic or genetic cause. The FHR tracing, if available and correctly interpreted, would likely provide better insight into the timing, duration, mechanism, and preventability of any affliction of the fetal nervous system than does the pH of the umbilical artery at birth or a host of other proposed tests on the newborn. (12,13) Indeed, the majority of fetuses injured during labor do not have severe umbilical artery acidosis or severe depression. (14) Ischemia (impaired blood flow to the brain) is a more important precursor of injury than hypoxia and will not fail to appear on the tracing before injury occurs. (15), Seemingly, neonatologists should demand timely (immediate) access to the tracing.

The **Guidelines** advocate "shared decision making" about the type of fetal surveillance during labor. Seemingly, they condone using a stethoscope to listen to the FHR -called intermittent

auscultation (IA) in "*patients at low risk of fetal acidemia, who are not receiving oxytocin,"* with the understanding that, "*there is, however, minimal evidence to guide the optimal frequency of such auscultation*." More pertinently, there is simply no evidence that intermittent, evanescent IA is accurate, predictive of fetal outcome in any way, and cannot be used for retrospective analysis. When an abnormal rate is auscultated, the monitor is applied to provide a definitive analysis.

With the **Guidelines** for classification and management of FHR patterns, uterine contractions, and IA so encumbered, how do the mother and the provider meaningfully share in decision-making?

The author of the **NYT article** concedes that "on rare occasions" the FHR pattern can reveal when something has gone wrong. The tracing, in fact, will **always** reveal when something has gone wrong. However, the money is on the normal tracing. The reassuring tracing confirming normal fetal behavior and responsiveness has no false normals and cannot be counterfeited. Thus, the objective of EFM should be to keep the mother and fetus out of harm's way in the first place, with prompt attempts to restore any deviations in the tracing to normal with proper attention to the question of the feasibility of safe vaginal delivery.

"The author of the NYT article concedes that "on rare occasions" the FHR pattern can reveal when something has gone wrong. The tracing, in fact, will always reveal when something has gone wrong. However, the money is on the normal tracing. The reassuring tracing confirming normal fetal behavior and responsiveness has no false normals and cannot be counterfeited. Thus, the objective of EFM should be to keep the mother and fetus out of harm's way in the first place, with prompt attempts to restore any deviations in the tracing to normal with proper attention to the question of the feasibility of safe vaginal delivery."

In the majority of medico-legal cases, the fetus is normal at birth. This is followed by failure to follow these principles, for example, by permitting too many contractions or too much pushing as the FHR pattern deteriorates. In other cases, despite any misadventures during labor and delivery, the abnormal tracing on admission is conclusive evidence of a prior, ***non-preventable*** injury.

The **NYT article** offers no solutions or direction for better technology use. Nor did the author explore the consequences of abandoning the technique, an improbable undertaking given its broad utilization. Another alternative, we believe, is to bolster the education of obstetrical and neonatal providers using reengineered formulations of the current nomenclature and ***preventive*** guidelines for ***intervention*** for concerning FHR and uterine contractions patterns including the recognition of patterns of fetal behavior, fetal head compression, patterns of excessive uterine activity that do not meet ACOG's time or frequency criteria for intervention, and patterns that represent preexisting fetal neurological injury. (7) Further, we believe, one cannot teach fetal surveillance without simultaneously teaching preventive strategies for the conduct of labor problems, which also impact the Cesarean section rate. It has been repeatedly shown that the longer vaginal delivery is pursued, especially in the second stage of labor, the greater is the risk of "fetal distress" and adverse outcome. (16,17)

The immediate object of reengineering fetal monitoring is not especially to lower the Cesarean section rate, but to reduce both the need for and the urgency of intervention based on the presumed severity of the tracing, and importantly, to inform the neonatologists of their new patient's immediate history and help inform the decision to implement neuroprotection.

"We need to teach safe driving in obstetrics, with less speeding (excessive contractions and pushing) and fewer panic stops (emergency Cesarean sections or operative vaginal deliveries). Good obstetrical care safeguards the mother and fetus while reducing the need to rescue. It enhances the value of shared decision-making on both sides, offers the potential for less confusion and less havoc in the labor and delivery suite, and less, not more, attention to tracing, with more attention to the patient. It advocates preventive care through early risk recognition, conservative use of interventions to limit both oxytocin and maternal pushing, and staffing models that reduce errors before harm occurs."

We need to teach safe driving in obstetrics, with less speeding (excessive contractions and pushing) and fewer panic stops (emergency Cesarean sections or operative vaginal deliveries). Good obstetrical care safeguards the mother and fetus while reducing the need to rescue. It enhances the value of shared decision-making on both sides, offers the potential for less confusion and less havoc in the labor and delivery suite, and less, not more, attention to tracing, with more attention to the patient. It advocates preventive care through early risk recognition, conservative use of interventions to limit both oxytocin and maternal pushing, and staffing models that reduce errors before harm occurs. Inaction is not the same as prevention. We need to give neonatologists better babies while adding the baby's immediate history to their armamentarium.

With these modifications, both to the analysis of FHR patterns and to the obstetrical and neonatal cultures, perhaps then, the primary Cesarean section rate will fall, fewer babies will require NICU care, and those that require such care will profit from the availability of a precise record of their experiences as a fetus during labor. Such enlightened maternal/fetal care during labor might even reduce public hostility to EFM and enhance the experience of birth for patients, for providers, and for the fetus.

References:

1. ACOG Clinical Practice Guideline No. 10:Intrapartum Fetal Heart Rate Monitoring: Interpretation and Management. Obstet Gynecol 2025;146(4):583–599. (In eng). DOI: 10.1097/aog.0000000000006049.
2. Kliff S. New York Times. New York, NY: New York Times; 2025.
3. Loverro M, Laforgia N, Lovero MT, A M, Di Naro E. Role of Training in Neonatal Encephalopathy Prevention. Practical Guide to Simulation in Delivery Room Emergencies2023:757–77.
4. Vintzileos AMS, J.C. Abnormal fetal heart rate patterns caused by pathophysiologic processes other than fetal acidemia. AJOG 2023. DOI: DOI:https://doi.org/10.1016/j.ajog.2022.05.002.
5. Vintzileos AM, Smulian JC. Decelerations, tachycardia, and decreased variability: have we overlooked the significance of longitudinal fetal heart rate changes for detecting intrapartum fetal hypoxia? Am J Obstet Gynecol 2016;215(3):261–4. (In eng). DOI: S0002-9378(16)30266-6 [pii]10.1016/j.ajog.2016.05.046 [doi].
6. Schifrin BS. Electronic Fetal Monitoring-Prevention or Rescue? Frontiers in pediatrics 2020;8:503. (In eng). DOI: 10.3389/fped.2020.00503 [doi].
7. Schifrin BS, Koos BJ, Cohen WR. Fetal Head Compression: Its Possible Role in Neurologic Injury. Open Journal of Obstetrics and Gynecology 2024;14(1). DOI: 10.4236/ojog.2024.141013.
8. Schifrin BS, Ater S. Fetal hypoxic and ischemic injuries. Curr Opin Obstet Gynecol 2006;18(2):112–22. (In eng). DOI: 10.1097/01.gco.0000192984.15095.7c.
9. Chandraharan E, Pereira S, Ghi T, et al. International expert consensus statement on physiological interpretation of cardiotocograph (CTG): First revision (2024). Eur J Obstet Gynecol Reprod Biol 2024;302:346–355. (In eng). DOI: 10.1016/j.ejogrb.2024.09.034.
10. Jia YJ, Ghi T, Pereira S, Gracia Perez-Bonfils A, Chandraharan E. Pathophysiological interpretation of fetal heart rate tracings in clinical practice. Am J Obstet Gynecol 2023;228(1097-6868 (Electronic)):6:622–644. (In eng). DOI: 10.1016/j.ajog.2022.05.023.
11. Tarvonen M, Hovi P, Sainio S, Vuorela P, Andersson S, Teramo K. Intrapartum zigzag pattern of fetal heart rate is an early sign of fetal hypoxia: a large obstetric retrospective cohort study. Acta Obstetricia et Gynecologica Scandinavica 2020. DOI: https://doi.org/10.1111/aogs.14007.
12. Chalak L, Ferriero DM, Gressens P, Molloy E, Bearer C. A 20 years conundrum of neonatal encephalopathy and hypoxic ischemic encephalopathy: are we closer to a consensus guideline? Pediatr Res 2019;86(5):548–549. (In eng). DOI: 10.1038/s41390-019-0547-9 [pii]10.1038/s41390-019-0547-9 [doi].
13. Chalak LF. Inflammatory Biomarkers of Birth Asphyxia. Clin Perinatol 2016;43(3):501–10. (In eng). DOI: S0095-5108(16)30033-1 [pii]10.1016/j.clp.2016.04.008 [doi].
14. Frey HA, Liu X, Lynch CD, et al. An evaluation of fetal heart rate characteristics associated with neonatal encephalopathy: a case-control study. Bjog 2018 (In eng). DOI: 10.1111/1471-0528.15222.
15. Michaeli J, Srebnik N, Zilberstein Z, Rotem R, Bin-Nun A, Grisaru-Granovsky S. Intrapartum fetal monitoring and perinatal risk factors of neonatal hypoxic-ischemic encephalopathy. Arch Gynecol Obstet 2021;303(2):409–417. (In eng). DOI: 10.1007/s00404-020-05757-2 [pii]10.1007/s00404-020-05757-2 [doi].
16. Leveno KJ, McIntire DD. Association of the Duration of Active Pushing With Obstetric Outcomes. Obstet Gynecol 2016;128(1):206–7. (In eng). DOI: 10.1097/aog.0000000000001499.
17. Leveno KJ, Nelson DB, McIntire DD. Second-stage labor: how long is too long? Am J Obstet Gynecol 2016;214(4):484–9. DOI: 10.1016/j.ajog.2015.10.926.

Disclosures: *The authors have no disclosures*

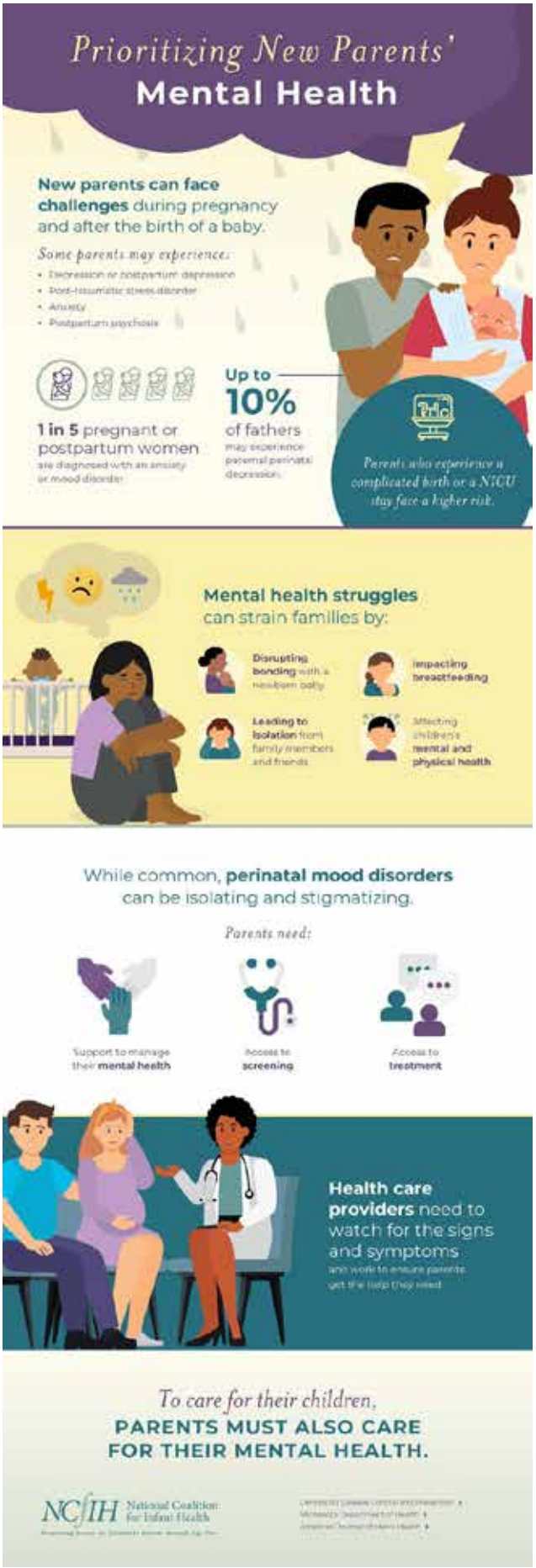
NT

Corresponding Author

Barry Schifrin, M.D.
Western University of Health Sciences
Pomona, California
formerly, Professor of Obstetrics and Gynecology
Keck School of Medicine
University of Southern California
Los Angeles, California
email: bpminc@gmail.com

Corresponding Author

Maureen E. Sims, M.D.
Professor of Pediatrics
Geffen School of Medicine
University of California, Los Angeles
Los Angeles, California
email: mes@g.ucla.edu



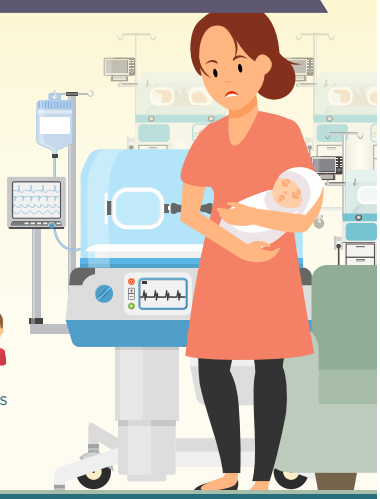
Will your **PRETERM INFANT** *need* **EARLY INTERVENTION** *services?*

Preterm infants are:

2x more likely to have developmental delays

5x more likely to have learning challenges

1 in **3** preterm infants will require support services at school

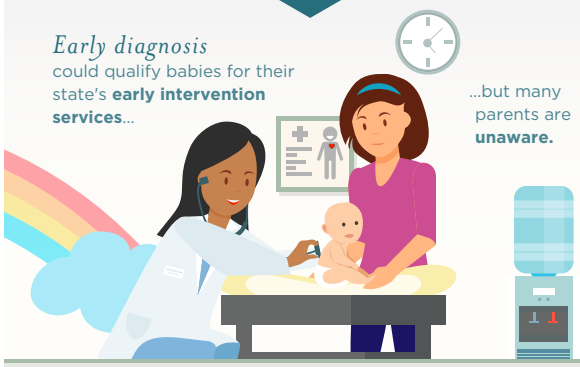


Early intervention can help preterm infants:

- Enhance language and communication skills
- Build more effective learning techniques
- Process social and emotional situations
- Address physical challenges
- Prevent mild difficulties from developing into major problems

Early diagnosis could qualify babies for their state's **early intervention services**...

...but many parents are **unaware.**



NICU staff, nurses, pediatricians and social workers **should talk** with NICU families about the challenges their baby may face.

Awareness, referral & timely enrollment in early intervention programs can help **infants thrive** and grow.

NCfIH National Coalition for Infant Health
Protecting Access for Premature Infants through Age Two
www.infanthealth.org

Visit **CDC.gov** to find contact information for your state's early intervention program.

Las nuevas mamás necesitan acceso a la detección y tratamiento para **LA DEPRESIÓN POSPARTO**

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

- Llanto incontrolable
- Sueño interrumpido
- Ansiedad
- Desplazamientos en los patrones de alimentación
- Ideas de hacerse daño a sí mismas o al bebé
- Distanciamiento de amigos y familiares

Sin embargo, sólo el 15% recibe tratamiento[1]

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

La salud de la madre

El sueño, la alimentación y el comportamiento del bebé a medida que crece[2]

La capacidad para cuidar de un bebé y sus hermanos

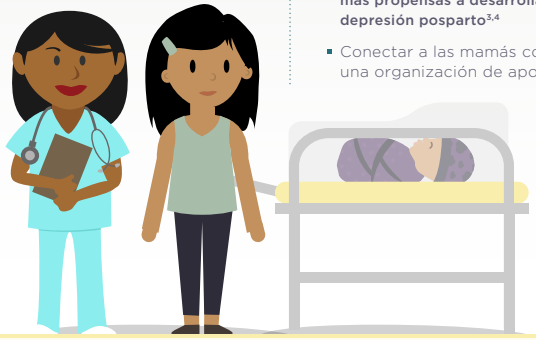
PARA AYUDAR **A LAS MADRES A ENFRENTAR LA DEPRESIÓN POSPARTO**

LOS ENCARGADOS DE FORMULAR POLÍTICAS PUEDEN:

- Financiar los esfuerzos de despistaje y diagnostico
- Proteger el acceso al tratamiento

LOS HOSPITALES PUEDEN:

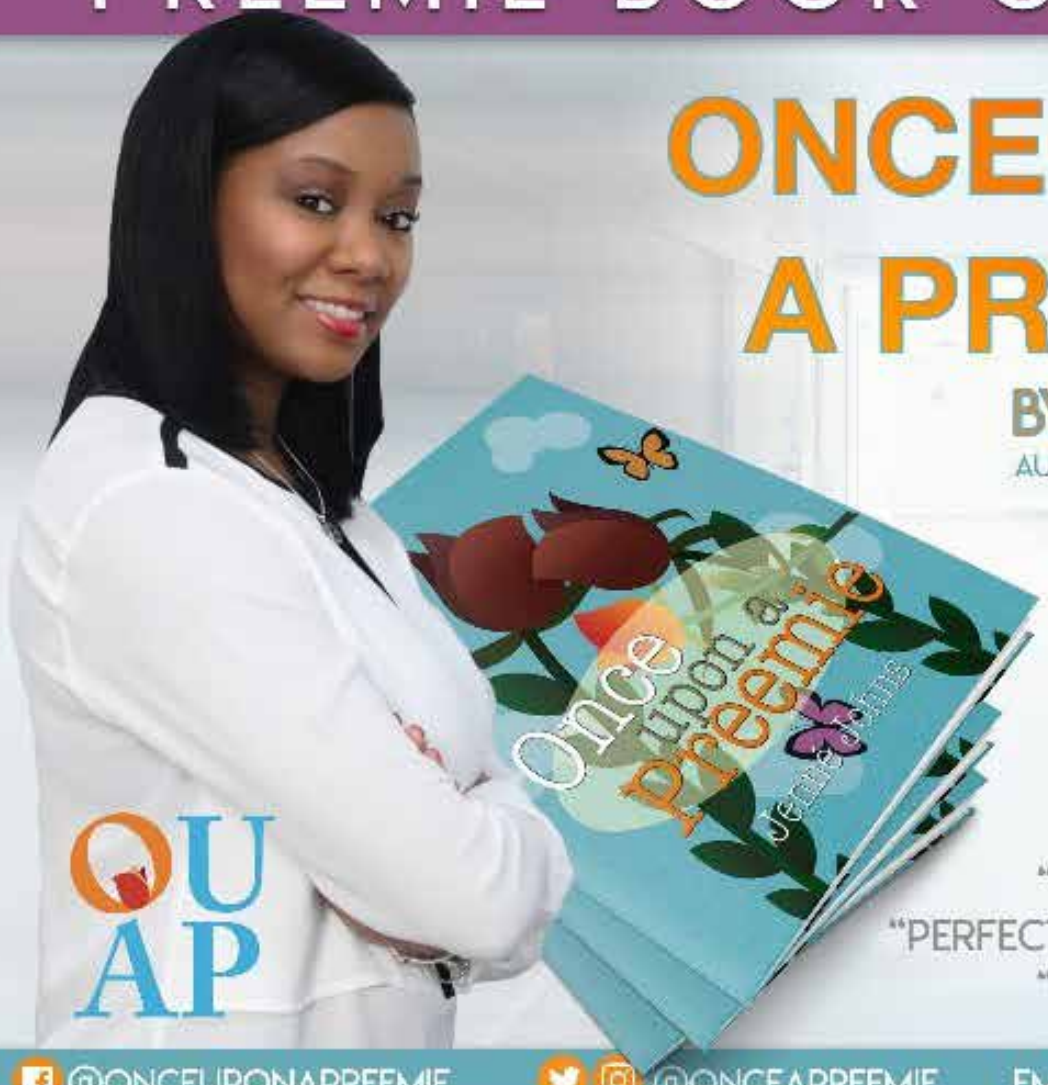
- Capacitar a los profesionales de la salud para proporcionar apoyo psicosocial a las familias... **Especialmente aquellas con bebés prematuros, que son 40% más propensas a desarrollar depresión posparto**[3,4]
- Conectar a las mamás con una organización de apoyo



NCfIH National Coalition for Infant Health
Protecting Access for Premature Infants through Age Two
www.infanthealth.org

[1] American Psychological Association. Accesible en: http://www.apa.org/pi/women/resources/reports/postpartum-depression.aspx
[2] National Institute of Mental Health. Accesible en: https://www.nimh.nih.gov/health/publications/postpartum-depression-facts/index.shtml
[3] Journal of Perinatology (2015) 35, 529–536; doi:10.1038/jp.2015.147.
[4] Prevalence and risk factors for postpartum depression among women with preterm and low-birth-weight infants: a systematic review. Vigod SN, Villegas L, Dennis CL, Ross LE BJOG. 2010 Apr; 117(5):540-50.

PREEMIE BOOK ON SALE



ONCE UPON A PREEMIE

BY JENNÉ JOHNS

AUTHOR | SPEAKER | ADVOCATE

QUAP

"ONE OF A KIND"
"PERFECT FOR PREEMIE FAMILIES"
"ENCOURAGING"

@ONCEUPONAPREEMIE @ONCEAPREEMIE EMAIL: HI@ONCEUPONAPREEMIE

ONCE UPON A PREEMIE IS A BEAUTIFUL NEW WAY TO LOOK AT THE LIFE OF A PREEMIE BABY. IT EXPLORES THE PARENT AND CHILD NEONATAL INTENSIVE CARE UNIT (NICU) JOURNEY IN A UNIQUE AND UPLIFTING WAY.

SPEAKING ENGAGEMENTS

PREEMIE PARENT ALLIANCE SUMMIT
NATIONAL ASSOCIATION OF PERINATAL SOCIAL WORKERS
CONGRESSIONAL BLACK CAUCUS ANNUAL LEGISLATIVE CONFERENCE
NATIONAL MEDICAL ASSOCIATION ANNUAL CONFERENCE
HUDSON VALLEY PERINATAL PUBLIC HEALTH CONFERENCE
MATERNITY CARE COALITION ADVOCACY DAY

MEDIA APPEARANCES

Preemie Family

The Joyner Report

PEBBLES of Hope

WDAS 105.3 FM

CBS RADIO

wgts 91.9 Washington, D.C.

MAJIC 102.3 92.7 The Real Sound of the DMV

AVAILABLE FOR $12.99 ON AMAZON OR ONCEUPONAPREEMIE.COM

FREE Online CE Activity

Nurses: parents trust you.

You can help reduce the risk of Sudden Infant Death Syndrome (SIDS), the leading cause of death among infants between 1 month and 1 year of age. Take our **free continuing education (CE) activity** to stay up to date on the latest safe infant sleep recommendations. Approved for 1.5 contact hours.

Learn more about the free online activity at **https://nichd.nih.gov/SafeSleepCE.**

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

NIH *Eunice Kennedy Shriver* National Institute of Child Health and Human Development

SAFE TO SLEEP®

Compiled and Reviewed by Benjamin Hopkins, DO

AAP, other medical groups file motion to block CDC's new immunization schedule

NEWS PROVIDED BY

American Academy of Pediatrics

By Sean Stangland

Study: **AAP, other medical groups file motion to block CDC's new immunization schedule**

Current as of January 20, 2026

The AAP and other leading medical organizations filed an amended complaint on Jan. 19 in their lawsuit against U.S. Department of Health and Human Services (HHS) Secretary Robert F. Kennedy Jr. that seeks to stop implementation of the new federal child and adolescent immunization schedule.

The amended complaint in a July 2025 lawsuit alleges that HHS arbitrarily and illegally overhauled the Centers for Disease Control and Prevention's (CDC's) schedule "without following the evidentiary-driven, and legally required processes for issuing recommended vaccine schedules in the United States."

The complaint and three previous amended complaints allege Kennedy and his department haven't followed proper administrative procedures for issuing immunization recommendations and have failed to "examine the relevant data and articulate a satisfactory explanation" for these four actions:

- the appointment of vaccine skeptics to Advisory Committee on Immunization Practices (ACIP) after all previous members were fired;
- votes taken by ACIP changing recommendations on the hepatitis B and COVID-19 vaccines and urging manufacturers to stop using thimerosal as a preservative in influenza vaccines;
- the alteration of the immunization schedule, which no longer recommends shots for hepatitis A and B, rotavirus, respiratory syncytial virus, flu and meningococcal disease for all infants; and
- Kennedy's removal of the CDC's routine recommendation for healthy children and pregnant women to receive the COVID-19 vaccine.

In addition, the plaintiffs plan to file a motion for preliminary injunction next week that asks the court to halt the implementation of the new CDC immunization schedule and the ACIP meeting scheduled for Feb. 25-26. The hearing on that injunction is scheduled for Feb. 13.

The Academy's co-plaintiffs include the American Public Health Association, the American College of Physicians, the Infectious Diseases Society of America, the Massachusetts Public Health Alliance, the Society for Maternal-Fetal Medicine and the Massachusetts chapter of the AAP.

As it has since the 1930s, the AAP continues to make its own evidence-based immunization recommendations.

Judge denies HHS effort to dismiss AAP lawsuit over vaccine policy, advisers Free

NEWS PROVIDED BY

American Academy of Pediatrics

By Melissa Jenco

Study: **Judge denies HHS effort to dismiss AAP lawsuit over vaccine policy, advisers Free**

Current as of January 6, 2026

A judge will allow the AAP and other medical groups to continue their lawsuit against the Department of Health and Human Services (HHS) over federal vaccine policy and advisers.

The lawsuit challenges HHS Secretary Robert F. Kennedy Jr.'s unilateral changes to COVID-19 vaccine policy without scientific evidence and his decision to replace members of the Centers for Disease Control and Prevention's (CDC's) Advisory Committee on Immunization Practices (ACIP) with people who lack the credentials and required experience.

"Today's ruling moves our case forward and reinforces our commitment to challenge unlawful changes to vaccine policy," AAP President Andrew D. Racine, M.D., Ph.D., FAAP, said Tuesday. "The American Academy of Pediatrics will continue to take all necessary actions to safeguard children's health. We brought this suit because our nation's vaccine policy must be driven by evidence and lawful process, not by arbitrary shifts divorced from science."

Judge Brian E. Murphy rejected the government's motion to dismiss the lawsuit. He said the AAP has a legal right to bring the case, the issues it raises are ongoing and it is plausible for the AAP to argue that the ACIP appointments do not comply with federal law that requires the committee to be fairly balanced and free of inappropriate influence.

The ruling comes a day after Kennedy announced an overhaul of the CDC's immunization schedule that removes universal recommendations from six childhood vaccines without scientific evidence for doing so. The new schedule is similar to Denmark's, which has one of the lowest numbers of recommended childhood vaccines among peer nations with just 10. The AAP and other medical groups said they are exploring all available options in response to these unprecedented changes.

"The recent federal move to impose the Danish schedule on American families, downgrading routine recommendations for vaccines like influenza, hepatitis A and meningococcal disease, only heightens the urgency to proceed quickly so families and pediatricians have clear, science-based guidance they can trust," Dr. Racine said.

The AAP also was in court in Washington, D.C., Tuesday in a

separate case against HHS over its termination of seven federal grants totaling nearly $12 million in retaliation for the AAP speaking out against the administration's actions that have threatened children's health. The AAP is asking a judge to restore the grants while the case proceeds and is awaiting a ruling. The grants fund programs related to sudden infant death; early detection of developmental disabilities and birth defects; pediatric care in rural communities; support for teens with substance use and mental health challenges; and improving standards of care for newborns.

AAP CEO/Executive Vice President Mark Del Monte, J.D., called the programs "vital" and stressed the importance of the AAP's longstanding partnership with the federal government to advance children's health.

"We are forced to take legal action … so that these programs can continue to make communities safer and healthier," he said.

44 pediatric flu deaths reported this season; measles cases climb as U.S. elimination status to be reviewed

NEWS PROVIDED BY

American Academy of Pediatrics

By Sean Stangland

Study: **44 pediatric flu deaths reported this season; measles cases climb as U.S. elimination status to be reviewed**

Current as of January 23, 2026

The Centers for Disease Control and Prevention (CDC) said Friday that 12 more pediatric flu-related deaths were reported for the week ending Jan. 17, bringing the total to 44 so far during the 2025-'26 influenza season.

The CDC also reported Friday that the number of confirmed measles cases in 2026 has reached 416 in the U.S., which is in danger of losing its measles elimination status.

For children ages 0-17, the current flu season is categorized as "high severity." Emergency department visits for flu increased and hospitalizations remained stable in the last week among school-age children.

"Some areas of the country, in particular, the Midwest, central and west coast regions, are reporting increasing or stable trends in some activity indicators this week after reporting declines the prior two weeks," the CDC said.

About 90% of the reported pediatric flu deaths this season have occurred in children not fully vaccinated against the flu.

Across all ages, the CDC estimates there have been at least 19 million illnesses, 250,000 hospitalizations and 10,000 deaths from flu so far this season.

Though the CDC recently announced an overhaul to the childhood immunization schedule that includes removing universal recommendations for numerous vaccines including flu, the AAP continues to recommend flu vaccination for everyone 6 months and older.

The CDC estimates 44.2% of U.S. children have been vaccinated for the flu this season, comparable to 44.4% at this time last year.

The 2024-'25 influenza season saw 289 pediatric flu deaths, the most in any season since the CDC began tracking in 2004.

No deaths, pediatric or otherwise, have been attributed to measles in 2026. The CDC reported 19 new cases for the week ending Jan. 23, down from 191 the previous week and 206 the week before that.

Of the 416 confirmed cases, 413 have been reported to the CDC from 14 states: Arizona, California, Florida, Georgia, Idaho, Kentucky, Minnesota, North Carolina, Ohio, Oregon, South Carolina, Utah, Virginia and Washington. The remaining three were reported among international visitors to the U.S.

The CDC reports no new outbreaks for 2026; 393 (94%) of the confirmed cases this year came from outbreaks that began in 2025.

The Pan American Health Organization (PAHO) announced last week that its Regional Monitoring and Re-Verification Commission for Measles, Rubella, and Congenital Rubella Syndrome (RVC) will meet in April to review the measles elimination status of both the U.S. and Mexico.

The RVC will review data from field investigations to determine whether the nations remain free of a continuous spread of measles or if endemic transmission, defined as transmission of a measles virus from the same genotype and lineage continued uninterrupted for 12 months or more, has been reestablished in the U.S. or Mexico.

After hearing the RVC's recommendations, the PAHO director will determine each country's measles elimination status.

In 2025, the U.S. saw 2,255 confirmed measles cases from 45 jurisdictions, with 49 outbreaks. Three deaths were reported. Experts say cases likely are significantly undercounted as many go unreported.

The AAP recommends ensuring patients are covered with a two-dose measles-mumps-rubella (MMR) vaccination series. Under routine recommendations, the doses are given at ages 12-15 months and 4-6 years. One dose of MMR is 93% effective against measles, and two doses are 97% effective.

New dietary guidelines include AAP recommendations on breastfeeding, limits on added sugars program 4 recommendations

NEWS PROVIDED BY

American Academy of Pediatrics

By Steve Schering

Study: **New dietary guidelines include AAP recommendations on breastfeeding, limits on added sugars**

Current as of January 7, 2026

The AAP is commending the inclusion of its evidence-based policy in the new

dietary guidelines released by the federal government Wednesday, which promote whole, nutritious offerings and call for children to avoid highly processed foods and added sugars.

The Dietary Guidelines for Americans (DGAs) urge households to focus on foods such as protein, dairy, vegetables, fruits, healthy fats and whole grains. The guidelines include a breakdown of optimal food and nutrition for specific age groups, including children from birth to age 4, children ages 5-10 years and adolescents ages 11-18.

"The AAP recognizes the importance of the DGAs' clear focus on child nutrition guidance that supports healthy eating patterns for children, with a focus on whole, minimally processed foods," said AAP President Andrew D. Racine, M.D., Ph.D., FAAP.

For the first six months of life, the guidance calls for infants to consume breast milk or iron-fortified infant formula if breast milk is not available. It is recommended that babies stop receiving infant formula at 12 months of age, at which time they should be given whole milk.

"Every day, pediatricians support families in developing healthy eating habits, and we commend the DGAs' inclusion of the Academy's evidence-based policy related to breastfeeding, introduction of solid foods, caffeine avoidance and limits on added sugars," Dr. Racine said. "Pediatricians are committed to public policies that promote healthy eating and ensure all children have access to affordable and nutritious food."

Infants should receive a diverse range of nutrient-dense foods in appropriate textures, while avoiding nutrient-poor and highly processed foods, the guidance states. Examples of nutrient-dense foods to introduce during the complementary feeding period include meat, poultry and seafood; vegetables and fruits; full-fat yogurt and cheese; whole grains; and legumes and nut- or seed-containing foods prepared in a safe, infant-appropriate form.

Parents and caregivers should ensure a child is developmentally ready to begin eating food, the guidance states. It may take eight to 10 exposures before a young child is willing to try a new food.

Children ages 5-10 years should focus on protein foods, dairy, vegetables, fruits, healthy fats and whole grains, while avoiding caffeinated beverages and added sugars. Water and unsweetened beverages should be chosen to support hydration, according to the DGA.

Adolescents ages 11-18 years enter a rapid growth period with increased needs for energy, protein, calcium and iron. Adequate calcium and vitamin D are vital for peak bone mass. This age group should limit sugary drinks and energy drinks and highly processed foods, according to the DGA. Officials encourage adolescents to participate in food shopping and cooking to learn how to make healthy food choices for life.

According to the Centers for Disease Control and Prevention, approximately 20% of U.S. children and adolescents have obesity, while one in three adolescents has prediabetes. Officials said healthier food choices made at a young age can lower chronic disease and health care costs for Americans.

In addition to the updated guidelines, U.S. Department of Agriculture Secretary Brooke L. Rollins said the administration will focus on ensuring healthier food options become accessible in schools and the community for those most in need.

"The school lunch is often the best place for our children to get the healthiest meal," Rollins said. "Right now, that is the single most important move forward is the school lunches and making sure we're getting the right amount and best amount of nutrient-dense foods into the schools."

Rollins said Supplemental Nutrition Assistance Program (SNAP) stocking standards will be updated to ensure retailers carry healthier options for those in communities most in need.

"If you have an economically challenged family and the only place they're getting their food is (a convenience store), we have a longer-term important policy priority and that is getting grocery stores into these lower margin communities," she said. "But for now, requiring those 250,000 (SNAP) retailers across America to double their stocking of healthier foods, that will allow us to immediately get these better foods into all communities, but especially the most vulnerable."

The DGAs are updated every five years, and were last released in 2020.

Milk powder used in ByHeart formula tests positive for Clostridium botulinum

NEWS PROVIDED BY

American Academy of Pediatrics

By Sean Stangland

Study: **Milk powder used in ByHeart formula tests positive for Clostridium botulinum**

Current as of January 26, 2026

Organic whole milk powder used in ByHeart infant formula tested positive for Clostridium botulinum, according to the Food and Drug Administration (FDA). The cause of contamination, however, remains unknown.

All ByHeart infant formula products were recalled in November after children who consumed the formula were diagnosed with infant botulism. In all, 51 children in 19 states were hospitalized and treated for the infection. No deaths have been reported, and no new cases have been confirmed since Dec. 10.

The FDA said in a news release that two samples it collected tested positive for C. botulinum, Type A. One came from an unopened package of ByHeart powdered infant formula and the other from a sample of whole milk powder collected from a processor for a ByHeart supplier.

The supplier in question does not supply organic whole milk powder to other infant formula manufacturers, according to an emailed statement from the FDA.

"At this time, no other products, infant formula or otherwise, have exhibited an unusual illness pattern that would indicate potential contamination, although the FDA remains vigilant," the statement read.

An update posted Jan. 23 to the ByHeart website said these findings suggest "we are significantly closer to determining the root cause of the contamination of ByHeart formula."

ByHeart's own testing identified C. botulinum in six samples of its products.

No ByHeart products should be purchased, nor should they be available at stores or online retailers. The FDA on Dec. 15 issued a letter to retailers, manufacturers and others involved in distributing food reminding them of their legal responsibilities with respect to recalls after continued reports of ByHeart products being found on store shelves.

The FDA on Dec. 10 extended the recall to include all ByHeart products manufactured since the product's launch in March 2022, as infant botulism cases associated with the formula were identified as far back as

December 2023.

Cases of infant botulism have been reported in Arizona, California, Idaho, Illinois, Kentucky, Maine, Missouri, Michigan, Minnesota, North Carolina, New Jersey, Ohio, Oregon, Pennsylvania, Rhode Island, Texas, Virginia, Washington and Wisconsin. The infants involved range in age from 16 to 264 days, and 22 (43%) are female.

A bacterial infection of the large intestine, infant botulism may take several weeks to develop. If left untreated, it will cause progressive, flaccid paralysis and breathing difficulties.

The Associated Press reported Jan. 19 that a 10-month-old boy in Portland, Ore., developed severe constipation and muscle weakness after consuming ByHeart formula given to his mother in November by a state program that aids poor and unhoused families.

Ashaan Carter was treated with botulism immune globulin intravenous (human) (BabyBIG) and was hospitalized for about two weeks. He was hospitalized again after suffering dramatic weight loss. At the time of publication, Ashaan had a feeding tube and would have to relearn how to crawl and speak.

Parents should seek immediate medical care if a child who has consumed the recalled formula develops poor feeding, loss of head control, difficulty swallowing or decreased facial expression.

Physicians who suspect a patient has infant botulism should call 510-231-7600 immediately for a case consultation, which is available 24/7.

Federal judge orders reinstatement of AAP funding that supports child health programs

NEWS PROVIDED BY

American Academy of Pediatrics

By Steve Schering

Study: **Federal judge orders reinstatement of AAP funding that supports child health programs**

Current as of January 12, 2026

A federal court has ordered the U.S. Department of Health and Human Services (HHS) to restore nearly $12 million in AAP grants while the Academy's case against the government proceeds.

The AAP sued HHS after the agency abruptly terminated seven long-running awards administered through the Centers for Disease Control and Prevention and the Health Resources and Services Administration. The AAP had asked the judge to restore the funding while the case proceeds.

The awards fund programs related to sudden infant death; early detection of developmental disabilities and birth defects; pediatric care in rural communities; support for teens with substance use and mental health challenges; and improving standards of care for newborns.

Without court intervention, the AAP warned these programs would cease, staff would be laid off, and children and families across the country would lose access to life-saving health services.

"Today's court action offers welcome relief for children and families who benefit from these important services that make communities safer and healthier," AAP CEO/Executive Vice President Mark Del Monte, J.D., said Monday. "The federal government remains an essential partner to improving the health of children. The AAP will continue to do all we can to support children's health and well-being, just as we've always done, and we will continue to speak out and take action against threats to children's health, just as we've always done."

The AAP argued the funding cuts violate the First Amendment, and the actions were retaliatory against the organization for speaking out against the administration's actions that have threatened children's health. The AAP has a separate lawsuit against HHS over federal vaccine policy and advisers.

In her decision, U.S. District Judge Beryl A. Howell noted the "timing of HHS' retaliatory act of terminating the seven grants has almost perfectly coincided with significant events in one area of AAP's First Amendment protected speech, namely, the lawsuit that AAP brought challenging agency actions…."

"Retaliatory actions serve both to punish past disfavored speech and as a warning shot to chill such speech in the future," Judge Howell wrote. "The continuing HHS grant awards to AAP simply leaves AAP, and other HHS grant recipients, to ponder the level of critical public debate HHS would tolerate before issuing further grant terminations, including of AAP's four remaining HHS grants, which may serve as an additional deterrent against future protected speech."

Judge Howell also noted the potential impact on the public, writing, "When force and coercion replace reason in the marketplace of ideas, the public suffers by denial of access to high-quality information. In the realm of public health policy, where evidence-based research can make the difference between lives well-lived and chronic illness or even death, assuring such public access to information and debate is acutely important."

The AAP is represented pro bono in the case by Democracy Forward, a national legal organization that advances democracy and social progress through litigation, policy and public education, and regulatory engagement.

"Once again, we took the administration to court to defend children, communities and the Constitution — and once again, we won," Democracy Forward President and CEO Skye Perryman said. "The court shut down a dangerous attempt to use federal funding as a political weapon and punish pediatricians for speaking the truth. This ruling sends a clear message: no administration gets to silence doctors, undermine public health, or put kids at risk, and we will not stop fighting until this unlawful retaliation is fully ended."

AAP report: Supporting lactation key priority in high-risk neonatal care

NEWS PROVIDED BY

American Academy of Pediatrics

By Margaret G. Parker, M.D., M.P.H., FAAP

Study: **AAP report: Supporting lactation key priority in high-risk neonatal care**

Current as of January 12, 2026

A revised AAP clinical report continues to highlight the importance of mother's own milk, appropriately fortified, as the optimal nutrition source for hospitalized very low birth weight (VLBW) infants due to short- and long-term health benefits.

The report "Promoting Human Milk and Breastfeeding for the Very Low Birth Weight Infant" also expands on the previous version by providing detailed recommendations regarding use of pasteurized donor human milk (PDHM) when mother's own milk is not available.

Also discussed are evidenced-based lactation support practices, including those that address social inequities in the provision of human milk for VLBW infants.

The clinical report, from the Committee on Fetus and Newborn, Section on Breastfeeding and Committee on Nutrition, is available at https://doi.org/10.1542/peds.2025-073625 and will be published in the February issue of Pediatrics.

Benefits of human milk

Numerous studies have shown that feeding mother's own milk to VLBW infants (1,500 grams or less) is associated with health benefits, including lower rates of necrotizing enterocolitis (NEC), late-onset sepsis, chronic lung disease, retinopathy of prematurity and neurodevelopmental impairment.

If the mother's milk is not available, PDHM is recommended until the infant's risk of developing NEC is low, which is approximately 34-36 weeks' postmenstrual age.

The report recommends that preterm infant formula be used when mother's own milk is not available and PDHM is not available or the family declines use, as this is superior to alternatives such as non-preterm formulas

The report also discusses the risk of bacterial contamination with informal milk sharing.

Milk expression

The report reviews the need for early and frequent milk expression (at least every three to four hours). Mothers also need double electric breast pumps, often called "hospital-grade" breast pumps, to maintain lactation.

An addition from the previous report is a clear recommendation that mothers optimally need access to and training in hospital-grade pumps prior to hospital discharge to minimize disruption in establishment of milk production. This recommendation was added due to reports of mothers being discharged with hand pumps or other pumps until they could obtain a hospital-grade breast pump. When this occurs, mothers' milk expression is suboptimal at the crucial time when milk supply is being established — the first one to two weeks of after birth.

The report also reiterates the role of skin-to-skin care and oral feedings at the breast.

Lactation support

Racial disparities in lactation among mothers of VLBW infants remain an important problem. While racial groups have similar lactation initiation rates, disparities emerge over the course of prolonged hospitalization.

The report highlights solutions, including equitable implementation of lactation support, addressing adverse social drivers of health such as transportation and providing peer lactation support and loaner pump programs.

Finally, the report addresses lactation support for mothers who have HIV. A 2024 AAP clinical report addressed supporting mothers with HIV in lactation if they met certain conditions. The report, however, did not address mothers of VLBW infants, for whom data are insufficient. In this scenario, PDHM may be considered.

The report reiterates that cytomegalovirus infection can be acquired through mother's own milk feeding, but evidence is insufficient to support withholding mother's own milk based on this risk.

Physician's role

The report is a call to action for physicians working in high-risk neonatal care settings to support mothers in achieving their personal lactation goals through implementation of evidence-based care.

Physicians can counsel families on the health benefits of mother's own milk, use of maternal medications, risk of infection and informal milk sharing.

Whooping Cough Deaths Rise in U.S. as Surge in Infections Continues

NEWS PROVIDED BY

Scientific American

By Meghan Bartels

Study: **Whooping Cough Deaths Rise in U.S. as Surge in Infections Continues**

Current as of December 30, 2025

Whooping cough cases are sweeping in the U.S., with tens of thousands infected and at least 13 people dead from the bacterial infection this year. While the infection rate is lower than last year, it remains above typical prepandemic years, and the number of deaths has risen.

The respiratory infection, also known as pertussis, is characterized by a severe, violent cough that can leave people—especially infants—struggling to breathe. Although rarely fatal, its lingering symptoms have earned it the moniker of the "100-day cough."

The disease is caused by the bacterium Bordetella pertussis, which emits toxins into a person's respiratory tract, making early treatment with antibiotics vital to managing the infection. The bacterium is easily spread between people, both through direct contact and droplets from the mouth or nose.

As of December 20, the U.S. and its territories has seen 27,871 diagnosed cases of whooping cough so far this year, according to the Centers for Disease Control and Prevention. Last year at this time, the number was 41,922, a staggering increase after four years of less than 10,000 cases annually during the peak of the COVID pandemic. In the years between 2003 and 2019, the U.S. typically saw between 10,000 to 20,000 cases annually; the highest rate during that time was in 2012, with 48,277 cases.

At least 13 people have died of pertussis so far this year, according to a recent report from the Pan American Health Organization. Provisional CDC data from last year noted 10 deaths from the infection.

Public health experts fear that the sustained high rates of whooping cough this year after last year's spike may be a symptom of declining vaccination levels.

The DTaP vaccine protects infants and young children from pertussis, while the Tdap vaccination offers protection for older children and adults. Both shots also protect against tetanus and diphtheria. The CDC has traditionally recommended these vaccinations from the age of two months; under the agency's guidelines, children should receive four doses in their

first two years and a total of six doses before reaching age 13. But for children born in 2021, the most recent group for whom data are available, only 79 percent had received four shots of DTaP by the age of two.

Whooping cough is most dangerous among infants under a year old, and public health experts also recommend that pregnant people get a Tdap vaccine to transfer antibodies to newborns. All adults are also advised to get a Tdap vaccine every 10 years to ensure continued protection.

AAP report provides update on therapeutic hypothermia for neonates with HIE

NEWS PROVIDED BY

American Academy of Pediatrics

By Santina A. Zanelli, M.D., M.Sc., FAAP

Study: **AAP report provides update on therapeutic hypothermia for neonates with HIE**

Current as of January 26, 2026

A neonate is born at 36 weeks' gestation to a 45-year-old mother. The pregnancy was complicated by diet-controlled gestational diabetes. A category II fetal heart rate tracing was noted prior to delivery. After an uncomplicated vaginal delivery, the neonate required brief positive pressure ventilation and oxygen. Apgar scores were 5, 6 and 6 at 1, 5 and 10 minutes, respectively. On examination, the neonate is noted to be lethargic and hypotonic and has a weak suck and abnormal Moro reflex.

What steps should the care team take to determine whether the patient is eligible for therapeutic hypothermia? How should the patient be monitored if cooling is initiated?

Neonatal hypoxic-ischemic encephalopathy (HIE) affects 1 to 5 per 1,000 live births in the United States and is associated with high rates of morbidity and disability.

Therapeutic hypothermia is the only therapy shown to improve long-term outcomes for HIE. Since 2010, it has been considered standard of care for neonates born at or after 36 weeks' gestation with moderate-to-severe HIE in high-income countries. However, the accurate identification of neonates eligible for therapeutic hypothermia can be challenging.

A revised AAP clinical report from the Committee on Fetus and Newborn and the Section on Neurology offers evidence-based guidance on therapeutic hypothermia for neonatal HIE and addresses some of the gaps in knowledge. The report "Therapeutic Hypothermia for Neonatal Hypoxic-Ischemic Encephalopathy" is available at https://doi.org/10.1542/peds.2025-073627 and will be published in the February issue of Pediatrics.

Key recommendations

Following are among the key action statements in the report:

- Therapeutic hypothermia is recommended for neonates with moderate-to-severe HIE who are born at or after 36 0/7 weeks of gestation. It can be considered for neonates born from 35 0/7 to 35 6/7 weeks of gestation after discussion of risks and benefits with families. Therapeutic hypothermia is not recommended for neonates born at less than 35 weeks of gestation.
- The gold standard remains initiation of cooling within 6 hours of birth. Treatment should be continued for 72 hours with a target temperature of 33.5 degrees Celsius.
- Neonates with moderate-to-severe HIE who present between 6 and 24 hours of age may be considered for therapeutic hypothermia after discussion of the potential for small benefits and associated risks with the family.
- Evidence is insufficient to support the use of therapeutic hypothermia for neonates with mild HIE.
- Initiation of cooling as soon as possible is a major goal of therapeutic hypothermia for HIE. Therefore, cooling on transport may be considered with strict guidelines, especially when arrival to a cooling center before 6 hours of age is not feasible.
- The care of neonates undergoing therapeutic hypothermia requires a multidisciplinary team approach and includes the need for continuous neuromonitoring and access to pediatric neurology services at all times.
- Centers caring for newborns should develop guidelines to assist providers in the prompt identification of neonates with HIE who may be eligible for therapeutic hypothermia.
- Care should be taken to avoid hyperthermia for all infants with HIE, including those not eligible for therapeutic hypothermia.

The updated clinical report reinforces current practice regarding the provision of therapeutic hypothermia for neonates with moderate-to-severe HIE. In addition, it clarifies potential eligibility of younger neonates or those who present between 6 and 24 hours after birth. Finally, the central role of continuous neuromonitoring for these patients is emphasized.

AAP clinical report describes problems expected in survivors of congenital diaphragmatic hernia

NEWS PROVIDED BY

American Academy of Pediatrics

By Tim Jancelewicz, M.D., M.A., M.S., FAAP

Study: **AAP clinical report describes problems expected in survivors of congenital diaphragmatic hernia**

Current as of January 26, 2026

A 3-month-old infant with left congenital diaphragmatic hernia (CDH) is discharged from initial hospitalization. She received extracorporeal life support (ECLS), depends on a gastrostomy tube for her feeds and is on multiple medications, including sildenafil and a proton pump inhibitor. The patient's home is nearly four hours away from the center where she was treated, and her primary care pediatrician wants to supervise her care locally.

Neonatal CDH care is complex, and the complexity does not cease upon discharge, especially for high-risk patients such as those with larger diaphragmatic defects and those treated with ECLS. It is important for clinicians who are responsible for post-discharge care of patients with CDH to anticipate the multisystem adverse outcomes that may occur and be familiar with patterns of presentation and recommended testing and treatment.

An updated AAP clinical report describes the problems clinicians and caregivers may expect to encounter in CDH survivors. It also provides a revised evidence-based follow-up algorithm with recommendations by system for the long-term management of high-risk and low-risk patients. Clinicians can use the guidelines in the report to develop an individualized plan that balances necessary care with available resources to maximize quantity and quality of life (QoL) for these complex children.

The report "Postdischarge Follow-up of Infants With Congenital Diaphragmatic Hernia," from the Section on Surgery and the Committee on Fetus and Newborn, is available at https://doi.org/10.1542/peds.2025-074114 and will be published in the February issue of Pediatrics.

What has changed since the last report?

Since the original clinical report was published in 2008, understanding of the multisystem medical problems faced by these patients has improved substantially.

Global experience with CDH survivors has led to improvement in the prevention, identification and treatment of the cardiopulmonary, neurodevelopmental, gastrointestinal/nutritional and surgical challenges that frequently occur in these patients. The updated report provides greater detail regarding care timelines and expected course for each of these major areas.

More attention also is given to the establishment of a medical home as well as patient and caregiver QoL — a frequently overlooked but fundamental component of long-term surveillance in this chronic disease.

Key recommendations

- Establishment of an experienced medical home for the patient is paramount to coordinate follow-up and surveillance across sectors of care.
- The purpose of surveillance is early identification of problems and treatment to minimize morbidity and optimize QoL for CDH patients and families.
- High-risk CDH patients require more thorough surveillance. These patients have large CDH defects, often are treated with ECLS and may have significant morbidity at time of discharge (e.g., require supplemental oxygen, pulmonary hypertension medications, feeding tube management and/or close nutritional monitoring).
- Cardiopulmonary subspecialist visits and echo surveillance are needed if CDH-associated pulmonary hypertension is present at discharge. Other pulmonary sequelae are diverse and may lead to invasive testing during childhood.
- Duration of hospitalization is the strongest predictor of neurocognitive impairment, which occurs in 10%-25% of CDH survivors. Motor deficits are more common than cognitive deficits, and deficits may be subtle. Recommended assessments change as the patient ages.
- Inability to take in adequate calories is a common problem in CDH infants. Management is challenging and may involve specialist therapy, medications and frequently modified feeding regimens.
- Consequences of surgical repair of the CDH should be monitored throughout life. Imaging is needed to monitor for hernia recurrence. Other common associated adverse surgical outcomes include bowel obstruction, gastroesophageal reflux, chest deformity or scoliosis, and undescended testicle.
- QoL generally is good for CDH survivors and families. Ongoing assessment of QoL will enable tailoring of overall care as patient perception of health status and QoL change with age.

Skincubator Scores FDA Breakthrough Device Designation

NEWS PROVIDED BY

Medical Device and Diagnostic Industry

By Amanda Pedersen

Study: **Skincubator Scores FDA Breakthrough Device Designation**

Current as of January 8, 2026

FDA has granted breakthrough device designation (BDD) for the Skincubator, a wearable device designed to enable immediate, prolonged skin-to-skin care for the tiniest preterm infants in their first days of life.

The Skincubator enables skin-to-skin care while addressing key clinical, technical, and behavioral challenges in the neonatal ICU, according to the company developing the technology, Skincubator Neocare.

"During the exchange with the agency, a core question we needed to address was how to evaluate a medical device whose primary mechanism of action relies on the human body, via prolonged skin-to-skin care, rather than on a purely mechanical system like a conventional incubator," CEO Alon Metrikin-Gold wrote in a LinkedIn post announcing the news. "This is a big moment for Skincubator, and hopefully soon for fragile babies and their families as well."

FDA's breakthrough devices program is a voluntary program for certain medical devices and device-led combination products that provide for more effective treatment or diagnosis of life-threatening or irreversibly debilitating diseases or conditions. The program is intended to provide patients and healthcare providers with timely access to medical devices by speeding up development, assessment, and review for premarket approval, 510(k) clearance, and De Novo marketing authorization.

The World Health Organization recommends 8 hours of skin-to-skin care each day for newborns, but according to Skincubator Neocare, most babies in neonatal ICUs around the world today only receive 30 minutes or less of skin-to-skin care.

A small trial on very and extreme preterm infants confirms superior thermal stability and humidity during prolonged skin-to-skin care, compared to traditional skin-to-skin care. The Skincubator reduced hypothermia, improved environmental control, and enabled safe skin-to-skin care even in the earliest days of life.

NT

pac-lac

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

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.

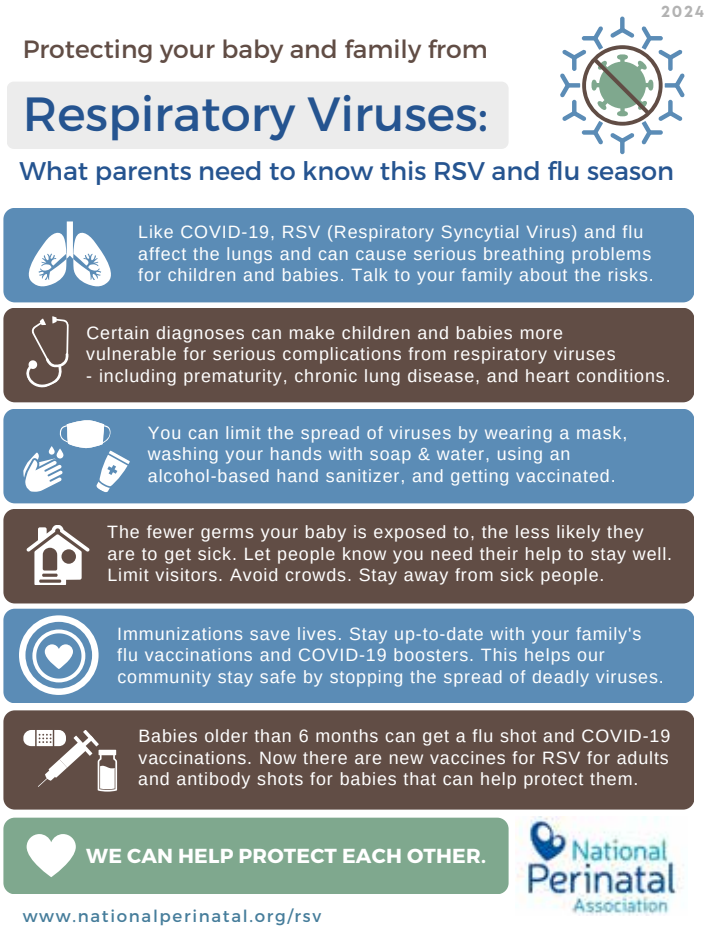
newly validated

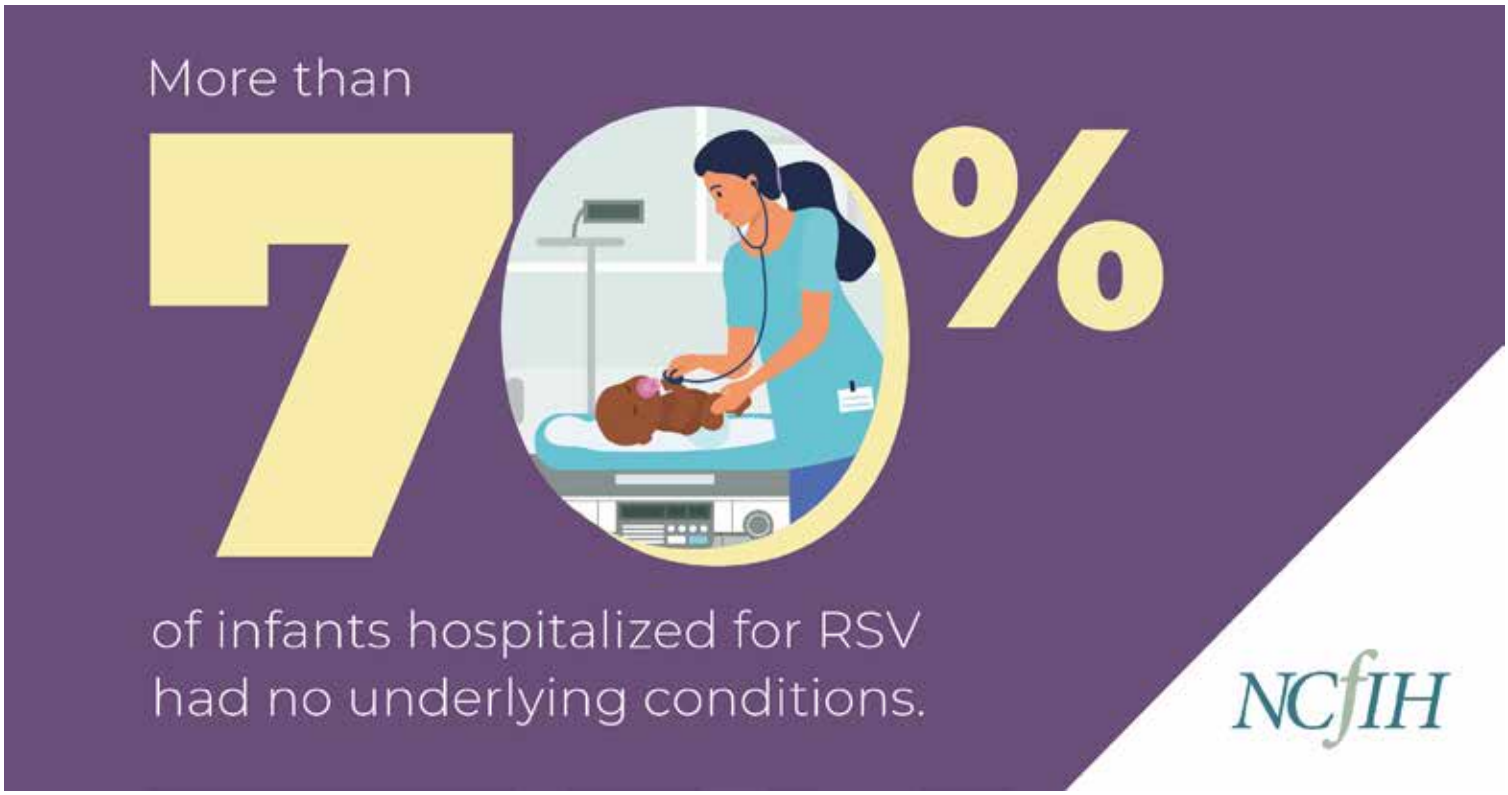
Caring for Babies and their Families:
Providing Psychosocial Support to NICU Parents

7- Module Online Course in NICU Staff Education

and

National Perinatal Association
and NICU Parent Network
mynicunetwork.org





NT

Peer Reviewed

Genetics Corner: Prenatal Detection of PTPN11-Associated Noonan Syndrome via Single-Gene NIPT: A Case of Mild Phenotype and Diagnostic Confirmation

Hua Wang, M.D., Ph.D., FACMG

Abstract:

Background: *Noonan syndrome (NS) is an autosomal dominant multisystem disorder typically caused by gain-of-function variants in the PTPN11 gene.* ***Case Presentation:*** *We report a male infant identified prenatally via single-gene noninvasive prenatal testing (NIPT) as carrying a pathogenic PTPN11 variant (c.784C>T, p.L262F). While prenatal ultrasound showed polyhydramnios and absent nasal bone, the postnatal phenotype was notably mild, consisting of a patent foramen ovale (PFO), mild renal pelviectasis, and subtle facial dysmorphia, without the severe cardiac defects often associated with this genotype.* ***Conclusion:*** *This case highlights the evolving role of single-gene NIPT in identifying monogenic disorders with variable expressivity. It underscores the need for postnatal confirmation and demonstrates that PTPN11 variants can present with milder neonatal phenotypes than previously described.*

Introduction:

Noonan syndrome (NS; OMIM 163950) is the most common RASopathy, with an estimated prevalence of 1:1,000 to 1:2,500 live births (1). It is characterized by a variable spectrum of defects, including short stature, distinct craniofacial features (e.g., hypertelorism, low-set ears), and congenital heart disease, most notably pulmonary valve stenosis (PS) and hypertrophic cardiomyopathy (HCM) (2). Approximately 50% of cases result from gain-of-function missense mutations in the PTPN11 gene, which encodes the protein tyrosine phosphatase SHP-2 (3).

"Noonan syndrome (NS; OMIM 163950) is the most common RASopathy, with an estimated prevalence of 1:1,000 to 1:2,500 live births. It is characterized by a variable spectrum of defects, including short stature, distinct craniofacial features (e.g., hypertelorism, low-set ears), and congenital heart disease, most notably pulmonary valve stenosis (PS) and hypertrophic cardiomyopathy (HCM)"

Historically, prenatal diagnosis of NS was limited to cases with severe ultrasound findings (e.g., cystic hygroma, hydrops) or those with a positive family history. However, the recent advent of single-gene noninvasive prenatal testing (sgNIPT) has expanded the capacity to screen for dominant monogenic disorders using cell-free fetal DNA (4, 5). This technology is particularly valuable for identifying de novo mutations in pregnancies with "soft" ultrasound markers that may not trigger standard aneuploidy warnings (5). We present a case of PTPN11-associated NS detected via sgNIPT in a fetus with polyhydramnios and absent nasal bone. This case is notable for its mild postnatal presentation, highlighting the potential for sgNIPT to ascertain a broader, milder phenotypic spectrum of RASopathies than previously recognized.

"Historically, prenatal diagnosis of NS was limited to cases with severe ultrasound findings (e.g., cystic hygroma, hydrops) or those with a positive family history. However, the recent advent of single-gene noninvasive prenatal testing (sgNIPT) has expanded the capacity to screen for dominant monogenic disorders using cell-free fetal DNA. This technology is particularly valuable for identifying de novo mutations in pregnancies with "soft" ultrasound markers that may not trigger standard aneuploidy warnings"

Case Presentation:

Patient Demographics and Perinatal History:

The patient is a male infant born at 39 weeks and 2 days of gestation via cesarean section to a 32-year-old G_3P_2 mother. The pregnancy was complicated by hyperemesis gravidarum. A

"A routine prenatal ultrasound at 35 weeks revealed polyhydramnios, absent nasal bone, and suspected macroglossia. Due to these findings, the mother underwent single-gene NIPT at 27 weeks, which reported a positive result for a pathogenic PTPN11 variant (c.784C>T, p.L262F)."

routine prenatal ultrasound at 35 weeks revealed polyhydramnios, absent nasal bone, and suspected macroglossia. Due to these findings, the mother underwent single-gene NIPT at 27 weeks, which reported a positive result for a pathogenic PTPN11 variant (c.784C>T, p.L262F). A follow-up fetal MRI ruled out macroglossia and spinal anomalies.

Postnatal Evaluation:

The infant was delivered with reassuring Apgar scores of 8 and 9 at one and five minutes, respectively. Despite the prenatal identification of a pathogenic PTPN11 variant, the immediate neonatal period was unremarkable, and the infant did not exhibit overt signs of distress or severe congenital anomalies at birth. Birth weight and length were within normal limits, consistent with the typical presentation of Noonan syndrome, where birth parameters are usually preserved despite subsequent growth challenges (6).

"Despite the prenatal identification of a pathogenic PTPN11 variant, the immediate neonatal period was unremarkable, and the infant did not exhibit overt signs of distress or severe congenital anomalies at birth. Birth weight and length were within normal limits, consistent with the typical presentation of Noonan syndrome, where birth parameters are usually preserved despite subsequent growth challenges."

At 48 days of life, the infant underwent a comprehensive evaluation in the genetics clinic. Growth assessment revealed early failure to thrive. His weight of 3.629 kg (Z-score −2.57) and length of 51 cm (Z-score −2.96) both fell below the 1st percentile. Physical examination revealed subtle dysmorphic features consistent with the neonatal presentation of Noonan syndrome. The infant demonstrated a depressed nasal bridge, a broad nasal base, a bulbous tip, micrognathia, retrognathia, and a flat philtrum—all characteristic facial features observed in affected neonates and young infants (1). The facial appearance, while distinctive, was relatively mild compared to classical presentations. Notably absent were several features commonly associated with more severe phenotypes, including webbed neck, widely spaced nipples, and the characteristic chest deformity of superior pectus carinatum with inferior pectus excavatum (1, 2).

"The facial appearance, while distinctive, was relatively mild compared to classical presentations. Notably absent were several features commonly associated with more severe phenotypes, including webbed neck, widely spaced nipples, and the characteristic chest deformity of superior pectus carinatum with inferior pectus excavatum."

Postnatal targeted sequencing confirmed the prenatal finding of a heterozygous pathogenic variant in PTPN11 (c.784C>T, p.L262F), fulfilling the critical requirement for diagnostic confirmation following positive single-gene NIPT screening (5). Cardiac evaluation by echocardiography demonstrated a patent foramen ovale with a small left-to-right shunt, normal biventricular size and function, and no evidence of pulmonary valve stenosis or hypertrophic cardiomyopathy. Renal imaging by abdominal ultrasound revealed mild left renal pelviectasis, a finding consistent with the spectrum of renal anomalies observed in Noonan syndrome (1, 6). Incidental gallbladder sludge was also noted.

Discussion:

Phenotypic Variability and the "Mild" Presentation:

The PTPN11 gene is the most common cause of Noonan syndrome, accounting for approximately 50% of cases (3). Classically, PTPN11 mutations are strongly associated with pulmonary valve stenosis and atrial septal defects but less frequently with HCM than with other RASopathy genes such as RAF1 or RIT1 (7, 8). In a large multicenter study, PTPN11 mutations were identified in 85% of patients with cardiac defects, with pulmonary valve stenosis being the most prevalent (60%) and atrial septal defects occurring in 25% of cases (9). In a recent systematic review, cardiac anomalies were observed in 71% of NS patients, with pulmonary stenosis in 48.3% and hypertrophic cardiomyopathy in 16–30% (8, 10).

"In a recent systematic review, cardiac anomalies were observed in 71% of NS patients, with pulmonary stenosis in 48.3% and hypertrophic cardiomyopathy in 16–30%."

However, our patient presented with a remarkably mild phenotype—lacking PS or significant structural heart defects—and was clinically stable aside from growth delays. The absence of significant structural heart disease in this patient is particularly noteworthy given that PTPN11 variants are strongly associated with pulmonary stenosis and atrial septal defects. The specific p.L262F mutation falls within a novel mutation cluster (affecting residues Leu262, Leu261, and Arg265) that has been characterized as causing a relatively mild form of NS with low prevalence of cardiac defects, short stature, and less evident typical facial features (11). Our patient's presentation aligns with this milder phenotypic spectrum described for this mutation cluster.

The milder presentation in our case also aligns with emerging recognition that the phenotypic spectrum of PTPN11-associated Noonan syndrome is broader than historically appreciated, with some patients displaying only subtle dysmorphism that may not be immediately recognized (1). Recent literature suggests that some patients present solely with short stature or subtle facial features, which may delay diagnosis until late childhood (1). This case supports the hypothesis that ascertainment bias has historically skewed our understanding of NS toward severe cases; widespread use of sgNIPT may reveal a higher prevalence of these "mild" forms (8).

"The milder presentation in our case also aligns with emerging recognition that the phenotypic spectrum of PTPN11-associated Noonan syndrome is broader than historically appreciated, with some patients displaying only subtle dysmorphism that may not be immediately recognized. Recent literature suggests that some patients present solely with short stature or subtle facial features, which may delay diagnosis until late childhood."

Growth Patterns in PTPN11-Associated Noonan Syndrome:

The growth trajectory observed in our patient is characteristic of PTPN11-associated Noonan syndrome. Infants with PTPN11 mutations are known to be significantly shorter and lighter at birth and throughout early childhood compared to those with other NS genotypes, with postnatal growth failure often becoming evident from the first year of life (12, 13). In a large cohort study, patients with NS-PTPN11 were significantly shorter at birth (mean birth length SDS: −1.2) and at 2 years of age compared with patients with other genotypes (12).

"Infants with PTPN11 mutations are known to be significantly shorter and lighter at birth and throughout early childhood compared to those with other NS genotypes, with postnatal growth failure often becoming evident from the first year of life. "

Failure to thrive is a common and often self-limited finding in infants with Noonan syndrome that may persist for up to 18 months (2). Most infants with Noonan syndrome have feeding difficulties that can lead to failure to thrive, and this period is typically self-limited, although poor weight gain may persist for up to 18 months (2). The largest decline in weight and length standard deviation score occurs in the first 2.5 months after birth, with feeding problems contributing to continued decline in the remaining months (14). Growth in children with Noonan syndrome is impaired right after birth and only partially associated with feeding problems, with several specific Noonan syndrome-related factors influencing growth in the first year (14).

"Growth in children with Noonan syndrome is impaired right after birth and only partially associated with feeding problems, with several specific Noonan syndrome-related factors influencing growth in the first year."

The Utility of Single-Gene NIPT:

This case underscores the clinical validity of sgNIPT for dominant single-gene disorders. In a large validation study of over 2,200 pregnancies, sgNIPT for 25 monogenic conditions (including NS) showed high positive predictive value, particularly when ultrasound anomalies were present (5). Elevated test-positive rates were observed for referrals with fetal long-bone abnormality (33.7%), fetal craniofacial abnormality (28.6%), fetal lymphatic abnormality (13.3%), or major fetal cardiac defect (12.9%) (5). For this patient, the presence of "soft markers" (polyhydramnios and absent nasal bone)—which are non-specific and often seen in aneuploidy—was successfully resolved by sgNIPT. This allowed for a "genotype-first" diagnosis, enabling the medical team to anticipate complications (such as feeding difficulties and growth failure) rather than reacting to them after a prolonged diagnostic odyssey (4).

"This case underscores the clinical validity of sgNIPT for dominant single-gene disorders. In a large validation study of over 2,200 pregnancies, sgNIPT for 25 monogenic conditions (including NS) showed high positive predictive value, particularly when ultrasound anomalies were present. Elevated test-positive rates were observed for referrals with fetal long-bone abnormality (33.7%), fetal craniofacial abnormality (28.6%), fetal lymphatic abnormality (13.3%), or major fetal cardiac defect (12.9%)."

Recent studies have further validated the clinical utility of expanded sgNIPT panels. In a study of 750 high-risk pregnancies with definitive ultrasound abnormalities, sgNIPT for 202 dominant single-gene disorders demonstrated 100% sensitivity and 99.9% specificity, with a positive predictive value of 96.9% (15). However, it is critical to emphasize that sgNIPT is a screening test, not a diagnostic test. Postnatal diagnostic confirmation through targeted variant testing or whole exome sequencing is imperative to verify the specific mutation and guide long-term management (5, 16).

Management Implications:

Current consensus guidelines recommend multidisciplinary management of NS with a focus on cardiac surveillance, screening for bleeding diathesis, and growth monitoring (2, 17). Given this patient's significant growth deceleration (<1st percentile), early nutritional intervention and potential future evaluation for growth hormone (GH) therapy are indicated. Short stature affects 70% to 80% of patients with NS with slowed growth in the first year and poor weight gain that may persist for up to 18 months (17).

"Current consensus guidelines recommend multidisciplinary management of NS with a focus on cardiac surveillance, screening for bleeding diathesis, and growth monitoring."

Recombinant human GH therapy, approved by the US Food and Drug Administration in 2007 for NS-associated short stature, has been shown to increase growth velocity and near-adult height by approximately 9–11 cm, with better outcomes associated with prepubertal initiation and longer treatment duration (2, 17, 18). While the overall safety profile is reassuring, close monitoring is recommended, particularly for cardiac complications, as patients with certain genotypes (RIT1, RAF1) may experience worsening hypertrophic cardiomyopathy with early treatment (17, 19).

Conclusion:

We report a case of PTPN11-related Noonan syndrome diagnosed via prenatal single-gene screening. The patient's mild phenotype, characterized by subtle facial dysmorphia and growth delay without severe congenital heart disease, highlights the diagnostic power of sgNIPT. As prenatal screening for monogenic disorders becomes more accessible, clinicians must be prepared to manage infants who carry pathogenic variants but display milder-than-expected clinical features.

"As prenatal screening for monogenic disorders becomes more accessible, clinicians must be prepared to manage infants who carry pathogenic variants but display milder-than-expected clinical features."

Take-Home Messages for the Neonatologist

1. **Expand the Differential for "Soft Markers":** When prenatal ultrasound identifies "soft markers" such as polyhydramnios and absent nasal bone—even in the setting of a normal chromosomal microarray—monogenic disorders like Noonan syndrome should be considered. Single-gene NIPT (sgNIPT) is a valuable tool for detecting dominant conditions in these scenarios.
2. **Screening vs. Diagnosis:** A positive result on single-gene NIPT is a screening result, not a diagnostic one. It is imperative to perform postnatal diagnostic confirmation (e.g., targeted variant testing or whole exome sequencing) to verify the specific mutation and guide long-term management.
3. **Recognize the "Mild" Phenotype:** PTPN11-associated Noonan syndrome does not always present with severe neonatal features like pulmonic stenosis or hydrops. Clinicians should maintain a high index of suspicion for infants with subtle dysmorphism (e.g., depressed nasal bridge, micrognathia) and feeding difficulties, even if structural heart defects are absent.
4. **Vigilant Growth Monitoring:** Failure to thrive is a hallmark of Noonan syndrome in infancy and can occur even in infants who appear well-nourished. Close monitoring of weight and length velocity is critical, as poor weight gain can persist for the first 18 months and may require nutritional intervention.
5. **Genotype-First Management:** With the rise of sgNIPT, neonatologists will increasingly encounter "genotype-first" patients—infants with a confirmed molecular diagnosis but minimal symptoms. Management should shift from reactive treatment to anticipatory surveillance (e.g., scheduled cardiology, ophthalmology, and renal evaluations) to prevent complications.

References:

1. Zenker M, Edouard T, Blair JC, Cappa M. Noonan syndrome: improving recognition and diagnosis. Arch Dis Child. 2022;107(12):1073-1078. doi:10.1136/archdischild-2021-322858.
2. Roberts AE, Allanson JE, Tartaglia M, Gelb BD. Noonan syndrome. Lancet. 2013;381(9863):333-342. doi:10.1016/S0140-6736(12)61023-X.
3. Tartaglia M, Mehler EL, Goldberg R, et al. Mutations in PTPN11, encoding the protein tyrosine phosphatase SHP-2, cause Noonan syndrome. Nat Genet. 2001;29(4):465-468. doi:10.1038/ng772.
4. Zhang J, Li J, Saucier JB, et al. Noninvasive prenatal sequencing for multiple Mendelian monogenic disorders using circulating cell-free fetal DNA. Nat Med. 2019;25(3):439-447. doi:10.1038/s41591-018-0334-x.
5. Mohan P, Lemoine J, Trotter C, et al. Clinical experience with noninvasive prenatal screening for single-gene disorders. Ultrasound Obstet Gynecol. 2022;59(1):33-39. doi:10.1002/uog.24791.
6. Myers A, Bernstein JA, Brennan ML, et al. Perinatal features of the RASopathies: Noonan syndrome, cardiofaciocutaneous syndrome and Costello syndrome. Am J Med Genet A. 2014;164A(11):2814-2821. doi:10.1002/ajmg.a.36737.
7. Tartaglia M, Kalidas K, Shaw A, et al. PTPN11 mutations in Noonan syndrome: molecular spectrum, genotype-

phenotype correlation, and phenotypic heterogeneity. Am J Hum Genet. 2002;70(6):1555-1563. doi:10.1086/340847.

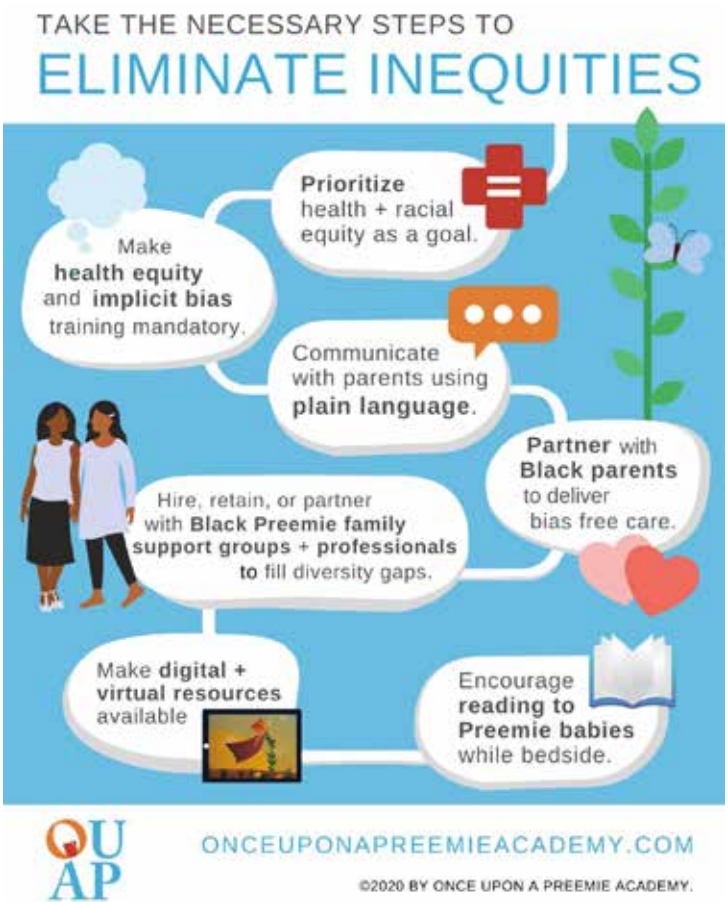
8. Reynolds G, Gazzin A, Carli D, et al. Update on the clinical and molecular characterization of Noonan syndrome and other RASopathies: a retrospective study and systematic review. Int J Mol Sci. 2025;26(8):3515. doi:10.3390/ijms26083515.
9. Sznajer Y, Keren B, Baumann C, et al. The spectrum of cardiac anomalies in Noonan syndrome as a result of mutations in the PTPN11 gene. Pediatrics. 2007;119(6):e1325-e1331. doi:10.1542/peds.2006-0211.
10. Linglart L, Gelb BD. Congenital heart defects in Noonan syndrome: diagnosis, management, and treatment. Am J Med Genet C Semin Med Genet. 2020;184(1):73-80. doi:10.1002/ajmg.c.31765.
11. Pannone L, Bocchinfuso G, Flex E, et al. Structural, functional, and clinical characterization of a novel PTPN11 mutation cluster underlying Noonan syndrome. Hum Mutat. 2017;38(4):451-459. doi:10.1002/humu.23175.
12. Cessans C, Ehlinger V, Arnaud C, et al. Growth patterns of patients with Noonan syndrome: correlation with age and genotype. Eur J Endocrinol. 2016;174(5):641-650. doi:10.1530/EJE-15-0922.
13. Cappa M, d'Aniello F, Digilio MC, et al. Noonan syndrome growth charts and genotypes: 15-year longitudinal single-centre study. Horm Res Paediatr. Published online June 28, 2024:1-13. doi:10.1159/000540092.
14. Croonen EA, Draaisma JMT, van der Burgt I, Roeleveld N, Noordam C. First-year growth in Noonan syndrome: an observational study. Arch Dis Child. 2018;103(2):153-158. doi:10.1136/archdischild-2016-312477.
15. Chen S, Xu W, Zhang L, et al. Expanded noninvasive prenatal screening for dominant single-gene disorders: proof-of-concept, performance, and challenges. Am J Obstet Gynecol. Published online June 27, 2025:S0002-9378(25)00422-3. doi:10.1016/j.ajog.2025.06.043.
16. 4. Scotchman E, Chandler NJ, Mellis R, Chitty LS. Noninvasive prenatal diagnosis of single-gene diseases: the next frontier. Clin Chem. 2020;66(1):53-60. doi:10.1373/clinchem.2019.304238.
17. 5. Stagi S, Cappa M, Gagliardi MG, et al. Multidisciplinary treatment of patients with Noonan syndrome: a consensus statement. JAMA Netw Open. 2025;8(10):e2537603. doi:10.1001/jamanetworkopen.2025.37603.
18. 6. Dahlgren J, Noordam C. Growth, endocrine features, and growth hormone treatment in Noonan syndrome. J Clin Med. 2022;11(7):2034. doi:10.3390/jcm11072034.
19. 7. Stagi S, Ferrari V, Ferrari M, Priolo M, Tartaglia M. Inside the Noonan "universe": literature review on growth, GH/IGF axis and rhGH treatment: facts and concerns. Front Endocrinol (Lausanne). 2022;13:951331. doi:10.3389/fendo.2022.951331.

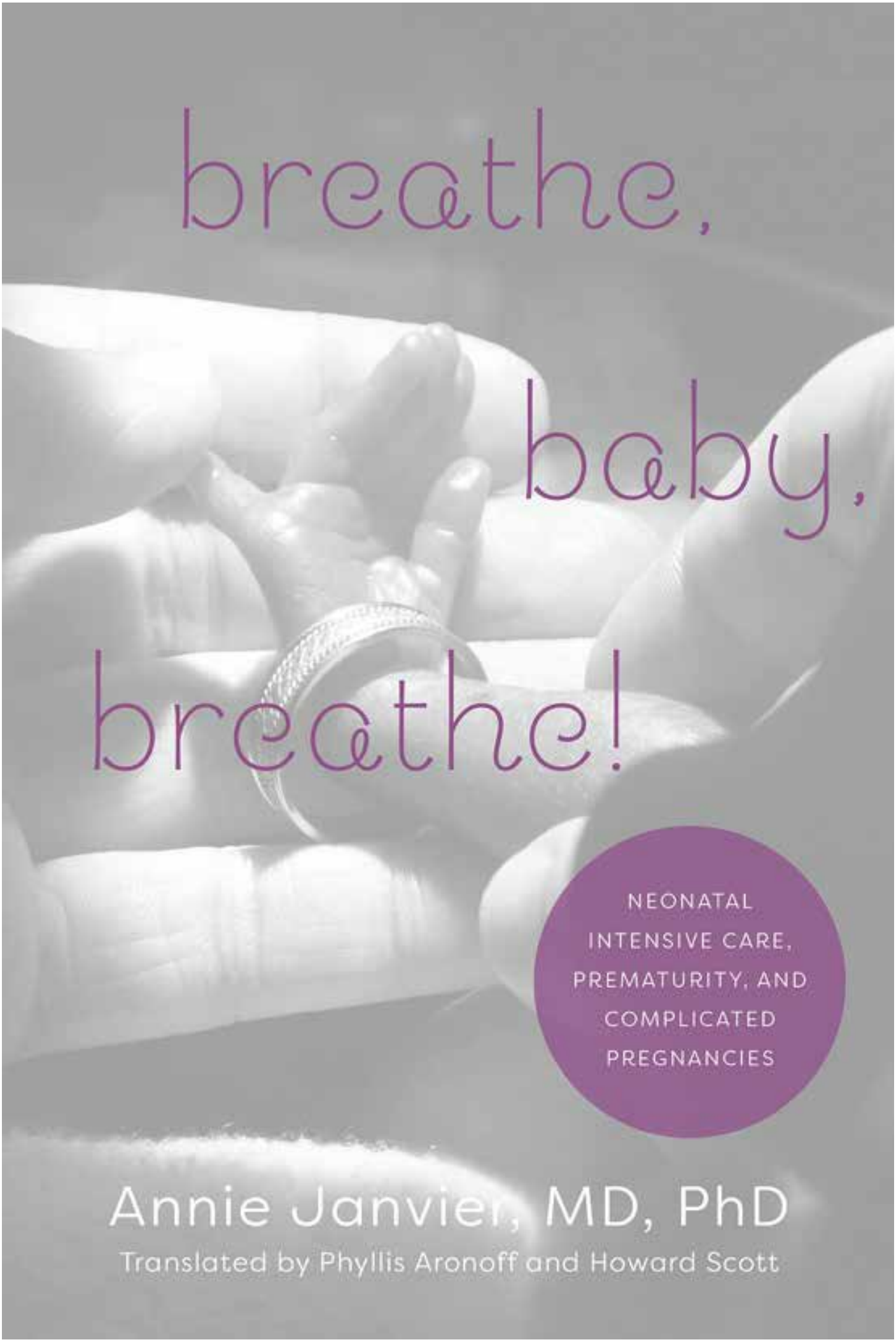
***Disclosures**: The author has no disclosures.*

NT

Corresponding Author:

Hua Wang, MD, PhD
Loma Linda University School of Medicine
Division of Genetics
Department of Pediatrics
Email: huawang@llu.edu




breathe,
baby,
breathe!
NEONATAL INTENSIVE CARE, PREMATURITY, AND COMPLICATED PREGNANCIES
Annie Janvier, MD, PhD
Translated by Phyllis Aronoff and Howard Scott

POLICY • EQUITY • INCLUSION

alliance
FOR BLACK NICU FAMILIES

FREE Wearable Breast Pump to a BLACK NICU BIRTHING PERSON

NO INCOME REQUIREMENT!

PUMP PARTNERSHIP FORM

SCAN HERE

NICU PARTNER PROGRAM

Join our coalition of NICUs across the country! It is also FREE.

JOIN NOW

ELIGIBILITY

Sign up today and you get direct access to the private request form, resources and more to help YOUR Black NICU Families.

In Unity,
Ashley, Deb & Jenny

CONTACT US

blacknicufamilies.org @ blacknicufamilies 571.520.NICU

Peer Reviewed

Family Centered Care January Newsletter: An International, Multicenter Collaborative Initiative Solely Dedicated to Quality Improvement in NICU Family-Centered Care

Morgan Kowalski

***Disclosures**: The author has no relevant disclosures.*

NT

"If you care for NICU families, you already understand that no one is guaranteed a "good outcome" in the neonatal intensive care unit. Sometimes, bad things happen. Sometimes, babies die. Sometimes, a diagnosis shatters the future a family has envisioned. When this happens, we suffer. Sometimes together—and sometimes alone."

Corresponding Author

Morgan Kowalski
Program Manager
Family Partner
Family Centered Care
Division of Neonatology
Department of Pediatrics
Stanford University
Palo Alta, CA
Email: morgankw@stanford.edu

Organizational Partners

Vol. 14 01/2026

FCC TASKFORCE NEWSLETTER

An international, multicenter collaborative initiative solely dedicated to **quality improvement in NICU Family-Centered Care**.

In This Issue

FAMILY-CENTERED CARE TASKFORCE

Subscribe to our mailing list and visit our website to learn more

Navigating Grief in the NICU, A Series with Sahra Cahoon & Erika Goyer

In spite of tremendous, significant advancements in neonatal care, few families leave the NICU unscathed. **For many, a NICU stay can be marked by a series of losses—both anticipated and unanticipated, ambiguous and blunt**. How we experience those losses shapes who we become as parents, caregivers, and advocates.

If you care for NICU families, you already understand that no one is guaranteed a "good outcome" in the neonatal intensive care unit. Sometimes, bad things happen. Sometimes, babies die. Sometimes, a diagnosis shatters the future a family has envisioned. When this happens, we suffer. Sometimes together—and sometimes alone. **As parents who have lived through the deaths of our own babies, as advocates who have been companions to other families in grief, and as witnesses to the suffering of our colleagues in the NICU, we have been activated to improve the systems in which we all work.**

In this series, we will thoughtfully explore how families and care teams experience and navigate grief in the NICU, guided by these core beliefs: **We believe that each of us brings our own unique skills, values, and experiences to our collective work. We believe that grief and gratitude often walk hand in hand. We believe there is no right way to grieve. We believe that we can be caring companions to each other—even in our suffering**

We know that compassionate care can help ease the weight of loss. Even in the most difficult moments, connection can offer beauty and comfort through our shared humanity. Although some discussions in this series may feel uncomfortable, we believe that meaningful growth often begins there. **We are committed to learning together and gaining a deeper understanding of grief in the NICU, recognizing that each of us experiences and processes it differently**. Our plan is to curate a collection of resources and articles to support you and your organization in advancing responsive, respectful, family-centered care practices. We invite you to share your favorite resources, policies, and practices, as well as any topics you would like us to address:

Sahra Cahoon, *Executive Director and Founder*, Love for Lily, sahra@loveforlily.org
Erika Goyer, BS, *Parent Advocate*, National Perinatal Association, egoyer@nationalperinatal.org

Vol. 14 01/2026

SUPPORTING FAMILIES BEYOND DISCHARGE

THE HIDDEN GRIEF OF GOING HOME: SUPPORTING EMOTIONAL READINESS AND CAREGIVER CONFIDENCE

WITH JESS DAIGLE, MD, FAAP, NICU PARENT

While discharge planning often focuses on teaching, checklists, and medical stability, many families carry a quieter truth: the hidden grief of leaving the NICU. **Discharge is often celebrated as a moment of relief, yet for many parents, it also brings fear, sadness, and a profound sense of disorientation.** The NICU becomes a place of structure, support, and predictability; stepping away from that environment can feel like losing the safety net that helped them navigate some of the most vulnerable moments of their lives.

This grief does not reflect a lack of readiness. It reflects the weight of transitioning from shared caregiving to full responsibility at home. Parents may appear outwardly confident while quietly asking themselves, "How will I do this on my own?" Because of this, **emotional readiness must be viewed as a core component of family-centered discharge—not an optional add-on.**

NICU teams can support families by normalizing these mixed emotions and preparing them for the emotional landscape of the first days and weeks at home. Families benefit from knowing that grief, anxiety, and uncertainty are common and do not mean they are unprepared. They benefit from practical strategies they can use when these feelings arise, such as:

- Pausing to take a breath during overwhelming moments
- Grounding themselves with simple routines
- Writing down questions for their pediatric provider
- Connecting with parent support networks and NICU follow-up programs that understand the complexities of the journey

Another important aspect of emotional readiness involves **preparing families for the reality that outpatient providers may adjust the care plan they learned in the NICU**. Even small changes can make parents feel confused or uncertain. NICU teams can empower families by explaining that **evolving guidance is normal as babies grow**—and encouraging parents to ask clarifying questions rather than assume they "got something wrong."

When NICU teams support both the emotional and practical dimensions of going home—and equip families with realistic expectations and self-advocacy tools—discharge becomes more than a clinical milestone. It becomes the beginning of confident, connected parenting. **Families deserve to leave the NICU not only with instructions, but with a sense of capability, community, and hope for the next chapter.**

Free Support for Families of NICU Graduates:

- Counseling Program in Partnership with BetterHelp for During or After the NICU, Project NICU
- Parent Groups and Resources, NICU Alumni
- Specialized Coordinator for Families Recently Home from the NICU, Postpartum Support Int'l
- Virtual Support Groups, Hand to Hold

JANUARY '26 WEBINAR SUMMARY

WITH BOB CICCO, MD

"Breaking Down Professional Silos to Improve Infant-Parent Outcomes in Neonatal Care" with Christy Gliniak, PhD, OTR/L, CNT, CPXP, NTMTC and Sue Ludwig, OTR/L, CNT

Sue opened the session by sharing how a relationship with a NICU mother shaped her understanding of the critical role occupational, physical, and speech therapists play when they work together. This experience inspired her to lead the creation of an organization dedicated to strengthening the quality, value, and collective voice of neonatal therapists. Together, Sue and Christy highlighted **key lessons they've learned about breaking down silos and fostering meaningful collaboration to improve outcomes for babies in the NICU**:

- Breaking down silos doesn't mean putting everyone into one role; it means **recognizing and valuing the unique perspectives, training, and skills each profession brings to improving outcomes**
- Families are a silo of their own and offer **essential expertise and insight** into their child's care
- **When professionals work in isolation, families bear the consequences** of fragmented care, mixed messages, loss of trust, and delayed decision-making
- A baby's development is influenced by multiple systems and recognizing this shapes how we work within our own roles and alongside others
- Building a collaborative team requires cooperation, coordination, communication, and coaching
- Collaboration across professions allows for a more holistic understanding of the baby and family
- Everyone involved in NICU care plays a vital, though often different, role in achieving positive outcomes; **moving from silos to collaboration is essential**

"The Power of "How Are You?": Strengthening Support for Fathers and Non-Birthing Parents in the NICU" with Cameron Boyd, MD and Michael Swain

Cameron and Michael delivered an in-depth presentation on **how to establish a successful Dad's group in the NICU and why these groups are essential for supporting fathers and other non-birthing parents**. Key takeaways from the session included:

- Michael, a veteran NICU dad, shared his two NICU experiences (20 years ago and 11 years ago), emphasizing that **no two NICU admissions are the same and that a previous NICU stay does not prepare a parent for another**
- Societal expectations that "this is as hard for Dad as it is for Mom" often result in limited resources designed specifically for fathers
- In reality, **fathers experience stress, anxiety, and depression that may be as significant, and sometimes more persistent, than what mothers experience**
- Providing clear information, including fathers in decision-making, encouraging participation in skin-to-skin care, and practicing family-centered care can reduce negative mental health outcomes for all parents
- Both short-term and long-term financial stressors may disproportionately affect fathers
- A dedicated Dad's Group is one of several effective ways to increase engagement with non-birthing parents
- Data presented showed that Dad's Groups are well received, offer meaningful educational opportunities, and help fathers become more actively involved in their baby's care
- Bottom line: while we often ask how mom is doing, we must also remember to ask how dad, or any non-birthing parent, is doing and how we can support them throughout their NICU journey.

Both sessions highlight that **achieving optimal outcomes in the NICU requires a dedicated team effort that respects and values every member of the care team (including birthing and non-birthing parents) and equips them with the tools and opportunities to do their work well.**

Did you miss this session? Watch the recording here.

TRAUMA-INFORMED CARE CORNER

TRAUMA DOES NOT BEGIN AT ADMISSION: A TRAUMA-INFORMED REFLECTION FOR FAMILY-CENTERED CARE

WITH MARY COUGHLIN, MS, NNP, NCC-E, TRAUMA INFORMED PROFESSIONAL

In family-centered care, we often speak about the NICU as a traumatic environment, and rightly so. The sights, sounds, uncertainty, separation, and loss of control can profoundly affect infants, parents, and clinicians alike. And yet, there is something equally important to name: for most families, trauma does not begin at admission. **Families arrive in the NICU carrying stories that long predate the hospital; stories shaped by generational and intergenerational trauma, by cultural and racialized histories of medical harm or exclusion, by chronic stress related to poverty, immigration, discrimination, or environmental exposure, and by prior pregnancy loss, infertility, or complicated reproductive journeys**.

The NICU may be the place where trauma becomes visible, but it is rarely where it begins.

When this broader context is not held, even well-intentioned care can misinterpret what families are expressing. Grief may be labeled as emotional dysregulation. **Vigilance can be mistaken for anxiety. Advocacy may be perceived as "difficult behavior." Withdrawal might be read as disengagement rather than protection.** These responses are often not signs of pathology. They are adaptations shaped by experience, history, and survival. **Trauma-informed, family-centered care asks us to pause before correcting, managing, or redirecting and to wonder instead what this response may be protecting. This may sound simple, but it is often insightful to quietly ask ourselves:**

- What story might this family be carrying that I cannot see?
- What has this parent already survived before arriving here?
- How might history, culture, or prior harm be shaping how they show up today?
- What would it mean to meet this moment with curiosity rather than correction?

This kind of reflection does not slow care down. It deepens it.

When we acknowledge that trauma does not begin at admission, family-centered care expands. It moves from engaging families in care to honoring the realities that surround and shape that care. Safety, trust, voice, and dignity are not created solely through policies or checklists. They are built through attunement, humility, and relationship—moment by moment.

Trauma-informed family-centered care is not about having all the answers. It is about widening the frame. **If we want families to feel seen, heard, and respected in the NICU, we must be willing to look beyond the moment in front of us to the histories, systems, and lived experiences that walk in with them. Because care is never neutral. And neither is context.**

Vol. 14 01/2026

EQUITY, DIVERSITY, INCLUSION, BELONGING, AND JUSTICE IN THE NICU

A FOUNDATION FOR FAMILY-CENTERED CARE

WITH JESSI BARNES, MSN, RN, RNC-NIC, NPD-BC, C-ELBW & MIA MALCOLM, BS, CDFT

As NICU parents, we understand that the NICU is uniquely positioned to influence the patient/family experience and the understanding of what healthcare is. For some families, the NICU is their first interaction with the medical system—you are the prelude to their medical story. For other families who have had extensive interactions with the healthcare system, they may be coming in with medical trauma that is personal, familial, generational, or ancestral. For them, the NICU can be a watershed moment allowing them to reflect on their past experiences, and for you to earn their trust. **In addition to the more trauma-informed, compassion-centered reasons that Equity, Diversity, Inclusion, Belonging, and Justice (EDIBJ) should be foundational to the care you provide, there is a business case for prioritizing these principles:**

- **Improved Clinical Outcomes**—Health disparities in the NICU are well documented (e.g., higher morbidity and mortality rates among Black, Indigenous, and low-income families). EDIBJ-informed practices such as culturally responsive care, language access, and bias-aware decision-making) are associated with fewer adverse events, improved breastfeeding rates, and better neurodevelopmental follow-up adherence.
- **Workforce Retention, Engagement, and Performance**—NICUs experience high burnout and turnover, which is extremely costly. Inclusive, psychologically safe environments reduce moral distress, improve teamwork and communication, and increase retention of nurses, physicians, and allied health staff.
- **Improved Patient Experience and Family Trust**—Family experience scores (e.g., Press Ganey) are influenced by respect, communication, and feelings of being heard and valued. Families who feel respected are more engaged in care, less likely to escalate conflicts, and more likely to follow discharge plans.
- **Stronger Family-Centered Care and Shared Decision-Making**—EDIBJ reinforces family-centered care by addressing power imbalances, ensuring families from all backgrounds can meaningfully participate in the care of their infant, and improving shared decision-making which reduces conflict, delays, and costly care mismatches.

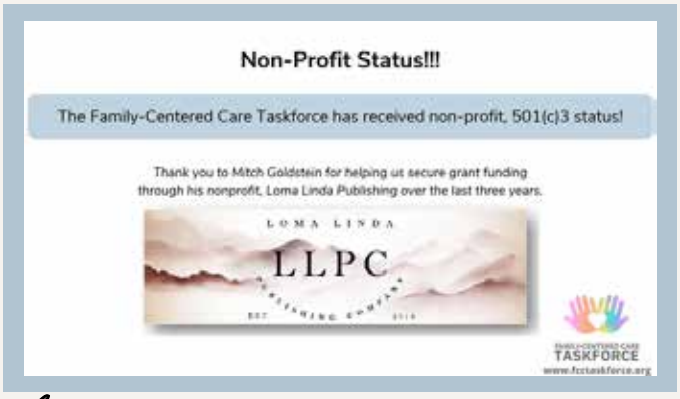
The reality is, their journey starts before many families even enter the NICU. The birthing experience is impactful to a family's origin story— whether positive or negative. Practicing medicine with EDIBJ principles in mind sets the stage for a more inclusive birth experience that mitigates the possibility for trauma. Birth-related trauma enters the NICU with the baby and family and does not stop at discharge. The experiences and stressors of the NICU can have lasting effects that families and infants carry throughout their lives.

Throughout this series, we will break down the core tenets of this work: Equity, Diversity, Inclusion, Belonging, and Justice. We will share real examples of EDIBJ in action and provide practical guidance. **We invite you to pause and reflect on how you show up each day—and how your presence and actions affect your colleagues, your professional journey, your patients, and their families.**

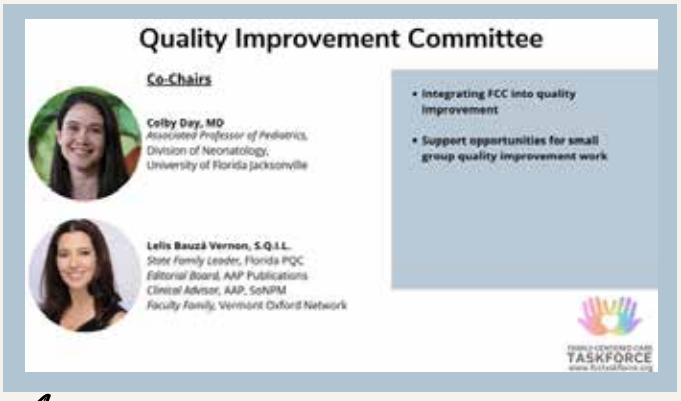
LEADERSHIP TEAM UPDATE

WITH MALATHI BALASUNDARAM, MD & MORGAN KOWALSKI

The FCC Taskforce's Executive Council held its fourth and final quarterly meeting of 2025 on December 10th with 21 members joining virtually via Zoom!



We are excited to share that **the FCC Taskforce has received non-profit, 501(c)3 status**! A huge thank you to Mitch Goldstein whose nonprofit, Loma Linda Publishing has served as our fiduciary home over the last three years.



Quality Improvement has remained an important foundational aspect of our work. Our newest committee will **support efforts to integrate FCC into QI.**

Join us in welcoming our newest Organizational Partners!

We are excited to share that our monthly office hours sessions are **changing to accomodate a growing audience and desire for FCC implementation strategies**.

Vol. 14 01/2026

THANK YOU FOR READING

FCC Taskforce Leadership

Malathi Balasundaram, MD
Founder & Executive Director

Morgan Kowalski, NICU Parent
Director of Operations

Keira Sorrells, NICU Parent
Director of Impact & Strategy

Newsletter Committee

Co-Chairs
Bob Cicco, MD
Morgan Kowalski

Contributors
Jessi Barnes, MSN, RN, RNC-NIC
Sahra Cahoon
Mary Coughlin, MS, NNP, NCC-E
Jess Daigle, MD, FAAP
Erika Goyer, BA
Mia Malcolm, BS, CDFT
Jadene Wong, MD

Membership

3,000+ members
49/50 U.S. States & Puerto Rico
9/10 Canadian Provinces
78 Countries
Join us, membership is free!

Generously Supported By:

Mead Johnson NUTRITION

Mission Statement

We support NICUs as they begin or strengthen Family-Centered Care in their units.

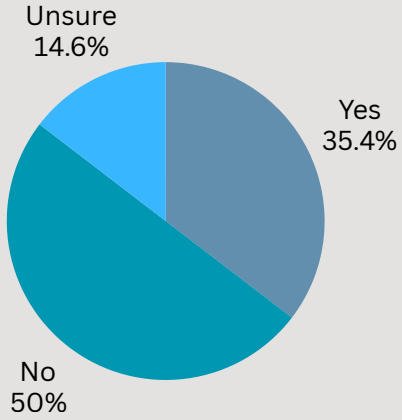
Why We Exist

To address the challenges that exist in implementing FCC practices, we offer free educational webinars with engaging, live Q&A sessions and free monthly FCC Community Exchange sessions.

Our key strength is equal partnership between clinicians and Family Partners in everything we do.

In a survey of 48 NICUs across the U.S., 65% said they don't have an FCC Committee in their unit.

Does your NICU currently have an FCC Committee?



Organizational Partners

Connect

Email
Bluesky
Website
Facebook
YouTube
Instagram
LinkedIn
X

FAMILY-CENTERED CARE TASKFORCE

FCC TASKFORCE

2025 IMPACT

An international, multicenter collaborative initiative solely dedicated to **quality improvement in NICU Family-Centered Care**.

6 FREE EDUCATIONAL WEBINARS

814 LIVE PARTICIPANTS

1251 RECORDING VIEWS

12 OFFICE HOURS SESSIONS

512 ATTENDEES

1000+ NEW MEMBERS

13 NEW COUNTRIES REPRESENTED IN MEMBERSHIP

5 NICU FELLOWS SUPPORTED IN ATTENDING GRAVENS CONFERENCE

36 NEW ORGANIZATIONAL PARTNERSHIPS

100%

EQUAL REPRESENTATION BETWEEN HEALTHCARE PROFESSIONALS AND FAMILY PARTNERS IN EVERYTHING WE DO

Subscribe to our mailing list and visit our website to learn more!

FCC TASKFORCE WEBINAR

March 12, 2026 | 11:00AM - 12:30PM PT

Measuring FCC Practices Across 99 NICUs: Are Resources and Acuity Correlated with Family Empowerment?

Mia Malcolm, BS, CDFT (she/her)

- Community Engagement Specialist, Ollie Hinkle Heart Foundation
- Co-Chair, FCC Taskforce EDIBJ Committee
- Senior Research Coordinator, Washington University School of Medicine & Stanford School of Medicine
- NICU Parent of Gavin

Malathi Balasundaram, MD (she/her)

- Clinical Professor, Stanford School of Medicine
- Founder & Executive Director, Family-Centered Care Taskforce
- Neonatal Intensivist, El Camino Health NICU

Trust and Engagement in the AI Era: Advancing Family-Centered Care Through Responsible Innovation

James S. Barry, MD, MBA (he/him)

- Professor of Pediatrics, Section of Neonatology
- Medical Director, University of Colorado Hospital NICU
- President, NeoMINDAI

JOIN FOR FREE TO REGISTER

FCC TASKFORCE WORK

GENEROUSLY SUPPORTED BY:

Mead Johnson NUTRITION

FAMILY-CENTERED CARE TASKFORCE

FCC TASKFORCE OFFICE HOURS

Who? Facilitated by one Healthcare Partner and one Family Partner from our Executive Council and attended by members like you!

What? An informal meeting where members can bring their unit's specific challenges and barriers around implementing family-centered care practices and brainstorm solutions for overcoming them with their peers.

Where? Zoom! These sessions are not recorded so folks can feel safe sharing.

When? 11am Pacific Time / 2pm Eastern Standard Time

Why? Don't reinvent the wheel! Modify what's worked for other units to suit your own.

Register Here

FAMILY-CENTERED CARE TASKFORCE

Pictured: Baby Kole with his Dad

Save the Date!

Join us for the 39th Annual Gravens Conference

"Sensitive Issues in Sensational Times"

New date & location, same great topics, workshops, abstracts, and networking for those who work in Newborn Intensive Care Units.

Come learn with us!

June 15th Preconference,
June 16th, 17th, and 18th, 2026
at University of Notre Dame
Notre Dame, Indiana

UNIVERSITY OF NOTRE DAME

LOMA LINDA LLPC

Loma Linda Publishing Company

NT

nidcap FEDERATION INTERNATIONAL voice of the newborn

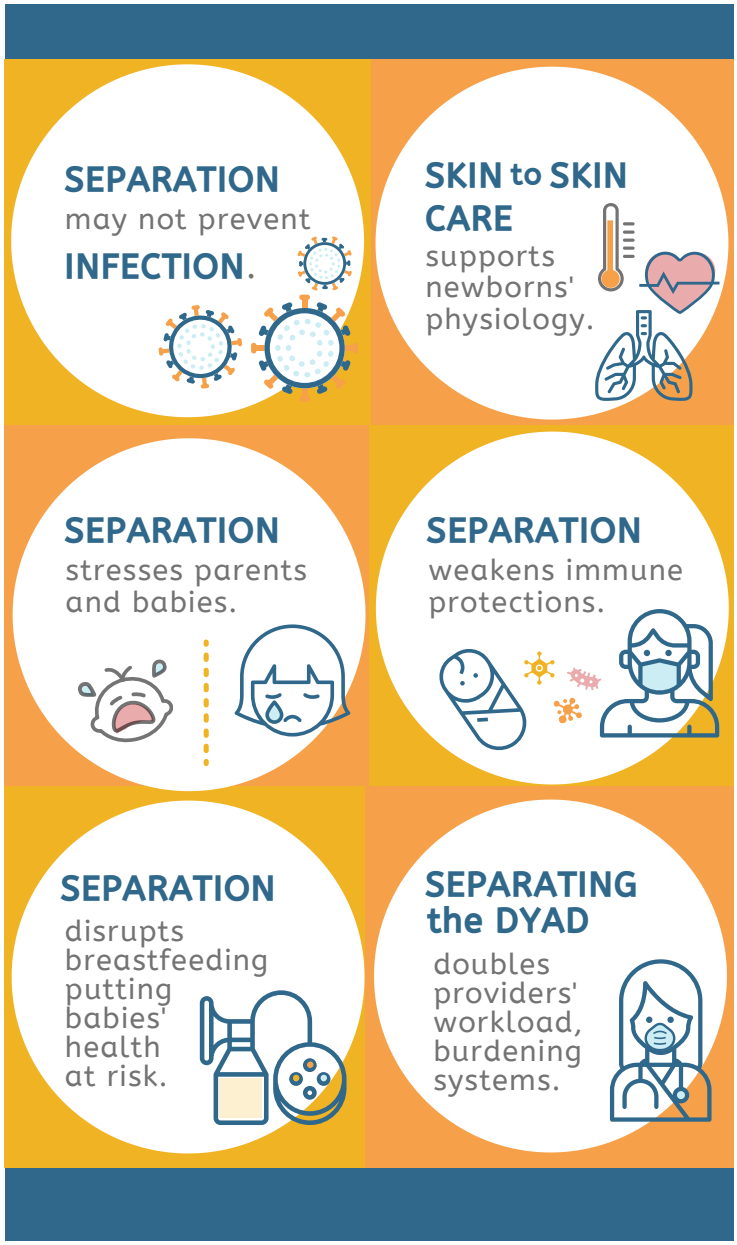
Endorsed by the NIDCAP© Federation International, Inc

Abstracts Due
March 15th, 2026
(Date extended)

To learn more and register, visit our website:

Should Infants Be Separated from Mothers with COVID-19?

FIRST DO NO HARM



BASED ON THE ARTICLE:

Should Infants Be Separated from Mothers with COVID-19? First, Do No Harm

Peer Reviewed

Medicolegal: Issues Surrounding the "Apparent Stillborn"

Jay P. Goldsmith, MD, Jonathan K. Muraskas, MD

"As coroner, I must aver, I thoroughly examined her. And she's not only merely dead, She's really most sincerely dead. …She is morally, ethically, spiritually, and physically dead." (The Munchkin coroner regarding the Wicked Witch of the East in *The Wizard of Oz*, lyrics by E.Y Harburg, 1939.)

"*…your friend here is only mostly dead. There is a big difference between mostly dead and all dead….Now mostly dead is slightly alive*." (Billy Crystal in *The Princess Bride*, directed by Rob Reiner, 1987.)

"The birth of a newborn with no signs of life presents great challenges to the neonatologist and the provider team. A 1-minute Apgar score of 0 means almost certainly that the newly born baby is very acidotic and a difficult resuscitation is ahead."

The birth of a newborn with no signs of life presents great challenges to the neonatologist and the provider team. A 1-minute Apgar score of 0 means almost certainly that the newly born baby is very acidotic and a difficult resuscitation is ahead. Is the baby really "dead," or is there cardiac activity that you cannot hear or palpate (pulseless electrical activity)? The resuscitating team would like to know when the fetal heart rate was last heard and what that rate was. If the heart rate was less than 100 bpm, was this a fetal or maternal heart rate? If the electronic fetal monitor showed a fetal heart rate in the minutes before delivery, you can assume that there is a possibility of a successful resuscitation. However, if the baby has dependent lividity, then the baby has been dead for at least 20–30 minutes, and resuscitation will be futile. Was the last heart rate seen on the monitor really the mother's and not the fetus's?

Outcomes of Apparently Stillborn Babies:

The term "apparently stillborn" first appeared in the medical literature in 1907 in an article by James Weir, an assistant surgeon in Glasgow Hospital in Scotland. Dr. Weir ascribed some of these infants' conditions to the use of chloroform anesthesia for childbirth.

"However, if the baby has dependent lividity, then the baby has been dead for at least 20–30 minutes, and resuscitation will be futile. Was the last heart rate seen on the monitor really the mother's and not the fetus's?"

In modern times, Jain et al. reviewed the resuscitation and long-term outcome of a series of "apparently stillborn" infants. (1) His group retrospectively reviewed the short- and long-term outcome of 93 infants in Illinois who had an Apgar score of 0 at 1 minute of age and were resuscitated at birth. Sixty-two (66.6%) responded and left the delivery room alive; 26 (42%) of the 62 infants died in the neonatal period, and 36 infants were discharged home; of these 36 infants, three subsequently died during infancy. Of the 33 survivors, ten were lost to follow-up after discharge. Developmental assessment of 23 of 33 long-term survivors revealed normal outcome in 14 (of the 93 initially reviewed or 15%), abnormal results in 6, and suspect status in 3. Fifty-eight infants had an Apgar score of 0 at greater than or equal to 10 minutes of age, and all except one died; the surviving infant had a severely abnormal developmental outcome. Survival was unlikely

"His group retrospectively reviewed the short- and long-term outcome of 93 infants in Illinois who had an Apgar score of 0 at 1 minute of age and were resuscitated at birth. Sixty-two (66.6%) responded and left the delivery room alive; 26 (42%) of the 62 infants died in the neonatal period, and 36 infants were discharged home"

if there was no response after 10 minutes of resuscitation. This review, and several other retrospective reviews of Apgar 0 babies done prior to the implementation of therapeutic hypothermia, led the International Liaison Committee on Resuscitation (ILCOR) and the Neonatal Resuscitation Program (NRP) in 2010 to suggest limiting resuscitation of newborns to 10 minutes if there was no return of spontaneous circulation (ROSC) by that time. (2)

"Survival was unlikely if there was no response after 10 minutes of resuscitation. This review, and several other retrospective reviews of Apgar 0 babies done prior to the implementation of therapeutic hypothermia, led the International Liaison Committee on Resuscitation (ILCOR) and the Neonatal Resuscitation Program (NRP) in 2010 to suggest limiting resuscitation of newborns to 10 minutes if there was no return of spontaneous circulation (ROSC) by that time."

Sentinel Events, Etiology, and Cord Blood Gases:

Often, apparently stillborn infants have suffered a sentinel event prior to birth. An obstetric sentinel event is defined as a serious adverse event (sometimes preventable) that results in death or harm to the patient. In obstetrics, these events include maternal cardiac arrest, abruptio placenta, cord prolapse or severe compression, uterine rupture, and prolonged shoulder dystocia. However, sometimes the fetal acid-base status is non-reassuring during labor, and an expedited delivery (cesarean section or operative vaginal delivery) will result in an apparent stillborn with the loss of fetal heart tones from the time of the decision to deliver to the actual delivery. In either case, cord blood gas analysis may not reflect the baby's true acid-base status. In some circumstances, the cord gases of the newborn will look relatively normal (i.e., pH >7.1) despite the baby having no signs of life. In a non-dysmorphic baby, normal cord gases in an apparent stillborn are not a reason to believe the baby was not asphyxiated. Although the gas sampled may be venous rather than arterial, in most cases the venous gas can be used to predict the arterial sample, which will be at most 0.1 pH units lower than the venous. (3) Thus, a 7.2 venous pH blood gas will reflect at worst a 7.1 pH arterial gas, which is still inconsistent with the condition of the baby. More likely, there has been an in utero event that has obstructed blood flow through the umbilical cord, or the fetal heart has lost the ability to perfuse the umbilical arteries. Thus, the blood gas sampled from the cord will reflect the fetus's acid-base status prior to the obstruction or cardiac failure, as if the blood in the cord had been frozen in time, with no circulation in either direction. After successful resuscitation, a neonatal blood gas may look much more acidotic than the cord gases, thus possibly suggesting (incorrectly) that the problem was with the resuscitation and not the time before delivery. Especially when there has been difficulty with the resuscitation (i.e., multiple attempts at intubation), the pediatric providers may be dragged into litigation regarding a poor neonatal outcome.

"Often, apparently stillborn infants have suffered a sentinel event prior to birth. An obstetric sentinel event is defined as a serious adverse event (sometimes preventable) that results in death or harm to the patient. In obstetrics, these events include maternal cardiac arrest, abruptio placenta, cord prolapse or severe compression, uterine rupture, and prolonged shoulder dystocia."

"In a non-dysmorphic baby, normal cord gases in an apparent stillborn are not a reason to believe the baby was not asphyxiated... Thus, a 7.2 venous pH blood gas will reflect at worst a 7.1 pH arterial gas, which is still inconsistent with the condition of the baby. More likely, there has been an in utero event that has obstructed blood flow through the umbilical cord, or the fetal heart has lost the ability to perfuse the umbilical arteries. Thus, the blood gas sampled from the cord will reflect the fetus's acid-base status prior to the obstruction or cardiac failure, as if the blood in the cord had been frozen in time, with no circulation in either direction."

Review of placental pathology in apparently stillborn infants usually does not provide additional information as to the etiology of the poor transition for the newborn. Unless there is a true knot in the cord or an obvious abruption or detached placenta in a uterine rupture at cesarean section, the placenta does not usually provide a definitive diagnosis. A review of placental pathology in apparently stillborn infants found no relevant findings in most cases, and no sentinel lesions were identified as indicative of these poor birth outcomes. The most common finding in this

review was maternal vascular malperfusion, which may make the fetus more vulnerable to a hypoxic ischemic event. (4) Sometimes an intraamniotic infection may result in a difficult transition and lead to an Apgar 0 baby.

"A review of placental pathology in apparently stillborn infants found no relevant findings in most cases, and no sentinel lesions were identified as indicative of these poor birth outcomes. The most common finding in this review was maternal vascular malperfusion, which may make the fetus more vulnerable to a hypoxic ischemic event."

Efficacy of Resuscitation:

The resuscitation of an apparently stillborn infant is difficult. It is likely that the infant is in secondary apnea due to severe acidosis and will not respond to drying, stimulation, or positive-pressure ventilation with a bag and mask. Providers are tempted to start chest compressions because the baby is asystolic, but they should attend to the airway first as recommended in the NRP. Often, the tidal volume delivered via bag-and-mask ventilation is inadequate to inflate the newborn's lungs. Milner showed many years ago that 250 mL bag devices were inadequate to ventilate the previously fluid-filled lung, and that the reason some neonates responded to this procedure was the activation of the Head paradoxical inflation reflex to achieve spontaneous ventilation in those babies who were NOT in secondary apnea. (5) In 1889, Head observed that if the Hering-Breuer reflex is partially blocked (i.e., by severe acidemia), lung hyperinflation causes a further increase in inspiratory effort, opposite to the Hering-Breuer reflex. The receptors for this paradoxical reflex are called rapidly adapting receptors because they stop firing promptly after a volume change. Periodic sighs help prevent alveolar collapse or atelectasis. This reflex seems to be involved in stimulating the first breaths of a newborn infant when other reflexes are depressed. Thus, the provider should proceed to intubation or laryngeal mask airway early, or possibly use a T-piece resuscitator with adequate pressures and inflation times to achieve chest rise and positive CO_2 exhalation. The problem is further complicated by the lack of intubation skills among most pediatricians and pediatric residents. Therefore, each hospital should develop a strategy to achieve adequate ventilation in the delivery room for the severely depressed newborn.

"Providers are tempted to start chest compressions because the baby is asystolic, but they should attend to the airway first as recommended in the NRP. Often, the tidal volume delivered via bag-and-mask ventilation is inadequate to inflate the newborn's lungs."

"Even with highly skilled resuscitation teams in large delivery service hospitals, it took 5–10 minutes to achieve the first dose of intravenous epinephrine. Therefore, it has been suggested that the resuscitation team prepare the umbilical catheter tray and meds prior to birth in a truly emergent delivery for fetal bradycardia while waiting in the delivery area so that the first doses of epinephrine and volume can be expedited."

The early administration of epinephrine and volume is also problematic. Intratracheal epinephrine is only recommended as a first step when intravenous access has not been established. Its efficacy, even at high doses, is questionable. Even with highly skilled resuscitation teams in large delivery service hospitals, it took 5–10 minutes to achieve the first dose of intravenous epinephrine. Therefore, it has been suggested that the resuscitation team prepare the umbilical catheter tray and meds prior to birth in a truly emergent delivery for fetal bradycardia while waiting in the delivery area so that the first doses of epinephrine and volume can be expedited. (6)

"The use of therapeutic hypothermia in the last two decades as part of the treatment of intrapartum asphyxia has resulted in some improved outcomes in apparently stillborn newborns and changes in the recommendations of the NRP for the time to discontinue resuscitation efforts if there is no ROSC."

How long should resuscitation be continued if there is no return of spontaneous circulation?

The use of therapeutic hypothermia in the last two decades as part of the treatment of intrapartum asphyxia has resulted in some improved outcomes in apparently stillborn newborns and changes in the recommendations of the NRP for the time to

discontinue resuscitation efforts if there is no ROSC. As noted above, retrospective studies prior to the use of therapeutic hypothermia suggested no good outcomes if ROSC was not achieved by 10 minutes of life. However, the review by Kasdorf et al. of 4 studies and their own local data in which hypothermia was utilized, showed that up to 27% of asphyxiated newborns had normal neurodevelopmental outcomes at 18 months after the 10 minute Apgar score was 0. (7) A more recent review of six electronic databases of neonates with a 10 minute Apgar score of 0 (820 babies) in which therapeutic hypothermia was utilized showed that approximately 2 out of 5 survived, and 1 out of 5 survived without moderate to severe neurodevelopmental impairment. (8) These results have led the ILCOR and NRP to change their recommendations "as a reasonable time frame" for the discontinuation of resuscitation without ROSC to occur after 20 minutes of appropriate effort. (9) The decision to discontinue resuscitation efforts should be discussed with the family and documented in the medical record.

"A more recent review of six electronic databases of neonates with a 10 minute Apgar score of 0 (820 babies) in which therapeutic hypothermia was utilized showed that approximately 2 out of 5 survived, and 1 out of 5 survived without moderate to severe neurodevelopmental impairment. These results have led the ILCOR and NRP to change their recommendations "as a reasonable time frame" for the discontinuation of resuscitation without ROSC to occur after 20 minutes of appropriate effort. The decision to discontinue resuscitation efforts should be discussed with the family and documented in the medical record."

Rarely, resuscitation efforts are discontinued, and the baby is placed in the parents' arms for "comfort and company" only to revive spontaneously after several minutes. This event is described in the paper by Paris et al. (10) and in an excellent short book, *The Lazarus Case*, by John Lantos, in which Dr. Lantos describes the intersection of neonatal medicine with the law as the case he describes became the subject of a malpractice litigation claiming, among other assertions, that the resuscitation was discontinued too early. (11) Providers should carefully weigh the decision to begin resuscitation again since the outcome in these rare cases is universally poor.

Recommendations:

Newborns who are born without signs of life are extremely acidotic regardless of what cord blood gas values are reported. Early neonatal blood gases and lactate should be obtained.

- Even though there is no heart rate, resuscitation should begin with ventilation before starting chest compressions.
- Babies with secondary apnea and no detectable heart rate will usually not respond to bag-and-mask ventilation alone; thus, early placement of an advanced airway (supraglottic airway device or intubation) is recommended.
- The preparation of the umbilical lines and medications prior to birth in an emergency delivery for fetal bradycardia will save precious minutes in the venous administration of epinephrine and volume during resuscitation.
- After 20 minutes of properly performed resuscitation with no ROSC, the procedure may be discontinued after appropriate discussion with the family.
- Apparently, stillborn infants who are successfully resuscitated are almost always candidates for therapeutic hypothermia regardless of the cord blood gas values.

References:

1. Jain L, Ferre C, Vidyasagar D, Nath S, Sheftel D. Cardiopulmonary resuscitation of apparently stillborn infants: survival and long-term outcome. J Pediatr. 1991 May;118(5):778–82. doi: 10.1016/s0022-3476(05)80046-0. PMID: 2019934.
2. Kattwinkel J, Perlman JM, Aziz K, Colby C, Fairchild K, Gallagher J, Hazinski MF, Halamek LP, Kumar P, Little G, McGowan JE, Nightengale B, Ramirez MM, Ringer S, Simon WM, Weiner GM, Wyckoff M, Zaichkin J; American Heart Association. Neonatal resuscitation: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Pediatrics. 2010 Nov;126(5):e1400-13.doi: 10.1542/peds.2010-2972E. Epub 2010 Oct 18. Erratum in: Pediatrics. 2011 Jul;128(1):176. PMID: 20956432.
3. Cantu J, Szychowski JM, Li X, Biggio J, Edwards RK, Andrews W, Tita ATN. Predicting fetal acidemia using umbilical venous cord gas parameters. Obstet Gynecol. 2014 Nov;124(5):926-932. doi: 10.1097/AOG.0000000000000517. PMID: 25437720.
4. Morrow R, Andersen C, Khong TY. Placental pathology of resuscitated apparent stillbirth. Pathology. 2022 Dec;54(7):888-892. doi: 10.1016/j.pathol.2022.04.009. Epub 2022 Jun 27. PMID: 35864008.
5. Field D, Milner AD, Hopkin IE. Efficiency of manual resuscitators at birth. Arch Dis Child. 1986 Mar;61(3):300-2. doi: 10.1136/adc.61.3.300. PMID: 3963876; PMCID: PMC1777722.
6. Sparks JE, Jaleel MA, Christie L, et al. [2011] [2175.6] time and route for first dose of first epinephrine. Impact of Changes in the 2006 Neonatal Resuscitation Program (NRP) Recommendations for Delivery Room Epinephrine Use. Society Ped Res, 2011.
7. Kasdorf E, Laptook A, Azzopardi D, Jacobs S, Perlman JM. Improving infant outcome with a 10 min Apgar of 0. Arch

Dis Child Fetal Neonatal Ed. 2015 Mar;100(2):F102–5. doi: 10.1136/archdischild-2014-306687. Epub 2014 Oct 23. PMID: 25342246.

8. Khorram B, Kilmartin KC, Dahan M, Zhong YJ, Abdelmageed W, Wintermark P, Shah PS. Outcomes of Neonates with a 10-min Apgar Score of Zero: A Systematic Review and Meta-Analysis. Neonatology. 2022;119(6):669–685. doi: 10.1159/000525926. Epub 2022 Aug 31. PMID: 36044835.

9. Aziz K, Lee HC, Escobedo MB, Hoover AV, Kamath-Rayne BD, Kapadia VS, Magid DJ, Niermeyer S, Schmölzer GM, Szyld E, Weiner GM, Wyckoff MH, Yamada NK, Zaichkin J. Part 5: Neonatal Resuscitation: 2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation. 2020 Oct 20;142(16_suppl_2):S524–S550. doi: 10.1161/CIR.0000000000000902. Epub 2020 Oct 21. PMID: 33081528.

10. Paris JJ, Goldsmith JP, Cimperman M. Resuscitation of a micropremie: the case of MacDonald v. Milleville. J Perinatol. 1998 Jul-Aug;18(4):302-5. PMID: 9730202.

11. The Lazarus Case: Life-and-Death Issues in Neonatal Intensive Care.by John D. Lantos. Johns Hopkins University Press. ISBN-13: 978-080188770.

Disclosures: The authors have no disclosures.

NT

The authors would like to thank Dr. Myra Wyckoff for her careful review and valuable suggestions regarding this manuscript.

Corresponding Author

Jonathan K. Muraskas, M.D.
Professor of Pediatrics
Co-director, Neonatal ICU
Director, Neonatal-Perinatal Research
Loyola University Medical Center
2160 S First Ave
Maywood, Illinois 60153
email: JMURASK@lumc.edu

Corresponding Author

Jay P. Goldsmith, M.D.
Clinical Professor of Pediatrics
Tulane University School of Medicine
4740 S I-10 Service Rd, West, Suite 120
Metairie, LA 70001
Email: jgoldsmi@tulane.edu

The Signs & Symptoms of RSV

RESPIRATORY SYNCYTIAL VIRUS

Know the Signs & Symptoms of RSV

- Cough
- Runny Nose
- Struggling to Breathe *(breastbone sinks inward when breathing)*
- Difficulty Eating
- Lethargy
- Wheezing

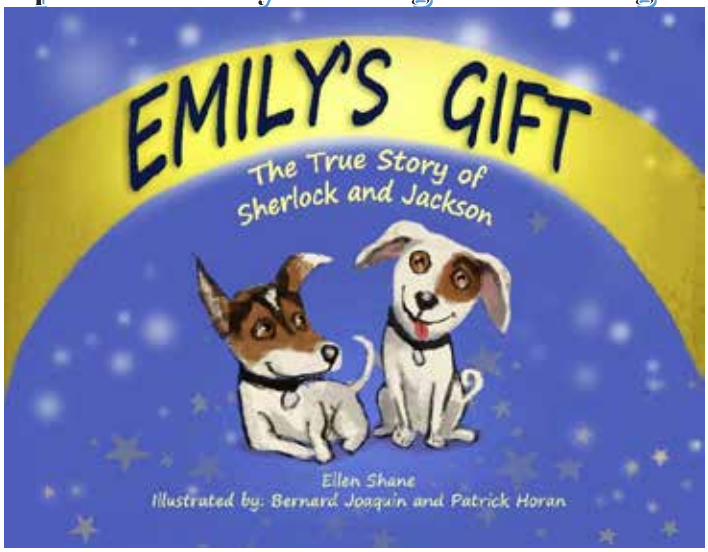
RESPIRATORY SYNCYTIAL VIRUS
is a highly contagious seasonal virus that can lead to hospitalization for some babies and young children.

Know the Signs.

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

LEARN MORE

"Emily's Gift" can be purchased by clicking on the image of the cover below.



Purchases of this engaging **true story** provide disadvantaged middle school students, risking academic failure, the opportunity to attain their best personal and academic potential.

Purchasing options include a limited quantity of signed and numbered books specifically to support the SEA Program, an ebook, soft and hardcover versions, and the option to donate one or more books to support organizations supporting young children.

You can provide both reading entertainment for younger children, and make a difference in the lives of the disadvantaged middle schoolers we support.

Sales support our nonprofit charity's SEA Program. You can make a difference for these children!

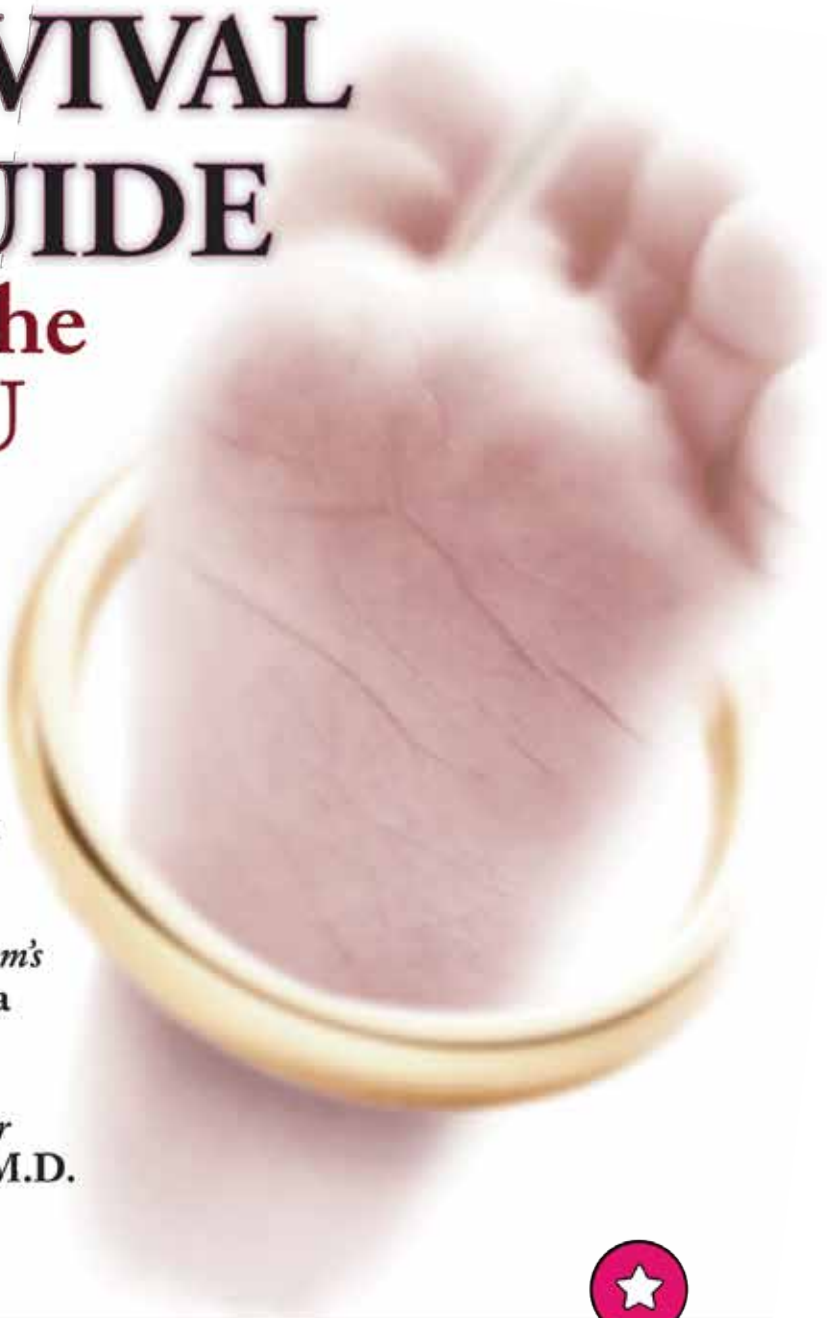
Emily's Gift-Click Here to Buy

Direct SEA Support-Click Here

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

For more information, please visit emilyshane.org.

The Preemie Parent's SURVIVAL GUIDE to the NICU



By

little man's
Nicole Conn

&

PreemieWorld.com's
Deb Discenza

with

Medical Editor
Alan R. Spitzer, M.D.

HOW TO MAINTAIN YOUR SANITY & CREATE A NEW NORMAL

second edition

Collab-a-Palooza: Inaugural Virtual Gathering for Perinatal Professionals Promises Three Days of Learning, Networking, and Innovation

Nicole Harlot

The perinatal care landscape is evolving, and so are the opportunities for professionals to connect, learn, and lead. This year marks the debut of Collabapalooza, a first-of-its-kind virtual event dedicated exclusively to perinatal professionals. Set to take place over three days, Collabapalooza is designed to unite doulas, midwives, lactation consultants, therapists, OB/GYNs, and other specialists for a dynamic experience of education, collaboration, and community-building.

"The perinatal care landscape is evolving, and so are the opportunities for professionals to connect, learn, and lead. This year marks the debut of Collabapalooza, a first-of-its-kind virtual event dedicated exclusively to perinatal professionals."

A Virtual Event for a Global Community:

Collabapalooza recognizes the need for accessible, high-impact professional development. By going fully virtual, the event removes geographic barriers, welcoming attendees from across the globe to participate in live sessions and interactive discussions. Every ticket includes 30 days of on-demand access, allowing busy professionals to revisit content and maximize learning at their own pace.

What Attendees Can Expect:

Participants will have access to:

- A robust lineup of live sessions covering the latest research, clinical best practices, and innovative approaches in perinatal care
- Networking opportunities with peers and industry leaders, fostering collaboration across disciplines
- 3 Day Live Event + 30 Days on Demand Access to watch replays
- Complimentary PRC membership (https://jointheprc.com/) extending community engagement beyond the event
- A complimentary one-year Seedlinks virtual business card, helping attendees expand their professional networks
- The chance to earn up to 8 CEUs, depending on their professional organization

Special Launch Offer:

To celebrate its inaugural year, Collabapalooza is offering a 15% discount on tickets with the code **COLLAB26**. This makes it even more accessible for professionals looking to invest in their growth and impact.

Why Collab-a-palooza Matters:

The event is more than just a conference—it is a movement to foster authentic connection, collective innovation, and equitable empowerment in perinatal health. By bringing together a diverse, global community, Collabapalooza aims to spark new ideas, strengthen support systems, and elevate the standard of care for families everywhere.

How to Join:

Perinatal professionals interested in attending can learn more and register at prc.vfairs.com. With its unique blend of education, networking, and practical resources, Collabapalooza is poised to become a cornerstone event for the field.

"To celebrate its inaugural year, Collabapalooza is offering a 15% discount on tickets with the code COLLAB26. This makes it even more accessible for professionals looking to invest in their growth and impact."

Our Speakers and Agenda:

Collabapalooza 2026 is a three-day virtual conference for perinatal professionals, featuring a robust agenda of live sessions, panels, and networking opportunities. The event highlights international collaboration, with speakers and panelists representing 12 countries and leading organizations in maternal and perinatal health.

"Collabapalooza 2026 is a three-day virtual conference for perinatal professionals, featuring a robust agenda of live sessions, panels, and networking opportunities. The event highlights international collaboration, with speakers and panelists representing 12 countries and leading organizations in maternal and perinatal health."

Key Speakers:

Angelina Spicer – Comedian & Accidental Activist- From Silence to Strength

Charles Johnson (4Kira4Moms) –Dads Delivering Change

Jodi Nuehauser & Kristin James–Unifying Women's Health

Tyler Fox & Trisha Short- TeamBirth Initiative through Ariadne Labs

Notable Panelists:

Defragmenting Care, Moving Forward in Collaboration:

Andrea Braden, MD, IBCLC – Maternal Health Technology & Equity

Prinscilla Moore – CAPPA Doula Organization President

Birdie Gunyon Meyer, RN, PMH-C – PSI Perinatal Mood Disorders & Certification Trainer

Robin Shadle – Childbirth Education, Lamaze International

Tigist Ejeta – Midwife, NACPM

Caitlin Goodwin – CNM, AWHONN

Laurel Wilson – IBCLC

Importance of Fathers in Perinatal Care Panel: Joshua Zawadi, Juan Irby, Andre Nelson, Scott Mair, Linos Muhvu, Gabrielle Albert

Global Landscape of Perinatal Care Panel: 8 Countries and multiple facets of care represented. US, Norway, Spain, Nigeria, UK, Ireland, Lebanon, and Israel.

The agenda includes keynote addresses, breakout sessions, roundtables, and panels on topics such as trauma-informed care, maternal mental health, pelvic health, postpartum support, advocacy, and the importance of father involvement in perinatal health, with over 30 collaborative opportunities to choose from.

"The agenda includes keynote addresses, breakout sessions, roundtables, and panels on topics such as trauma-informed care, maternal mental health, pelvic health, postpartum support, advocacy, and the importance of father involvement in perinatal health, with over 30 collaborative opportunities to choose from."

Perinatal Resource Collaborative:

The Perinatal Resource Collaborative serves as the village for the villagers: the professionals who create villages for women on their perinatal and motherhood journey. The PRC aims to create a nurturing ecosystem where perinatal professionals worldwide unite to revolutionize maternal healthcare. Through evidence-based education, innovative collaboration, and holistic support, we empower those who empower mothers. We are dedicated to improving maternal health outcomes by fostering a dynamic community where professionals thrive, knowledge flows freely, and every connection strengthens the quality of care for mothers and families.

Do not miss the chance to be part of this milestone moment—join the inaugural Collabapalooza and help shape the future of perinatal care. Go to https://prc.vfairs.com to register today. *Code COLLAB26 for 15% OFF Ticket Price*

NT

Corresponding Author

Nicole Harlot
Founder & President
Perinatal Resource Collaborative
PRC SPARK Fund 501(3)c
Seedlinks: Virtual Business Cards
T: 386-845-5243
E: nicole@jointheprc.com

PERINATAL RESOURCE COLLABORATIVE

A GLOBAL COLLABORATION

COLLAB-A-PALOOZA AROUND THE WORLD

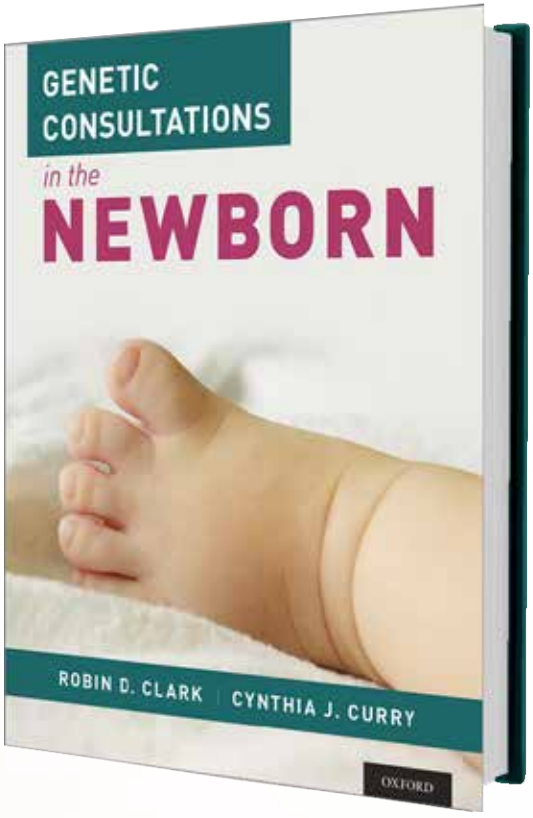
COLLAB-A-PALOOZA

FEBRUARY 6-8

"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

Peer Reviewed

Clinical Pearl: The Effects of Prenatal Maternal COVID-19 Infection on Neurodevelopment in Offspring

Joseph R. Hageman, MD, Walid Hussain, MD, Mitchell Goldstein, MD, MBA, CML

"In the context of rapidly evolving public health guidance and ongoing revisions to vaccine recommendations, particularly those pertaining to pregnancy, it has become increasingly important for clinicians to evaluate emerging data and incorporate high-quality evidence into counseling critically and shared clinical decision-making. These changes have direct implications for obstetric, neonatal, and pediatric practice, and they underscore the responsibility of clinicians caring for pregnant women and their infants to remain informed and engaged with the growing body of literature."

In the context of rapidly evolving public health guidance and ongoing revisions to vaccine recommendations, particularly those pertaining to pregnancy, it has become increasingly important for clinicians to evaluate emerging data and incorporate high-quality evidence into counseling critically and shared clinical decision-making. These changes have direct implications for obstetric, neonatal, and pediatric practice, and they underscore the responsibility of clinicians caring for pregnant women and their infants to remain informed and engaged with the growing body of literature. In light of these developments, the following recently published clinical data may be particularly relevant to providers involved in maternal–fetal and newborn care.

As is now widely recognized, the maternal COVID-19 vaccine is no longer considered a universal requirement for pregnant women, as reflected in updated positions articulated by Robert F. Kennedy, Jr., and the Centers for Disease Control and Prevention (CDC) (1). Rather than a standardized mandate, the decision regarding COVID-19 vaccination during pregnancy has shifted toward a shared decision-making framework, in which obstetric providers and patients collaboratively consider the potential benefits and risks of vaccination in the context of individual clinical circumstances, maternal comorbidities, gestational age, and patient values (1). This approach places increased emphasis on the availability of accurate, up-to-date evidence regarding both maternal infection and downstream infant outcomes.

"A recent, particularly informative study by Shook and colleagues examined neurodevelopmental outcomes in infants born to mothers who contracted COVID-19 during pregnancy (2). This extensive retrospective cohort study evaluated 18,124 pregnant women, of whom 861 (4.8%) had documented exposure to SARS-CoV-2 infection confirmed by positive polymerase chain reaction (PCR) testing (2)."

Concurrently, new research continues to emerge, deepening our understanding of the potential consequences of SARS-CoV-2 infection during pregnancy, including its impact on early childhood development. A recent, particularly informative study by Shook and colleagues examined neurodevelopmental outcomes in infants born to mothers who contracted COVID-19 during pregnancy (2). This extensive retrospective cohort study evaluated 18,124 pregnant women, of whom 861 (4.8%) had documented exposure to SARS-CoV-2 infection confirmed by positive polymerase chain reaction (PCR) testing (2).

Infants born to these mothers were followed longitudinally for up to 36 months after birth, allowing for the assessment of early neurodevelopmental outcomes during a critical period of brain growth and functional maturation. The investigators found that 16.3% of infants exposed to maternal SARS-CoV-2 infection in

utero were subsequently diagnosed with a neurodevelopmental impairment, compared with 9.7% of infants born to mothers without documented infection (2). These findings translate to a 29% increase in the odds of neurodevelopmental impairment overall among exposed infants. Notably, the magnitude of risk was even greater when maternal infection occurred during the third trimester, with a reported 36% increase in the odds of neurodevelopmental impairment during this period of heightened fetal brain vulnerability (2).

The range of neurodevelopmental diagnoses observed in exposed infants was clinically significant and encompassed multiple developmental domains. The most frequently identified conditions included disorders of speech and language development, disorders of motor function, autistic disorder, and broader disorders of psychological development (2–4). These outcomes are consistent with prior concerns regarding the potential neuroinflammatory, hypoxic, and placental effects of maternal infection during pregnancy, particularly during late gestation when cortical organization and synaptic refinement are rapidly occurring.

"These outcomes are consistent with prior concerns regarding the potential neuroinflammatory, hypoxic, and placental effects of maternal infection during pregnancy, particularly during late gestation when cortical organization and synaptic refinement are rapidly occurring."

Collectively, these findings reinforce the importance of careful, evidence-based counseling when discussing COVID-19–related risks during pregnancy. While vaccination decisions are now guided by shared decision-making rather than prescriptive mandates, emerging data, such as those presented by Shook et al., highlight the need to consider not only maternal outcomes but also potential long-term neurodevelopmental implications for the infant (2). Ongoing surveillance, continued research, and transparent communication of evolving evidence remain essential to supporting informed choices and optimizing outcomes for both mothers and their children.

References:

1. https://www.cdc.gov/vaccines/hcp/imz-schedules/adult-age.html
2. Shook LL, Castro V, Ibanez-Pintor L et al. Neurodevelopmental Outcomes of 3-Year-Old Children Exposed to Maternal Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Infection in Utero. *Obstetrics and Gynecology 2026;147 (1):11-20.*
3. O'Shea TM, Blackwell CK. Lasting influence of prenatal SARS-Co-V-2 infection on offspring neurodevelopmental health and functioning. *Obstetrics and Gynecology 2026; 147(1):8-10.*
4. Anderer S. COVID-19 in Pregnancy Linked With Risk of Neurodevelopmental Disorders in Early Childhood. *JAMA 2026;335(4):296-297. Published January 2, 2026. Doi 10.1001/jama.2025.23090.*

***Disclosures**: The authors have no relevant disclosures.*

NT

Joseph R. Hageman, MD
Professor of Health Sciences
Touro University
Skokie, IL
Email: josephhageman6@gmail.com

Walid Hussain, MD
Associate Professor of Pediatrics
The University of Chicago
Department of Pediatrics
Email: whussain1@uchicago.edu

Corresponding Author

Mitchell Goldstein, MD, MBA, CML
Professor of Pediatrics
Division of Neonatology
Department of Pediatrics
Loma Linda University School of Medicine
*Email:*mgoldstein@llu.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:

josephhageman6@gmail.com

2024

Keeping Your Baby Safe

from respiratory infections

RSV
COVID-19
colds
flu

How to protect your little one from germs and viruses

This year's cold and flu season may be a dangerous one - especially for vulnerable infants and children. Fortunately, there are proven protective measures that we can take to stay healthy.

Here's what you can do...

Wash Your Hands

- This is the single, most important thing you can do to stop the spread of viruses.
- Use soap.
- Wash for more than 20 seconds.
- Use alcohol-based sanitizers.

Limit Contact with Others

- Stay home when you can.
- Stay 6 feet apart when out.
- Wear a face mask when out.
- Change your clothes when you get home.
- Tell others what you're doing to stay safe.

Provide Protective Immunity

- Hold baby skin-to-skin.
- Give them your breast milk.
- Stay current with your family's immunizations.

Take Care of Yourself

- Stay connected with your family and friends.
- Sleep when you can.
- Drink more water and eat healthy foods.
- Seek mental health support.

Immunizations Vaccinations save lives. Protect your baby from flu, pertussis, RSV, and COVID-19 by getting your immunizations.

WARNING

Never Put a Mask on Your Baby

- Because babies have smaller airways, a mask makes it hard for them to breathe.
- Masks pose a risk of strangulation and suffocation.
- A baby can't remove their mask if they're suffocating.

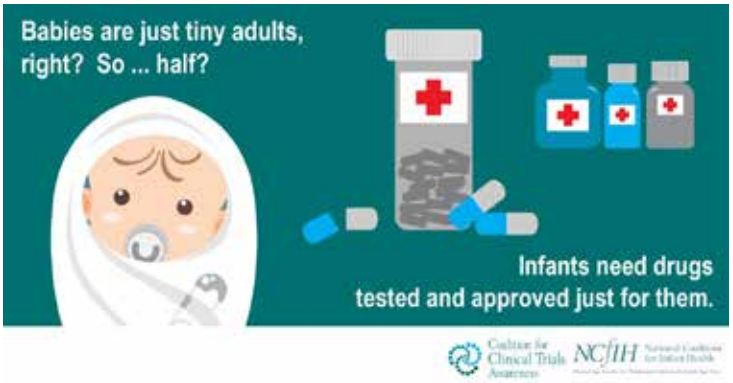
If you are positive for COVID-19

- Wash with soap and water and put on fresh clothes before holding or feeding your baby.
- Wear a mask to help stop the virus from spreading.
- Watch out for symptoms like fever, confusion, or trouble breathing.
- Ask for help caring for your baby and yourself while you recover.

We can help protect each other.

Learn more
www.nationalperinatal.org/rsv

National Perinatal Association



Center for Clinical Trials Awareness NCFIH

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

RSV is a respiratory virus with cold-like symptoms that causes 90,000 hospitalizations and 4,500 deaths per year in children 5 and younger. It's 10 times more deadly than the flu. For premature babies with fragile immune systems and underdeveloped lungs, RSV proves especially dangerous.

But risk factors associated with RSV don't touch all infants equally.*

*Source: Respirator Syncytial Virus and African Americans

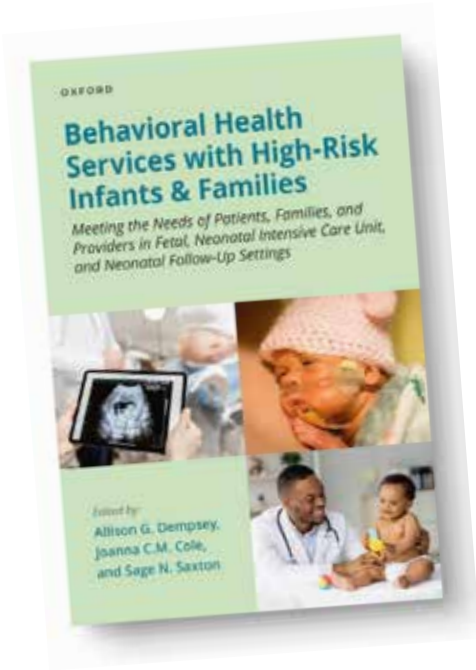
Caucasian Babies	Risk Factor	African American Babies
11.6%	Prematurity	18.3%
58.1%	Breastfeeding	50.2%
7.3%	Low Birth Weight	11.8%
60.1%	Siblings	71.6%
1%	Crowded Living Conditions	3%

AFRICAN AMERICAN BABIES bear the brunt of RSV. Yet the American Academy of Pediatrics' restrictive new guidlines limit their access to RSV preventative treatment, increasing these babies' risk.

AfPA Alliance for Patient Access

National Network of NICU Psychologists

Education, Resources, and Support for Perinatal Mental Health Professionals



Preorder

Behavioral Health Services with High-Risk Infants and Families

Use discount code **ASPROMP8** and save 33% online at www.oup.com

$56.00

Free Resources

Empower families with the skills they need.

Download our perinatal Mental Health Plan worksheets.

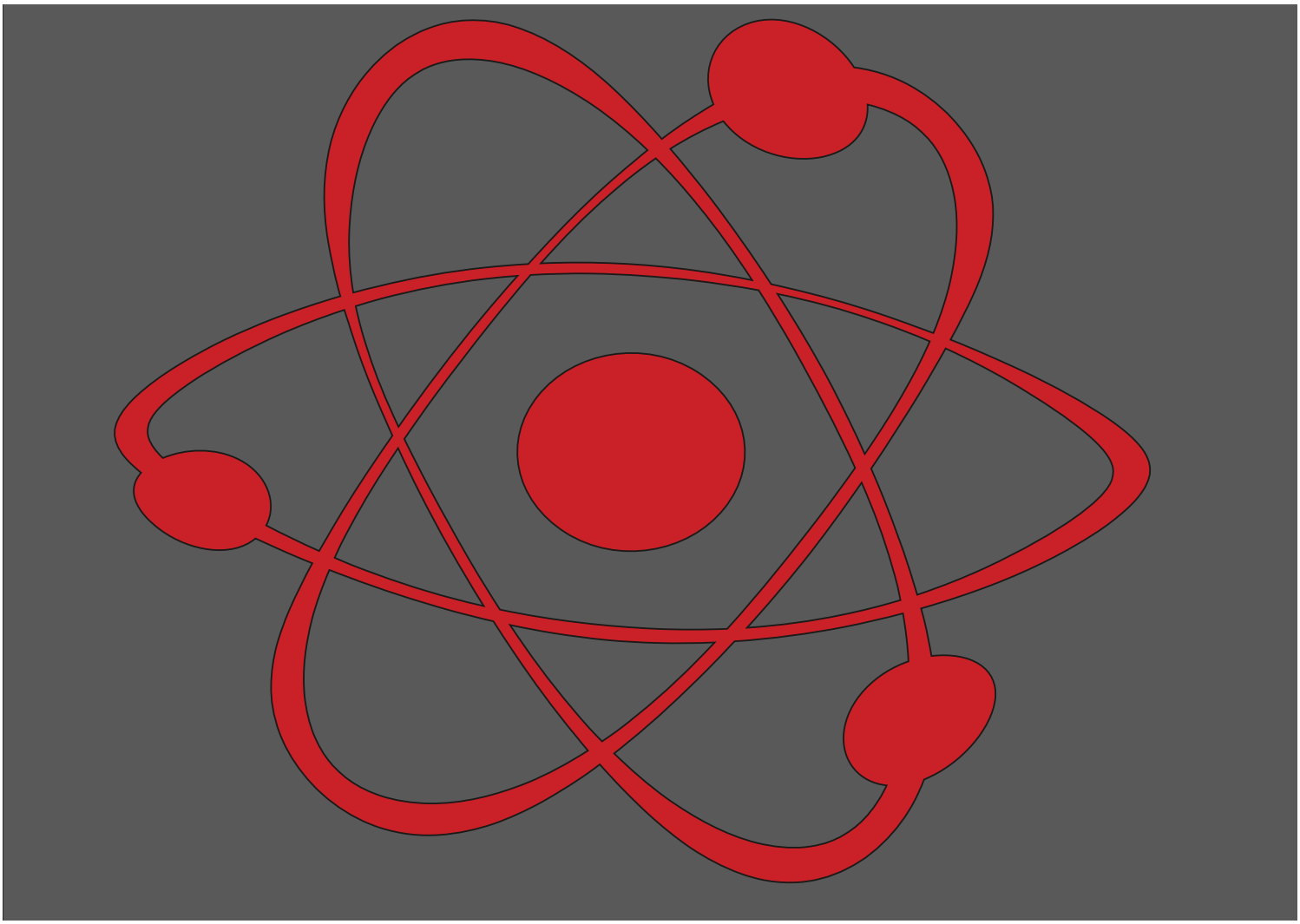
Support NICU families and staff during COVID-19.

See resources created by the National Network of NICU Psychologists.

National Perinatal Association

NATIONALPERINATAL.ORG/PSYCHOLOGISTS

Academic True Open Model (ATOM)



Loma Linda Publishing Company supports the Academic True Open Model (ATOM)

Journals listed support the following principles:

1. Free subscriptions (electronic or paper) to all.
2. Peer review of all submitted manuscripts
3. Timely review of manuscripts
4. Timely response to letters to the editor
5. Listing and correction of erratum
6. Appropriate disclosure of any related conflicts of interest in published manuscripts
7. No charge for submission of manuscripts
8. No charge for review of manuscripts
9. No charge for processing of artwork, color, layout, or length of manuscript
10. No charge for publication of manuscript in electronic or digital form.
11. A commitment to the ethical treatment of humans and animals in research.
12. Documentation of informed consent where indicated.

NT

Any journal that supports the ATOM principles can be listed here, along with their logo and a link back to their site, free of charge. Please contact Loma Linda Publishing Company at LomaLindaPublishingCompany@gmail.com for additional details.

Neonatology Today, a publication of Loma Linda Publishing Company.

ISSN: 1932-7137 (Online), 1932-7129 (Print)

Readers can also follow

NEONATOLOGY TODAY

via our Twitter Feed

@NEOTODAY

Upcoming Medical Meetings

2026 NeoPREP:
An Intensive Review and Update
of Neonatal-Perinatal Medicine
January 25-29, 2026
Denver, CO

2026 NeoCram Virtual Course
January 21-22, 2026

Neo The conference for Neonatology
February 17-19, 2027
Caesars Palace
Las Vegas, NV
https://www.pediatrix.com/for-clinicians/neo-conference

2026 Workshop on Neonatal-Perinatal Practice Strategies
Loews Ventana Canyon Resort Tucson, AZ
March 13-15, 2026
Tucson, AZ

National Perinatal Association
46th Annual Interdisciplinary Conference.
March 25 - 27, 2026
UNITING for IMPACT: Advancing Rural-Urban Collaboration and Innovation in Perinatal and Infant Health
The Coeur d'Alene Resort
Coeur d'Alene, Idaho
https://www.npaconference.org/

97TH PEDIATRIC ACADEMIC SOCIETIES MEETING
April 24-27, 2026
Convention Center
Boston, MA
https://www.pas-meeting.org/

The Gravens Conference
June 16-18, 2026
Notre Dame, IN
TheGravensConference.org

For up to date Meeting Information, visit NeonatologyToday.net and click on the events tab.

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
Tel: +1 (302) 313-9984
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 Melissa LaMarca at: +1 (302) 313-9984, scan the QR code, or send an email to Melissa.LaMarca@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
We will respond promptly
Twitter Account: @NeoToday

The Gravens Conference
on the Environment of Care for High Risk Newborns

THE VOICES OF ALL PROFESSIONALS WHO WORK WITHIN THE ENVIRONMENT OF CARE FOR HIGH RISK NEWBORNS AND THEIR FAMILIES NEED TO BE HEARD.

WE WANT TO HEAR FROM PROFESSIONALS WHO REPRESENT A BROAD RANGE OF BACKGROUNDS, CULTURES, BELIEFS GENDER AND LIFESTYLE DIFFERENCES.

Please contribute to the Gravens Professional Diversity Fund!

Funds will provide support professionals from diverse backgrounds to attend the Gravens conference.

Send your tax deductible contribution to

Neonatology Today
Division of Neonatology, Department of Pediatrics
Loma Linda University Children's Hospital
11175 Campus Street, CP 11121
Loma Linda, CA 92354

Or PayPal

Supporting NICU Staff so they can support families

Providing online education that is...

- Story-Driven
- Trauma-Informed
- Evidence-Based

National Perinatal Association

NPN NICU PARENT NETWORK

The preeminent provider of compelling perinatal education on psychosocial support created through interprofessional collaboration

www.mynicunetwork.org

Clinical Trial Center (Full-Time, Day Shift) - Research Coordinator

The Loma Linda University Health's Clinical Trial Center is actively seeking and recruiting top clinical research coordinator talent.

Our mission is to participate in Jesus Christ's ministry, bringing health, healing, and wholeness to humanity by Creating a supportive faculty practice framework that allows Loma Linda University School of Medicine physicians and surgeons to educate, conduct research, and deliver quality health care with optimum efficiency, deploying a motivated and competent workforce trained in customer service and whole-person care principles and providing safe, seamless and satisfying health care encounters for patients while upholding the highest standards of fiscal integrity and clinical ethics. Our core values are compassion, integrity, humility, excellence, justice, teamwork, and wholeness.

Able to read, write and speak with professional quality; use computer and software programs necessary to the position, e.g., Word, Excel, PowerPoint, Access; operate/troubleshoot basic office equipment required for the position. Able to relate and communicate positively, effectively, and professionally with others; provide leadership; be assertive and consistent in enforcing policies; work calmly and respond courteously when under pressure; lead, supervise, teach, and collaborate; accept direction. Able to communicate effectively in English in person, in writing, and on the telephone; think critically; work independently; perform basic math and statistical functions; manage multiple assignments; compose written material; work well under pressure; problem solve; organize and prioritize workload; recall information with accuracy; pay close attention to detail. Must have documented successful research administration experience focused on managing clinical trials function. Able to distinguish colors as necessary; hear sufficiently for general conversation in person and on the telephone; identify and distinguish various sounds associated with the workplace; see adequately to read computer screens and written documents necessary to the position. Active California Registered Nurse (RN) licensure preferred. Valid Driver's License required at time of hire.

The Clinical Trial Center is actively involved in many multi-center global pediatric trials, which span different Phases of research to advance health care in children. Please reach out to Jaclyn Lopez at 909-558-5830 or JANLopez@llu.edu with further interest. We would love to discuss the exciting research coordinator opportunities at our Clinical Trials Center.

Additional Information

- Organization: Loma Linda University Health Care
- Employee Status: Regular
- Schedule: Full-time
- Shift: Day Job
- Days of Week: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday

LOMA LINDA UNIVERSITY


WE ARE HIRING
Clinical Nurses!
Join a rewarding work environment, and impact lives in our community.
$9,000 sign on bonus for eligible positions.
APPLY NOW
LOMA LINDA UNIVERSITY
CHILDREN'S HOSPITAL
LOMA LINDA UNIVERSITY
CHILDREN'S HOSPITAL

Loma Linda University Children's Hospital is hiring Neonatal Nurse Practitioners

Children's Hospital, centrally located in Southern California, has earned Magnet Recognition as part of the American Nurses Credentialing Center's (ANCC) Program.

We are looking for experienced or new graduate Neonatal Nurse Practitioners (NNPs) who are excited to join a cohesive team that practices in a collaborative, fast-paced, high-acuity setting.

- Full-time and part-time positions available
- Level IV, 84-bed Neonatal Intensive Care Unit (NICU)
- Regional referral center encompassing Tiny Baby unit, ECMO, Cardiac ICU, Neuro NICU and Surgical services
- Maternity services and delivery center
- 24/7 coverage by NNP team and Fellows
- Competitive employee benefit packages

*Offering a **sign-on bonus** with relocation reimbursement for full-time, direct applicants who meet requirements.

For more information, please contact:

Karin Colunga, MSN, RN, PNP-BC
Director of Advanced Practice Nursing
kecolunga@llu.edu | 909-558-4486

BEST CHILDREN'S HOSPITALS U.S.News & World Report NEONATOLOGY 2022-23

THELEAPFROGGROUP TOP CHILDREN'S HOSPITAL 2021

MAGNET RECOGNIZED AMERICAN NURSES CREDENTIALING CENTER

LOMA LINDA UNIVERSITY CHILDREN'S HOSPITAL

HEALING. HEALTHY. HAPPY.
A Seventh-day Adventist Organization

LLUHNK1#8977-CH-22/1022/TBD

LOMA LINDA UNIVERSITY

CHILDREN'S HOSPITAL

WE ARE HIRING

NICU DIETICIAN SPECIALIST 2

Full job summary and link to apply below

https://egln.fa.us2.oraclecloud.com/hcmUI/CandidateExperience/en/sites/CX/job/2820/?utm_medium=jobshare

Qualifications:

- Bachlor's Degree or Master's degree in Nutrition and Dietetics or Nutrition-related field required
- Two years of clinical nutrition experience required
- One year in Pediatrics preferred
- RD/RDN required
- CCS paneling required within one year of hire date

Annette Gonzales | Recruiter | LLUH HRM| ACGonzales@llu.edu

NEONATOLOGY TODAY

News and Information for BC/BE Neonatologists and Perinatologists

We Can Help <u>You</u> 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:

Melissa LaMarca

+1 (302) 313-9984 or

Melissa.LaMarca@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

Editorial Board

Neonatology Today's Policy on Animal and Human Research

Neonatology Today's policies ensure the protection and responsible use of animals and humans in all research articles under consideration. Authors are encouraged to follow the guidelines developed by the National Centre for the Replacement, Refinement & Reduction of Animals in Research (NC3R), International Committee of Medical Journal Editors, and the Guide for the Care and Use of Laboratory Animals and U.S. Public Health Service's Policy on Humane Care and Use of Laboratory Animals (PHS Policy). Authors are expected to demonstrate to their institutional review board or suitable proxy that ethical standards are met. If there is doubt whether research conducted was in accordance with ethical standards, then there must be verification that the institutional review body approved the uncertain aspects. Research not following these policies on participating animal and human subjects may be rejected. Researchers have a moral obligation towards the humane treatment of animals and ethical considerations for humans participating in research and are expected to consider their welfare when designing studies.

https://www.nc3rs.org.uk/arrive-guidelines

http://www.icmje.org

https://olaw.nih.gov/policies-laws/phs-policy.htm

NT

Neonatology and the Arts

This section focuses on artistic work which is by those with an interest in Neonatology and Perinatology. The topics may be varied, but preference will be given to those works that focus on topics that are related to the fields of Neonatology, Pediatrics, and Perinatology. Contributions may include drawings, paintings, sketches, and other digital renderings. Photographs and video shorts may also be submitted. In order for the work to be considered, you must have the consent of any person whose photograph appears in the submission.

Works that have been published in another format are eligible for consideration as long as the contributor either owns the copyright or has secured copyright release prior to submission.

Logos and trademarks will usually not qualify for publication.

This month we continue to landscapes, feature artistic works created by our readers on the next to last page as well as photographs of birds on rear cover. Dr. Zahera Etter provides "Au Cap d'Antibes." For this edition, our art was graciously provided by Colleen Kraft, MD. It is a work called "Sunburst" done by her son Tim. Our birds are from Dr. Shah, "Egret"

Lily Martorell, MD

Arts Editor
Associate Professor
Loma Linda University Children's Hospital
Loma Linda, CA

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 in a Microsoft Word, Open Office, or XML format for the textual material and separate files (tif, eps, jpg, gif, ai, psd, SVG, or pdf) for each figure. Preferred formats are ai, SVG, psd, or pdf. tif and jpg images with 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. There is no charge for your manuscript to be published. NT does maintain a copyright of your published manuscript.

4. The title page should contain a brief title and full names of all authors, their professional degrees, their institutional affiliations, and any conflict of interest relevant to the manuscript. The principal author should be identified as the first author. Contact information for the principal author including phone number, fax number, e-mail address, and mailing address should be included.

5. A brief biographical sketch (very short paragraph) of the principal author including current position and academic titles as well as fellowship status in professional societies should be included. A picture of the principal (corresponding) author and supporting authors should be submitted if available.

6. An abstract may be submitted.

7. The main text of the article should be written in formal style using correct English. The length may be up to 10,000 words or longer with prior approval. Abbreviations which are commonplace in neonatology or in the lay literature may be used.

8. References should be included in standard "NLM" format (APA 7th is no longer acceptable). Bibliography Software should be used to facilitate formatting and to ensure that the correct formatting and abbreviations are used for references. EndNote X9 is suggested.

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

Invitation to Apply:

Seeking content development experts for an AAP Project Advisory Committee (PAC)

The White Zone – Developing A Perinatal Loss Toolkit for LMICs

The Need: Over 2.4 million neonatal deaths and 2.6 million stillbirths occur each year; 98% occur in Low- and Middle-Income Countries (LMICs). While programs such as Helping Babies Breathe (HBB) and Essential Newborn Care (ENC 1 and 2) have revolutionized how providers in LMICs train in and provide neonatal resuscitation and post-delivery care for small and sick newborns, gaps remain in how to best offer end-of-life care and post-loss psychosocial care in these settings.

The Babies: HBB and ENC 1 begin with assessing if a baby is crying and conclude with the "Red Zone" where a baby who is unable to sustain an appropriate heart rate and/or respirations is provided with PPV support as someone attempts to get help. Within the HBB/ENC framework, we could imagine several babies for whom an extension of this framework to include palliative/perinatal loss guidelines could be helpful:

1. A stillbirth for whom no resuscitation is attempted. (Stillbirth)
2. A baby who proceeds through the red zone but never has a heartbeat or breathing despite the best resuscitative efforts of the team. (Stillbirth)
3. A baby who proceeds through the red zone who, after 20 or so minutes still has a very low heartbeat and/or gasping breathing. (Anticipated neonatal death)
4. A preterm baby who is too small for ongoing support, based on local resource constraints or resuscitation guidelines, despite a sustained heart rate and breathing. (Anticipated neonatal death)

The Approach: Create a suite of resources that could accompany ENC 1 and 2, focused on end-of-life care and perinatal loss. These resources would be less algorithmic than ENC, as local practices around death vary significantly – meaning there is not one "right" way to approach this care. Rather, the "White Zone Toolkit" would combine structured guidance about symptom management as well as reflective tools for implementing contextually and culturally appropriate post-loss care. This could consist of, but is not limited to, the following:

1. Structured guidance on what physiologic changes may happen at the end of life (ex: gasping) as well as pharmacologic and non-pharmacologic options for symptom management.
2. Reflective questions about if/when to offer seeing or holding of the baby.
    - Data shows that many women want to see and/or hold their infant following stillbirth or neonatal death but are often not offered that opportunity based on historic cultural norms.
3. Reflective questions about cultural traditions around loss and if/how these practices can be supported by those attending the delivery.
4. Anticipatory guidance guides on how mothers may still produce milk and how to manage those symptoms.
5. Anticipatory guidance on potential maternal mental health needs. Reflective questions on how to approach mental health and psychosocial support after loss.
6. Access to a set of adaptable practice scenarios that could help providers gain experience in handling perinatal loss and communicating with families surrounding perinatal loss.

NICU BABY'S *Bill of Rights*

1 The Right to *Advocacy*

My parents are **my voice** and **my family** are **my best advocates**.

My parents know me well. They are my voice and my best advocates. They need to be knowledgeable about my progress, medical needs, and prognosis, so they celebrate my achievements and support me when things get challenging.

2 The Right to *My Parents' Care*

Welcome my family and **include them** in everything we do.

My parents are my essential caregivers. In order to care for me, they need lots of opportunities to learn. Ensure that hospital policies and protocols, including hours & rounding, are as inclusive and expansive as possible. Then be patient with them.

3 The Right to *Bond With My Family*

Create opportunities for my family and me **to be together and bond**.

Bonding is crucial for my healthy growth and development. Support my parents so that we can practice skin-to-skin care as soon and as often as possible. Encourage them to read, sing, and talk to me.

4 The Right to *Neuroprotective Care*

Protect my **developing mind** and **senses**.

Protect me from things that startle, stress, or overwhelm me. Support things that calm me. Ensure I get as much sleep as possible. My brain is developing for the first time - and faster than it ever will again. The way I'm cared for today will affect me as I continue to grow & develop.

5 The Right to *Be Nourished*

Support our feeding decisions and **help us develop our skills**.

Encourage my parents to feed me at the breast or by bottle, whichever way works for us both. Support our feeding goals and make sure my parents know all the nutrition options available to meet my needs.

6 The Right to *Personhood*

Respect me as the **amazing, unique individual** that I am.

Use my name. Talk to me before touching me. If one of my siblings passes away, ask my family how we want to talk about and acknowledge them.

7 The Right to *Confident and Competent Care Giving*

Support my parents and caregivers.

The NICU may be a traumatic place for my parents. Ensure that they receive tender loving care, information, education, and as many resources as possible to help inform them about my unique needs, development, diagnoses, and more.

8 The Right to *Family-Centered Care*

Teach my family **how to care for me**.

Help me feel that I am a part of my own family. Teach my parents, grandparents, and siblings how to read my cues, how to care for me, and how to meet my needs. Encourage them to participate in or perform my daily care activities, such as bathing and diaper changes.

9 The Right to *Healthy and Supported Parents*

Care for our **mental health** and **wellbeing**.

My parents may be experiencing a range of new and challenging emotions. Be patient, listen to them, and lend your support. Share information with my family about resources such as counseling, support groups, & peer-to-peer programs, which can help reduce the impact of perinatal mood and anxiety disorders (PMADs).

10 The Right to *Inclusion and Belonging*

Celebrate what makes us special and unique.

Celebrate our diversity. Honor what makes us unique. Ensure that my parents, grandparents, siblings, and friends feel accepted and welcomed in the NICU, and respected and valued in all forms of engagement and communication.