

NEONATOLOGY TODAY

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



Volume 19 / Issue 3 March 2024

The Broken Supply Chain: How Group Purchasing Organizations Are Sabotaging Healthcare Mitchell Goldstein, MD, MBA, CML, Phillip Zweig, MBAPage 3	Congress Boosts "Hope" for Infants with Rare Diseases Josie CooperPage 104
Revisiting Emergency Response Dynamics in High-Reliability Organizing (HRO): The Overlooked Dimension of Time Daved van Stralen, MD; Sean D. McKay; and Thomas A. Mercer, RAdm, USNPage 6	iCAN Updates: Empowering Pediatric Advisors Worldwide: iCAN's Latest Updates and Inspiring Achievements Sabina Schmidt Goldstein-BecerraPage 109
The World Health Organization Calls for a New Paradigm for Mental Health and Residency Training: Do Any of the Newer Alternatives to the Standard Biomedical Model, such as Lifestyle Psychiatry, Meet WHO Requirements? Cheryl L. Green, M.D., Ph.D.Page 16	Briefly Legal: Should Midgut Volvulus Have Been Suspected in this Baby? Maureen Sims, MD, Barry Schifrin, MDPage 122
Novel Treatment of Mucous Plugging Causing Left Lung Atelectasis in a Premature Neonate Weighing <500 Grams Using Flexible Fiberoptic Bronchoscopy Tiffany G Campbell, MD, Juan C Martinez, MD, FAAP, Doron J Kahn, MD, FAAPPage 24	Medical News, Products & Information Compiled and Reviewed by Sandeep Lankireddy, BA, OMSIVPage 130
The National Network of NICU Psychologists: Support Mental Health Needs in the NICU and Beyond LaTrice L. Dowtin, PhD, Elizabeth Fischer, PhDPage 28	Section on Neonatal-Perinatal Medicine Update – Abstracts, Scholarships, and PAS Munish Gupta MD, MMSc, FAAPPage 142
Health and Wellness: Being Kind Has a Multitude of Benefits Mitchell Goldstein, MD, MBA, CML, T. Allen Merritt, MD, MHAPage 34	Genetics Corner: A Term Infant with a Bilateral Cleft Lip and Palate and Coarctation of the Aorta Robin Dawn Clark, MDPage 148
Letter to the Editor: Antibiotic Treatment of Chorioamnionitis-Exposed Neonates Based Only on Signs of Infection Carisa Swason OMS III, Lexi R M Lavell OMS III, PdTF, Aden Copeland OMS III, Nicole Lin OMS III, Mitchell Goldstein, MD, MBA, CMLPage 37	The Use and Misuse of Cord Blood Gases in HIE Litigation Jay P. Goldsmith, MD, Jonathan K. Muraskas, MDPage 156
Navigating toward Neonatology: Cerebral Palsy Benjamin Hopkins, OSM IV, Robert White, MDPage 41	Family-Centered Care Taskforce March 2024 Webinar Summary Tamara Bledsoe, MS, NNP, APRN-BC-C-ONQS, Vargabi Ghei, MD, MSHS, Pamela Torreblanca, RNPage 163
Fellows Column: The 0/0/0 "Miracle": Overcoming Multifactorial Birth Trauma in a Preterm Neonate Grace Ahuja, MA, Melissa Kreutz, Joshua HernandezPage 48	Clinical Pearl: The Clinical Relevance of Neonatal Informatics Gustave H. Falciglia, MD, Joseph R. Hageman, MD, Walid Hussain, MD, Lolita Alcocer Alkureishi, MD, Kshama Shah, MD, Mitchell Goldstein, MD, MBA, CMLPage 174
Think Small Rob Graham, R.R.T./N.R.C.P.Page 55	Upcoming MeetingsPage 181
First Candle: First Candle Honors Women's History Month Alison JacobsonPage 65	Subscriptions and Contact InformationPage 181
Gravens By Design: The 37th Gravens Conference on the Environment of Care in the NICU convened in Clearwater Beach, FL, on March 6-9, 2024 Robert White, MD, Vincent Smith, MD, Joy Browne, Mitchell Goldstein, MD, MBA, CMLPage 72	Editorial BoardPage 187
Fragile Infant Forums for Implementation of IFCDC Standards: Insights from the 37th Annual Gravens Meeting Joy V. Browne, Ph.D., PCNS, IMH-EPage 85	Animal and Human ResearchPage 189
	Manuscript SubmissionPage 189
	Neonatology & the Arts Mita Shah, MDPage 189
	Infinity Tim KraftPage 191
	The Longstanding Amicable Relationship between Polar Bears and Penguins Mitchell Goldstein, MD, MBA, CMLPage 192



NEONATOLOGY TODAY
© 2006-2024 by Neonatology Today
Published monthly. All rights reserved.
ISSN: 1932-7137 (Online), 1932-7129 (Print)
All editions of the Journal and associated manuscripts are available on-line:
www.NeonatologyToday.net
www.Twitter.com/NeoToday



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



Join Us! For the 38th International GRAVENS meeting on the *Environment of Care for High Risk Newborns and their Families*

*“Providing Safe Spaces for Babies, Families
and Staff”*

March 5-9, 2025

Sheraton Sand Key Resort
Clearwater Beach, Florida

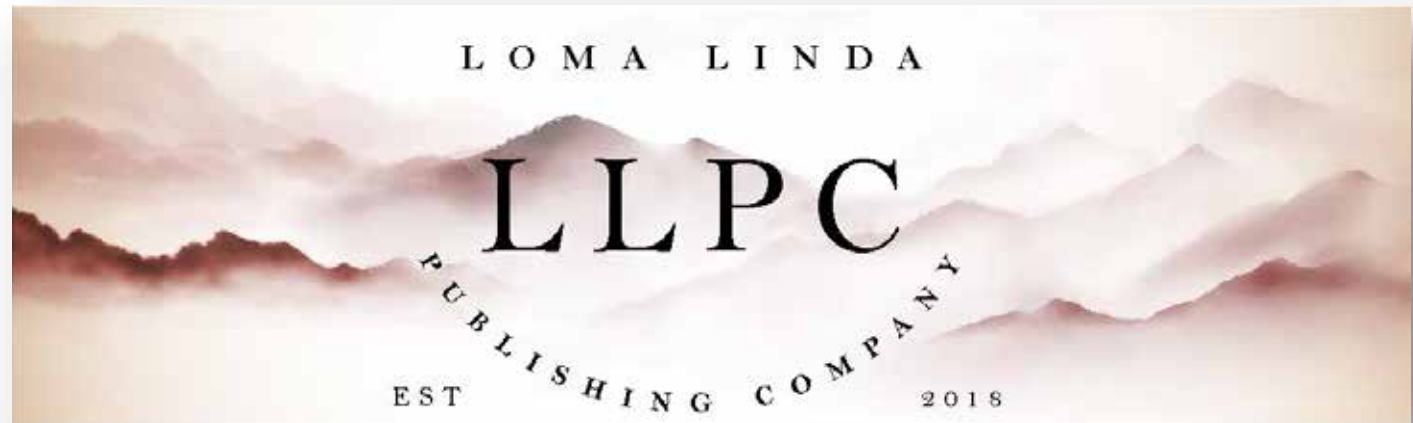
For more information go to NeonatologyToday.net or PACLAC.org

Abstracts due September 30, 2024.



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



The Broken Supply Chain: How Group Purchasing Organizations Are Sabotaging Healthcare

Mitchell Goldstein, MD, MBA, CML, Phillip Zweig, MBA

“In the intricate web of America’s healthcare system, few elements are as integral yet obscure as Group Purchasing Organizations (GPOs). Initially conceived to streamline procurement processes and reduce healthcare facility costs, these entities have metamorphosed into gargantuan entities wielding disproportionate control over the medical supply chain”

As a neonatologist, publisher of NT, and Chair of Physicians Against Drug Shortages Inc., a pro bono patient advocacy group formed in 2012 to expose and address the root cause of drug shortages, I have an urgent ask.

In the intricate web of America’s healthcare system, few elements are as integral yet obscure as Group Purchasing Organizations (GPOs). Initially conceived to streamline procurement processes and reduce healthcare facility costs, these entities have metamorphosed into gargantuan entities wielding disproportionate control over the medical supply chain. Their impact is profound, and their practices demand a comprehensive examination to drive meaningful reform.

GPOs, including titans like Vizient (formerly Novation), Premier Inc., and HealthTrustPG, have amassed staggering influence, commanding the purchasing of nearly 90% of the \$250-\$300 billion worth of drugs, devices, supplies, and services utilized in healthcare facilities nationwide. Originating as cooperative ventures designed to aggregate purchasing power and negotiate bulk discounts, GPOs have veered dramatically from their founding principles.

Their ascent to dominance was marked by controversy and scrutiny. The late 1990s and early 2000s witnessed a surge of media exposés and Senate hearings unearthing their unfair and anti-competitive practices. From doling out exclusive contracts to the highest bidder to demanding exorbitant supplier kickbacks, GPOs have transformed into mercenary middlemen, prioritizing profit

over patient welfare and market integrity.

At the heart of this dysfunction lies a legislative oversight that proved to be a double-edged sword: the Medicare anti-kickback safe harbor enacted in 1987. This statutory provision inadvertently granted GPOs immunity from prosecution for their dubious dealings, creating fertile ground for malfeasance and corruption. What was intended to safeguard legitimate business practices instead enabled a culture of exploitation, rendering GPOs as profit-driven gatekeepers rather than facilitators of cost-effective procurement.

“At the heart of this dysfunction lies a legislative oversight that proved to be a double-edged sword: the Medicare anti-kickback safe harbor enacted in 1987. This statutory provision inadvertently granted GPOs immunity from prosecution for their dubious dealings, creating fertile ground for malfeasance and corruption. What was intended to safeguard legitimate business practices instead enabled a culture of exploitation, rendering GPOs as profit-driven gatekeepers rather than facilitators of cost-effective procurement.”

The repercussions of this malaise are manifold and far-reaching. Generic drug shortages once whispered concerns confined to hospital corridors, have burgeoned into a full-blown crisis exacerbated by GPOs’ stranglehold on the market. Domestic production has dwindled precipitously, compelling healthcare providers to resort to risky imports from countries like China exposing the nation to significant vulnerabilities in its drug supply chain.

Moreover, the financial toll exacted by GPOs’ machinations is staggering. Healthcare supply costs have spiraled by 25-35%, translating to an annual burden exceeding \$100 billion. Essential drugs witness their prices inflated under GPO contracts, exacerbating the financial strain on hospitals and patients.

The drugs in short supply are mainly generic sterile injectables,

NEONATOLOGY TODAY is interested in publishing manuscripts from Neonatologists, Fellows, NPs 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

including antibiotics (e.g., penicillin), chemotherapeutic agents (e.g., vincristine, cisplatin), nutritional IV solutions (e.g., sterile saline), anesthetics (e.g., propofol), and painkillers (e.g., morphine). These shortages are unprecedented in our post-WWII economy. They have caused needless patient deaths (including at least 76 from the 2012 fungal meningitis outbreak alone), complications, inferior outcomes, and more extended hospital stays. The independent evidence is overwhelming. It comprises federal and state investigations, antitrust lawsuits, congressional testimony, media exposure, and scholarly research. Virtually every patient in America and their physicians are potentially harmed by these artificial shortages. For more information and documentation, visit our website, www.physiciansagainstdrugshortages.com.

However, perhaps the most insidious facet of this saga lies in the collusion between GPOs and hospital executives, who profit handsomely from enforcing exclusive contracts. Extensive investigations have laid bare this cozy arrangement, wherein CEOs reap windfalls from vendor kickbacks, perpetuating a cycle of exploitation and opacity that corrodes trust in the healthcare system.

So, what is the remedy for this systemic malaise? It necessitates a multifaceted approach rooted in legislative reform and rigorous oversight. Repealing the flawed safe harbor provision, as envisaged in the bipartisan “Ensuring Competition in Hospital Purchasing Act” drafted in 2005, offers a viable path forward. This legislative initiative, which has languished in political limbo for far too long, embodies a blueprint for restoring integrity to the supply chain and revitalizing domestic drug production.

“As ongoing investigations by the FTC and HHS shed light on the murky practices of GPOs, the imperative for change grows more urgent. It is time to hold these entities accountable, dismantle their monopolistic stranglehold, and usher in a new era characterized by transparency, competition, and a steadfast commitment to patient well-being. Our healthcare system’s integrity, patients’ welfare, and the nation’s security depend on nothing less.”

As ongoing investigations by the FTC and HHS shed light on the murky practices of GPOs, the imperative for change grows more urgent. It is time to hold these entities accountable, dismantle their monopolistic stranglehold, and usher in a new era characterized by transparency, competition, and a steadfast commitment to patient well-being. Our healthcare system’s integrity, patients’ welfare, and the nation’s security depend on nothing less.

In a [November 22, 2022, letter to Chair Khan](#), PADS, the American Economic Liberties Project, an anti-monopoly think tank, Public Citizen, and six other advocacy groups urged her to open this investigation.

On February 14, Federal Trade Commission Chair Lina Khan and

Health and Human Services Secretary Xavier Becerra gave patients and clinicians a welcomed Valentine’s Day gift. They announced an investigation into the role of giant for-profit hospital group purchasing organizations (GPOs) and their big distributor partners in causing the chronic shortages of generic drugs.

Here is the joint FTC/HHS press release requesting public comment: <https://www.ftc.gov/news-events/news/press-releases/2024/02/ftc-hhs-seek-public-comment-generic-drug-shortages-competition-amongst-powerful-middlemen>. If you have been affected by the ongoing drug shortages crisis and/or GPO contracting and pricing practices, self-dealing, and conflicts of interest, I urge you to submit comments here <https://www.regulations.gov/docket/FTC-2024-0018>. This could not be more important.

Please feel free to share this with colleagues, family, and friends and post on your social media pages.

Disclosures: The authors have no relevant financial disclosures

NT

Corresponding Author

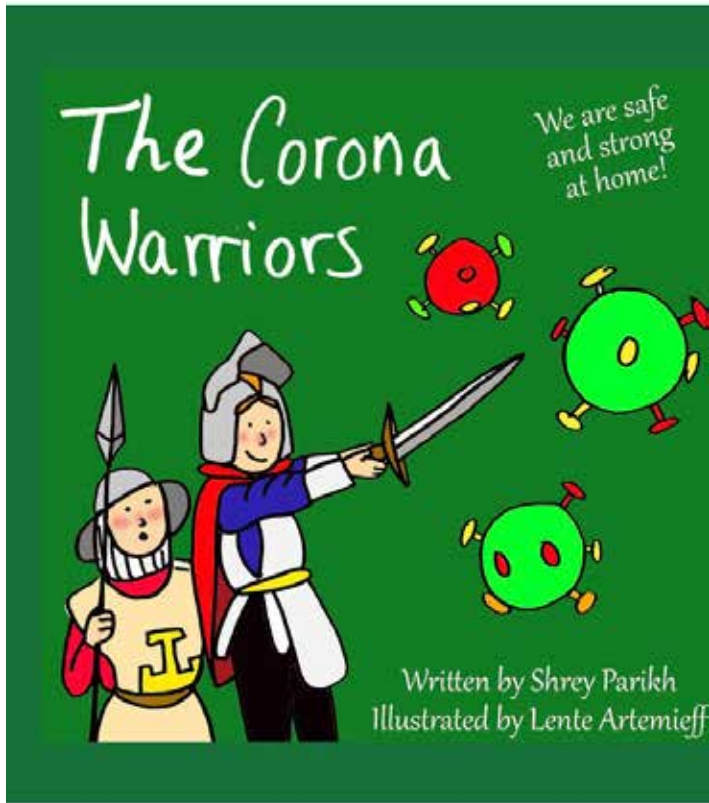


*Mitchell Goldstein, MD, MBA, CML
Professor of Pediatrics
Loma Linda University School of Medicine
Division of Neonatology
Department of Pediatrics
Loma Linda University Childrens Hospital
Loma Linda, CA
Email: mgoldstein@llu.edu*

Corresponding Author



*Phil Zweig, MBA
Executive Director
Physicians Against Drug Shortages
New York, New York
Email: plzweig@aol.com
Website: www.physiciansagainstdrugshortages.com*



NPA 2024 CONFERENCE

Towards —

Trauma-Responsive Perinatal Care

Featured Presentation

There is No “P”
in My PTSD

with Cristal Grogan
Parent Advocate



May 15-17 in Anaheim
California

npaconference.org

 National
Perinatal
Association

JOIN US



Readers can also follow

NEONATOLOGY TODAY

via our Twitter Feed

@NEOTODAY

Revisiting Emergency Response Dynamics in High-Reliability Organizing (HRO): The Overlooked Dimension of Time

Daved van Stralen, MD; Sean D. McKay; and Thomas A. Mercer, RAdm, USN

Abstract

This discussion delves into the critical dimension of time in emergency response scenarios, highlighting its often-overlooked significance in decision-making processes and organizational frameworks. Drawing from a harrowing incident reminiscent of the 1992 Los Angeles riots, where assailants violently attacked a truck driver, the narrative unfolds to underscore the complexities faced when traditional organizational paradigms clash with real-time, dynamic situations.

The discourse extends to an aviation safety conference, where emergency decision-making strategies, notably John Boyd's OODA Loop, were scrutinized alongside Robert Helmreich's Crew Resource Management (CRM) model. Despite their apparent compatibility, the discussion unveils a broader challenge: the failure to integrate time as a fundamental aspect of safety and reliability programs.

Administrators and planners, ensconced in a paradigm of 'detached objectivity,' often disregard the temporal nuances inherent in crisis management. This myopic approach not only sidelines the expertise of frontline operators but also engenders blind spots in organizational responses to emergent threats.

“Administrators and planners, ensconced in a paradigm of ‘detached objectivity,’ often disregard the temporal nuances inherent in crisis management. This myopic approach not only sidelines the expertise of frontline operators but also engenders blind spots in organizational responses to emergent threats.”

Moreover, the reluctance to acknowledge time as a dimension exacerbates the centralization of authority, constraining the adaptability and efficacy of emergency operations as organizational leaders remain entrenched in fixed frameworks devoid of temporal context, the ability to navigate rapidly evolving scenarios

Readers can also follow

NEONATOLOGY TODAY

via our Twitter Feed

@NEOTODAY

diminishes, endangering both personnel and operational integrity.

This paper advocates for a paradigm shift, urging stakeholders to embrace time compression and incorporate it as a pivotal dimension in safety and reliability initiatives. Organizations can foster resilience, enhance decision-making processes, and fortify response mechanisms in an ever-changing environment by fostering a holistic understanding of temporal dynamics.

Introduction

Assailants pulled a truck driver out of his truck to the ground. They pummeled him with fists and objects. As he lay on the ground, they kicked his head. One of the authors (DvS) played this video of the 1992 Los Angeles riots at the beginning of his emergency decision-making presentation at an aviation safety conference.

He then asked the audience how they would approach the situation to help the victim—if no cops were present. The audience was comprised of executives from major US airlines and leaders in US commercial aviation. The author, a former fire rescue medic, had training and experience in medical responses for "assailants on the scene" when there would be no police.

“Energy flows into an incident as an open system. While incidents occur in an open system—uncontrolled behavior from rioters, uncontrolled kinetic energy harming the victim, and uncontrolled physiology from the victim's injuries—organizations, admin, and planners consider activities to occur in a closed system. We watch from outside the incident, a privileged frame of reference—safe by distance and time.”

Energy flows into an incident as an open system. While incidents occur in an open system—uncontrolled behavior from rioters, uncontrolled kinetic energy harming the victim, and uncontrolled physiology from the victim's injuries—organizations, admin, and planners consider activities to occur in a closed system. We watch from outside the incident, a privileged frame of reference— safe by distance and time.

At an aviation safety conference attended by executives from major US airlines, the author's lecture presented emergency decision-making, focusing on John Boyd's OODA Loop [1-3]. After the presentation, an attendee, Robert Helmreich, approached the author to discuss Helmreich's model of Crew Resource Management (CRM) (4). Helmreich wanted to know if Boyd's OODA Loop was consistent with CRM. He walked away, satisfied that using the OODA Loop was consistent with

CRM. The author's goal for the presentation was to impress the audience that people can make effective decisions under time compression while working in a rapidly changing circumstance. In the setting, attendees questioned how to approach the scene. In later conversations, they placed themselves there, wondering what they would have done.

Thirty years later, programs for safety and reliability do not incorporate time as a dimension. This could be the need for tractability or because the privileged perspective is one of 'detached objectivity,' the preferred 'scientific' approach. More likely, it is a lack of familiarity with time-compressed operations. The lack of familiarity is the danger of centralization and contraction of authority. When administrators lack a technical background and have limited requisite expertise, they miss time-based variations in the environment (5). When individuals with relevant experience are available, it is more common to dismiss the relevance of their experience (6–9).

“Thirty years later, programs for safety and reliability do not incorporate time as a dimension. This could be the need for tractability or because the privileged perspective is one of ‘detached objectivity,’ the preferred ‘scientific’ approach. More likely, it is a lack of familiarity with time-compressed operations. The lack of familiarity is the danger of centralization and contraction of authority. When administrators lack a technical background and have limited requisite expertise, they miss time-based variations in the environment. When individuals with relevant experience are available, it is more common to dismiss the relevance of their experience.”

Public commitment to scientific "detached objectivity," at the expense of informed, experienced operators, creates blind spots. Part of the irrelevance of operational experience comes from the lack of familiarity (acquaintance) by administrators and the lack of a lexicon for descriptions that translate from the field to the office [10]. (The central problem of Bertrand Russell's knowledge by acquaintance or description[11].) Even so, after administrators publicly commit to a structural system that does not accommodate time, they will not entertain the possibility that time has dimension characteristics. Time compression and time as a dimension then become a blind spot in the administration of reliability and safety programs (5).

Blind to time, the central authority of the organization acts as the *absolute* reference frame and the *absolute* time control for the measurement of emergency operations. This completes the decontextualization of leadership, command, and control for the organization's response to environmental forcing functions.

“Blind to time, the central authority of the organization acts as the absolute reference frame and the absolute time control for the measurement of emergency operations. This completes the decontextualization of leadership, command, and control for the organization’s response to environmental forcing functions.”

Euclidean Geometry and Relativity

In 1905, Albert Einstein developed his Special Theory of Relativity, which changed how we perceive the world. In the Galilean/Newtonian sense of relativity, which Einstein called “the principle of relativity (in the restricted sense)” (11), reference frames move at the same speed. This implied a privileged reference frame from which movement and elapsed time were measured.

In his thought experiment, Einstein used the speed of light as the limit for the relative velocity between two inertial (reference) frames. With this condition, he demonstrated the inadequacy of three-dimensional Euclidean space. Time was a necessary dimension—the space-time continuum is a “Euclidean” four-dimensional continuum.

“Critically, in all inertial frames, all laws of physics are the same. For the operators of HRO, special relativity demonstrated that time is a dimension and no preferred or absolute reference frame or elapsed time exists. The laws of physics applied to all reference frames. Inertia is a property of energy, not a fundamental property of matter, nor an irreducible magnitude but a property of energy.”

Critically, in all inertial frames, *all* laws of physics are the same. For the operators of HRO, special relativity demonstrated that time is a dimension and no preferred or absolute reference frame or elapsed time exists. The laws of physics applied to all reference frames. Inertia is a property of energy, not a fundamental property of matter, nor an irreducible magnitude but a property of energy.

Euclidean metrics can no longer be for systems of coordinates that accelerate. This deficit could be ignored because *Euclidean metrics hold for small domains*. (Table)

Time and Reference Frame

Time as a dimension greatly influences our understanding of an emergency incident or crisis. Every reference body (coordinate

Table. Euclidean geometry of three dimensions and the space-time continuum of physics (12)

<i>Euclidean Geometry of Three Dimensions.</i>	<i>Special Theory of Relativity</i>
A numerical measure of distance ds corresponds to two neighboring points in space.	Corresponding to two neighboring points in space-time (point events), a numerical measure distance (ds) includes time.
It is independent of the system of coordinates chosen and can be measured with the unit measuring rod.	It is independent of the inertial system chosen and can be measured with the unit measuring rod and a standard clock.
Concerning these transformations, the laws of <i>Euclidean geometry</i> are invariant.	Concerning these transformations, the <i>laws of physics</i> are invariant.

system) has its own particular time; unless we are told the reference body to which the statement of time refers, there is no meaning in a statement of the time of an event (11).

All systems are in motion. The authors had discussed this with Professor Weick. He described that organizations would focus on the incident while ignoring their routine operations. While this may seem prudent, routine operations support the organization's emergency response. He then identified *sensitivity to operations* as an HRO characteristic.

We discuss the effect of time on operations in several earlier

“Instability derives from novelty, uncertainty, and uncontrollability—each a cause of stress. Uncontrollability alone causes minor stress, impairing the executive functions. If unrestrained neurological stress responses develop, then almost pure bottom-up control and self-preserving behaviors occur. Cortisol and the amygdala increasingly suppress executive functions, and a defense cascade follows.”

articles (7, 13, 14). However, time is a source of stress and fear that is underappreciated. Time changes the situation in several ways. Novelty, uncertainty, and uncontrollability create stress responses. Motion and proximity initiate fear-based behaviors (15–18).

- Novelty. Self-organization, as a response to energy, produces novel properties. For some individuals with less experience, the event itself is novel.
- Uncertainty. Red noise events create forcing functions that individuals must respond to. There is no way to fully appreciate the amount of energy entering the system or the length of time it will last.
- Uncontrollability. Energy is difficult to control in the best of circumstances. Adding novelty and uncertainty makes controllability more difficult.
- Motion. Our brains are designed to notice motion, particularly the motion of a threat moving toward us. This will elicit

fear behaviors.

- Proximity. A nearby threat significantly influences fear behaviors and our mental capacity to deal with the threat.

The reference frame of centralized leaders is commonly privileged at the expense of those involved in the event. Outside commands are also privileged in some organizations. The leader gains a sense of controllability, which reduces stress for the leader. Masculine detached objectivity is also a privileged reference frame (19).

“Fear develops from movement and proximity. Threats that are proximal (static distance) or approaching (changing distance) will mobilize one to move toward safety or, if escape is not possible, to fight in self-defense. Cognitive behaviors directed toward self-protection are organized into offensive and defensive actions.”

Stress responses. Fear Behaviors.

Administrators gain a sense of security that comes from control and stability. Time can be measured as movement or the rate of change and acceleration of events. In perceptual terms, time is part of uncontrollability, instability, and movement. The neurophysiological consequences are stress-induced symptoms, fear circuitry behaviors, and amygdala-driven behaviors (15, 16).

Instability derives from novelty, uncertainty, and uncontrollability—each a cause of stress (20, 21). Uncontrollability alone causes minor stress, impairing the executive functions (22). If unrestrained neurological stress responses develop, then almost pure bottom-up control and self-preserving behaviors occur. Cortisol and the amygdala increasingly suppress executive functions, and a defense cascade follows (23). Interventions commonly focus on reframing the situation, limiting exposure to uncontrollability, or creating perceived controllability through rules and algorithms to prevent stress. These approaches are almost foundational for risk management and management science (24).

Fear develops from movement and proximity. Threats that are proximal (static distance) or approaching (changing distance) will mobilize one to move toward safety or, if escape is not possible, to fight in self-defense (25). Cognitive behaviors directed toward

self-protection are organized into offensive and defensive actions.

Offensive protections, generally initiated to protect others, include prompt attacks, surprise, concentrated actions, fast tempo, and audacity to stop the spread of the problem. This aggressive projection of force secures the initiative but is pathological when directed toward people. The aggressor uses blame, accusation, and personal attacks.

“Defensive protections, generally initiated to protect self or close associates, come about when demands clearly, though subjectively, exceed a person’s capabilities, performance, security, or ability to survive. Ad hoc emergency plans will focus on personal survival or the person’s sense of safety. The person may withdraw or move to a place of psychological or physical safety—not going near the source of the threat, which could be the leader, an administrator, or a colleague...which impairs their ability to identify correlations or causations... The person will deflect, excuse, justify, or use prophylactic self-blame. This individual is less helpful in protecting others because of the primary focus on reducing risk to themselves.”

Defensive protections, generally initiated to protect self or close associates, come about when demands clearly, though subjectively, exceed a person’s capabilities, performance, security, or ability to survive. Ad hoc emergency plans will focus on personal survival or the person’s sense of safety. The person may withdraw or move to a place of psychological or physical safety (26)—not going near the source of the threat, which could be the leader, an administrator, or a colleague. Whether a leader, administrator, or line worker, the individual keeps a safe distance from the situation, which impairs their ability to identify correlations or causations. As a result, rationalizations, analogies, clichés, metaphors, and abstractions are used to support reasoning, plans, and actions. The person will deflect, excuse, justify, or use prophylactic self-blame. This individual is less helpful in protecting others because of the primary focus on reducing risk to themselves.

Actions for *offensive protection*, often formed from a developed plan, take the individual into a prompt attack to stop the spread of the problem. The aggressive projection of force secures the initiative but becomes pathological when directed at people. The person will use surprise, concentrated actions, fast tempo, and audacity. They will use blame, accusation, and personal attacks.

Worlds: Real, Actual, Possible

Do we live in the *real world*? How do we know the *actual world*? How do we make a *possible world* real or actual? These questions may seem trite, if not silly, but they elucidate the difficulty of reaching reliability and safety and mistranslating HRO into practice.

Each individual belongs to their “real world.” As perceived by humans, the aggregate of real worlds is only part of the actual world—the part that is perceived. Moreover, is time experienced differently by each human, such as by these points and lines or by the relativity of frames of reference?

Real World

The *real world* is made of the concepts the individual uses and the actions the individual takes. The individual experiences it. We continually exist in the real world; it is not something we prepare for or graduate into. In the real world, the individual cognitively perceives objects or ideas and then gives them mental representation. *Intentions* (with a “t”) are the mental representations of objects or ideas in the person’s real world. Actions (verbs) from the *intentional* (mental) properties or meanings are *intensions* (with an “s”) (27). Roman Ingarden, a Polish phenomenologist, ontologist, and aesthetician, describes the real world as a reality correlating with a meaningful series of intentional acts (28).

“The real world creates the reference frame within which the person acts. Beliefs, judgments, desires, fears, deductive reasoning, or classical logic do not drive actions. It is the intention and specific states of mind, mental directedness towards (or attending to) objects, that lead to action (intensionality).”

The real world creates the reference frame within which the person acts. Beliefs, judgments, desires, fears, deductive reasoning, or classical logic do not drive actions. It is the intention and specific states of mind, mental directedness towards (or attending to) objects, that lead to action (intensionality) (27). To better understand how operators perceive the actual world, we can use epistemic models of logic, the justification and rationality of knowledge and belief. Epistemology has two aspects: the definition of knowledge and its logical inferences. The two logical inferences are epistemic knowledge logic and doxastic belief logic.

We digress to explain intentionality, intensionality, and extensionality.

- ‘Intentional’ (with a “t”) in philosophy is a characteristic of consciousness, a property of mental states. The individual has different mental states (emotions) or holds different mental representations of an object. Intentional terms can label or explain the perceived object.
- [In contemporary English, ‘intention’ is a state of mind for taking deliberate or purposeful action.]
- ‘Intensional’ (with an “s”) and ‘extensional’ are semantic

properties of words and sentences. Intensional is a property or meaning connoted by a symbol; the definition of the symbol implies intention. Intensionality is concerned with whether the *internal definitions* of objects are the same.

- 'Extensional' refers to principles for judging whether objects are equal. That is, the objects have the same *external properties*.
- If two words or phrases designate the same object yet do not have the same meaning, the different meanings are called *intensions*. Objects with different meanings are called *extensions*.
 - Contexts in which only extension matters are *extensional*.
 - Contexts that need more than extension are *intensional*.
- 'Intentionality' is related to the meaning of 'intension,' the meanings we give to intentional states are "intensional" meanings.

“In our real world, we give meaning through intention and communicate through intention about objects where meaning matters in intensional contexts. Individuals who think in a linear matter and use classical logic will evaluate their real world on a single bipolar scale of ‘right/wrong’ or ‘rational/ irrational.’ This may be from their internal logic. Karl Weick describes how capacity (experience) affects perception—those with limited capacity search the world but only see what they can do. Seeing nothing relevant or salient to them, they stop looking. For either of these reasons and likely others, some individuals have a constrained perception of the actual world and limited imagination for possible worlds. Their real world becomes heavily constrained.”

Quantum mechanics describes how the conscious observer creates, in part, the reality observed. However, nothing in quantum mechanics forces such a narrow conclusion (29) because the real world is not a purely intentional object but a mental representation. For a functional real world, we must know of it and enter into other intentional relations, which we accomplish through a meaningful series of intentional acts (28). Individuals engage in the real world and the real world around them. Engagement of the world through intentional acts can reduce confusion between mental meaning-giving and salience or relevance.

In our real world, we give meaning through *intention* and communicate through *intention* about objects where meaning matters in *intensional contexts*. Individuals who think in a linear matter and use classical logic will evaluate their real world on a single bipolar scale of 'right/wrong' or 'rational/ irrational' (30). This may be from their internal logic. Karl Weick describes how capacity (experience) affects perception—those with limited capacity search the world but only see what they can do. Seeing nothing relevant or salient to them, they stop looking (5). For either of these reasons and likely others, some individuals have a constrained perception of the actual world and limited imagination for possible worlds. Their real world becomes heavily constrained.

What we do in healthcare is to expand a person's capacity, enlarging their real world and creating more possible worlds. Rather than commiseration or affirmations, we can support effective ways to think about their condition and situation. This is a significant part of how the authors work with people through HRO. In effect, we develop the experts we will later defer to—one of the HRO characteristics (*Deference to Expertise*) (31).

“Helping people construct their realities in a way they can engage with problems will increase their sense of agency while reducing the causes of stress: novelty, uncertainty, and uncontrollability.”

Living in a seriously adverse environment for an extended time normalizes such circumstances. Through *intentionality*, the individual gives meaning by using a different mental state (emotion) than we might and holds a different mental representation of their circumstances that we cannot perceive or do not want to. Rather than re-interpret a person's real world through the professional's "objective" perspective of the person's reality, we can explore reasons people construct their realities the way they do (30).

One of the authors [DvS] explores perceptions and actions by asking, "What made the person think this is right?" Asking questions in this way has, for decades, alarmed other healthcare professionals who consider it intrusive, prejudiced, or critical of other providers. On the other hand, the author has identified previously unidentified determinants of poor health that include unreported sexual trauma, Adverse Childhood Experiences (ACE) scores >6, domestic emotional abuse directed toward a parent, family estrangement, serious medical conditions diagnosed as "Pain Amplification Syndrome," unrecognized Post-Traumatic Stress, and behavior problems caused by severe malnutrition.

Helping people construct their realities in a way they can engage with problems will increase their sense of agency while reducing the causes of stress: novelty, uncertainty, and uncontrollability. This creates another of the HRO characteristics (*Commitment to Resilience*) (31).

Ever-present biases that negatively influence the perception of the real world are the availability construct (32), intuitive thoughts (33), and motivated reasoning (34–36).

Availability construct. What you think of first is the most critical, insidiously dangerous as the individual stops considering alternatives.

Intuitive thoughts. With the loss of executive functions from stress or fear, we lose inhibition of intuitive thoughts. Because intuitive responses are mentally faster, the individual thinks in intuitions and superstitions as childlike misconceptions emerge.

Motivated reasoning. The individual over-scrutinizes information conflicting with firmly held beliefs while readily accepting data supporting those beliefs. People are unaware of their use of motivated reasoning, and analytical sophistication and education do not reduce the presence of motivated reasoning (37).

“The actual world is the realm that includes us, the world that we inhabit. The actual world is the maximal spatiotemporally related whole we are a part of. ‘Actual’ is the equivalent of ‘present.’ The actual world does not have unique properties or privileged status.”

What has put all of us at great risk for harm is the privileging of certain reference frames from a real world. Some individuals at every level and location come to believe their real world reference frame, the one they alone can experience, is the actual world. They present their real, but subjective, reference frame as one of detached objectivity, a representation of the actual world. They can be convincing to others or disruptive to the system and organization. Their real world confidence and certitude emerging from masculine detached objectivity untested by the actual world (8, 39).

Actual World

The *actual world* is the realm that includes us, the world that we inhabit. The actual world is the maximal spatiotemporally related whole we are a part of. “Actual” is the equivalent of “present.” The actual world does not have unique properties or privileged status. (39, 40)

“*Dynamic epistemic logic*” deals with knowledge and information change and planning for partial observability and non-determinism (41, 42). These events can change the factual properties of the actual world. It describes knowledge and how actions change knowledge (epistemic) and facts (ontic) (41). “What makes the **actual world** actual is that it is our world, the world that we simply happen to inhabit”—Christopher Menzel (40).

Possible World

Possible worlds describe alternative extensions and domains that can emerge from the facts and properties of the actual world (40). The solution generated in the actual world creates the next actual world from the possible worlds that existed at the start of the engagement.

Objects exist in time and change properties over time. Logic systems must accommodate the flux during change. In temporal logic, the possible worlds become time instants, and the relation is in terms of temporal precedence called *temporal frames* (43).

The Function of Worlds

The function of real, actual, and possible worlds is to reach

a desired possible world. The structure of the organization organizes its individual real worlds, each with its own intentionality. Working from outside the problem space, a top down approach identifies necessary skills and rules. However, analysis that is reliant on detached objectivity easily becomes biased by locality, knowledge, and experience: narrow, constrained locality away from the problem; knowledge by description rather than acquaintance; and underfed experience with the local real worlds.

Leaders can expand the spectrum of analysis by addressing the problem as a mystery, creating attributes and capabilities of individual real worlds, and developing reciprocating feedback to merge top-down and bottom-up approaches (45, 46). Not as a puzzle, liminality is solved as a mystery.

“Aligning with Einstein’s profound insight, the real world is indeed considered the actual world, mirroring the perceptions and actions of individuals, particularly leaders. This delineation underscores the imperative for organizations to transcend fixed perspectives and embrace the multifaceted dimensions of real-time scenarios. Organizations can navigate emergent challenges with greater adaptability, efficacy, and foresight by acknowledging this dichotomy and adopting a more holistic approach that integrates temporal dynamics.”

Popper’s Three Worlds

We differentiate this three-world model from Karl Popper’s *Three Worlds* (46), which describes a series of developments from:

- World 1: “The realm of states and processes as studied by the natural sciences.”
- World 2: “The realm of mental states and processes.”
- World 3: “The realm of the products of thought’ when considered objects in their own right.”

Conclusion

In conclusion, examining real-world dynamics versus organizational perspectives reveals a profound separation rather than a mere gap or divide. This schism is epitomized by the organizational frame of reference, which dictates the measurement and organization of operations. Aligning with Einstein’s profound insight, the real world is indeed considered the actual world, mirroring the perceptions and actions of individuals, particularly leaders. This delineation underscores the imperative for organizations to transcend fixed perspectives and embrace the multifaceted dimensions of real-time scenarios. Organizations can navigate emergent challenges with greater adaptability, efficacy, and foresight by acknowledging this dichotomy and adopting a

more holistic approach that integrates temporal dynamics. Thus, by bridging the chasm between organizational frameworks and real-world exigencies, we can aspire to transcend the limitations of conventional paradigms and forge a path toward enhanced operational resilience and effectiveness.

References

1. van Stralen D, Byrum S, Inozu B. High Reliability for a Highly Unreliable World: Preparing for Code Blue through Daily Operations in Healthcare. North Charleston, SC: CreatSpace Publishing; 2017.
2. van Stralen D, Mercer TA. High-Reliability Organizing (HRO), Decision Making, the OODA Loop, and COVID-19. *Neonatology Today*. 2021;16(8):86–96.
3. Boyd J. A discourse on winning and losing. Maxwell AFB, Alabama: Air University Press; 2018.
4. Helmreich RL, Merritt AC, Wilhelm JA. The evolution of Crew Resource Management training in commercial aviation. *International Journal of Aviation Psychology*. 1999;9(1):19–32.
5. Weick KE. Enacted sensemaking in crisis situations *Journal of management studies*. 1988;25(4):305–17.
6. Kolditz TA. Research in In Extremis Settings: Expanding the Critique of ‘Why They Fight.’ *Armed Forces & Society*. 2006;32(4):655–8. doi: 10.1177/0095327x05283853.
7. van Stralen D, McKay SD, Mercer TA. High-Reliability Organizing Fundamentals: The Distinct Dimension of Time. *Neonatology Today* 2024;19(1):68–78.
8. MacCoun RJ, Kier E, Belkin A. Does social cohesion determine motivation in combat? An old question with an old answer. *Armed Forces & Society*. 2006;32(4):646–54.
9. Morris DJ. *The evil hours: A biography of post-traumatic stress disorder*. Boston, MA: Houghton Mifflin Harcourt; 2015. 336 p.
10. van Stralen D, McKay SD, Mercer TA. Disaster Series: High Reliability Organizing for (HRO) Disasters—Disaster Ecology and the Color of Noise. *Neonatology Today*. 2021;16(12):96–109. doi: <https://doi.org/10.51362/neonatology.today/2021161296108>.
11. Einstein A. On the special and general theory of relativity: CPAE (English translation); 1917. 247–420 p.
12. Einstein A. A brief outline of the development of the theory of relativity. *Nature*. 1921;106(2677):782–4.
13. van Stralen D, McKay SD, Mercer TA. High-Reliability Organizing, Time, and Motion *Neonatology Today*. 2023;18(11):42–8.
14. van Stralen D, McKay SD, Mercer TA. High-Reliability Organizing Fundamentals: Time and Acceleration. 2023;18(12):59–64.
15. Bracha HS. Human brain evolution and the “Neuroevolutionary Time-depth Principle:” Implications for the Reclassification of fear-circuitry-related traits in DSM-V and for studying resilience to warzone-related posttraumatic stress disorder. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*. 2006;30(5):827–53.
16. Bracha HS, Bracha AS, Williams AE, Ralston TC, Matsukawa JM. The human fear-circuitry and fear-induced fainting in healthy individuals. *Clinical Autonomic Research*. 2005;15(3):238–41.
17. van Stralen D, Mercer TA. During Pandemic COVID-19, the High-Reliability Organization (HRO) Identifies Maladaptive Stress Behaviors: The Stress-Fear-Threat Cascade. *Neonatology Today*. 2020;15(11):113–24. doi: 10.51362/neonatology.today/202011511113124.
18. van Stralen D, Mercer TA. Pragmatic High-Reliability Organizations (HRO) Modulates the Functions of Stress and Fear Behaviors During Pandemic COVID-19: The Stress-Fear-Threat Cascade. *Neonatology Today*. 2020;15(10):126–34. doi: 10.51362/neonatology.today/2020101510126134.
19. van Stralen D, McKay SD, Mercer TA. High-Reliability Organizing (HRO): Objectivity and the Loss of Subjectivity. *Neonatology Today* 2024;19(2):65–70.
20. Mason JW. A review of psychoendocrine research on the pituitary-adrenal cortical system. *Psychosomatic medicine*. 1968;30(5):576–607.
21. Gagnon SA, Wagner AD. Acute stress and episodic memory retrieval: neurobiological mechanisms and behavioral consequences. *Annals of the New York Academy of Sciences*. 2016;1369(1):55–75.
22. Arnsten AF. Stress signalling pathways that impair prefrontal cortex structure and function. *Nat Rev Neurosci*. 2009;10(6):410–22. Epub 2009/05/21. doi: 10.1038/nrn2648. PubMed PMID: 19455173; PubMed Central PMCID: PMC2907136.
23. Kozłowska K, Walker P, McLean L, Carrive P. Fear and the Defense Cascade: Clinical Implications and Management. *Harv Rev Psychiatry*. 2015;23(4):263–87. Epub 2015/06/11. doi: 10.1097/HRP.000000000000065. PubMed PMID: 26062169; PubMed Central PMCID: PMC4495877.
24. van Stralen D, McKay SD, Hart CA, Mercer TA. Implementation of High-Reliability Organizing (HRO): The Inherent Vice Characteristics of Stress, Fear, and Threat. *Neonatology Today*. 2022;17(6):26–38.
25. Hediger H. *Wild animals in captivity*. London, UK: Butterworths Scientific Publications; 1950.
26. Oatley K, Johnson-Laird PN. Cognitive approaches to emotions. *Trends Cogn Sci*. 2014;18(3):134–40. Epub 2014/01/07. doi: 10.1016/j.tics.2013.12.004. PubMed PMID: 24389368.
27. Jacob P. Intentionality. In: Zalta EN, Nodelman U, editors. *The Stanford Encyclopedia of Philosophy*. Spring 2023 ed: Metaphysics Research Lab, Stanford University; 2023.
28. Thomasson A. Roman Ingarden. In: Zalta EN, Nodelman U, editors. *The Stanford Encyclopedia of Philosophy*. Spring

- 2024 ed: Metaphysics Research Lab, Stanford University; 2024.
29. Searle JR. Mind, language and society: Philosophy in the real world. NY, NY: Basic Books; 1998.
 30. Stanley L, Wise S. Breaking out again: Feminist ontology and epistemology. NY, NY: Routledge; 2002. 253 p.
 31. Weick KE, Sutcliffe KM. Managing the Unexpected: Assuring High Performance in an Age of Complexity. Quinn RE, editor. San Francisco, CA: Jossey-Bass; 2001.
 32. Kahneman D, Tversky A. On the psychology of prediction. *Psychological Review*. 1973;80(4):237–51. doi: 10.1037/h0034747.
 33. Shtulman A, and Andrew Young. Why do logically incompatible beliefs seem psychologically compatible? In: McCain K, Kampourakis K, editors. *What is Scientific Knowledge?: An Introduction to Contemporary Epistemology of Science*. New York, NY: Routledge; 2019. p. 163–78.
 34. Kunda Z. The case for motivated reasoning. *Psychological bulletin*. 1990;108(3):480.
 35. Kraft PW, Lodge M, Taber CS. Why people “don’t trust the evidence” motivated reasoning and scientific beliefs. *The ANNALS of the American Academy of Political and Social Science*. 2015;658(1):121–33.
 36. Cotter RG, Lodge M, Vidigal R. The boundary conditions of motivated reasoning. *The Oxford Handbook of Electoral Persuasion*: Oxford University Press, USA; 2020. p. 66.
 37. Bénabou R, Tirole J. Mindful Economics: The Production, Consumption, and Value of Beliefs. *Journal of Economic Perspectives*. 2016;30(3):141–64. doi: 10.1257/jep.30.3.141.
 38. van Stralen D, Mercer TA. High-Reliability Organizing (HRO) in the COVID-19 Liminal Zone: Characteristics of Workers and Local Leaders. *Neonatology Today*. 2021;16(4):90-101. doi: 10.51362/neonatology.today/2021416490101.
 39. Lewis D. Anselm and Actuality. *Noûs*. 1970;4(2):175–88.
 40. Menzel C. Possible Worlds. In: Zalta EN, editor. *The Stanford Encyclopedia of Philosophy*. Fall 2021 ed: Metaphysics Research Lab, Stanford University; 2021.
 41. Andersen MB, Bolander T, Jensen MH. Conditional Epistemic Planning. In: del Cerro LF, Herzig A, Mengin J, editors. *Logics in Artificial Intelligence*. Lecture Notes in Computer Science. Heidelberg, Germany: Springer; 2012. p. 94–106.
 42. Aucher G. An Internal Version of Epistemic Logic. *Studia Logica*. 2010;94(1):1-22. doi: 10.1007/s11225-010-9227-9.
 43. Goranko V, Rumberg A. Temporal Logic. In: Zalta EN, Nodelman U, editors. *The Stanford Encyclopedia of Philosophy*. Fall 2023 ed. on line: Metaphysics Research Lab, Stanford University; 2023.
 44. Wolfberg A. Full-spectrum analysis: A new way of thinking for a new world. *Military Review*. 2006;86(4):35–42.
 45. Wolfberg A, Stumborg M. Achieving clarity in a constantly changing environment. *Reflections*. 2007;8(3):11–22.
 46. Popper K. *Three Worlds*. The Tanner Lecture on Human Values; April 7, 1978; The University of Michigan, Ann Arbor, MI: The University of Michigan; 1979.

Disclosure: The authors have no conflicts of interests to disclose.

NT

Corresponding Author



Daved van Stralen, MD, FAAP
 Associate Professor, Pediatrics
 Department of Pediatrics
 Loma Linda University School of Medicine
 11175 Campus Street
 CP-A1121
 Loma Linda, CA 92350
 Email: DVanStra@llu.edu



Sean McKay
 Executive Partner / Director, Disruptive Rescue & Austere
 Medicine
 Element Rescue - Response Solutions within Nonlinear Complex
 Environments
 Greenville, South Carolina, United States



Thomas A. Mercer
Rear Admiral
United States Navy (Retired)

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

99nicu

Acknowledgments

Karl Weick, Rensis Likert Distinguished University Professor of Organizational Behavior and Psychology, Emeritus, University of Michigan

William J. Corr, formerly with the Los Angeles City Fire Department

Adrian Wolfberg, PhD, Senior Program Officer at the National Academy of Sciences

H. Stefan Bracha, University of Hawai'i at Mānoa, United States Department of Veterans Affairs

Errol van Stralen, Ancora Education



Readers can also follow

NEONATOLOGY TODAY

via our Twitter Feed

@NEOTODAY

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

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.

The World Health Organization Calls for a New Paradigm for Mental Health and Residency Training: Do Any of the Newer Alternatives to the Standard Biomedical Model, such as Lifestyle Psychiatry, Meet WHO Requirements?

Cheryl L. Green, M.D., Ph.D.

Abstract:

Background: In its most recent publications, the World Health Organization called for profound change in how mental health care is conceptualized and delivered—for a new paradigm for mental health. The new model will be non-coercive, person-centered, human rights-based, recovery-oriented, readily implementable in the community, and evidence-based and optimizable via ongoing quality studies.

Methods: The author identified eight alternative models for mental health care from one or more of three sources: scientific publications, scientific journals, and/or professional associations. A narrative review was conducted in which the eight different models were reviewed and analyzed qualitatively regarding their potential to meet WHO criteria.

Results: After qualitative analysis of complementary and alternative psychiatry, complementary and integrative psychiatry, energy or mind-body psychiatry, functional psychiatry, holistic psychiatry, lifestyle psychiatry, nutritional psychiatry, and orthomolecular psychiatry, lifestyle psychiatry was found to be the only model for mental health that meets all criteria recently established by the WHO.

Conclusions: Lifestyle Psychiatry meets WHO criteria, and additionally, it is affordable, easy to implement, and effective, either as a standalone treatment or in tandem with the existing model of psychiatry. Lifestyle psychiatry should be widely implemented in community settings and taught in psychiatric residency training programs.

“In its most recent publications, the World Health Organization called for profound change in how mental health care is conceptualized and delivered—for a new paradigm for mental health. The new model will be non-coercive, person-centered, human rights-based, recovery-oriented, readily implementable in the community, and evidence-based and optimizable via ongoing quality studies.”

Background:

In June of 2023, the World Health Organization (WHO) released a 300-page document entitled “Guidance on Community Mental Health Services: Promoting Person-Centered and Rights-Based Approaches” (1) (henceforth called the WHO Guidance document). In it, the authors called for a “paradigm shift” in how mental health care is conceptualized and delivered worldwide. The document includes information about the “WHO QualityRights Initiative” (2) and links to “Seven Supporting Technical Packages on Community Mental Health Services” to advance such a transformation. (3) The new WHO documents are consistent with and draw from numerous other WHO documents put forward since the end of World War II: “The Universal Declaration of Human Rights” (4) of 1948, the “International Covenant on Civil and Political Rights” (5) of 1966, the “International Covenant on Economic, Social and Cultural Rights”(6) of 1966, the “Convention on the Rights of Persons with Disabilities” (7) of 2006, several recent reports by UN Special Rapporteurs (8) (e.g., 2017, 2020), and the “Comprehensive Mental Health Action Plan 2013-2020,” (9) which was extended to 2030 in 2019.

The recent WHO Guidance document criticizes the current global mental health system as “inadequate and outdated”(10) and points to several key problems, giving particular emphasis to two: coercion and discrimination. As to the former, the WHO Guidance document decries forced institutionalization and treatment, restraint, seclusion, and overmedication. It points to the lack of evidence of benefit from such practices and highlights “the damaging effects of institutionalization...and of involuntary hospitalization.”(11) It cites evidence to the effect that “interventions that are undertaken with force have negative outcomes for those subjected to them”(12) and asserts that “coercive practices such as restraint and seclusion cause harm to physical and mental health, and can lead to death.”(13) It also emphasizes “the negative effects of antidepressants, including the serious withdrawal syndrome that can occur when people stop using these drugs.”(14)

“The recent WHO Guidance document criticizes the current global mental health system as “inadequate and outdated” and points to several key problems, giving particular emphasis to two: coercion and discrimination.”

Further, the WHO Guidance document asserts that “Evidence for [antidepressants] efficacy is mixed and even contested”(15)

and advises that “People wishing to come off of psychotropic drugs should also be actively supported to do so.”(16) On its recommended list of civil society organizations for people with psychosocial disabilities, both the World Network of Users and Survivors of Psychiatry (WNUSP) and the European Network of (Ex)Users and Survivors of Psychiatry (ENUSP)(17) are featured. That is to say; the WHO Guidance document appears to support two of the largest anti-psychiatry organizations in the United States and Europe.

As to the latter problem with the global mental health system, discrimination, the WHO Guidance document decries what it calls the global stigmatization of persons with mental health conditions and adds that such persons are often excluded from or discriminated against in employment, education, housing, and matters of social welfare (for example, in some areas persons with mental health disabilities are denied the right to vote, to marry, and/or to bear children). The WHO Guidance document decries the “insufficient and fragmented nature of community mental health services” (18) implemented globally.

“As to the latter problem with the global mental health system, discrimination, the WHO Guidance document decries what it calls the global stigmatization of persons with mental health conditions and adds that such persons are often excluded from or discriminated against in employment, education, housing, and matters of social welfare...”

To address these pervasive problems and to chart a more favorable course for global mental health going forward, the WHO Guidance document calls for a new model of mental health that includes several key aspects. The following aspects are not cited in a single list. Instead, these are discussed repeatedly in multiple parts of the WHO Guidance document. For ease of understanding, I am enumerating these as follows. The new model for mental health is to be 1) non-coercive, 2) person-centered, 3) human rights-based, 4) recovery-oriented, 5) readily implementable in the community, and 6) evidence-based and optimizable via ongoing quality studies.

“...the WHO Guidance document calls for a new model of mental health that includes several key aspects...1) non-coercive, 2) person-centered, 3) human rights-based, 4) recovery-oriented, 5) readily implementable in the community, and 6) evidence-based and optimizable via ongoing quality studies.”

“Non-coercive” is explained to mean free of any forced treatment, whether this be in the form of institutionalization, forced medication, or the necessity of disabled individuals to surrender their most basic human rights to surrogate decision-makers. “Person-centered” means personalized, individualized, and aimed at promoting the dignity and respect of the individual (as opposed to dehumanizing or disempowering). “Human rights-based” means promoting basic human rights such as autonomy (e.g., informed consent), inclusion in the community, and non-discrimination. “Recovery-oriented” is explained to mean that the new model must encourage healing rather than mere symptom reduction and rather than prolonged and/or ever-escalating psychiatric services. As part of the healing, the new model should foster the recovery of identity and a sense of control over an individual’s own life. It should restore hope, optimism, connectedness, meaning, purpose, and empowerment. The new model should also be readily implementable in the community setting (as opposed to exclusively in psychiatric hospitals and other institutional facilities) and should, whenever possible, address the social determinants of mental health (e.g., isolation, unemployment, poverty, and violence). Finally, the model should be evidence-based and capable of ongoing study and research. The new model should “move toward more balanced, person-centered, holistic, and recovery-oriented practices.”(19) The WHO Guidance document then provides examples of individual organizations around the world that are presently providing services of this nature.

Methods:

Existing alternatives to the standard biomedical model of mental health care (i.e., medications and therapy, with hospitalization and/or institutionalization as needed) were identified by the author. Existing alternative models of psychiatry that have associated scientific publications, journals, and/or professional organizations include *at least* the following eight: complementary and alternative psychiatry, complementary and integrative psychiatry, energy or mind-body psychiatry, functional psychiatry, holistic psychiatry, lifestyle psychiatry, nutritional psychiatry, and orthomolecular psychiatry. There may be other models; however, this author could not identify others associated with scientific publications, journals, and/or professional associations (s). Each of these eight was analyzed qualitatively to determine whether any meet the essential characteristics, which are, again, that it be 1) non-coercive, 2) person-centered, 3) human rights-based, 4) recovery-oriented, 5) readily implementable in the community, and 6) evidence-based and optimizable via ongoing quality studies.

Results:

Eight models of psychiatry were reviewed, with results as follows.

Complementary and alternative (CAM) psychiatry

CAM refers to two types of treatments: complementary, which are offered in addition to standard biomedical care, and alternative, which are offered instead of standard care. The American Psychiatric Association has a caucus, or special interest group, on CAM. CAM also has multiple peer-reviewed scientific journals, including the *Journal of Complementary and Alternative Medicine*, *The Journal of Alternative and Complementary Medicine*, *The International Journal of Alternative and Complementary Medicine*, *Evidence-Based Complementary and Alternative Medicine*, and several others. CAM for psychiatry has a textbook, *Complementary*

and *Alternative Treatments in Mental Health Care*, (20) published in 2006 by the American Psychiatric Association. The textbook provides information about a range of non-standard treatments, including herbal medicines and homeopathy, that have not yet been accepted within mainstream psychiatry.

“Complementary and alternative (CAM) psychiatry refers to two types of treatments: complementary, which are offered in addition to standard biomedical care, and alternative, which are offered instead of standard care... CAM offers complements or alternatives to drugs (such as certain herbs) and also psychotherapies (such as meditation).”

CAM offers complements or alternatives to drugs (such as certain herbs) and also psychotherapies (such as meditation). It is not incompatible with the first five of the WHO criteria. Its main problem is the sixth principle concerning the need for treatments to be evidence-based. Some CAM treatments, like most of its botanical medicines, have only weak evidence of benefit. Others, like homeopathy, are difficult to prove even in theory (i.e., it would be hard to show the benefit of a vanishingly small quantity of a substance against a placebo). The fact that CAM psychiatry is not consistently grounded in a strong evidence base renders it incompatible with WHO goals.

Complementary and integrative (CIM) psychiatry

Complementary refers to treatments offered in addition to standard biomedical (known as “Western”) care. Integrative usually refers to a blend of Eastern and Western approaches. Ayurvedic medicine is an ancient medical system that originated in India. Its goal is to cleanse the body and restore balance to the body, mind, and spirit through diet, herbs, yoga, and, if necessary, *rasashastra* medicine. This is a type of medicine in which minerals, including gems and metals, sometimes even lead and mercury, are ground into powders and used therapeutically.

Similarly, traditional Chinese medicine aims to balance the chi (energy) along the body’s energy meridians and balance two forces, yin and yang. Again, diet, Chinese herbs, *tai chi*, and other treatments are implemented. This field has at least three major journals: *The Journal of Complementary and Integrative Medicine*, the *Journal of Evidence-Based Integrative Medicine*, and *Integrative Medicine: A Clinician’s Journal*. It also has two major centers, the National Center for Complementary and Integrative Medicine and the George Washington University Center for Integrative Medicine.

Though yoga therapies and Mindfulness-Based Stress Reduction have a large body of evidence supporting their use across a range of psychiatric disorders, many CIM therapies, such as *rasashastra* and yin-yang therapies, lack a strong evidence base. An additional caveat: Some Ayurvedic and some Chinese herbal medicines have been found to contain harmful amounts of toxic substances.

Thus, CIM cannot be accepted as the new model of care.

“Complementary and integrative (CIM) psychiatry. Complementary refers to treatments offered in addition to standard biomedical (known as “Western”) care. Integrative usually refers to a blend of Eastern and Western approaches. Ayurvedic medicine is an ancient medical system that originated in India. Its goal is to cleanse the body and restore balance to the body, mind, and spirit ...Similarly, traditional Chinese medicine aims to balance the chi (energy) along the body’s energy meridians and balance two forces, yin and yang.”

Energy medicine or mind-body medicine psychiatry

Energy medicine relies upon the transfer of “energy” (called “prana” in the Indian system and “chi” in the Chinese system) in order to effect healing. For example, in reiki therapy, the therapist places the hands lightly on an individual to guide such energy into that individual to effect a healing. “Therapeutic touch” is a similar practice. “Energy” is a broad term that segues into other mind-body therapies: mindfulness, meditation, biofeedback, hypnosis, yoga, *tai chi*, and healing-directed visualizations. There are several associations for Energy or mind-body medicine, such as The Center for Mind-Body Medicine in Washington, D.C., and several scientific journals, such as *Mind Body Medicine* and *Advances in Mind-Body Medicine*.

“Energy medicine relies upon the transfer of ‘energy’ (called ‘prana’ in the Indian system and “chi” in the Chinese system) in order to effect healing.”

Again, energy or mind-body approaches are not incompatible with the first five of the WHO criteria. The problem is (again) with criterion six: these are not grounded in a solid evidence base. Although many individuals report being sensitive to subtle energy transfers and shifts, these are somewhat difficult to prove objectively. Thus, even when healing appears, it is difficult to connect that with the specific energy intervention applied.

Functional psychiatry

Jeffrey Bland founded functional medicine (FM) in the early 1990s.

It aims to identify the root causes of diseases, such as interactions between the environment and gastrointestinal, endocrine, and immune systems of the body. It seeks to identify “triggers” for disease in a “matrix” of possible causes (e.g., lifestyle dysfunctions, non-optimal genetics, and/or harmful environmental exposures) and then to create an individualized treatment plan that makes use of lifestyle interventions, physiological cures, and spirituality as treatments. There is an *International Journal of Human Nutrition and Functional Medicine* and several functional medicine associations, such as the Institute for Functional Medicine and the Cleveland Center for Functional Medicine. Functional psychiatry is simply functional medicine aimed at identifying the root causes of psychiatric disorders and treating them with this same array of tools.

“...functional medicine...aims to identify the root causes of diseases, such as interactions between the environment and gastrointestinal, endocrine, and immune systems of the body...and then to create an individualized treatment plan that makes use of lifestyle interventions, physiological cures, and spirituality as treatments. Functional psychiatry is simply functional medicine aimed at identifying the root causes of psychiatric disorders and treating them with this same array of tools.”

This approach could be compatible with the first four of the WHO criteria. The fifth WHO criterion, however, requires that the new model be readily implementable within the community. Root cause analyses can be tremendously expensive. Beyond the common tests used in the standard biomedical model, additional allergy, hormonal, and genetic testing are usually required, and it is not unusual for a patient to spend thousands of dollars on such tests before suggestive results are identified. Thus, the functional approach is probably cost-prohibitive on a community-wide or global basis.

Additionally, it is doubtful whether the root cause approach is appropriate for psychiatric disorders. Much of the psyche is unconscious; the mind is quite complex. Determining a root cause for any one psychiatric disorder might not be possible. Also, even if allergy-related, hormonal, and/or endocrine factors were found to be abnormal in a psychiatric disorder, such correlation does not necessarily imply causation. Thus, the sixth criterion is again unmet due to the lack of a sufficiently strong evidence base.

Holistic psychiatry

Holistic medicine and holistic psychiatry use “natural” agents to effect cures. These include light, heat and massage, structured water, herbal products, acupuncture, aromatherapy, and, in

fact, any and all of the treatments discussed thus far except the standard biomedical ones. “Holistic” mental health is perhaps the broadest and most inclusive of any alternative models discussed thus far. There are two holistic associations, the American Holistic Health Association and the American Holistic Medical Association. A board certification is also available from the American Board of Integrative and Holistic Medicine. This holistic approach is very commonly applied to psychiatry.

“Holistic medicine and holistic psychiatry use 'natural' agents to effect cures... 'Holistic' mental health is perhaps the broadest and most inclusive of any alternative models discussed thus far.”

The main problem, again, is with the sixth criterion. Holistic psychiatry has a very uneven evidence base, with some therapies having robust evidence of efficacy and others having little to no such evidence. Also, it cannot be assumed that “natural” is necessarily safe. Nature’s pharmacopeia includes many poisons, and even botanicals known to be somewhat beneficial for certain indications, such as lavender essential oil for relaxation, have in some cases been found to contain harmful impurities. Thus, holistic psychiatry cannot be accepted in its entirety.

“Lifestyle psychiatry is an evidence-based field of medicine that offers treatments in six domains: nutrition, detoxification from harmful substances, exercise or movement, sleep hygiene, social and emotional connectedness and meaning, and stress reduction.”

Lifestyle psychiatry

Lifestyle psychiatry is an evidence-based field of medicine that offers treatments in six domains: nutrition, detoxification from harmful substances, exercise or movement, sleep hygiene, social and emotional connectedness and meaning, and stress reduction. As of 2007, the field of lifestyle medicine has had its journal, the *American Journal of Lifestyle Medicine*, its professional organization (The American College of Lifestyle Medicine), and as of 2017, it has had its board certification through the American Board of Lifestyle Medicine. Though newer still, the field of lifestyle psychiatry already has two textbooks, (21) and as of 2024, it also has its caucus within the American Psychiatric Association.

Lifestyle psychiatry is entirely free from forced treatment and from coercion in any form. Treatment recommendations are based on patient participation. (Patients choose the top three domains in which they would like to initiate changes; they must

have a confidence level of 7 out of a possible ten that they would be able to make changes in that domain before starting.) Lifestyle psychiatry is also person-centered in that each person engaged with it will help to generate his or her own personalized “SMART” (i.e., specific, measurable, achievable, realistic, and time-bound) treatment plan. A diagnosis, though sometimes helpful for communications among medical providers, can also be stigmatizing and thus is not strictly necessary. It is human rights-based in that the movement is increasingly focused on solutions for community health (e.g., community gardens) and even planetary health for the good of all inhabitants (both human and animal) of the earth. It is recovery-oriented in that it aims not just at temporarily ameliorating symptoms but indeed at preventing, treating, and reversing diseases and disorders. In the domain of social and emotional connectedness, this includes the restoration of hope and optimism, meaning and purpose, and a sense of personal empowerment. Lifestyle psychiatry and lifestyle psychiatry education are implementable in personal homes and community centers such as schools, libraries, religious centers, and other public gathering places. For example, courses in “culinary medicine,” featuring information about the whole food plant-based diet, have sprung up all over the United States and Europe in recent years, wherever there is a kitchen and a willing audience. Finally, lifestyle psychiatry is evidence-based and readily adaptable to ongoing monitoring and continuous improvement. In short, lifestyle psychiatry meets all the criteria in the WHO Guidance document.

“Nutritional medicine and nutritional psychiatry use food and food supplements as alternative treatments. The field of nutritional psychiatry targets at least three mechanisms for healing: healing nutrient deficiencies, such as vitamin D, reducing inflammation throughout the body, and correcting imbalances in the gut microbiome. The field advances the Mediterranean-pattern diet as the mainstay for optimal mental health.”

Nutritional psychiatry

Nutritional medicine and nutritional psychiatry use food and food supplements as alternative treatments. The field of nutritional psychiatry targets at least three mechanisms for healing: healing nutrient deficiencies, such as vitamin D (associated with dementia and Alzheimer’s Disease), reducing inflammation throughout the body (linked with cardiovascular and other diseases), and correcting imbalances in the gut microbiome (linked with depression, schizophrenia, and other mental disorders). The field advances the Mediterranean-pattern diet as the mainstay for optimal mental health. The field has many journals, such as *Nutrition in Clinical Practice*. It has many professional associations,

including one psychiatric one, The International Society for Nutritional Psychiatry Research.

This is an evidence-based field; it meets WHO criterion six of being evidence-based. However, nutrition alone, even if it were to entirely replace our current model of providing psychiatric medications, does not provide any of the psychosocial support elements necessary to create a viable, comprehensive model for mental health. Moreover, though it does address the significant problem of nutritional deficiencies, it does not address any other social determinants of mental health. Specifically, it cannot even theoretically be adapted to address social issues such as isolation, unemployment, poverty, violence, and so on. Thus, this model does not provide the basis for the fifth WHO criterion—i.e., that it be readily implementable in the community—to be met.

Orthomolecular psychiatry

Orthomolecular psychiatry was founded in the 1950s by Abram Hoffer and Humphrey Osmond, then continued by Carl Pfeiffer. Molecular biologist Linus Pauling named the field in a 1968 article, “Orthomolecular Psychiatry,” published in *Science*. The premise of the field is that bodily and psychiatric diseases can be prevented and treated with optimal amounts of substances normal to the body. The root causes of symptoms are assumed to be biochemical, the result of deficiencies due to poor diet, infections, drug and alcohol use, disorders of metabolism, and the like. The treatments are vitamins (including “megavitamins”), minerals, amino acids, enzymes, botanicals, and other natural supplements. “Pfeiffer’s law” states, “For every drug that benefits a patient, there is a natural substance that can achieve the same effect.” (22) The movement has a journal, the *Journal of Orthomolecular Medicine*, and a society, the International Society for Orthomolecular Medicine.

“Orthomolecular psychiatry... The premise of the field is that bodily and psychiatric diseases can be prevented and treated with optimal amounts of substances normal to the body. The root causes of symptoms are assumed to be biochemical, the result of deficiencies due to poor diet, infections, drug and alcohol use, disorders of metabolism, and the like.”

Criticisms of this field are the same as those for Nutritional Psychiatry. Though evidence-based, it does not include any psychosocial treatments, and it does not attempt to address or help mitigate the social issues that could be at the root of some individuals’ mental health problems. Thus, the fifth WHO criterion is not met.

Conclusions:

After qualitative review and analysis in light of WHO criteria of

complementary and alternative psychiatry, complementary and integrative psychiatry, energy or mind-body psychiatry, functional psychiatry, holistic psychiatry, lifestyle psychiatry, nutritional psychiatry, and orthomolecular psychiatry, lifestyle psychiatry was found to be the only model for mental health that meets all of the criteria for the new paradigm for mental health recently called for by the WHO. Lifestyle psychiatry is by nature non-coercive, person-centered, human rights-based, recovery-oriented, readily implementable in the community, and evidence-based and optimizable via ongoing quality research. In contrast, each of the other models fails to meet at least one or more of these criteria, notably the criterion of being evidence-based and suitable for ongoing research. Moreover, while most models either meet or could readily be adapted to meet most of the required elements, lifestyle psychiatry already meets all of these.

“...lifestyle psychiatry was found to be the only model for mental health that meets all of the criteria for the new paradigm for mental health recently called for by the WHO. Lifestyle psychiatry is by nature non-coercive, person-centered, human rights-based, recovery-oriented, readily implementable in the community, and evidence-based and optimizable via ongoing quality research.”

Additionally, the lifestyle psychiatry model can be implemented at all stages of life. It is suitable for infant, child, adolescent, adult, and geriatric psychiatry. Moreover, lifestyle psychiatry is safe, affordable, and effective, either as a standalone treatment or in tandem with the existing model of psychiatry. It is also easy to teach and implement; a Lifestyle Medicine Residency Curriculum (23) was approved in 2018 and rolled out in 2019 to dozens of medical schools and hospitals throughout the United States.

Particularly in the domain of infant psychiatry, which spans the period zero to three in which few to no FDA-approved psychiatric treatments exist, lifestyle psychiatry holds great promise. During these years, psychiatric medications are sometimes prescribed, particularly as a child approaches three. For example, at present, medical professionals commonly prescribe as follows: for insomnia, melatonin or diphenhydramine; for posttraumatic stress (PTSD), fluoxetine or escitalopram; for attention-deficit hyperactivity disorder (ADHD), mixed amphetamine salts, guanfacine, or clonidine; and irritability associated with autism spectrum disorder (ASD), aripiprazole or risperidone. It should be noted that the infant cannot consent nor even assent during these years, yet such prescribing can lead to adverse long-term consequences for his or her developing brain.

A lifestyle psychiatry approach would look very different. It would yield no adverse side effects yet would be comparable in efficacy.

For insomnia, the prescription might be optimal sunlight exposure by day, avoidance of blue light at night, and several other sleep hygiene recommendations. For PTSD, the prescription might be corrective emotional experiences with a foster caregiver and ideally with other family members, perhaps including therapeutic touch, regular and predictable routines, exposure to calmly spoken language, and the reduction of stress (e.g., loud noises). For ADHD, which has been linked to cigarette smoke and lead exposures in utero, the prescription would be keeping the child away from those and other common toxic exposures (e.g., pesticides, strong cleaning chemicals, heated plastics, and other heavy metals, like mercury in dental fillings). For irritability associated with ASD, the lifestyle prescription would be enrichment in early social, emotional, and linguistic experiences in tandem with appropriate psychotherapies, such as Applied Behavioral Analysis.

“Particularly in the domain of infant psychiatry, which spans the period zero to three in which few to no FDA-approved psychiatric treatments exist, lifestyle psychiatry holds great promise... It would yield no adverse side effects yet would be comparable in efficacy.”

In short, while several other potential models for health care fall short, lifestyle psychiatry meets all of the criteria in the WHO Guidance document and thus is suitable to become the new model for global mental health for people of all ages. Lifestyle psychiatry should be widely taught and implemented worldwide in psychiatric residency training programs.

References:

1. World Health Organization. Guidance on community mental health services: Promoting person-centred and rights-based approaches. World Health Organization, 2021. Accessed May 1, 2024. <https://www.who.int/publications/i/item/9789240025707>
2. World Health Organization. QualityRights materials on training, guidance and transformation. World Health Organization, November 12, 2019 Handbook. Accessed May 1, 2024. <https://www.who.int/publications/i/item/who-qualityrights-guidance-and-training-tools/>
3. World Health Organization. Guidance and technical packages on community mental health services: Promoting person-centred and rights-based approaches. World Health Organization, 2021. Accessed May 1, 2024. <https://www.who.int/publications/i/item/9789240025707>
4. United Nations. Universal declaration of human rights (UDHR). United Nations, December 10, 1948 (General Assembly resolution 217A). Accessed May 1, 2024. <https://www.un.org/en/about-us/universal-declaration-of-human-rights/>
5. United Nations. International covenant on civil and political rights. United Nations Human Rights Office of the High Com-

- missioner, December 16, 1966 (General Assembly resolution 2200AXXI). Accessed May 1, 2024. <https://www.ohchr.org/en/instruments-mechanisms/instruments/international-covenant-civil-and-political-rights/>
6. United Nations. International covenant on economic, social and cultural rights. United Nations Human Rights Office of the High Commissioner, December 16, 1966 (General Assembly resolution 2200AXXI). Accessed May 1, 2024. <https://www.ohchr.org/en/instruments-mechanisms/instruments/international-covenant-economic-social-and-cultural-rights/>
 7. United Nations. Convention on the rights of persons with disabilities. United Nations Human Rights Office of the High Commissioner, December 12, 2006 (General Assembly resolution A/RES/61/106). Accessed May 1, 2024. <https://www.chchr.org/en/instruments-mechanisms/instruments/convention-rights-persons-disabilities/>
 8. Report of the Special Rapporteur on the right of everyone to the enjoyment of the highest attainable standard of physical and mental health, Dainius Puras, March 28, 2017 (A/HRC/44/48). Geneva: United Nations, Human Rights Council; 2020. Accessed May 1, 2024. [https://undocs.org/A/HRC/35/21/ Report of the Special Rapporteur on the right of everyone to the enjoyment of the highest attainable standard of physical and mental health, Dainius Puras, April 15, 2020 \(A/HRC/44/48\)](https://undocs.org/A/HRC/35/21/Report%20of%20the%20Special%20Rapporteur%20on%20the%20right%20of%20everyone%20to%20the%20enjoyment%20of%20the%20highest%20attainable%20standard%20of%20physical%20and%20mental%20health,%20Dainius%20Puras,%20April%2015,%202020%20(A/HRC/44/48).). Geneva: United Nations, Human Rights Council; 2020. Accessed May 1, 2024. <https://undocs.org/en/A/HRC/44/48/>
 9. World Health Organization. Comprehensive Mental Health Action Plan 2013-2030. World Health Organization, Mental Health and Substance Use, September 21, 2021. Accessed May 1, 2024. <https://www.who.int/publications/item/9789240031029/>
 10. World Health Organization. Guidance on community mental health services: Promoting person-centred and rights-based approaches, p. viii. World Health Organization, 2021. Accessed May 1, 2024. <https://www.who.int/publications/item/9789240025707/>
 11. Ibid., p. viii.
 12. Ibid, p. 216.
 13. Ibid, p. 216.
 14. Ibid, p. 201.
 15. Ibid, p. 201.
 16. Ibid, p. 201.
 17. Ibid, p. 212.
 18. Ibid, p. viii.
 19. Ibid, p. 10, p. 201.
 20. Lake, J, Spiegel, D (Eds.). Complementary and Alternative Treatments in Mental Health Care. American Psychiatric Association Publishing, 2006.
 21. Noordsy, DL (Ed.). Lifestyle Psychiatry, 1st Edition, American Psychiatric Association Publishing, 2019. Merlo, G, Fagundio, CP (Eds.). Lifestyle Psychiatry: Through the Lens of Behavioral Medicine. CRC Press, 2024.
 22. Law attributed to Pfeiffer, CC, founding director of the Brain Bio Center in Princeton, New Jersey, 1973.
 23. American College of Lifestyle Medicine. Lifestyle Medicine Residency Curriculum. ACLM. Accessed May 1, 2024. <https://lifestylemedicine.org/project/lifestyle-medicine-residency-curriculum/>

Corresponding Author



Cheryl L. Green, M.D., Ph.D
Ph: 909-558-9552
Fx: 909-558-9252
Department of Psychiatry
Loma Linda University School of Medicine
1686 Barton Rd., Box D
Redlands, CA 92373
Email: CLGreen@LLU.edu



REGISTER

\$675 NPA MEMBERS
get \$100 off

\$250 STUDENT/PARENT
* includes continuing ed credits

NPA's ANNUAL INTERDISCIPLINARY CONFERENCE

Towards

Trauma-Responsive Perinatal Care



 WHEN:

May 15 -17

 WHERE:

**Sheraton Park
Hotel** in Anaheim,
California



 **National
Perinatal
Association**

* Continuing Education credits available at
no additional cost through our joint provider

WWW.NPACONFERENCE.ORG

Novel Treatment of Mucous Plugging Causing Left Lung Atelectasis in a Premature Neonate Weighing <500 Grams Using Flexible Fiberoptic Bronchoscopy

Tiffany G Campbell, MD, Juan C Martinez, MD, FAAP, Doron J Kahn, MD, FAAP

Abstract:

Introduction: Improved survival rates in extremely low birth weight (ELBW) neonates require smaller instruments and newer techniques to manage atelectasis in neonates on mechanical ventilation.

Case presentation: A chronically ventilated 23-week gestational age neonate weighing 465g developed worsening respiratory distress on day of life 17. X-rays showed complete opacification of the left lung. Flexible fiberoptic bronchoscopy (FFB) was performed with a 2.2 mm bronchoscope through the endotracheal tube (ETT), where an occlusive mucus plug was visualized in the left mainstem bronchus. Due to the lack of suction capability with this bronchoscope and inability to pass a larger one, the bronchoscope was positioned proximal to the mucous plug, the ETT was advanced over the bronchoscope, thereby selectively intubating the left mainstem bronchus, the bronchoscope was removed, an 8Fr suction catheter was inserted, and suction was applied resulting in successful removal of the mucous plug. Immediate clinical improvement and re-aeration of the left lung were noted.

Conclusion: This case introduces a novel FFB technique to manage left lung atelectasis in critically ill ELBW neonates

“Improved survival rates at the border of viability (22-24 weeks gestation) necessitate smaller instruments and newer techniques to manage complications in these extremely low birth weight (ELBW) neonates. Atelectasis occurs commonly in neonates on mechanical ventilation. Bronchoalveolar lavage with rigid and flexible fiberoptic bronchoscopy (FFB) is a treatment option for atelectasis.”

Introduction:

Improved survival rates at the border of viability (22-24 weeks gestation) necessitate smaller instruments and newer techniques to manage complications in these extremely low birth weight (ELBW) neonates. Atelectasis occurs commonly in neonates on

mechanical ventilation. Bronchoalveolar lavage with rigid and flexible fiberoptic bronchoscopy (FFB) is a treatment option for atelectasis. Currently, the smallest pediatric bronchoscopes with and without suction catheters measure 2.8 mm and 2.2 mm, respectively. FFB can be performed directly into the trachea of a spontaneously breathing patient or through an endotracheal tube (ETT). The flexible bronchoscope must be small enough to allow for ventilation, which is challenging in the ELBW neonate (1). The ultrathin 2.2 mm bronchoscope is advantageous in ELBW neonates intubated with ETTs of size 2.5 mm and 3.0 mm. However, the lack of a suction channel limits its use for diagnostic purposes. While blind suctioning is often feasible in the trachea and right mainstem bronchus, the anatomy of the left mainstem bronchus poses a challenge for access.

We describe a novel technique to suction the left mainstem bronchus in a critically ill 23 (corrected age 25) week neonate weighing 470 grams with complete left lung atelectasis due to mucous plugging.

“We describe a novel technique to suction the left mainstem bronchus in a critically ill 23 (corrected age 25) week neonate weighing 470 grams with complete left lung atelectasis due to mucous plugging.”

Case presentation:

A male neonate with a birth weight of 465 grams was born at 23-week and 1-day gestation to a 39-year-old G2P1 female via cesarean section due to prolonged rupture of membranes and non-reassuring fetal heart tones. Apgar scores were 1, 6, and 7 at 1, 5, and 10 minutes, respectively. He required endotracheal intubation at birth due to respiratory insufficiency, high-frequency jet ventilator, and surfactant on day of life (DOL) 1, 2 and 4. His course was complicated by respiratory distress syndrome, persistent pulmonary hypertension of the newborn, spontaneous intestinal perforation, bilateral grade 4 intraventricular hemorrhage, and portal vein thrombosis. A peritoneal drain was placed for spontaneous intestinal perforation on DOL 4, but due to continued stool drainage and hemodynamic compromise, a laparotomy with resection of focal perforation and placement of ostomy with mucous fistula was performed on DOL 15. Post-op, he was supported on the high-frequency jet ventilator with a fraction of inspired oxygen (FiO₂) of 45% and no longer required vasopressors. However, after brief post-op clinical improvement, on DOL 17, he had worsening respiratory distress with FiO₂ up to 100%. Inhaled nitric oxide for

hypoxemic respiratory failure and vasopressors for hemodynamic decompensation were started. On x-ray, complete opacification of his left lung was noted (shown in Fig. 1A). Multiple strategies to resolve the atelectasis such as various ventilators, ventilator strategies, different body positionings, frequent saline lavage, and pulmozyme, were attempted but were ineffective. After 36 hours of unsuccessful conventional interventions, FFB was performed by pediatric pulmonology on DOL 19.

His respiratory and hemodynamic instability precluded extubation, so a 2.2 mm Olympus ultrathin BF-N20 bronchoscope was advanced through the existing 2.5 mm ETT into the trachea and the right and left mainstem bronchus. A large, occlusive mucous plug was visualized approximately 1-2 cm into the left mainstem bronchus. Due to a lack of attached suction capabilities, the bronchoscope was removed from the airway and multiple blind attempts to suction the mucous plug were performed. Post-suctioning FFB demonstrated persistence of the mucous plug, and attempts to

advance the bronchoscope through or beyond the plug were unsuccessful. The patient tolerated the procedure well, however, after 2 hours of various interventions, it was abandoned. Trials of conventional therapies continued throughout that night; however, hemodynamic instability continued, thus FFB was reattempted.

On DOL 20, despite his weight of <500 grams, a 3.0 ETT was inserted to pass the larger 2.8 mm bronchoscope. Unfortunately, the passage was unsuccessful; thus, FFB was repeated using the 2.2 mm ultrathin bronchoscope. (shown in Fig. 2A) With the occlusive plug visualized and the scope tip just proximal to the mucous plug, the ETT was advanced over the bronchoscope to be situated at the mucous plug in the left mainstem bronchus (shown in Fig. 2B) The bronchoscope was removed, and an 8Fr suction catheter advanced just distal to the end of the ETT. (shown in Fig. 2C). The mucous plug was successfully removed as suction was applied. Post-procedure, there was clinical improvement with lowering of FiO_2 to 50% and discontinuation of inhaled nitric oxide

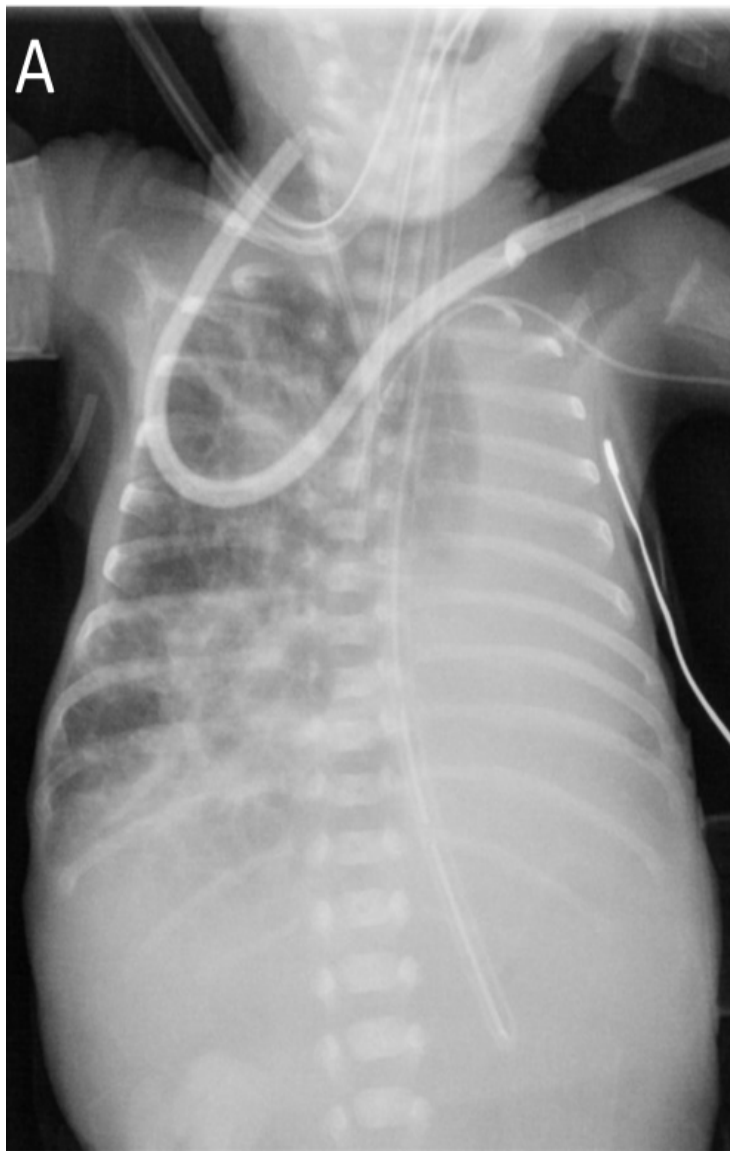


Figure 1: Before and after radiographic images of left lung atelectasis

A. Spontaneous development of left lung atelectasis

B. resolution of atelectasis a few hours post direct suctioning of left mainstem bronchus mucous plug

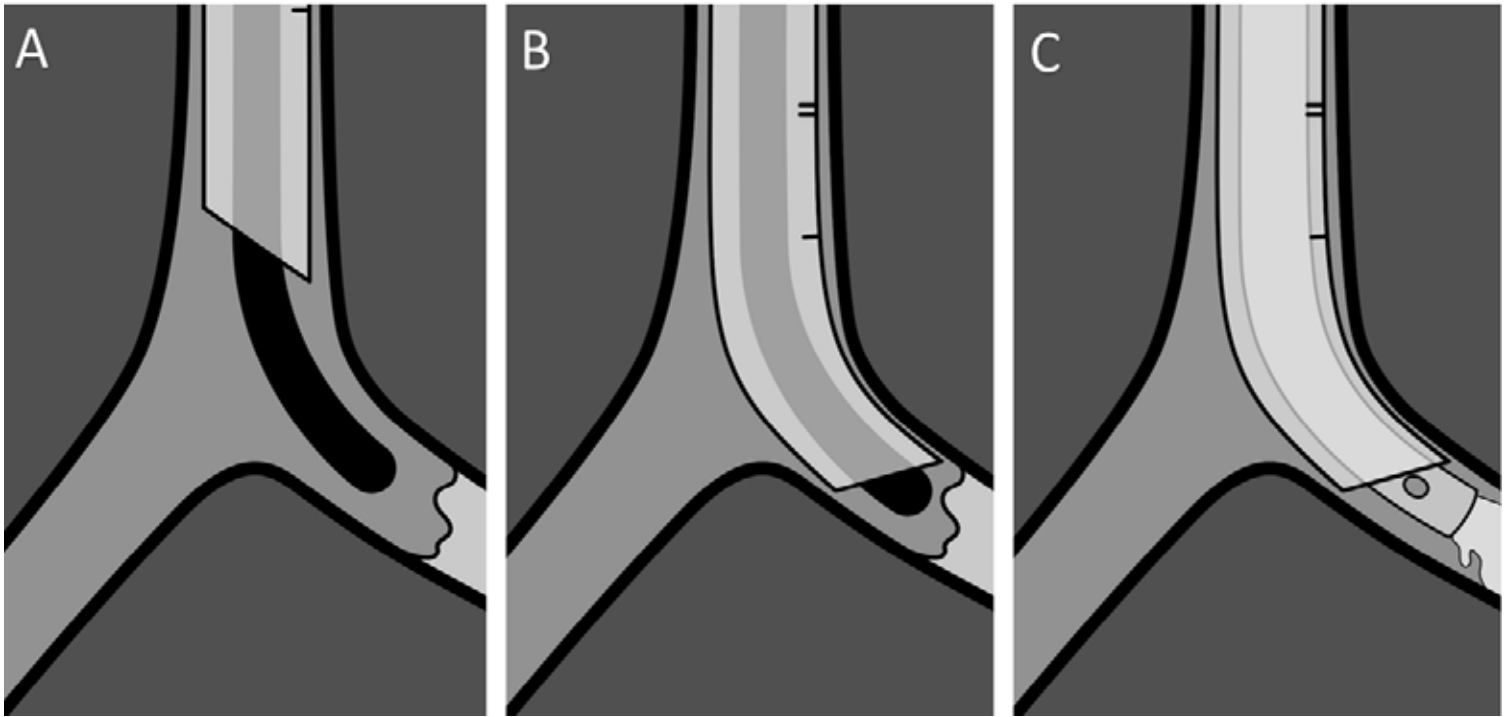


Figure 2: The procedure to remove the left mainstem bronchus mucous plug when suctioning via direct bronchoscopy is not possible
A. Visualize mucous plug via direct bronchoscopy through existing ETT
B. Pass ETT over the bronchoscope so it sits within the left mainstem bronchus just proximal to the mucous plug
C. Remove the bronchoscope and insert the suction catheter through the existing ETT

and vasopressor support. The immediate post-procedure x-ray demonstrated improved left lung volume (shown in Fig. 1B).

“FFB is documented to be safe and effective in assessing and treating infants and children with a wide variety of respiratory diseases, including atelectasis (3-6).”

Discussion:

FFB in young children was first described in 1978 (2). FFB is documented to be safe and effective in assessing and treating infants and children with a wide variety of respiratory diseases, including atelectasis (3-6). In two large cohorts of 559 and 116 infants undergoing FFB, the smallest infants were 1180 grams and 750 grams, respectively (7, 8). In a retrospective case series by Sachdev et al., FFB performed in neonates with birth weights 820-3660 grams caused resolution of atelectasis within 24 hours in 20 out of 25 cases of persistent atelectasis (6) Fan et al. describe successful resolution of lung atelectasis due to mucous plugging in a 658-gram neonate, however, this was with a rigid bronchoscope, off ventilator support, and with atelectasis and mucous plugging on the right side (9). Other case series describe successful resolution of lung atelectasis, including left-sided atelectasis, however, the smallest patients in these cohorts were typically more than 1000 grams. Most of these patients could be extubated for the procedure, and those who remained intubated

were scoped through a size 3.5mm ETT or larger in whom FFB with an attached suction device was feasible (3, 10). Our patient’s size and clinical instability made him an unsuitable candidate for extubation, and since he was too small for a 3.5 mm ETT, we were limited to the 2.2 mm bronchoscope without a suction device. To our knowledge, there has been no other case report of a critically ill, intubated, less than 500-gram neonate undergoing therapeutic FFB into the left mainstem bronchus. We describe a technique to suction the often difficult-to-reach left mainstem bronchus in the smallest neonates in which conventional bronchoscopy equipment may be inadequate.

References:

1. Wood RE, Sherman JM. Pediatric flexible bronchoscopy. *Ann Otol Rhinol Laryngol.* 1980;89(5):414-6.
2. Wood RE. Bronchoscopy and bronchoalveolar lavage in pediatric patients. In: Wilmot RW, Deterding R, Li A, et al, eds. *Kendig’s Disorders of the Respiratory Tract in Children.* 9th ed. Elsevier; 2019. P 134-36.
3. De Blic J, Delacourt C, Scheinmann P. Ultrathin flexible bronchoscopy in neonatal intensive care units. *Arch Dis Child.* 1991;66(12):1383-5.
4. Faro A, Wood RE, Schechter MS, Leong AB, Wittkugel E, Abode K, et al. Official American Thoracic Society technical Standards: Flexible airway endoscopy in children. *Am J Respir Crit Care Med.* 2015;191(9):1066-80.
5. Hysinger E, Friedman N, Jensen E, Zhang H, Piccione J. Bronchoscopy in neonates with severe bronchopulmonary dysplasia in the NICU. *J Perinatol.* 2018;39(2):263-8.

6. Sachdev A, Chhawchharia R, Gupta D, Gupta N. Flexible fiberoptic bronchoscopy directed interventions in neonatal intensive care unit. *Indian Pediatr.* 2019;56(7):563–5.
7. Mackangee HR, Naidoo L, Ramkaran P, Sartorius B, Chuturgoon AA. Neonatal bronchoscopy: Role in respiratory disease of the newborn – a 7 year experience. *Pediatr Pulmonol.* 2019;54(4):415-20.
8. Ke LQ, Shi MJ, Zhang FZ, Wu HJ, Wu L, Tang LF, et al. The clinical application of flexible bronchoscopy in a neonatal intensive care unit. *Front Pediatr.* 2022;10:2296-2360.
9. Fan PC, Teng RJ, Chen JC, Huang CH, Tsou Yau KI. Rigid bronchoscopy and jet ventilation in an extremely low birth-weight infant. *J Formos Med Assoc.* 1996;95(12):937
10. Kohelet D, Arbel E, Shinwell ES. Flexible fiberoptic bronchoscopy – a bedside technique for neonatologists. *J Matern Fetal Neonatal Med.* 2011;24(3):531-5.



Juan C Martinez, MD, FAAP
 Division of Pulmonology
 Joe DiMaggio Children's Hospital
 Hollywood, FL, USA

Acknowledgment: The authors thank Ari Hoffman for the renderings in Figure 2. Ari Hoffman is a fourth-year dental student at Touro College of Dental Medicine in New York and does dental cartoons for American Dental Association Print News. He has no conflicts of interest or funding sources related to this rendering.

Statement of Ethics: Written informed consent was obtained from the parents to publish this case report and accompanying images.

Disclosure: The authors have no conflicts of interests to disclose.

NT

Corresponding Author



Tiffany G Campbell, MD
 Department of Pediatrics
 Joe DiMaggio Children's Hospital
 Hollywood, FL, USA
 Tel#: (954) 265-5830
 email: tifcampbell@mhs.net



Doron J Kahn, MD, FAAP
 Division of Neonatology and Perinatal Medicine
 Joe DiMaggio Children's Hospital
 Hollywood, FL, USA

National Network of
 NICU Psychologists

NICU MENTAL HEALTH

OFFER ANTICIPATORY GUIDANCE

Parents need to know that they are more likely to develop depression and anxiety during the first year after childbirth than at any other time in their life.

Let's work together to improve support for NICU families.

nationalperinatal.org/psychologists

The National Network of NICU Psychologists: Support Mental Health Needs in the NICU and Beyond

LaTrice L. Dowtin, PhD, Elizabeth Fischer, PhD

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

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



united mission to optimize care for infants and their families in NICU settings through direct family involvement, staff support, research, education, and social justice and equity. This network was unofficially established in 2012 following the “Hynan Calls,” hosted by psychologist Michael Hynan, Ph.D. (Saxton et al., 2020). At this stage, Stephen Lassen and Chavis Patterson (co-chairs for approximately seven years, 2011~2018) volunteered to help organize the budding collaboration between eager NICU psychologists under the mentorship of Mike Hynan (2011–current) and the late Cheryl A. Milford (2011~2020).

NNNP’s work is accomplished through fluid collaboration between an executive leadership council and five dedicated committees, each led by psychologist chairs and co-chairs skilled, trained, and experienced in providing high-quality care to infants and families in NICUs. The committees include Social Justice and Equity, Training and Education, Advocacy, Research, and Communications. This collective group provides mentorship to those entering the field of NICU psychology and advocates for the role of psychologists and other mental health providers in NICU settings.

“As an organization, NNNP’s work is accomplished through fluid collaboration between an executive leadership council and five dedicated committees, each led by psychologist chairs and co-chairs skilled, trained, and experienced in providing high-quality care to infants and families in NICUs. The committees include Social Justice and Equity, Training and Education, Advocacy, Research, and Communications.”

“This collective group provides mentorship to those entering the field of NICU psychology and advocates for the role of psychologists and other mental health providers in NICU settings.”

“The National Network of NICU Psychologists (NNNP) is a collective group of passionate psychologists with the united mission to optimize care for infants and their families in NICU settings through direct family involvement, staff support, research, education, and social justice and equity.”

In 2019, the NNNP was officially formed as the current organization working under the parent organization, the National Perinatal Association (NPA), striving to be the leading voice and resource for NICU mental health services across the country, led by co-chairs Allison Dempsey and Sage Saxton (2019–2022). As an organization,

Values and Beliefs

The NNNP operates under core values and beliefs:

- 1) Psychologists have unique training and skills to optimize medical, socioemotional, and neurodevelopmental outcomes for NICU infants and families.
- 2) Psychology services should be integrated into every NICU in the United States.
- 3) Implementing evidence-based, targeted interventions to improve parental, familial, and infant mental health is critical to each child and family’s long-term health and well-being.
- 4) National collaboration among NICU psychologists is essential to state-of-the-art education, clinical research, policy development, and change advocacy.

The National Network of NICU Psychologists (NNNP) is a collective group of passionate psychologists with the

NNNP Initiatives and Contributions:

The NNNP is a busy organization actively working to contribute to training, scientific literature, and direct patient care. In the past, group members have come together to publish peer-reviewed articles and cutting-edge book chapters outlining clinical care and psychotherapy interventions for NICU families. One specific area of focus has been addressing traumatic stress in the NICU setting. Members additionally partnered to write a resource book for behavioral health clinicians in neonatal and perinatal settings, offering guidance, direction, and understanding regarding the practice of NICU psychology. During the initial months of the COVID-19 pandemic, the group worked closely with NPA to create support resources for NICU mental health clinicians and families, available on the NPA website. The materials included guidance for parent-infant bonding, coping with the hospitalization during a pandemic, and support for caregivers in this context. Furthermore, the training and education arm of the NICU has launched a series of educational webinars for psychologists and trainees interested in practicing in the NICU setting.

“...the group worked closely with NPA to create support resources for NICU mental health clinicians and families, available on the NPA website. The materials included guidance for parent-infant bonding, coping with the hospitalization during a pandemic, and support for caregivers in this context. Furthermore, the training and education arm of the NICU has launched a series of educational webinars for psychologists and trainees interested in practicing in the NICU setting.”

Under the present leadership of co-chairs LaTrice L. Dowtin and Elizabeth Fischer (2022–current), the NNNP continues to have an active agenda for education, research, and advocacy while keeping a running focus on social justice and equity. Currently, the NNNP is working on completing a NICU mental health roadmap to support families through the NICU journey. The advocacy group is actively completing work on an advocacy toolkit that guides clinicians and administrators on their path to developing a NICU psychology program at their institution. The training and education members continue to put out webinars and other training opportunities for membership, focusing on psychology trainees early and transitional career psychologists to help them gain specialized training and consultation in NICU and perinatal mental health. During the annual NPA conference, a retreat is held for psychologists, providing networking, training, and time to develop shared projects further. The NNNP has had an increasing presence in scientific presentations at the NPA conference through platform and poster presentations.

“Currently, the NNNP is working on completing a NICU mental health roadmap to support families through the NICU journey. The advocacy group is actively completing work on an advocacy toolkit that guides clinicians and administrators on their path to developing a NICU psychology program at their institution. The training and education members continue to put out webinars and other training opportunities for membership, focusing on psychology trainees early and transitional career psychologists to help them gain specialized training and consultation in NICU and perinatal mental health.”

As we look to the future, our focus is on expanding our reach by welcoming new members and continuing our important work through collaboration between members of our organization and other medical and mental health advocacy organizations in infant, postpartum, and perinatal mental health. Together with NPA, we will continue mentoring trainees and those new to the field of NICU mental health to expand the field of clinicians and researchers, improving the care and outcomes for babies and families who share the NICU journey.

Reference:

1. Saxton SN, Dempsey AG, Willis T, Baughcum AE, Chavis L, Hoffman C, Fulco CJ, Milford CA & Steinberg Z. Essential knowledge and competencies for psychologists working in neonatal intensive care units. *J Clin Psychol Med Settings*. 2020;27:830–841. <https://doi.org/10.1007/s10880-019-09682-8>

Disclosure: *The authors have no conflicts of interests to disclose.*

NT

Corresponding Author



LaTrice L. Dowtin, PhD
Executive Director | Administration & Clinical Services
PlayfulLeigh Psyched
2920 Meramec St #26909
St. Louis, MO 63118
Main Line: 305-814-PLAY (7529)
Email: DrDowtin@playfulleighpsyched.com



Elizabeth A Fischer, PhD
Associate Chief Pediatric Psychology and Developmental
Medicine, Children's Wisconsin
Assistant Professor, Medical College of Wisconsin
8915 W. Connell Court
Milwaukee, WI 53226
(414) 266-3400



2024

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

which is especially dangerous for babies younger than 3 months



www.nationalperinatal.org/rsv

The Indirect Impact of RSV

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 2/3 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 1/3 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.



GLO Preemies

Healthcare Professional Roundtable

Talk Openly, Share Opinions & Ask Burning Questions

Scan the QR Code to learn more



EVERY 4TH FRIDAY

Virtual
10:00am - 1:00pm

"A place for NICU Nurses, Social Workers, Doulas, and all involved with babies"



More information:

www.GLOPreemies.org



REGISTER TODAY
for the 2024 Neonatology
Conferences in Las Vegas!



CENTER FOR RESEARCH,
EDUCATION, QUALITY
AND SAFETY








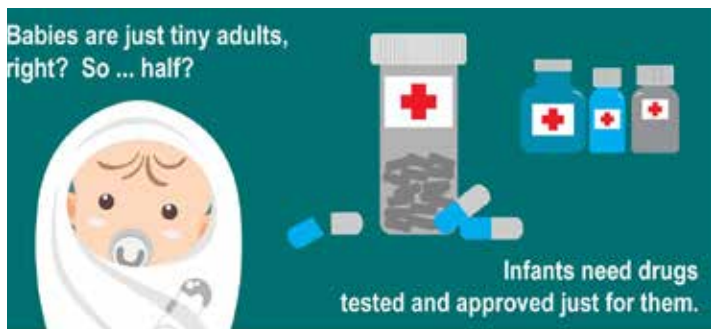
Which Infants are More Vulnerable to Respiratory Syncytial Virus?

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%

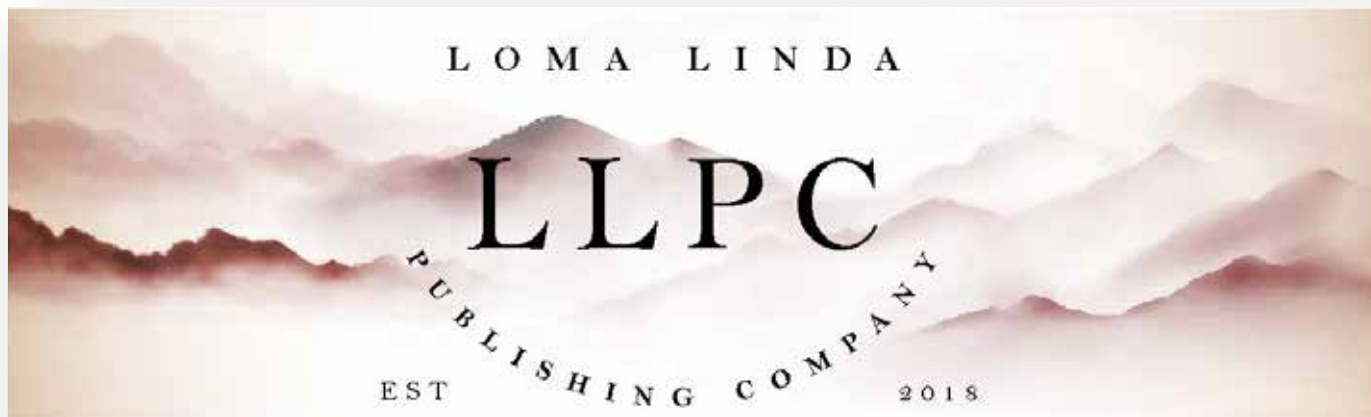


Center for Clinical Trials and Biometrics | **NCJH** National Center for Juvenile Health



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

AfPA
Alliance for Patient Access



Health and Wellness: Being Kind Has a Multitude of Benefits

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

“Working within the specialized environment and culture of the Neonatal Intensive Care Unit (NICU) demands a multifaceted approach that extends beyond mere technical competence. The correlation between health and wellness for newborns under our care and those who interact with them is best supported with a pleasant demeanor and kindness. Kindness and empathy underscores the significance of maintaining a ‘nice disposition’ in a critical healthcare setting.”

Working within the specialized environment and culture of the Neonatal Intensive Care Unit (NICU) demands a multifaceted approach that extends beyond mere technical competence. The correlation between health and wellness for newborns under our care and those who interact with them is best supported with a pleasant demeanor and kindness. Kindness and empathy underscores the significance of maintaining a “nice disposition” in a critical healthcare setting. Aristotle defined kindness as “helpfulness towards someone in need, not in return for anything, nor for the advantage of the helper himself, but for that of the person helped” (1). Friedrich Nietzsche considered kindness and love the “most curative herbs and agents in human intercourse.” Kindness evolved from the old English [circa 1300], meaning being well-born or well-bred. **Kindness** is a behavior marked by generosity, consideration, rendering assistance, or concern for others without expecting praise or reward. It is a subject of interest in philosophy, religion, and psychology.

In the context of the NICU, where intricate medical procedures intersect with delicate emotional dynamics, the adage that the nicest person in the room is often the most intelligent resonates profoundly. This principle speaks to the nuanced understanding that intelligence encompasses cognitive prowess, emotional intelligence, and interpersonal acumen. In navigating the complexities of neonatal care, possessing the ability to convey information and comfort to patients’ families with empathy and compassion is indispensable. Often, acts of kindness are what is most remembered by parents.

The notion of being kind underscores the importance of recognizing the potential equivalence of solutions within the NICU setting. While medical interventions may vary, the overarching goal re-

mains consistent: the optimal health and well-being of the neonate [and their parents]. Engaging in fruitless debates over minutiae detracts from the primary focus of delivering quality care, may impede collaborative efforts among healthcare professionals, and is neither nice nor necessary.

“The evolution of the word ‘nice’ from its origins in Old English denotes simplicity and offers a compelling perspective on the virtue of simplicity within neonatal care. Embracing simplicity does not denote a lack of sophistication; rather, it signifies an appreciation for streamlined approaches prioritizing efficiency and efficacy. In the intricate landscape of neonatal medicine, simplicity often serves as the conduit through which complex concepts can be effectively communicated and understood by diverse stakeholders.”

The evolution of the word “nice” from its origins in Old English denotes simplicity and offers a compelling perspective on the virtue of simplicity within neonatal care. Embracing simplicity does not denote a lack of sophistication; rather, it signifies an appreciation for streamlined approaches prioritizing efficiency and efficacy. In the intricate landscape of neonatal medicine, simplicity often serves as the conduit through which complex concepts can be effectively communicated and understood by diverse stakeholders.

Truly intelligent individuals within the NICU context eschew the temptation to engage in intellectual one-upmanship. Instead, they possess the innate ability to distill complex medical concepts into digestible insights accessible to a broad audience. Their gift lies not in flaunting their knowledge but in empowering others through education and understanding.

In interpersonal communication, embodying “niceness” entails mastering the art of tone and cadence, particularly during crucial conversations within the NICU. Maintaining a measured and composed demeanor, even in the face of adversity, fosters an environment conducive to collaboration and problem-solving. Effective leadership in the NICU is characterized not by authoritarianism but rather by kindness, empathy, and presence of “niceness.” While firm boundaries are essential to ensure patient safety and operational efficiency, disciplinary actions focus on constructive redirection rather than punitive measures.

In the realm of neonatal care, the presence or absence of cruelty and indifference is influenced by a myriad of psychological, social, cultural, and environmental factors. Our initial inclinations towards indifference to others' suffering, often stemming from fear or judgment towards those perceived as different, find their roots in our evolutionary past as a mechanism for survival. However, in the context of modern society and particularly within the delicate environment of neonatal care, it becomes imperative to transcend these primal instincts by fostering empathy and compassion.

It is crucial to recognize that some individuals may struggle to cultivate empathy and compassion due to various factors such as upbringing, cultural beliefs, or societal pressures. In certain competitive environments, where success is often equated with ruthless behavior, acts of indifference may be perceived as strategic, while kindness is unfortunately viewed as a weakness. Not being nice, in essence, is a manifestation of a lack of empathy hindering the ability to truly understand and connect with others, including vulnerable neonates and their families. Conversely, kindness is indicative of higher emotional intelligence, facilitating the formation of meaningful relationships and fostering collaborative problem-solving within the neonatal care setting.

“It is crucial to recognize that some individuals may struggle to cultivate empathy and compassion due to various factors such as upbringing, cultural beliefs, or societal pressures. In certain competitive environments, where success is often equated with ruthless behavior, acts of indifference may be perceived as strategic, while kindness is unfortunately viewed as a weakness.”

By acknowledging these complex factors and actively promoting kindness, we can strive towards creating a more enlightened and harmonious society. This endeavor requires a concerted effort toward education and fostering empathy and inclusivity. Empowering individuals to overcome instinctive responses and prioritize understanding can pave the way for a world characterized by compassion, where acts of cruelty are diminished and harmony prevails, particularly within the delicate realm of neonatal care.

In conclusion, within the context of the Neonatal Intensive Care Unit, cultivating kindness and a nice disposition is not merely a matter of etiquette but a strategic imperative. By embodying *kindness*, *simplicity*, and *emotional intelligence*, healthcare professionals can navigate the intricate terrain of neonatal medicine with grace, empathy, and effectiveness. Indifference should not be tolerated.

References:

1. <https://en.wikipedia.org/wiki/Aristotle>
2. https://en.wikipedia.org/wiki/Friedrich_Nietzsche
3. The Dean's Commencement speech from Northwestern given by Illinois Governor Pritzker: <https://youtu.be/5uFwyPP5GOQ?si=yNddrcQ-Y0YRw9P2>

<https://youtu.be/5uFwyPP5GOQ?si=yNddrcQ-Y0YRw9P2>

Disclosure: The authors have no conflicts of interests to disclose.

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



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





TAKE THE NECESSARY STEPS TO
ELIMINATE INEQUITIES

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

OU AP ONCEUPONAPREEMIEACADEMY.COM
 ©2020 BY ONCE UPON A PREMIE ACADEMY.

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

Readers can also follow

NEONATOLOGY TODAY

via our Twitter Feed

@NEOTODAY



Neonatology Grand Round Series

Earn accredited CE while learning about pressing neonatology topics!

pediatrix
 CENTER FOR RESEARCH, EDUCATION, QUALITY AND SAFETY

Letters to the Editor

Letter to the Editor: Antibiotic Treatment of Chorioamnionitis-Exposed Neonates Based Only on Signs of Infection

Dear Editor,

We want to applaud and acknowledge the work done by Wimmer et al. regarding their study, "Antibiotic Treatment of Chorioamnionitis-Exposed Neonates Based Only on Signs of Infection." This retrospective study demonstrates how risk calculators can potentially lead to overutilization of the medical system and may cause harm or developmental consequences to neonates (1). We appreciated that this paper discussed that utilizing laboratory techniques may not be beneficial and, in some instances, harmful. Not only the pain that multiple pokes can cause to the infant but also transferring the baby to the NICU may disrupt the development of the parent-infant bond by prolonging chestfeeding (2). Additionally, we commend the investigators for highlighting the effects of antibiotic use on the infant's microbiota and the development of long-term chronic illnesses such as obesity, asthma, and other atopic diseases. Determining whether prophylactic antibiotics are necessary to prevent neonatal sepsis is a worthwhile, medically and financially endeavor. Furthermore, the obligation to antibiotic stewardship is ever-growing as resistance increases yearly.

“Determining whether prophylactic antibiotics are necessary to prevent neonatal sepsis is a worthwhile, medically and financially endeavor. Furthermore, the obligation to antibiotic stewardship is ever-growing as resistance increases yearly.”

After reviewing the guidelines for the Neonatal Early Onset Sepsis Calculator (NEOSC) and this study's methods, we noticed a discrepancy in the data. The NEOSC is a tool utilized by neonatologists to calculate the risk of neonatal sepsis in infants > 34 weeks gestation based on a variety of maternal factors. Maternal factors include the EGA, the mother's highest antepartum temperature, duration of rupture of membranes, Group B Streptococcus (GBS) status, and type and timing of intrapartum antibiotics given. However, this study investigated the treatment and handling of chorioamnionitis-exposed infants at EGA \geq 35 weeks based on symptomatology rather than NEOSC score. Symptomatic infants were admitted to the NICU and treated through their standard treatment early-onset sepsis (EOS) guidelines. Infants who did not meet the symptom criteria were considered asymptomatic; they were exempted from laboratory evaluation and not treated with antibiotics.

The most significant discrepancy between infants being evaluated using the NEOSC and the methods proposed in this study lies in the EGA. The NEOSC is designed for neonates with an EGA of

> 34 weeks, whereas this study only investigated neonates with an EGA of \geq 35 weeks. While realizing this, we decided to test the NEOSC tool ourselves. We inputted a hypothetical patient with only the maternal risk factors for intrapartum temperature elevation \geq 100.4 F, one of the selection criteria presented in this study (CPT code of intrapartum fever \geq 100.4 F.) Other maternal factors were set to 0.5/1000 live births incidence of EOS, 12 hours duration of rupture of membranes, negative GBS status, and no intrapartum antibiotics given. With this selection criteria, the risk of neonatal sepsis in a well-appearing, asymptomatic neonate with an EGA of 34.1 weeks was more than double the risk than in a neonate with an EGA of 35 weeks under the same parameters (3.61 per 1000 live births versus 1.71 per 1000 live births.) Additionally, the suggested management of these infants changes from empiric antibiotics to blood cultures, respectively. Altering other maternal risks for infection, such as GBS status or intrapartum antibiotic treatment, only enhances this discrepancy.

“Given this, we are concerned about the efficacy of this study due to the lack of data evaluation for infants between EGA 34.1 and 35 weeks. With this extra six days of data, the study results could be altered significantly concerning the infection rate, readmission, and disease outcome. While the newly proposed method could be effectively and positively utilized in infants of EGA \geq 35 weeks, the study does not address or discuss the differences in care and evaluation between EGA 34.1 and 35 weeks.”

This remarkable difference in care should not be ignored. Though a single week in gestational age may seem like a minuscule difference in everyday life, for a neonate, one week could mean the difference between life and death. Invasive infection is the cause of about one-third of neonatal deaths each year, and the rate of sepsis is inversely proportional to gestational age (3,4). Therefore, there is a significant increase in neonatal interventions between premature infants EGA 34 weeks compared to EGA 35 weeks (5). Given this, we are concerned about the efficacy of this study due to the lack of data evaluation for infants between EGA 34.1 and 35 weeks. With this extra six days of data, the study results could be altered significantly concerning the infection rate, readmission, and disease outcome. While the newly proposed method could be effectively and positively utilized in infants of EGA \geq 35 weeks, the study does not address or discuss the differences in care and evaluation between EGA 34.1 and 35 weeks. To effectively compare NEOSC and symptomatic infant treatment, we propose that further data analysis be performed in this patient population for this gestational age discrepancy, along with further data collection at additional hospital sites.

Overall, we appreciate the authors' commitment to antibiotic stewardship and the development of the parent-baby bond. While NEOSC offers a beneficial tool for centers to determine

the degree of treatment a neonate requires, this article describes a valuable alternative. These physicians were able to mitigate the potential morbidity and mortality of neonatal sepsis while maximizing families' ability to bond and minimizing overutilization of healthcare resources and dollars. The providers treated 12% fewer infants for neonatal sepsis than indicated using the NEOSC tool without any negative impacts on individual patient safety. We suggest that the authors further investigate how the conclusions drawn from this retrospective study may differ regarding the preterm population that falls between 34.1 and 35 weeks of gestational age, as even a week's difference significantly impacts the maturity of a newborn's immune system (3).

Thank you for contributing to perinatology, antibiotic stewardship, and preserving families' integrity.

References:

1. Wimmer, J., Chandler, N., Clark, R., & Gable, K. (2024). Antibiotic Treatment of Chorioamnionitis-Exposed Neonates Based Only on Signs of Infection. *Neonatology Today*, 19(1).
2. Mukhopadhyay S, Lieberman E, Puopolo K, Riley L, Johnson L. Effect of early-onset sepsis evaluations on in-hospital breastfeeding practices among asymptomatic term neonates. *Hosp Pediatr*. 2015;5(4):203–210
3. Shane, A. L., & Stoll, B. J. (2014). Neonatal sepsis: progress towards improved outcomes. *Journal of Infection*, 68, S24-S32.
4. Cai, Shirley, Deanne K. Thompson, Peter J. Anderson, and Joseph Yuan-Mou Yang. 2019. "Short- and Long-Term Neurodevelopmental Outcomes of Very Preterm Infants with Neonatal Sepsis: A Systematic Review and Meta-Analysis" *Children* 6, no. 12: 131. <https://doi.org/10.3390/children6120131>
5. Magriples U, Crichton R, Ehrenkranz R, Copel JA. Delivery at 34 weeks is more costly than at 35 weeks in pregnancies with premature rupture of membranes. *J Matern Fetal Neonatal Med*. 2003 Jul;14(1):22-5. doi: 10.1080/jmf.14.1.22.25. PMID: 14563087.

Sincerely,

Carisa Swason OMS III, Lexi R M Lavell OMS III, PdTF, Aden Copeland OMS III, Nicole Lin OMS III

Dear Carisa Swason OMS III, Lexi R M Lavell OMS III, PdTF, Aden Copeland OMS III, and Nicole Lin OMS III

The editorial's authors have articulated insightful commendations towards Wimmer et al. for their significant contribution through the study titled "Antibiotic Treatment of Chorioamnionitis-Exposed Neonates Based Only on Signs of Infection." (1) This retrospective analysis serves as a critical examination of the utilization of risk calculators within the medical domain, shedding light on the potential ramifications of overreliance on such tools, particularly concerning the well-being of neonates. Indeed, the authors emphasize the prudent use of laboratory techniques and antibiotic treatment resonates within the medical community, highlighting the imperative of mitigating potential harm to neonatal health and

preserving the crucial parent-infant bond.

“Indeed, the authors emphasize the prudent use of laboratory techniques and antibiotic treatment resonates within the medical community, highlighting the imperative of mitigating potential harm to neonatal health and preserving the crucial parent-infant bond.”

However, the Letter to the Editor underscores a concern regarding a discrepancy between the study's methodology and the Neonatal Early Onset Sepsis Calculator (NEOSC), a widely employed tool for risk assessment in neonatal care. The divergence primarily stems from differences in gestational age criteria, as the study predominantly focused on neonates with a gestational age of ≥ 35 weeks, deviating from the NEOSC's designated scope of infants > 34 weeks. This discrepancy prompts a critical reevaluation of the implications for clinical practice and patient outcomes.

The letter's authors meticulously examined NEOSC parameters, revealing substantial disparities in the calculated risk of neonatal sepsis and subsequent management strategies between infants aged 34.1 and 35 weeks. Such findings underscore the profound impact of even minor variations in gestational age on risk assessment and treatment algorithms, warranting thorough scrutiny and refinement of existing clinical frameworks.

“The letter's authors meticulously examined NEOSC parameters, revealing substantial disparities in the calculated risk of neonatal sepsis and subsequent management strategies between infants aged 34.1 and 35 weeks. Such findings underscore the profound impact of even minor variations in gestational age on risk assessment and treatment algorithms, warranting thorough scrutiny and refinement of existing clinical frameworks.”

While acknowledging the study's valuable contributions to antibiotic stewardship and family-centered care, the letter advocates for continued inquiry into the gestational age discrepancy and

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

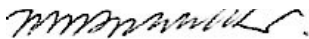
its potential implications for clinical decision-making. The authors propose further empirical investigation and data collection within the population between 34.1 and 35 weeks of gestational age to ensure comprehensive evaluation and refinement of current clinical practices.

In conclusion, the letter underscores the imperative for ongoing scrutiny and refinement to optimize neonatal care practices across all gestational age cohorts.

References:

1. Wimmer, J., Chandler, N., Clark, R., & Gable, K. (2024). Antibiotic Treatment of Chorioamnionitis-Exposed Neonates Based Only on Signs of Infection. *Neonatology Today*, 19(1).

Sincerely,



Mitchell Goldstein, MD, MBA, CML

Editor in Chief



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

© 2006-2024 by Neonatology Today ISSN: 1932-7137 (online)

Published monthly.

All rights reserved.

Erratum (Neonatology Today February, 2024)

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

www.NeonatologyToday.net

Twitter: www.Twitter.com/NeoToday

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.

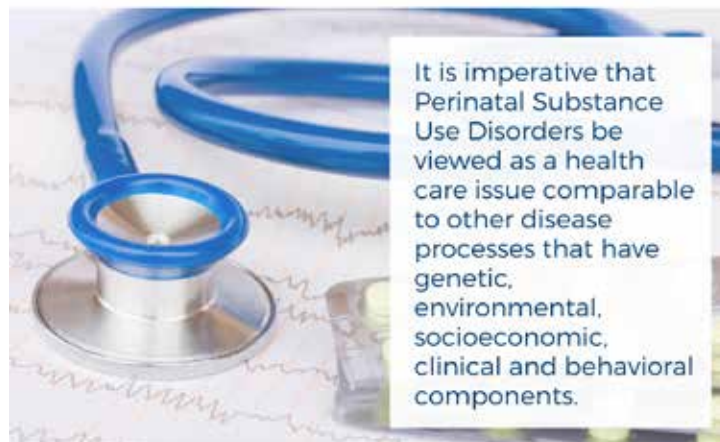
Please address your response in the form of a letter. For further formatting questions and submissions, please contact Mitchell Goldstein, MD at LomaLindaPublishingCompany@gmail.com.

NT



nationalperinatal.org/advocacy

www.nationalperinatal.org/substance-use



Educate. Advocate. Integrate.

Readers can also follow

NEONATOLOGY TODAY

via our Twitter Feed

@NEOTODAY

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

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.


Should Infants Be Separated from Mothers with COVID-19?

FIRST DO NO HARM


SEPARATION may not prevent **INFECTION.**




SKIN to SKIN CARE supports newborns' physiology.




SEPARATION stresses parents and babies.




SEPARATION weakens immune protections.



SEPARATION disrupts breastfeeding putting babies' health at risk.



SEPARATING the DYAD doubles providers' workload, burdening systems.



BASED ON THE ARTICLE:

Should Infants Be Separated from Mothers with COVID-19?
First, Do No Harm

© Alison Stuebe, 2020. Published by Mary Ann Liebert, Inc.

We can help protect each other.
Learn more
www.nationalperinatal.org/rsv



Navigating toward Neonatology: Cerebral Palsy

Benjamin Hopkins, OSM IV, Robert White, MD

“Welcome back to another installment. My name is Benjamin Hopkins, and I am currently a fourth-year medical student at Western University of Health Sciences in Pomona, California. 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 currently a fourth-year medical student at Western University of Health Sciences in Pomona, California. 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.

This month was “The Match,” and I am happy to say I will be a pediatric intern at the University of California San Francisco–Fresno. Currently, I am rotating within pediatric neurology and getting a deep sense of how to care for these patients, both in the hospital and out. The attending neurologist I work with is a superb teacher who exemplifies what it means to practice individualized patient care with optimal treatment options. Much of my time this month was spent looking at long-term or life-long disorders and how to manage them during acute flares as well as day-to-day to maintain an optimal state of health.

One of my patients this month was a 14-month-old female who is an ex-34⁰/7 wk preemie whom we have had continued follow-ups for cerebral palsy. Her official diagnosis is quadriplegic right-over-left cerebral palsy, which was evident by the physical exam. The patient had recently received an MRI of the brain and spine w/ and w/out contrast to observe locations of past damage during a traumatic delivery. The MRI of the spine was normal; however, the MRI of the brain showed diffuse white matter loss and thinning of the corpus callosum. The patient receives multiple therapies, including occupational, physical, and speech, and uses ankle-foot orthotics. She is continuing to develop well and had increases in her flexibility and movement; however, she is still non-verbal and will most likely continue to have developmental and intellectual delays due to the findings on the recent MRI. Physical exam findings show tight and restricted right hand and leg movement, more significant than left, and the patient is found to be in the 5th percentile for height and weight and 14th percentile for head circumference.

Cerebral palsy (CP) is the most common motor disability in children (1–3). Prevalence is 2–3/1000 in high-income countries (4, 5). There has been a decline in the prevalence of CP in many high-income countries, most likely due to advancements in treatment

options, although there has not been a decrease in incidence (1, 5). Various studies have indicated that the prevalence of CP is stable (4). CP is a group of diseases with an underlying cause of non-progressive nerve tissue damage and is categorized into spastic (80%), dyskinetic (15%), and ataxic (5%) forms (4, 5). CP is associated with various developmental delays, and its prevention is a public health priority (1, 3).

“Cerebral palsy (CP) is the most common motor disability in children. Prevalence is 2–3/1000 in high-income countries...CP is a group of diseases with an underlying cause of non-progressive nerve tissue damage and is categorized into spastic (80%), dyskinetic (15%), and ataxic (5%) forms. CP is associated with various developmental delays, and its prevention is a public health priority.”

The cause of CP is multifactorial, with multiple risk factors contributing to its development, and two-hit and multi-hit models have been considered (1, 5). Risk factors include preconception, prenatal, perinatal, or postnatal time periods, with most patients having pre- or perinatally acquired CP (4, 6). Injury to the developing brain before, during, or after birth can lead to CP, with various symptomology that may be present (4). Preconception risk factors depend on the mother’s health condition, and certain factors, such as obesity and age, have been identified as damaging to the brain (1, 4). The most significant risk factors for developing CP are the baby’s gestational age and birth weight (1, 4, 5). Despite the strong correlation between gestational age and birth weight, more than 50% of infants with CP are born at or near term (5, 6). The risk of developing CP increases with complications that result from premature birth (5). Premature complications such as periventricular leukomalacia, intraventricular bleeding, bronchopulmonary dysplasia, neonatal encephalopathy, and neonatal stroke all increase the chance of developing CP, while others have no identifiable risk factors and might be due to genetics (4–6). In addition to complications of prematurity, other risk factors include intrauterine growth restriction, intrauterine infection, antepartum hemorrhage, multiple pregnancies, placental

“The most significant risk factors for developing CP are the baby’s gestational age and birth weight. Despite the strong correlation between gestational age and birth weight, more than 50% of infants with CP are born at or near term.”

pathologies, and congenital and genetic predispositions (5). Even though most causes of CP happen in the prenatal and perinatal periods, 14% of CP diagnoses result from CNS damage during infancy and early childhood (5). Some of the leading causes of development postnatally are sepsis, meningitis, kernicterus, head trauma, hypoxia, and stroke (5).

“Even though most causes of CP happen in the prenatal and perinatal periods, 14% of CP diagnoses result from CNS damage during infancy and early childhood. Some of the leading causes of development postnatally are sepsis, meningitis, kernicterus, head trauma, hypoxia, and stroke.”

There has not been an agreed-upon age by which CP can be diagnosed; however, evidence does point to increased cognitive and motor benefits with early diagnosis (1). Diagnosis is based on clinical investigation and neurologic exams; gathering information from the mother, looking for early signs of brain damage in the child, magnetic resonance imaging, biomarkers, and cranial ultrasound can all be used to diagnose CP (4). While neonatologists look out for premature babies and patients who stay in the NICU who might develop CP, pediatricians play an essential role in identifying full-term infants with CP who may not have been under the care of a neonatologist (6). In most patients, the predominant motor abnormality is spasticity, and the term “high risk of cerebral palsy” can be given before confirmation so that early cognitive and motor interventions can start (3, 6). A test known as the General Movements Assessment (GMA) has been shown to reliably identify infants at risk for CP; it is a non-invasive and low-cost test with robust predictions on CP development (7).

“While neonatologists look out for premature babies and patients who stay in the NICU who might develop CP, pediatricians play an essential role in identifying full-term infants with CP who may not have been under the care of a neonatologist. In most patients, the predominant motor abnormality is spasticity, and the term “high risk of cerebral palsy” can be given before confirmation so that early cognitive and motor interventions can start. A test known as the General Movements Assessment (GMA) has been shown to reliably identify infants at risk for CP...”

A normal GMA exam in a term high-risk infant at three months is associated with a low risk for moderate or severe CP (7). If the patient has neonatal encephalopathy, the GMA is less reliable when performed before 15 weeks of age; however, if cramped synchronized general movements are found, there is a strong probability that CP will be diagnosed by two years of age (7). Although the GMA is a helpful tool in diagnoses, there is a lack of high-quality research, which limits its applicability, so the GMA test should not be used alone but along with other diagnostic methods (7).

The extent of damage to the developing brain can vary from patient to patient, resulting in a variety of symptom presentations (5). The first symptoms may appear discreetly, such as trouble gaining new development skills, with difficulties revealing themselves over time (5). Common symptoms are abnormal resistance to movements, activity limitations, sensory disturbances, problems with perception, cognition, communication, behavior, epilepsy, and secondary musculoskeletal abnormalities (4, 5). The damage is not progressive; however, due to the plasticity of the maturing CNS, other areas of the brain may take over damaged areas and change the general condition (5). With the possibility of multiple associated problems, a multidisciplinary team of specialists should assess and manage the patient (4).

“The extent of damage to the developing brain can vary from patient to patient, resulting in a variety of symptom presentations. The first symptoms may appear discreetly, such as trouble gaining new development skills, with difficulties revealing themselves over time. Common symptoms are abnormal resistance to movements, activity limitations, sensory disturbances, problems with perception, cognition, communication, behavior, epilepsy, and secondary musculoskeletal abnormalities.”

The best treatment for any disease process is prevention. Several prevention techniques are implemented when CP is anticipated (4, 5). Since the development of the CNS occurs over various time frames, specific prevention strategies are implemented multiple times (5). Since preterm delivery and low birth weight are the leading risk factors for the development of CP, interventions to prolong pregnancy are consistently implemented (1, 4, 5).

Antenatal steroid therapy has been used for over 50 years and has confirmed efficacy in preventing respiratory distress syndrome, perinatal death, intraventricular bleeding, necrotizing enterocolitis, and the development of sepsis (5). Given the proven effects of antenatal steroid therapy, it is unethical to perform placebo-controlled trials; however, a meta-analysis of observational studies indicated the benefit of a single course of antenatal steroid therapy in reducing the risk of CP (3, 5). There was a 32% decrease in CP diagnoses in patients whose mothers received a single course of antenatal steroids (5).

“...a meta-analysis of observational studies indicated the benefit of a single course of antenatal steroid therapy in reducing the risk of CP. There was a 32% decrease in CP diagnoses in patients whose mothers received a single course of antenatal steroids.”

The World Health Organization currently recommends the administration of magnesium sulfate to mothers who are at risk for preterm labor and whose gestational age is less than 34 weeks (5). This recommendation is based on a meta-analysis that showed a 30% reduction in the incidence of mild and a 40% reduction in moderate and severe CP (5). However, it is essential to note that composite endpoint of CP or death did not significantly decrease (5).

“The World Health Organization currently recommends the administration of magnesium sulfate to mothers who are at risk for preterm labor and whose gestational age is less than 34 weeks. This recommendation is based on a meta-analysis that showed a 30% reduction in the incidence of mild and a 40% reduction in moderate and severe CP.”

The World Health Organization also recommends delayed cord clamping (after 1 minute) to benefit the health and nutrition of preterm and full-term babies (5). The delay in cord clamping has been shown to reduce the risk of intraventricular hemorrhage, necrotizing enterocolitis, iron deficiency anemia, and to improve neurological development (5).

For newborns who experienced a perinatal episode of hypoxia, one must watch for hypoxic-ischemic encephalopathy (HIE), which increases the risk of CP (3, 5). Therapeutic hypothermia is used to treat hypoxic-ischemic encephalopathy and leads to improved survival rates and neurologic development, as well as a reduction in neurologic disorders and death (3, 5). Therapeutic hypothermia is implemented in the first six hours of life to prevent the primary necrosis phase from progressing to the secondary apoptosis phase of neuronal damage; however, with more severe hypoxic-ischemic injury, the latency period is shorter (5).

Multiple methods exist for treating patients with CP; however, it is crucial to implement the interventions early (2, 7). The earlier the intervention, the more likely nervous system plasticity will help develop the systems appropriately (2). Initial care should be conducted using a multidisciplinary approach covering nine domains: motor function, cognitive skills, communication,

“Therapeutic hypothermia is used to treat hypoxic-ischemic encephalopathy and leads to improved survival rates and neurologic development, as well as a reduction in neurologic disorders and death. Therapeutic hypothermia is implemented in the first six hours of life to prevent the primary necrosis phase from progressing to the secondary apoptosis phase of neuronal damage; however, with more severe hypoxic-ischemic injury, the latency period is shorter.”

eating and drinking, vision, sleep, muscle tone management, musculoskeletal health, and parental support (2, 3). Treatment should focus on care coordination, support, continued evaluations, and monitoring advancements in research that could improve life functions (3, 4). There is a multitude of treatment options that start primarily with physiotherapy, speech therapy, language therapy, constrain-induced movement therapy, and occupational therapy; second-line treatments can include therapeutic hypothermia, nanomedicine, stem cell therapy, and Botulinum toxin A (1, 3, 4). The critical part of caring for patients with CP is managing with an individualized approach tailored to their specific symptoms and etiology.

“Initial care should be conducted using a multidisciplinary approach covering nine domains: motor function, cognitive skills, communication, eating and drinking, vision, sleep, muscle tone management, musculoskeletal health, and parental support. Treatment should focus on care coordination, support, continued evaluations, and monitoring advancements in research that could improve life functions.”

This month, I enjoyed talking with Dr. Robert White, the medical director at Pediatrix Medical Group at Beacon Children’s Hospital in South Bend, Indiana, and a neonatologist with over 20 years of experience who has specialized in NICU design. We discussed what makes an excellent neonatologist, NICU layout and its impacts on patient health, and critical care worker burnout. *

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

Well, at least for the first part of my career and hopefully for a long time going forward, I have a natural appetite for learning new treatments. When we started, we had babies dying of lots of things at gestational ages and weights that we don't have now because we kept getting new treatments like surfactants and jet ventilators and better antibiotics and better nutrition. It's been an exciting ride because there's always a new way to treat a problem that we've been challenged with for all these years, and now, finally, someone's come up with a better idea. I suspect that will be the case with neonatology for a long time. There are some professions where you do the same thing over and over for 20 years, but neonatology is not one of them.

“When we started, we had babies dying of lots of things at gestational ages and weights that we don't have now because we kept getting new treatments like surfactants and jet ventilators and better antibiotics and better nutrition. It's been an exciting ride because there's always a new way to treat a problem that we've been challenged with for all these years, and now, finally, someone's come up with a better idea. I suspect that will be the case with neonatology for a long time. There are some professions where you do the same thing over and over for 20 years, but neonatology is not one of them.”

HIE is a great example. When I started, we had nothing to do for those babies. Cooling came along and refined over the years. It wasn't just now that we could cool; it was all the variations on how soon we should start, how long we should go, and what criteria we should use. They are testing erythropoietin and other medications for neuroprotection. That's an excellent example of an area where we've come a long way, yet we still have much to figure out.

2. What do you now know that you wish you had known before going into neonatology?

I didn't know what to expect and was just really lucky. Part of what I got lucky with was a wife who was willing to have me gone for long hours and even when I was home to be still working on other projects or still have my mind occupied, probably for longer than the average doctor would, certainly longer than the average nine-to-five person would.

I got lucky that the location where I ended up, a level three non-academic center, still gave me all the opportunities to do exciting stuff nationally and internationally. I am interested in NICU design and have pursued that over the years. I am also interested in the environment of care that we talk about at the Gravens Conference

every year.

I could do those things just as much at South Bend as at some big academic medical center. The difference is that this is at a level we take direct care of babies. While we have some nurse practitioners and occasionally a family practice resident, for the most part, we're the ones taking direct care of the baby and the family, and we're doing it day in and day out. This is our full-time job; if you love it, there's no better place to do it than in a setting like this.

“I could do those things just as much at South Bend as at some big academic medical center. The difference is that this is at a level we take direct care of babies. While we have some nurse practitioners and occasionally a family practice resident, for the most part, we're the ones taking direct care of the baby and the family, and we're doing it day in and day out. This is our full-time job; if you love it, there's no better place to do it than in a setting like this.”

I came here because this is where I grew up and, more importantly, where she wanted to raise our kids. I didn't know at the time that there would be all these benefits compared to, for example, training at Johns Hopkins. For a while, I thought that would be my career path; I'd be on the faculty there doing significant research and taking great care of babies. I came back to South Bend feeling like I was making some compromises, but as it turned out, I had all the opportunities to do research and have an impact that everyone had, and plenty of people could tell the same story. I have friends in Kalamazoo up the road, and they would say the same. This is not to denigrate an academic career because we need people doing full-time research and people to whom we can send babies. We need someone with expertise and uncommon problems that we don't have, but it was another way that I was just fortunate to have chosen to be at level three in a medium-sized community.

Still, there's a real danger if all of your training is at a place like that of having an ivory tower syndrome and believing that you can't possibly deliver good medicine any place but in such a center. You've got all these people around that you can call in if you need them, and how could you possibly practice good medicine at a location where you didn't have all those sorts of experts? It was true back then, but it's even more true now; they're at the other end of a telephone or an email. You are not giving up much access to expertise by practicing at a level three in a medium-sized community, and there are all these other benefits.

One of the things for me is being part of the community outside of medicine. I couldn't have done this in Baltimore, but I can do it here. I have friends that I play softball and basketball with; I have friends from church; and I have a community all around me that, not that you wouldn't have those things in Baltimore or Los Angeles, but it's a lot more intimate and personal, and the number of times that someone will come up to me in a grocery

store and say, “You took care of my baby 20 years ago, and here are pictures of her now”—that kind of experiences I don’t think I would have had in Baltimore.

3. You are known for NICU layout and design. Can you discuss some important aspects to consider when designing a NICU?

Let me give you my background, which is why this is important to me. When I started in neonatology, everyone had a big open NICU with 8, 10, or 12 beds in each room. They were very noisy and bright, significantly overstimulating not only for the babies but also for the staff and the families. The amount of time families were allowed there was not much, and we’ve gotten much better at that. We still have ways to go because a lot of people now have gone to the other extreme and believe that NICU should be quiet and dark, and you have to restrict touching the baby or bothering them much until they’re almost close to discharge.

There is still overstimulation in a few NICUs; however, there’s a lot of sensory deprivation now, and it’s all well-intentioned, but it’s not consistent with the evidence. The babies benefit from a circadian rhythm, lighting, hearing music, and their mother’s voices even while asleep. Touch is an essential means of communication with them. You wonder what that has to do with design, but you must understand a baby’s and the family’s needs to get the design right.

“There is still overstimulation in a few NICUs; however, there’s a lot of sensory deprivation now, and it’s all well-intentioned, but it’s not consistent with the evidence. The babies benefit from a circadian rhythm, lighting, hearing music, and their mother’s voices even while asleep. Touch is an essential means of communication with them. You wonder what that has to do with design, but you must understand a baby’s and the family’s needs to get the design right.”

The first part is knowing what babies need for neurodevelopment, and that led us to build a NICU that has a lot of single-family rooms. Some people call them private rooms, but I like to emphasize the family component. The next crucial component is couplet care rooms if your NICU is in a hospital where they do deliveries. Until now, almost all babies and mothers are separated when the baby goes to the NICU, and the mother is sent to a postpartum floor where she’s surrounded by mothers with healthy babies, which has to be extremely painful for her, not only the separation but seeing that other moms are not having to go through what she goes through.

We figured out that we shouldn’t be separating mothers from healthy babies back in the 80s. It used to be done before when there was the nursery, mom had a room, and everybody came and looked at babies through the windows. We figured all that out in the 80s, and now nobody would think about separating mothers

and babies when the baby is healthy. Likewise, they shouldn’t be doing it when the baby’s sick. The baby needs the family as much, or more; the mother and father want to be with the baby more than if the baby is healthy.

For daylight and the visual environment, we have a giant atrium. All the rooms have windows to either the atrium or the outside, so families can stay with their babies and have access to regular day and night; they know the weather outside, and there’s a balcony they can go out on to relax and decompress before they go back to see their baby. We try to make it a place where families can have a home away from home. Many of them will be there for weeks at a time, and when that happens, parents bond better, and babies do better, not only when they’re in the NICU but also after discharge.

We have occasional kids that we have to send to a level four NICU because they need specialist care that we can’t provide. Pediatric surgery is the most common, and the parents can’t wait to get back to our NICU because the environment is so much more supportive and nurturing for them and their baby. We’re hoping that other people can learn from our experience. We’re just one of a couple dozen in the country with couplet care rooms. There are many more with single-family rooms, which is the trend for the future because that’s the right thing to do.

I was trying to make the point that it’s not that you can’t do this kind of radical new different stuff at level fours; you definitely can, and Loma Linda and Yale are good examples of that, but I think it was a lot easier to do at our hospital. I have to give credit to the CEO of the hospital. I’m sure there are other hospitals where the CEO wouldn’t think of it, and there wouldn’t be any chance. But you certainly are not reducing your chance of doing something new and innovative just because you might practice at a medium-sized community hospital instead of a big level four.

4. How do you think the critical care scenario of the NICU affects the chance of burnout? And how should we counter it?

I teach a class of pre-med students at Notre Dame, and we discuss dealing with critical situations because some people aren’t sure they want to go into a specialty that’ll frequently put them in the position of losing a patient or having challenging, emotional moments. One of the points I always make to them is how gratifying it is if you can make it through that with a family, even if you lose the baby, to know that somebody cared, did the absolute best that could be done, and cared not only about their baby but about them. If you get them through that situation with that kind of feeling at the end of it, even when you’ve lost the baby, you feel like, okay, that’s what God put me here for. He gave me the talents and opportunities to help people through this situation, and I’d be selfish if I were not willing to use them for people suffering in this situation.

The other part of the story is you get the baby through, and then you have this wonderful feeling that this was hard, and I gave it everything I could and did the best I could, and the baby made it through. The parents sometimes will look at you as a miracle worker and say you saved my baby. However, even when you know that’s not entirely true, you still know that you were part of a challenging situation, and it turned out well, and I don’t know any better feeling you could have in any profession. It took me a while to reach that point, but now I embrace those moments.

You won’t find it in any other area of critical care medicine. I have a son who works in adult critical care and another who works in pediatric critical care, and when they get their patients through the most crucial stage, they get moved out to the floor and don’t see

them again. For the most part, after we get a 23-weeker through a tough first week and they're moving along, we get to stay with them and their family till they go home for the next three months and watch them grow and thrive.

“I teach a class of pre-med students at Notre Dame, and we discuss dealing with critical situations because some people aren't sure they want to go into a specialty that'll frequently put them in the position of losing a patient or having challenging, emotional moments. One of the points I always make to them is how gratifying it is if you can make it through that with a family, even if you lose the baby, to know that somebody cared, did the absolute best that could be done, and cared not only about their baby but about them.”

5. What are you currently working on?

I have lots of hobbies, primarily sports. I play softball and basketball, do weightlifting and track and field, but the most fun time I spend is with my grandchildren. I'm fortunate that three out of our four kids stayed in this area, so there are grandkids around a lot of the time, and there's nothing more fun than that. So when I have that opportunity, that's what I'm doing when I get home from the hospital.

*Answers paraphrased from video/voice call.

References:

1. Korzeniewski SJ, Slaughter J, Lenski M, Haak P, Paneth N. The complex aetiology of cerebral palsy. *Nat Rev Neurol*. 2018 Sep;14(9):528–543. doi: 10.1038/s41582-018-0043-6. PMID: 30104744.
2. Morgan C, Fetters L, Adde L, Badawi N, Bancale A, Boyd RN, Chorna O, Cioni G, Damiano DL, Darrah J, de Vries LS, Dusing S, Einspieler C, Eliasson AC, Ferriero D, Fehlings D, Forssberg H, Gordon AM, Greaves S, Guzzetta A, Hadders-Algra M, Harbourne R, Karlsson P, Krumlinde-Sundholm L, Latal B, Loughran-Fowlds A, Mak C, Maitre N, McIntyre S, Mei C, Morgan A, Kakooza-Mwesige A, Romeo DM, Sanchez K, Spittle A, Shepherd R, Thornton M, Valentine J, Ward R, Whittingham K, Zamany A, Novak I. Early Intervention for Children Aged 0 to 2 Years With or at High Risk of Cerebral Palsy: International Clinical Practice Guideline Based on Systematic Reviews. *JAMA Pediatr*. 2021 Aug 1;175(8):846–858. doi: 10.1001/jamapediatrics.2021.0878. PMID: 33999106; PMCID: PMC9677545.
3. O'Shea TM. Diagnosis, treatment, and prevention of cerebral palsy. *Clin Obstet Gynecol*. 2008 Dec;51(4):816–28. doi:

10.1097/GRF.0b013e3181870ba7. PMID: 18981805; PMCID: PMC3051278.

4. Paul S, Nahar A, Bhagawati M, Kunwar AJ. A Review on Recent Advances of Cerebral Palsy. *Oxid Med Cell Longev*. 2022 Jul 30;2022:2622310. doi: 10.1155/2022/2622310. PMID: 35941906; PMCID: PMC9356840.
5. Mlodawski J, Mlodawska M, Pazera G, Michalski W, Domanski T, Dolecka-Slusarczyk M, Gluszek S, Rokita W. Cerebral palsy and obstetric-neonatal interventions. *Ginekol Pol*. 2019;90(12):722–727. doi: 10.5603/GP.2019.0124. PMID: 31909467.
6. Morgan C, Fahey M, Roy B, Novak I. Diagnosing cerebral palsy in full-term infants. *J Paediatr Child Health*. 2018 Oct;54(10):1159–1164. doi: 10.1111/jpc.14177. PMID: 30294991.
7. Seesahai J, Luther M, Church PT, Maddalena P, Asztalos E, Rotter T, Banihani R. The assessment of general movements in term and late-preterm infants diagnosed with neonatal encephalopathy, as a predictive tool of cerebral palsy by 2 years of age—a scoping review. *Syst Rev*. 2021 Aug 12;10(1):226. doi: 10.1186/s13643-021-01765-8. PMID: 34384482; PMCID: PMC8359053.

Disclosure: The authors have no conflicts of interests to disclose.

NT

Corresponding Author



Benjamin Hopkins, OMS IV
Western University of Health Sciences
College of Osteopathic Medicine of the Pacific
Email: Benjamin.Hopkins@westernu.edu

Readers can also follow

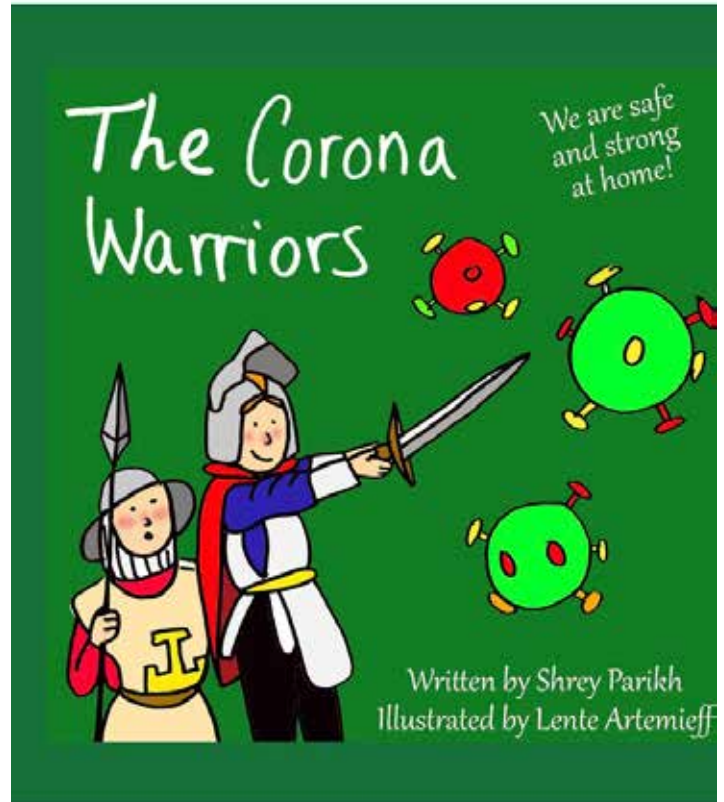
NEONATOLOGY TODAY

via our Twitter Feed

@NEOTODAY



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



PERINATAL SUBSTANCE USE

nationalperinatal.org/position
www.nationalperinatal.org/substance-use



Educate. Advocate. Integrate.



CONGENITAL
 CARDIOLOGY
 TODAY

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



Subscribe Electronically
 Free on the Home Page

www.CongenitalCardiologyToday.com

Fellows Column: The 0/0/0 “Miracle”: Overcoming Multifactorial Birth Trauma in a Preterm Neonate

Grace Ahuja, MA, Melissa Kreutz, Joshua Hernandez

Abstract:

An APGAR score of 0 at 10 minutes is usually associated with high mortality and poor outcomes for the neonate, including lifelong deficits, severe hypoxic brain injury, and even death. Additionally, neonatal exposure to substances such as methamphetamines plays a role in developmental delays and meeting neurobehavioral milestones. In this case of a baby with APGARS of 0 at 1, 5, and 10 minutes, as well as in utero exposure to methamphetamines and complicated delivery, the risk of early demise was high. The aggressive resuscitation at birth and continued care in the NICU resulted in significantly less damage than what was expected. It is important to note that despite multiple factors contributing to the prediction of poor outcomes, early and attentive care of the newborn can play a vital role in recovery and a fighting chance.

Introduction:

The APGAR score to evaluate a newborn is a universally accepted tool that collects data about the coloring, heart rate, reflex irritability, muscle tone, and respiratory effort to determine the neonate's health and whether immediate attention is necessary (1). The APGAR is scored out of 10, assigning 2 points for each of the five standards above. A score of 7–10 is reassuring, 4–6 is moderately abnormal, and 0–3 is severely abnormal (1). It is standard to assess the neonate and assign an APGAR score at 1 and 5 minutes of life and at 5-minute intervals if the score remains below 7 for up to 20 minutes. Mortality is high among neonates who have an APGAR score of 0 at 10 minutes (2), but individual cases of aggressive interventions can change this outcome.

“The APGAR score to evaluate a newborn is a universally accepted tool that collects data about the coloring, heart rate, reflex irritability, muscle tone, and respiratory effort to determine the neonate's health and whether immediate attention is necessary. The APGAR is scored out of 10, assigning 2 points for each of the five standards above. A score of 7–10 is reassuring, 4–6 is moderately abnormal, and 0–3 is severely abnormal. It is standard to assess the neonate and assign an APGAR score at 1 and 5 minutes of life and at 5-minute intervals if the score remains below 7 for up to 20 minutes.”

Case Report:

A baby girl was born at 31⁰/₇ weeks to a G₆P₃ mother who came into the emergency department in severe abdominal pain. Maternal history was positive for methamphetamine use, lack of consistent prenatal care, and maternal immunology labs, including HIV, RPR, Rubella, Hepatitis B, and GBS, were all unknown at the time of delivery. The decision was made to proceed via cesarean section due to a history of three prior cesarean deliveries, and upon opening of the abdominal cavity, it was found that the lower uterine section had ruptured. The rupture was extended so that the infant could be delivered, and it was discovered that the placenta had also detached and was delivered along with the child. The surgical team stabilized the mother, and the NICU team took over care of the newborn.

“A baby girl was born at 31⁰/₇ weeks to a G₆P₃ mother who came into the emergency department in severe abdominal pain. Maternal history was positive for methamphetamine use, lack of consistent prenatal care, and maternal immunology labs...were all unknown at the time of delivery. The decision was made to proceed via cesarean section due to a history of three prior cesarean deliveries, and upon opening of the abdominal cavity, it was found that the lower uterine section had ruptured. The rupture was extended so that the infant could be delivered, and it was discovered that the placenta had also detached and was delivered along with the child.”

The infant was limp and apneic and was immediately started on chest compressions and was intubated with positive pressure ventilation within 90 seconds. By two minutes of life, the infant had received their first dose of epinephrine. By 10 minutes of life, the infant had received four doses of epinephrine and two boluses of normal saline and was continually getting chest compressions with no improvement. The infant's first pulse was palpated in the low 40s at 15 minutes of life. A PIV and UVC were placed for central access, an additional unit of epinephrine was dosed, and chest compressions were continued. The baby's final APGARS were 0¹, 0⁵, 0¹⁰, 2¹⁵, 3²⁰, 5²⁵, 5³⁰. She was stabilized and transferred to the NICU.

Discussion:

Though there are some recommendations and guidelines (3) for discontinuing resuscitation at 10 minutes of life with no pulse due to the likelihood of severe hypoxic injury, there is still merit to the decision made by this care team. The landscape of neonatal survival after resuscitation at birth is improving, in part due to more aggressive resuscitation efforts and the inclusion of therapeutic hypothermia (4) but also due to the understanding that outcomes are dependent on individual cases and are primarily determined by the individual care teams. The large majority of babies with 0 APGARS at 10 minutes do not survive resuscitation in the delivery room, and the other majority do not survive the first week of life due to severe ischemic brain injury (2). However, of those that do make it to 8 days of life, the likelihood of survival past one year is much higher (2).

“The landscape of neonatal survival after resuscitation at birth is improving, in part due to more aggressive resuscitation efforts and the inclusion of therapeutic hypothermia but also due to the understanding that outcomes are dependent on individual cases and are primarily determined by the individual care teams.”

It is clear to us that the baby girl featured in this case report is an example of a particularly resilient and “miraculous” recovery. Her triple zero APGARs were an early indicator of high mortality risk, and yet here she is at almost 70 days of life, able to feed by nipple at her full capacity and breathe on just one liter of oxygen by nasal cannula without significant difficulty. She was diagnosed with a grade III germinal matrix hemorrhage by head ultrasound at 12 days of life. She was additionally started on prophylactic anti-seizure medication, but repeat head ultrasounds have reported a moderate de-escalation to a grade II GMH with ventriculomegaly paired with a brain MRI that reports signs of periventricular leukomalacia. Given these findings, the most pressing concern would be the development of cerebral palsy or long-term intellectual and developmental deficits secondary to the hypoxic injury at birth (5), but the degree of her future deficits is currently unknown.

We are also wary of the long-term effects that intrauterine exposure to methamphetamines may have on her development. Because methamphetamines can cross the placental barrier, there are risks for placental insufficiency and abruption along with neurotoxicity, among other complications in other organs for the offspring. Prenatal meth exposure may disrupt the excitation/inhibition balance in the brain, which is associated with emotional and stress-related impairments (6). A systematic analysis of studies reviewing the effects of methamphetamine use on brain structure and activity reports that there is a high correlation between the patterns of cortical damage associated with exposure and a decrease in task-related efficiency, decreased working memory,

altered attention, and an increase in risk-taking activity (7). There is also an association between poor quality motor activity and lower arousal and higher lethargy scores, as well as increased risk for anxiety, depression, attention disorders, and withdrawn behavior that are significant by the age of 5 years (6).

“Because methamphetamines can cross the placental barrier, there are risks for placental insufficiency and abruption along with neurotoxicity, among other complications in other organs for the offspring. Prenatal meth exposure may disrupt the excitation/inhibition balance in the brain, which is associated with emotional and stress-related impairments. A systematic analysis of studies reviewing the effects of methamphetamine use on brain structure and activity reports that there is a high correlation between the patterns of cortical damage associated with exposure and a decrease in task-related efficiency, decreased working memory, altered attention, and an increase in risk-taking activity.”

Occupational therapists assessed baby girl at day of life 9, and she was found to have mild to moderate hypotonicity, inattentiveness, tremors, low level of arousal, inconsolable, inability to quiet herself, and inability to follow or focus on stimuli. Occupational therapy was continued throughout her stay in the NICU. At 57 days of life, occupational therapy signed off on her, and their final assessment reflected hypertonicity, intact reflexes, and postural and motor development for gestational age. Neurobehavioral deficits were noted, including an inability to self-console or self-quiet, irritability, low arousal, tremors, and decreased cuddliness. The occupational therapist does not suspect cerebral palsy based on her motor development at this time, but the neurobehavioral delays, likely secondary to methamphetamine exposure in utero, could lead to potential future challenges in frontotemporal development.

Conclusion:

As mortality is known to be high among newborns with an APGAR score of 0 at 10 minutes, this case presents valuable data on potential survival and outcomes with aggressive management. While APGAR scores alone are insufficient to predict outcomes, they are essential data points to analyze within the scope of the whole clinical picture. Neonatal growth and development status post cardiopulmonary resuscitation at birth provides insight

into the long-term effects of cardiac arrest and the potential outcomes of prompt and continued interventions. Additionally, many maternal variables exist in this case that contribute to the neonate's health, including the mother's lack of prenatal care, methamphetamine use, uterine rupture, unknown Rubella/RPR/HIV/HepB/GBS status, lack of antenatal steroid administration, preterm birth, and complex psychosocial factors. It is valuable to look at this clinical case and consider that while a multitude of contributing factors present challenges to the health of the neonate, standard protocols of clinical care have helped support this newborn and give her the best chance at the most optimal outcome. While maternal factors were out of our control in this case, it highlights the value of diligent care for a neonate who had the odds stacked against her from the start. Continued follow-up on this patient will provide further insight into the outcome as she grows and develops.

We commend the multidisciplinary team involved in this neonate's case from the perspective of efficient and thorough clinical management and their empathetic and devoted attention to her care. At the end of her stay in the NICU, the unit hosted a baby shower to celebrate her transition out of acute clinical care. The Department of Child and Family Services is handling placement with a foster family who will be able to manage her continued medical needs.

References:

1. Apgar V. A proposal for a new method of evaluation of the newborn infant. *Curr Res Anesth Analg*. 1953;32:260–7. https://journals.lww.com/anesthesia-analgesia/fulltext/2015/05000/a_proposal_for_a_new_method_of_evaluation_of_the.22.aspx
2. Billimoria, Z., Chabra, S., Patel, A. et al. Apgar score of 0 at 10 min and survival to 1 year of age: a retrospective cohort study in Washington state. *J Perinatol* 39, 1620–1626 (2019). <https://doi.org/10.1038/s41372-019-0454-2> <https://www.nature.com/articles/s41372-019-0454-2>
3. Wyckoff MH, Aziz K, Escobedo MB, Kapadia VS, Kattwinkel J, Perlman JM, et al. Part 13: neonatal resuscitation: 2015 American Heart Association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*. 2015;132:S543–60.
4. Natarajan G, Shankaran S, Lupton AR, Pappas A, Bann CM, McDonald SA, Das A, Higgins RD, Hintz SR, Vohr BR; Extended Hypothermia Subcommittee of the Eunice Kennedy Shriver National Institute of Child Health and Human Development Neonatal Research Network. Apgar scores at 10 min and outcomes at 6-7 years following hypoxic-ischaemic encephalopathy. *Arch Dis Child Fetal Neonatal Ed*. 2013 Nov;98(6):F473-9. doi: 10.1136/archdischild-2013-303692. Epub 2013 Jul 29. PMID: 23896791; PMCID: PMC4166405. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4166405/>
5. Lie KK, Grøholt EK, Eskild A. Association of cerebral palsy with Apgar score in low and normal birthweight infants: population based cohort study. *BMJ*. 2010 Oct 6;341:c4990. doi: 10.1136/bmj.c4990. PMID: 20929920; PMCID: PMC2952090. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2952090/>
6. Li J-H, Liu J-L, Zhang K-K, Chen L-J, Xu J-T and Xie X-L (2021) The Adverse Effects of Prenatal METH Exposure on the Offspring: A Review. *Front. Pharmacol.* 12:715176. doi: 10.3389/fphar.2021.715176. <https://www.frontiersin.org/articles/10.3389/fphar.2021.715176/full>
7. Moghaddam HS, Abadi NN, Dolatshahi M, Ershadi SB, Abbasi-Feijani F, Rezaei S, Cattarinussi G, Aarabi MH. Effects

of Prenatal Methamphetamine Exposure on the Developing Human Brain: A Systematic Review of Neuroimaging Studies. *ACS Chemical Neuroscience* 2021 12 (15), 2729-2748 DOI: 10.1021/acscchemneuro.1c00213 <https://pubs.acs.org/doi/10.1021/acscchemneuro.1c00213>

Disclosure: The authors have no conflicts of interests to disclose.

NT

Corresponding Author



Grace Ahuja, MA, OMSIII
Western University of Health Sciences
College of Osteopathic Medicine of the Pacific
E-mail: grace.ahuja@westernu.edu



Melissa Kreutz, OMSIII
Western University of Health Sciences
College of Osteopathic Medicine of the Pacific
E-mail: melissa.kreutz@westernu.edu



Joshua Hernandez, OMS IV
 Western University of Health Sciences
 College of Osteopathic Medicine of the Pacific
 E-mail: joshua.hernandez@westernu.edu

Fellow's Column is published monthly.

- Submission guidelines for "Fellow's Column":
- 2000 word limit not including references or title page. Exceptions will be made on a case by case basis
- QI/QA work, case studies, or a poster from a scientific meeting may be submitted..
- Submission should be from a medical student, resident, fellow, or NNP in training.
- Topics may include Perinatology, Neonatology, and Younger Pediatric patients.
- No more than 20 references.
- Please send your submissions to:

Elba Fayard, MD, Interim Fellowship Column Editor
 or Sandeep Lankireddy, OMS IV Fellowship Column Assistant
 Editor: LomaLindaPublishingCompany@gmail.com

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





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. Now there are new vaccines for RSV for adults and antibody shots for babies that can help protect them.

 **WE CAN HELP PROTECT EACH OTHER.** 

www.nationalperinatal.org/rsv

Neonatology Grand Round Series

Earn accredited CE while learning about pressing neonatology topics!



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



Subscribe Electronically
Free on the Home Page

www.CongenitalCardiologyToday.com



National Network
of **NICU**
Psychologists

www.nationalperinatal.org/psychologists

COVID-19

FREE RESOURCES for your NICU

- Helping Children and Families Cope
- Bonding with Your Baby
- Caregivers Need Care Too

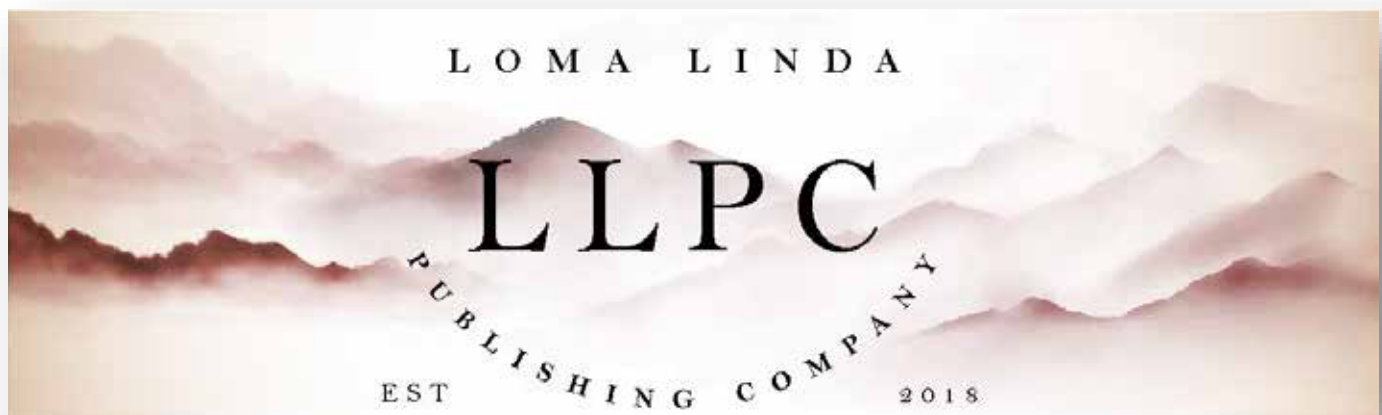
99nicu

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

www.99nicu.org

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



National Coalition for Infant Health Values (SANE)

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

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

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

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

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



shrimp

canned light tuna

cod

catfish

salmon

pollock

tilapia

But **mixed messages** from the media and regulatory agencies cause pregnant women to sacrifice those benefits by eating less fish than recommended.

Postpartum Revolution

@ANGELINASPICER



New subscribers are always welcome!

NEONATOLOGY TODAY

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

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



NCfIH National Coalition
for Infant Health

Protecting Access for Premature Infants through Age Two

LEARN MORE ▶

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 Premie Parents as Partners in Premie Care

Register at
OnceUponAPremieAcademy.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 premie parents
- + Gain actionable tools to drive health and racial equity solutions in your organization!

Think Small

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

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

When it comes to lung protection, less is more.

Disclaimer:

The practices described in this column have evolved with ventilator technology. They are not applicable to the Sensormedics® 3100, which has never been used in Sunnybrook's NICU. High-frequency oscillation, as used with modern, 3rd generation ventilators with integrated HFOV and volume targeting, will not apply directly to American practice until the FDA's full approval of these machines. A history of ventilation at Sunnybrook HSC NICU and how it has evolved into current practices follows.

Post-menstrual age (PMA) notwithstanding, babies are not born with chronic lung disease (CLD). The premature infant is *predisposed* to pulmonary injury, and clinicians worldwide have become quite adept at turning that predisposition into de facto CLD. Dr. Andrew Shennan proposed the definition of CLD as supplemental oxygen required at 36 weeks PMA in the late 1980s (1). While widely adopted, this criterion casts a very large net, and it does not identify the severity of CLD.

“Post-menstrual age (PMA) notwithstanding, babies are not born with chronic lung disease (CLD). The premature infant is predisposed to pulmonary injury, and clinicians worldwide have become quite adept at turning that predisposition into de facto CLD.”

In 2000, a more descriptive definition of CLD was based on how high FiO_2 was and the level of respiratory support required in addition to oxygen supplementation (2). Newer, graded criteria classifying CLD as mild, moderate, or severe are largely based on those proposed in 2000.

CLD, at least the more serious manifestations, has all but disappeared in the ≥ 30 -week PMA cohort. Widespread adoption of non-invasive ventilation (NIV) modes indubitably contributed to the decline of CLD in babies of higher PMA. When it is feasible to use NIV with smaller, less mature infants, it also reduces the risk and/or severity of CLD. It is very important to note that failure to recognise when smaller babies are not tolerating NIV, the risk may increase.

“CLD, at least the more serious manifestations, has all but disappeared in the ≥ 30 -week PMA cohort. Widespread adoption of non-invasive ventilation (NIV) modes indubitably contributed to the decline of CLD in babies of higher PMA. When it is feasible to use NIV with smaller, less mature infants, it also reduces the risk and/or severity of CLD. It is very important to note that failure to recognise when smaller babies are not tolerating NIV, the risk may increase.”

Many of the improvements in neonatal care (particularly in ventilator technology and ventilatory support) notwithstanding, CLD continues to be ubiquitous in ≤ 29 -week babies. The predisposition to CLD increases with decreasing gestational age at birth, \approx doubling with each week's decline in PMA. Lower birthweight and having a Y chromosome also pose a higher risk; birthweight $< 3^{\text{rd}}$ percentile increases the risk of CLD almost six-fold (3). As recently as 2019, reported overall rates of CLD range from 11% – 50%, rising to 20% - 75% when birthweight is $< 1\text{kg}$, and $\approx 80\%$ if born at 22-24 weeks PMA (4). Being able to offer lung-protective invasive ventilation is imperative because it is simply not possible to support extremely premature babies with NIV.

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

These statistics need not be a proverbial roadmap to Rome; all roads do not necessarily lead to CLD, even with invasive mechanical ventilation. In previous columns, I have reported CLD rates at the unit I recently retired from, which remain low at $\leq 11\%$. The extremely premature cohort still graduates NICU with a diagnosis of CLD approximately 40% of the time. If the fact that this is half the rate cited in the above data is not remarkable enough, more so is the fact that these babies overwhelmingly share a diagnosis of *mild* CLD, and it is not uncommon for them to be free of supplementary oxygen at discharge. CLD in the ≥ 27 -week PMA is all but non-existent. One might ask, "Where is the road to these outcomes, and how is it found?". I may not be able to answer that question fully, but I may be able to point you in the right direction.

Our patients are small, and with "nano-prems" being successfully resuscitated and admitted to NICU, both their weight and PMA are getting smaller. Small on the outside means small on the inside, and the lungs are no exception. The high resistance characteristic of tiny airways is compounded by their immature, fragile state and structures distal to them. Protecting the pulmonary system from damage secondary to clinical interventions essential for these babies' survival presents a formidable task.

"Our patients are small, and with "nano-prems" being successfully resuscitated and admitted to NICU, both their weight and PMA are getting smaller. Small on the outside means small on the inside, and the lungs are no exception. The high resistance characteristic of tiny airways is compounded by their immature, fragile state and structures distal to them. Protecting the pulmonary system from damage secondary to clinical interventions essential for these babies' survival presents a formidable task."

Before the 3rd generation of microprocessor-controlled ventilators capable of measuring delivered volume, "chest rise" was the metric of positive pressure ventilation. Inspiratory pressures were adjusted to achieve an "adequate" chest rise. "Volutrauma" (5) was neither part of the vernacular nor a concern when discussing lung-protective ventilatory strategies. Barotrauma was the problem of the day, and fear of pressure drove mechanical ventilation practices.

"PEEP-o-phobia" (6) was (and all too often still is) a common manifestation of this fear—inadequate PEEP results in inadequate functional residual capacity (FRC) and sub-optimal lung compliance. Lower pulmonary compliance requires higher inspiratory pressure to deliver sufficient tidal volumes to clear CO₂ and higher FiO₂ to maintain adequate oxygenation. This higher pressure results in conducting airways and alveoli being subject to higher

sheer pressures, increasing the potential for structural damage that can lead to pulmonary interstitial emphysema (PIE). Higher oxygen requirements increase oxidative stress, which leads to abnormal pulmonary development. Today, barotrauma remains a concern. However, most clinicians have learned PEEP is the safest way to provide sufficient mean airway pressure (MAP) and minimise FiO₂.

Measuring actual tidal volumes in near real-time allows us to adjust parameters to avoid excessive volumes. Some ventilators measure pulmonary compliance in the latter part of the ventilatory cycle and calculate compliance during the final part of inspiration relative to total compliance. This can warn clinicians that they may be over-distending the lung and risking damage. (This is reported as C₂₀/C on the Babylog® family of ventilators.) When displayed graphically, this overdistention is seen as "beaking," a flow/pressure curve change at end-inspiration that looks like a bird's beak (7). This is useful when using conventional ventilation (CV) to help avoid volutrauma but can also provide a false sense of security.

If the lung is not recruited to optimum (or at least adequate) FRC, then the volume delivered to the lung by the ventilator is not evenly distributed. A clinician confident in the thought that they are providing lung-protective ventilation because they are using 4 mls/kg must be reminded that if 50% of the lung has not been recruited, 4mls/kg at the endotracheal tube equates to 8mls/kg delivered to 50% of the lung.

"If the lung is not recruited to optimum (or at least adequate) FRC, then the volume delivered to the lung by the ventilator is not evenly distributed."

I very rarely ventilate using CV. When the first generation of ventilators offered integrated high-frequency ventilation (HFOV), the unit at Sunnybrook was the first in Canada to use the mode. It did not take long to realise that most of our smaller babies ended up on HFOV after being ventilated on CV since birth. Since alveolarisation has yet to happen when most babies land in NICU, most of the volume given in CV inflates conducting airways, terminal bronchioles, and alveolar ducts. Air leaks are often the result of tears created by the overdistention of these structures. With this in mind (and in typical cowboy fashion), I started using HFOV immediately in the resuscitation room; it did not take long for everyone else to emulate my practice. It should not have been surprising when CLD rates began to decrease slowly but steadily in these babies.

In those days, virtually all babies with a trachea and an OHIP number (Ontario's premium-free universal public health insurance plan) born at less than 30 weeks PMA were intubated and ventilated. (How loudly they squawked on the admission bed was irrelevant.) Those born at higher PMA were still placed and maintained on CV, yet these babies, by and large, escaped a diagnosis of CLD. Volume measurement was a feature of these ventilators before HFOV became an option, and it was revealed that the volumes delivered to babies using the pressures typical of the day were remarkably large.

Given the reasonable assumption that less volume was available

to ventilate, the range of 4-5 mls/kg was deemed more protective. When HFOV became available, 5 mls/kg became an upper volume limit, and 20 cm H₂O was the upper peak inspiratory pressure limit. Babies would be switched to HFOV if these parameters were reached. As with smaller babies, CLD numbers became progressively lower in this “older” and larger cohort. Even before the widespread use of non-invasive modes of ventilatory support (NIV), it was rare for babies of ≥ 27 weeks of PMA to end up with CLD. Today, it is almost unheard of.

Practice involving HFOV also evolved with time. The Sensormedics® 3100A was the only oscillator available to many NICU clinicians before introducing HFOV-integrated machines. The Hummingbird BMO 20N®, a Japanese product, had limited distribution in North America. The Infrasonics Infant Star® (now Nelcor Puritan Bennett®) was ostensibly the first hybrid ventilator. However, its HFOV mode was a flow interrupter, not an actual oscillator. It cannot be directly compared with true sinusoidal wave-producing machines.

“Given the reasonable assumption that less volume was available to ventilate, the range of 4-5 mls/kg was deemed more protective. When HFOV became available, 5 mls/kg became an upper volume limit, and 20 cm H₂O was the upper peak inspiratory pressure limit. Babies would be switched to HFOV if these parameters were reached.”

Nonetheless, it earned its place in the hearts of many NICU clinicians. Other high-frequency machines of the time were flow interrupters or had very limited distribution in North America. As with the Bunnell® jet, babies ≤ 25 weeks PMA were not commonly offered resuscitation at the time these machines were being used.

Comparing the Sensormedics® to flow-interrupting devices is an apples-to-oranges affair; comparing it with today's 3rd generation machines is more like comparing apples to concrete. Therein lies part of the problem. As demonstrated by Dr. Jane Pillow, different HFOV machines produce very different results (8). HFOV was considered a rescue therapy at the time (and still is by too many clinicians) and thus was used relatively infrequently and on the sickest babies. HFOV studies had limited subjects to recruit from, and those in the US used the Sensormedics®. That means airway pressure (MAP) was not necessarily adequate, which compounded the problem, as anyone familiar with the “HIFI” oscillation trial of the 1980s can attest to (9).

Anyone who has used the Sensormedics® knows how powerful it is (the “A” model is rated for patients ≤35 kg) and that there is no way to measure the volumes delivered. Volumes delivered are assessed by observing “chest wiggle.” As we learned from observing measured tidal volume delivered during CV, chest movement is a very unreliable way to assess volumes. The power the machine is capable of requires frequencies ≥ 10 Hz, 15 Hz being common. Theoretically, if not in actual practice, this increases the propensity for gas trapping. (The machine's rigid circuit makes

positioning difficult and kangaroo care impossible.) The practice of using higher frequencies continued when integrated machines came to market. Since these parameters were most widely used and recommended, clinicians can hardly be faulted for doing so.

“Volumes delivered are assessed by observing ‘chest wiggle.’ As we learned from observing measured tidal volume delivered during CV, chest movement is a very unreliable way to assess volumes. The power the machine is capable of requires frequencies ≥ 10 Hz, 15 Hz being common. Theoretically, if not in actual practice, this increases the propensity for gas trapping.”

Elimination of CO₂ in HFOV (DCO₂) follows the formula DCO₂ = $f \times Vt^2$ (frequency multiplied by the square of tidal volume); small changes in volume (amplitude (λ)) result in large changes in ventilation. Decreasing f increases volume, and increasing f decreases the volume at a given λ (8). I prefer lower λ to higher, and when f is decreased, I also decrease λ to obtain the same Vt. If there is gas trapping (or if high λ is creating turbulent flow in upper airways), CO₂ may remain the same. Vt decreases as f increases, so a higher λ is required to deliver the same Vt. Increasing f requires higher λ to maintain Vt. Small changes in λ create large changes in DCO₂, and since it is the primary driver of CO₂ clearance, the resulting λ may be lower to maintain the same PaCO₂. Higher λ may necessitate increasing MAP to prevent gas trapping from pinch points or derecruitment resulting from lower trough pressure created by active expiration (10). To avoid this scenario, I practice limiting λ to twice the MAP and monitoring waveform trough pressure.

High λ can produce sheer stress in the upper airways (11). I limit HFOV Vt to a maximum of 2.5, although if λ is low, I will use Vt of 3*. [A quick primary on volume targeted HFOV can be found here (12).] Similarly, I limit λ to 20 cmH₂O, a limit many will consider relatively low. (Many babies will cruise along quite nicely on HFO/VG using λ of less than 10 cmH₂O or delta-P of 10-11 cmH₂O if supported with HFJV.) When either of these conditions occur, it is my (and generally Sunnybrook NICU) practice to change the mode to high-frequency jet ventilation (HFJV). f is generally set at 10 initially and is rarely increased. Instead, f may be decreased to allow lower λ , and Vt may be increased by 0.1-0.3 mls to compensate for the lower minute volume resulting from lower f . These practices align with our philosophy of using lower Vt and pressure. Lower f decreases pressure attenuation and increases the risk of sheer stress (11). However, limiting Vt and λ and changing mode to HFJV early eliminates this risk while reducing the risks associated with gas trapping at higher f .

Perhaps the most contentious issue with both HFOV and HFJV is MAP. Clinicians too often look at a hazy chest film and count ribs to assess lung inflation. In doing so, they fail to appreciate that they are looking at lungs that are not entirely recruited. MAP is

subsequently decreased based on perceived hyperinflation. Derecruitment does not happen immediately upon a MAP decrease, and it is often the next shift that notices climbing FiO_2 ; repeat X-ray all too often is a whiteout.

It must be appreciated that the small volumes used in HFOV, and especially in HFJV, do not create the same sheer stresses produced by the relatively large Vt in CV. This leaves room for more static inflation, without fear of barotrauma or volutrauma produced by the dynamic inflation of CV. Eight ribs may be adequately inflated in CV, but ten ribs (and sometimes more) is acceptable in HFOV/HFJV. If a baby crumps after a drop in MAP, they are telling you that, as far as they are concerned, their inflation is just fine, thank you. Generally, the best inflation results in the lowest FiO_2 and requires the lowest λ to maintain ventilation. To paraphrase James Carville, "It's physiology, stupid!"

"Perhaps the most contentious issue with both HFOV and HFJV is MAP. Clinicians too often look at a hazy chest film and count ribs to assess lung inflation. In doing so, they fail to appreciate that they are looking at lungs that are not entirely recruited. MAP is subsequently decreased based on perceived hyperinflation. Derecruitment does not happen immediately upon a MAP decrease, and it is often the next shift that notices climbing FiO_2 ; repeat X-ray all too often is a whiteout."

There are factors to consider when using HFOV that influence ventilation. Circuit compliance should be low and without water traps. Water from rainout in the circuit should not be allowed to remain as it will decrease ventilation in HFOV, but may increase ventilation via a superimposed oscillatory waveform when using HFJV. When accumulated in the expiratory limb, it raises MAP (PEEP rises in HFJV, reducing ventilating pressure.) Humidifiers contain compressible volume; they should be small in volume and fill automatically. A low water level will result in a decrease in ventilation.

Thinking small applies to HFJV as well. Here, we use low rates (usually 240, but this can be increased to 300 if nuisance alarms occur) to mitigate gas trapping as much as possible. Permissive hypercapnia is a standard feature of Sunnybrook ventilatory management regardless of the mode used. There is no numerically fixed limit to PaCO_2 provided pH is metabolically compensated to >7.20 . High PaCO_2 has been linked to white matter injury, but PVL is a very rare outcome at Sunnybrook, and our rates of severe intraventricular hemorrhages are not out of line with our comparators.

Think small may be applicable to ventilation, but it is anything but descriptive of the well-coordinated team required to achieve good outcomes. These improvements may not be achieved by cherry-picking one aspect of practice to emulate. While many disagree,

I believe staff (especially respiratory therapists) should be dedicated to the NICU. Aside from being as different from adults as night and day, premature babies are not all the same. Each week of intrauterine development results in changes that make them a different patient. The never-ending NICU learning curve is steep, and NICU clinicians have "...miles to go before we sleep".

References:

1. Shennan, A et al., Oxygen Requirement in the Neonatal Period: Pediatrics, PEDIATRICS 82(4):527-32, 1988/11/01.
2. Jobe, Alan H, Bancalari, E -- Bronchopulmonary Dysplasia: American Journal of Respiratory Care and Critical Care Medicine, Volume 163, Issue 7.
3. Henderson-Smart DJ et al., Australian and New Zealand Neonatal Network. Prenatal predictors of chronic lung in very preterm infants. Arch Dis Child Fetal Neonatal Ed. 2006 Jan;91(1):F40-5. doi: 10.1136/adc.2005.072264. Epub 2005 Aug 30. PMID: 16131530; PMCID: PMC2672649.
4. Thébaud B et al., Bronchopulmonary Dysplasia. Nat Rev Dis Primers. 2019 Nov 14;5(1):78. doi: 10.1038/s41572-019-0127-7. PMID: 31727986; PMCID: PMC6986462.
5. "Volutrauma": tissue injury sustained from excessive volume.
6. "PEEP-a-phobia: fear of PEEP values above an arbitrary setting creating pulmonary damage. This leads to lung damage because the PEEP upper limit is too low to achieve optimum compliance.
7. <https://derangedphysiology.com/main/cicm-primary-exam/required-reading/respiratory-system/Chapter%20554/interpreting-shape-pressure-volume-loop>
8. Pillow, J et al., In Vitro Performance Characteristics of High-Frequency Oscillatory Ventilators. Am J Respir Crit Care Med Vol 164. pp 1019–1024, 2001
9. HIFI study group: High-frequency oscillatory ventilation compared with conventional mechanical ventilation in the treatment of respiratory failure in preterm infants. N Engl J Med. 1989 Jan 12;320(2):88-93. doi: 10.1056/NEJM198901123200204.
10. Copilot GPT: what is the relationship between λ and MAP in HFOV? <https://www.bing.com/chat?form=MY02CC&OCID=MY02CC> (This is the only reference I could find after searching for an hour.) * HFOV is used almost exclusively for the volume guarantee (VG) adjunct. Currently, the Dräger VN500 is the sole ventilator used at Sunnybrook NICU.
11. Pillow, J, High-frequency oscillatory ventilation: Mechanisms of gas exchange and lung mechanics. Crit Care Med 2005 Vol. 33, No. 3 (Suppl.)
12. Graham, R, HFO/VG: This changes everything: Neonatology Today, Volume 14 Issue 1, January 2019. <https://neonatologytoday.net/newsletters/nt-jan19.pdf>

Disclosures: The author receives compensation from Bunnell Inc for teaching and training users of the LifePulse HFJV in Canada. He is

not involved in sales or marketing of the device nor does he receive more than per diem compensation. Also, while the author practices within Sunnybrook H.S.C. This paper should not be construed as Sunnybrook policy per se. 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



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



www.perinatalharmreduction.org



www.nationalperinatal.org



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

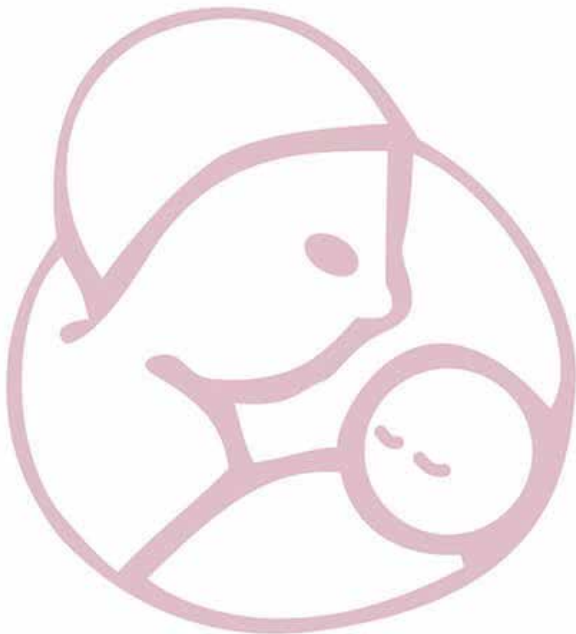
PAC/LAC is an accredited provider of continuing education by Accreditation Council for Continuing Medical Education / Institute for Medical Quality, the California Board of Registered Nursing, the California Association of Marriage and Family Therapists, the National Commission for Health Education Credentialing,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

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



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



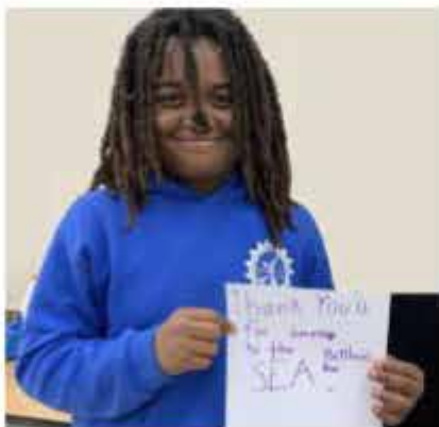
Each year, the Emily Shane Foundation SEA(Successful Educational Achievement) Program provides academic and mentoring support to over 100 disadvantaged middle school students who risk failure and have no other recourse. We have served over 700 children across Los Angeles since our inception in the spring 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

Paperback
USD 24.99

There's new information and rulings on safe sleep. Are you ready to speak with your patients?



Bring First Candle's Straight Talk for Infant Safe Sleep program to your hospital so that everyone is up to date on the latest information from the AAP on safe sleep and the CPSC on safe products.

For more information contact Barb Himes
at barb@firstcandle.org



National Network
of NICU
Psychologists

www.nationalperinatal.org/psychologists

COVID-19

FREE RESOURCES for your NICU

- Helping Children and Families Cope
- Bonding with Your Baby
- Caregivers Need Care Too

COPING WITH COVID-19

KEEP PATIENTS UP-TO-DATE WITH CHANGES IN POLICIES SO THEY KNOW WHAT TO EXPECT. LISTEN TO THEIR CONCERNS.



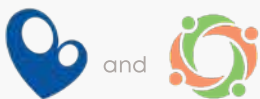
Provide culturally-informed and respectful care.

TELL PARENTS HOW YOU WILL KEEP THEM AND THEIR BABIES SAFE DURING THEIR NICU STAY.



Use technology like video chat apps to include family members who can't visit the NICU.

myNICUnetwork.org



National Perinatal Association
NICU Parent Network

My Perinatal Network and My NICU Network are products of a collaboration between NPA and NPN.

2024

Respiratory Syncytial Virus:

How you can advocate for babies this RSV season

Track national data and trends at the CDC's website
www.cdc.gov/rsv



Identify the babies at greatest risk



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

Teach families how to protect



their babies from respiratory infections

Advocate for broader insurance coverage for both vaccination and palivizumab prophylaxis so more babies can be protected



Use your best clinical judgement



when prescribing RSV prophylaxis

Tell insurers what families need



and provide the supporting evidence



www.nationalperinatal.org/rsv

First Candle: First Candle Honors Women's History Month

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 are taking this opportunity to call attention to women who have made lasting advances in maternal and infant health – advances we value in our work to reduce the rates of Sudden Unexpected Infant Death (SUID) and Sudden Infant Death Syndrome (SIDS)."

It is March and that means Women's History Month.

We are taking this opportunity to call attention to women who have made lasting advances in maternal and infant health – advances we value in our work to reduce the rates of Sudden Unexpected Infant Death (SUID) and Sudden Infant Death Syndrome (SIDS). We all know there are too many to list them all, but among them are:

"She was first a nurse and then entered the New England Female Medical College, becoming the first Black woman in the U.S. to earn a medical degree. She tended to underserved communities and inspired other Blacks to pursue a career in medicine."

Dr. Rebecca Lee Crumpler (1831-1895). She was first a nurse and then entered the New England Female Medical College, becoming the first Black woman in the U.S. to earn a medical degree. She tended to underserved communities and inspired other Blacks to pursue a career in medicine. The first woman in the U.S. to earn a medical degree was **Dr. Elizabeth Blackwell** (1821-1920), who went on to study obstetrics further.

Elisabeth Bing (1914 -2015). Born in Germany and trained in England, she was a physical therapist who emigrated to the U.S. and co-founded [Lamaze International](#), which supports a holistic approach, natural childbirth methods, and parental empowerment.

"Born in Germany and trained in England, she was a physical therapist who emigrated to the U.S. and co-founded Lamaze International, which supports a holistic approach, natural childbirth methods, and parental empowerment."

Mary Francis Hill Coley (1900-1966). A Georgia native, she apprenticed in midwifery after her marriage and, for more than 30 years, delivered over 3,000 babies across a four-county swath. In 1952, she was featured in the Georgia Health Dept.-sponsored training documentary [All My Babies](#), which highlighted her work's scope and families' living conditions. In 2002, the film entered the



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

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

Library of Congress's National Film Registry. In 2005, she was featured in exhibits at the Anacostia Smithsonian Museum for African American History and Culture, the Columbia University School of Nursing, and the Mailman School of Public Health.

Dr. Martha Lay Eliot (1891-1978) and **Dr. Virginia Alexander** (1899-1949) were pioneers in public health. Dr. Eliot addressed maternal and children's health and was the first woman president of the [American Public Health Association](#). Dr. Alexander, a Black physician, did graduate work in public health and was part of a network of Black medical professionals who identified the effects of systemic racism in health care.

Eunice Kennedy Shriver (1921-2009). Her dedicated efforts led to the founding the [National Institute of Child Health and Human Development](#) in 1962. In 1994, NICHD led a coalition of organizations and agencies in launching the Back to Sleep (now Safe to Sleep) public health campaign, of which we were part, which promoted infant safe sleep practices and resulted in a 50% drop in sleep-related infant deaths.

“ We also want to recognize the legions of women over generations who have guided and continue to guide mothers and infants through birthing and postpartum and have helped save lives. The many physicians, nurses, midwives, doulas, lactation, and other consultants serve in public health and scientific research around maternal and infant health. ”

We also want to recognize the legions of women over generations who have guided and continue to guide mothers and infants through birthing and postpartum and have helped save lives. The many physicians, nurses, midwives, doulas, lactation, and other consultants serve in **public health** and **scientific research** around maternal and infant health.

This year's WHM theme is Women Who Advocate for Equity, Diversity and Inclusion. We have learned through our decades of educating healthcare professionals and families that infant health relies on maternal health, and the health of both may depend on

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 3,500 infant deaths nationwide per year.

social forces.

The U.S. continues to report disparities in maternal and infant mortality along racial and socioeconomic lines. We applaud all women on civilization's front lines working to improve maternal and infant health outcomes and save lives.

Learn more about [Women's History Month](#) at <https://womenshistorymonth.gov/> and the [National Women's History Alliance](#) at <https://nationalwomenshistoryalliance.org/our-history>.

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

New subscribers are always welcome!

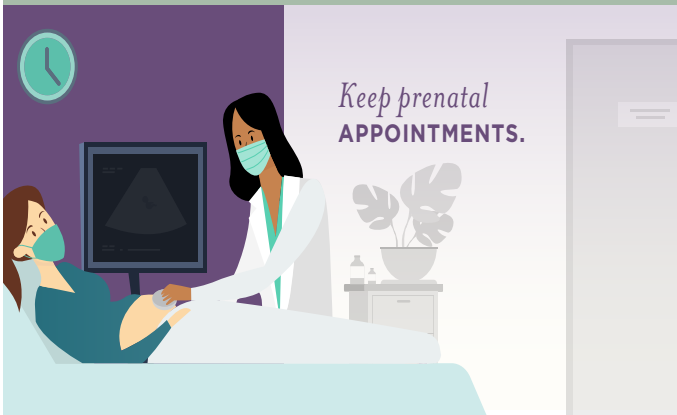
NEONATOLOGY TODAY

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

The PREGNANT MOM'S Guide To Staying SAFE DURING COVID-19



Maintain at least **A 30-DAY SUPPLY OF YOUR MEDICATIONS.**



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

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



nicuparentnetwork.org
nationalperinatal.org/skin-to-skin



eLearning Courses

Health and Racial in the NICU

Meet Our Faculty



+ Jenné Johns, MPH
Once Upon A Premie Academy



+ Deidre McDaniel, MSW, LCSW
Health Equity Resources and Strategies



+ Dawn Godbolt, Ph.D.
National Birth Equity Collaborative



+ Dalia Feltman, MD, MA, FAAP
Univ. of Chicago Pritzker School of Medicine



+ Chavis A. Patterson, Ph.D.
Children's Hospital of Philadelphia



+ Terri Major- Kincade, MD, MPH
Pediatrician and Neonatologist



+ Shanté Nixon
Connect2NICU



+ Ashley Randolph
Glo Premies



REGISTER TODAY

OnceUponAPremieAcademy.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.

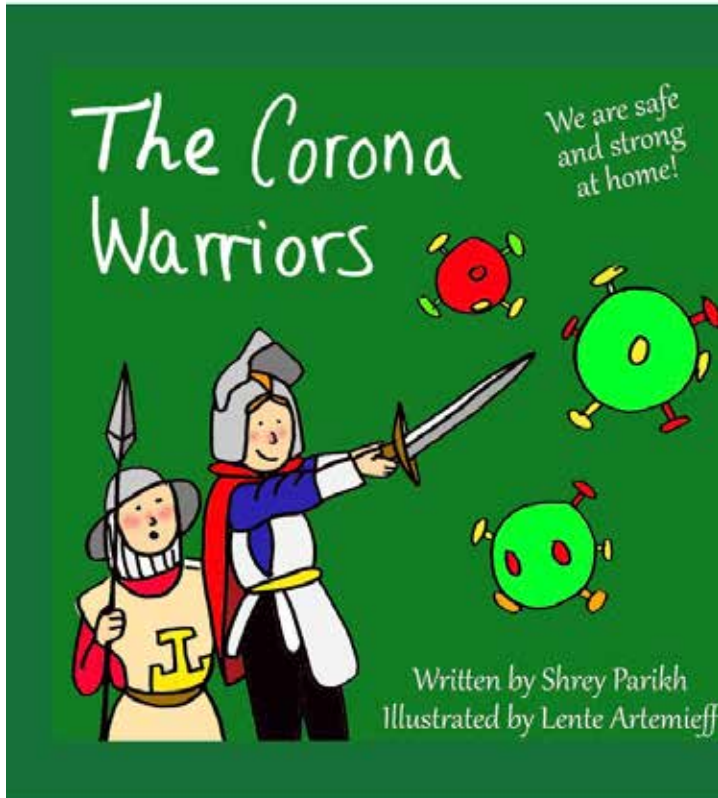
Raising Global Awareness of RSV

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.





National Perinatal Association
PERINATAL MENTAL HEALTH

nationalperinatal.org/position
www.nationalperinatal.org/mental_health

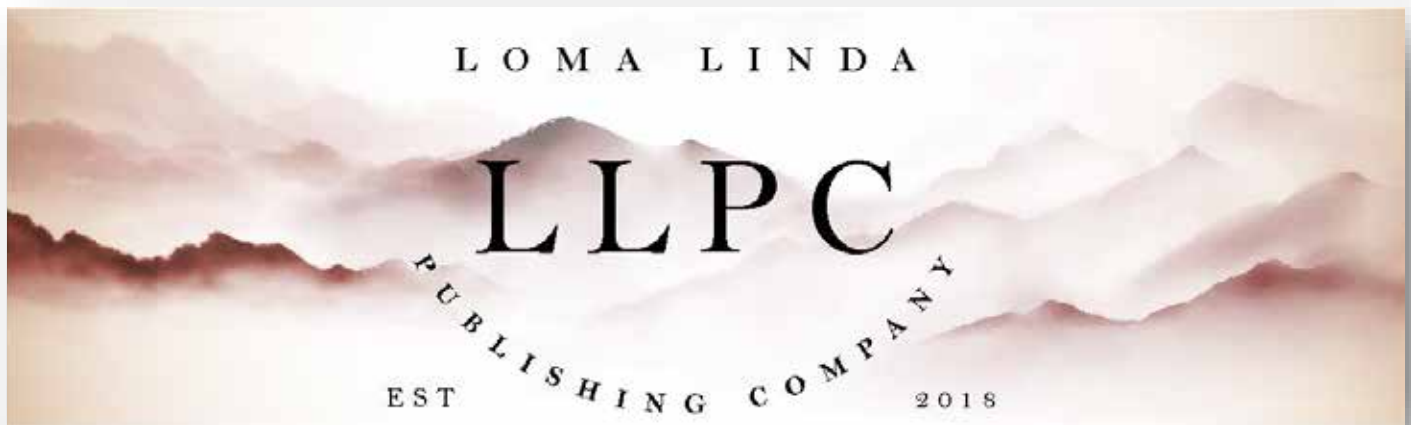
SCREEN DADS TOO

10% of fathers experience depression and anxiety during the perinatal period.



Educate. Advocate. Integrate.

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



Neonatology Grand Round Series
Earn accredited CE while learning about pressing neonatology topics!


CENTER FOR RESEARCH, EDUCATION, QUALITY AND SAFETY



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.

Gravens By Design: The 37th Gravens Conference on the Environment of Care in the NICU convened in Clearwater Beach, FL, on March 6-9, 2024

Robert White, MD, Vincent Smith, MD, Joy Browne, Mitchell Goldstein, MD, MBA, CML

“This year, Dr. Mia Malcolm, NICU mom and family advocate, addressed ‘The Power of Effective Communication in the NICU.’ She helped us understand how families react to hearing that their baby had ‘failed’ a treatment or procedure – extubation, for example, or to hear that their baby was ‘misbehaving.’ She addressed how judgmental NICU staff can become towards parents if they are less – or more - involved than we consider appropriate.”

Day 1 at Gravens focuses on Science and Application but always begins with a parent’s perspective. This year, Dr. Mia Malcolm, NICU mom and family advocate, addressed “The Power of Effective Communication in the NICU.” She helped us understand how families react to hearing that their baby had “failed” a treatment or procedure – extubation, for example, or to hear that their baby was “misbehaving.” She addressed how judgmental NICU staff can become towards parents if they are less – or more - involved than we consider appropriate. She asked that we become more thoughtful about how our comments to them or about them or their baby might be interpreted, especially with recognition of the stress that they are under. In the final presentation of the day, Dr. Paige Church touched on the same topic, pointing out that our typical focus on IQ scores or physical abilities as criteria for successful treatment of a high-risk newborn devalues other characteristics that might be equally or more important to the quality of life for the child and their parents. Among those presentations was one by Dr. Scott Berns who described his experience as the father of a child with progeria whose life was full of joy and meaning.

A second point of emphasis on Day 1 was the complexity of brain development in the second and third trimesters and how this is impacted by preterm delivery and our subsequent care practices. Dr. Petra Huppi noted that early activity in a newborn is beneficial to subsequent neuronal maturation and reviewed extensive research on how music and voice can be used most effectively in the NICU. This is a vital role for parents in the NICU, but if they cannot be there much of the time, caregivers must recognize

and embrace this aspect of NICU care that is so often overlooked or considered optional. She was followed by Dr. Nathalie Maitre, who outlined the superiority of infant-directed speech in promoting neurological development and detailed the challenges of achieving that in a typical NICU and strategies to overcome those challenges.

“A second point of emphasis on Day 1 was the complexity of brain development in the second and third trimesters and how this is impacted by preterm delivery and our subsequent care practices. Dr. Petra Huppi noted that early activity in a newborn is beneficial to subsequent neuronal maturation and reviewed extensive research on how music and voice can be used most effectively in the NICU.”

Dr. Jeff Alberts described the sense of touch as multidimensional, interactive, and an essential means of communication, especially in the newborn period when other forms of communication are not extensively developed. Dr. Elizabeth Rogers outlined the “All Care is Brain Care” project at VON that helps teams provide more interactive, developmentally appropriate care of even the most fragile – but also most needy - infants. IVH prevention protocols are essential, but so is skin-to-skin care – even more so in babies with the most physiologic instability, ones who are often precluded from this care. Likewise, human milk feeding and enabling parents to be essential care team members are crucial to achieving optimal outcomes. Caring for our caregivers is often forgotten but crucial, essential to any success we can achieve in the NICU.

A highlight of the first day’s session was the presentation of the Gravens Award to Dr. Berns in recognition of his years of leadership, including at the Gravens Conference, the March of Dimes, and now at NICHQ. Through his efforts, the role of parents as partners in every step of the NICU journey has become a reality in many NICUs nationwide and internationally.

On day 2, separate developmental care and NICU design tracks were presented. The Infant and Family Centered Developmental Care track (IFCDC) focused on the science and potential implementation strategies for three evidence-based standards and care

competencies. Carol Jaeger provided an overview of the strategies the consensus panel is using to update both the principles in the IFCDC model and the standards to make them more accessible to those NICUs wanting to achieve IFCDC competencies. Dr. Carol McNair provided an excellent overview of evidence-based decision-making strategies for non-pharmacologic and pharmacologic strategies for Alleviating Babies' Pain and Stress, and Jean Powlesland described various implementation strategies for babies' pain and stress. Dr. Britt Pados provided the science background for Feeding, Eating, and Nutrition Delivery standards, and Dr. Erin Ross detailed implementation considerations for professionals feeding babies and supporting families to feed their babies. Dr. Natalie Charpak discussed global findings for better infant and family outcomes when early and prolonged Skin-to-skin has been supported, and Dr. Christie Lawrence discussed specific science-based approaches for successful implementation. Audience discussion was robust, resulting in recommendations for strategies to benchmark practices currently being used to implement the standards.

“On the design side, Becca Ames and Mardelle Shepley described the implications of trauma-informed design; understanding how visual, auditory, and procedural stimuli affect all of us can lead to better design – or, in existing NICUs, re-design. Christina Mullen demonstrated wonderful examples of how art and design can create a sense of place and purpose in the NICU, transforming an area of the hospital that was once intimidating and unfamiliar into one that can be welcoming and calming.”

On the design side, Becca Ames and Mardelle Shepley described the implications of trauma-informed design; understanding how visual, auditory, and procedural stimuli affect all of us can lead to better design – or, in existing NICUs, re-design. Christina Mullen demonstrated wonderful examples of how art and design can create a sense of place and purpose in the NICU, transforming an area of the hospital that was once intimidating and unfamiliar into one that can be welcoming and calming. The team from Catholic Medical Center in Manchester, NH, reviewed their 14 years of offering couplet care in the NICU, providing a wealth of practical experience in making this a successful and popular model for avoiding mother-baby separation after preterm delivery. They were followed by Jim Greenberg from Cincinnati Children's, who described the design process for their new level IV NICU, starting with a very successful stage of community engagement even before the building plans were begun. The design track presentations concluded with a presentation of a hybrid NICU design by

Caitlin Potter and Colby Dearman from HKS Architects.

Day 3 of Gravens is designed to equip attendees with the knowledge and skills to actualize their innovative ideas upon returning home. The day begins with immersive workshops, each tailored to address specific aspects of project implementation. Participants engage in activities, discussions, and question-and-answer sessions to deepen their understanding of key concepts and refine their strategies.

Following the workshops, the day transitions into abstract presentations, where individuals and teams showcase their Gravens ideas to their peers and experts in their respective fields. This platform allows attendees to receive valuable feedback, gain insights from diverse perspectives, and cultivate potential collaborations.

“Throughout the day, attendees are encouraged to network with fellow innovators, exchange insights, and forge connections that may prove instrumental in their future endeavors. By the end of Day 3, participants at Gravens have seen comprehensive toolkits, developed newfound inspiration, and accessed a robust support network, poised to translate their visions into impactful actions within their communities and beyond.”

Throughout the day, attendees are encouraged to network with fellow innovators, exchange insights, and forge connections that may prove instrumental in their future endeavors. By the end of Day 3, participants at Gravens have seen comprehensive toolkits, developed newfound inspiration, and accessed a robust support network, poised to translate their visions into impactful actions within their communities and beyond.

“The concluding morning of the Gravens meeting is devoted to the importance of teamwork and exploring ways to work together. Dr. Vincent C. Smith and Ms. Molly Fraust-Wylie provided context for the morning program and introduced the theme for the day.”

The concluding morning of the Gravens meeting is devoted to the importance of teamwork and exploring ways to work together. Dr. Vincent C. Smith and Ms. Molly Fraust-Wylie provided context for

the morning program and introduced the theme for the day. As a continuation of previous years, Saturday Morning at Graves is a voyage into our understanding of each other as individuals and how different characteristics (e.g., cultural beliefs, religion, race/ethnicity, sexual orientation, gender identity, and socioeconomic factors) about us affect and how we each show up in the NICU and interact with each other. It is crucial for individuals who work in a NICU or with NICU families to understand these issues as they directly or indirectly contribute to the NICU experience.

“Dr. Erick Rideout gave a riveting presentation on the power of teamwork in the NICU. He explained how things that seemed impossible when viewed from only one perspective became possible when the whole team contributed to the solution. To illustrate this point, Dr. Rideout shared data on how their unit was able to decrease the number of interventions that preterm infants received in their NICU to 1/3 of what they historically had been, and their unit was also able to go for more than 4000 days without a catheter-associated line infection based on teamwork.”

The theme of the morning this year was teamwork and families as partners. Dr. Mia Malcolm and her colleague Emily Revelle described a model program integrating NICU parents and families into almost every aspect of the NICU/hospital environment. This session contained examples of parents’ and families’ roles and offered suggestions on how such programs could be reproduced. Then, Dr. Erick Rideout gave a riveting presentation on the power of teamwork in the NICU. He explained how things that seemed impossible when viewed from only one perspective became possible when the whole team contributed to the solution. To illustrate this point, Dr. Rideout shared data on how their unit was able to decrease the number of interventions that preterm infants received in their NICU to 1/3 of what they historically had been, and their unit was also able to go for more than 4000 days without a catheter-associated line infection based on teamwork. Dr. Rideout’s talk demonstrated numerous ways a NICU could be a more welcoming place for the faculty and staff that work there so that they “never want to leave.”

Dr. Rideout was followed by Dr. Goldman, who discussed the importance and impact of teamwork and kindness in high-stress environments. Dr. Goldman led the audience through a visualization activity that helped emphasize the role of viewpoints when

assessing a situation or circumstance. Specifically, everyone in the room looked at the same image simultaneously, yet the interpretations of what was seen varied widely.

“Finally, the last speaker of the morning was Dr. Malathi Balasundaram. Dr. Balasundaram shared her personal story of growing up and moving to the United States and how that affected her motivation and drive. Then, she walked the audience through her interactions with the Gravens conference and how she translated the Gravens conference content and participants into improvement and innovation in her hospital’s NICU.”

Finally, the last speaker of the morning was Dr. Malathi Balasundaram. Dr. Balasundaram shared her personal story of growing up and moving to the United States and how that affected her motivation and drive. Then, she walked the audience through her interactions with the Gravens conference and how she translated the Gravens conference content and participants into improvement and innovation in her hospital’s NICU. Dr. Balasundaram gave the audience some pragmatic guidance on making a real tangible and practical difference in their local NICU even if they had no other allies, additional funding, or support. The morning ended with a wrap-up by Drs. Bob White and Joy Browne. Overall, it was a very inspiring and motivational conclusion to an exhilarating conference.

“Gravens 2025 will meet in Clearwater Beach, FL, March 5-8. Watch upcoming issues of Neonatology Today for announcements about abstract submission and early registration.”

Gravens 2025 will meet in Clearwater Beach, FL, March 5-8. Watch upcoming issues of Neonatology Today for announcements about abstract submission and early registration.

Disclosure: The authors have no conflicts of interests to disclose.

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

Corresponding Author



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

Corresponding Author

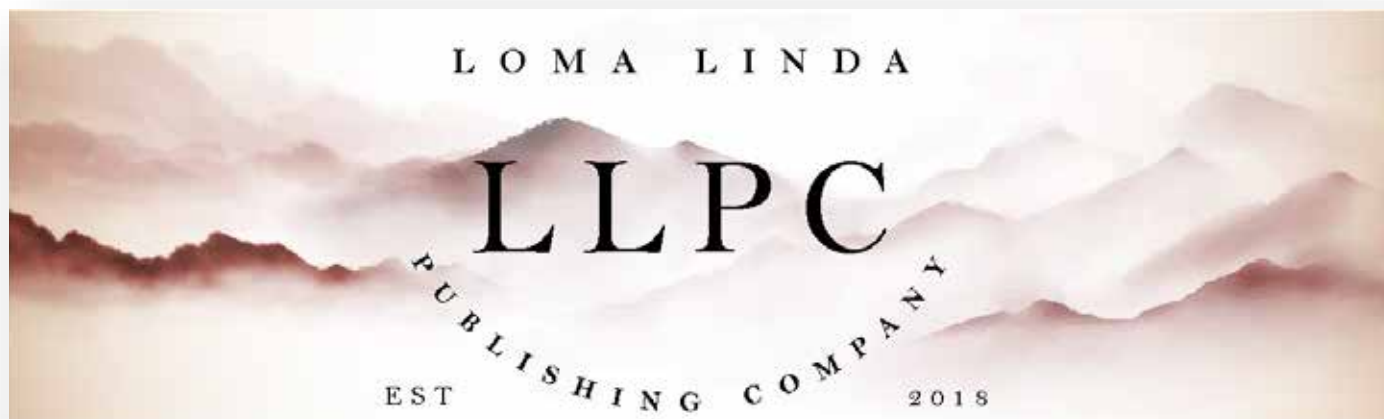


Vincent Smith, MD, MPH
Boston Medical Center
801 Albany Street Room 2009
Boston, MA 02119
(617) 414-3989 (T)
(617) 414-3833 (F)
Email: Vincent.smith@bmc.org

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



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



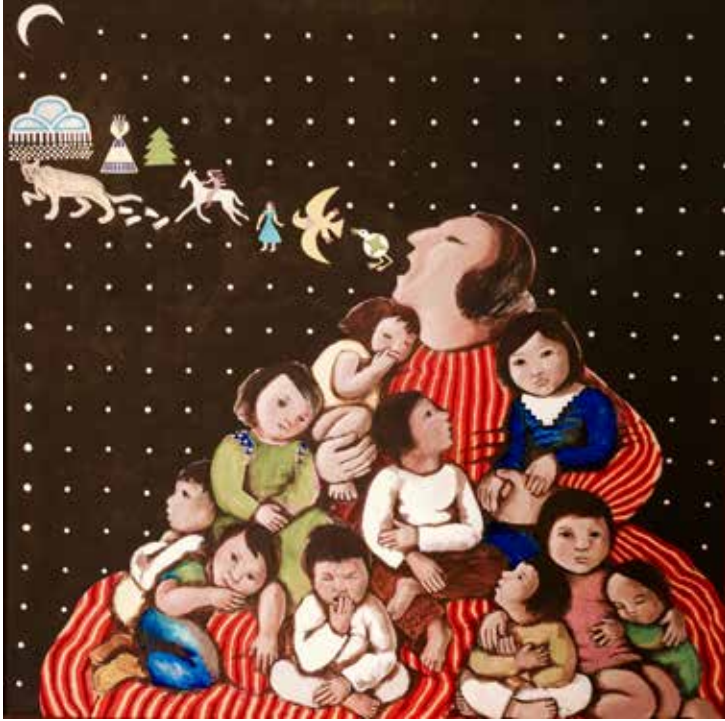
National
Association of
Neonatal
Nurses



National
Perinatal
Association

Fragile Infant Forums for Implementation of IFCDC Standards: Insights from the 37th Annual Gravens Meeting

Joy V. Browne, Ph.D., PCNS, IMH-E



Background:

Medical and caregiving approaches have increased survival rates of young and vulnerable infants in neonatal intensive care units (NICUs), but neurologic, social, emotional, and behavioral outcomes continue to be of concern (1) even into adulthood (2-4). Developmental care practices were initiated early on to provide environmental protection and caregiving based on babies' perceived developmental needs and optimize developmental outcomes (5-7). Many programs, interventions, and environmental adaptations have been initiated to address the needs of babies and families in intensive care and to affect short-term developmental outcomes. (8-14).

Most developmental assessments in NICUs include growth, motor, neurologic, feeding, and behavioral organization and screening for parental stress and adaptation. Often, the emotional aspects of medically fragile infants in intensive care include reactivity to pain and stress and behavior such as self-soothing. As the baby grows, evaluations typically focus on cognitive, communication, and motor skills and academic performance (15, 16). Research now identifies the ability to engage in social relationships and to feel and react appropriately to emotional experiences as foundational to other areas of development. Studies of the brain that contribute to the understanding of emotion and affect are ongoing in older infants and are now emerging in research with preterm and medically vulnerable babies in intensive care.

Infant and Family-Centered Developmental Care Standards

Based on a significant increase in developmental and family interventions in the NICU, the Infant and Family-Centered Developmental Care (IFCDC) Consensus Panel has developed evidence-

based standards, competencies, and best practice guidelines for IFCDC. <https://nicudesign.nd.edu/nicu-care-standards/>.

The model developed by the panel includes "the baby as an effective communicator" (17), who needs an individualized understanding of and responsiveness to the baby's behavioral communication, including emotions and affective responsiveness. (Figure 1) A recent addition to the IFCDC model is the infusion of infant mental health (IMH) principles, including preventative and protective strategies to promote the baby's social and emotional development (18, 19). Support for early social and emotional development in the context of relationships is central to infant mental health (IMH).

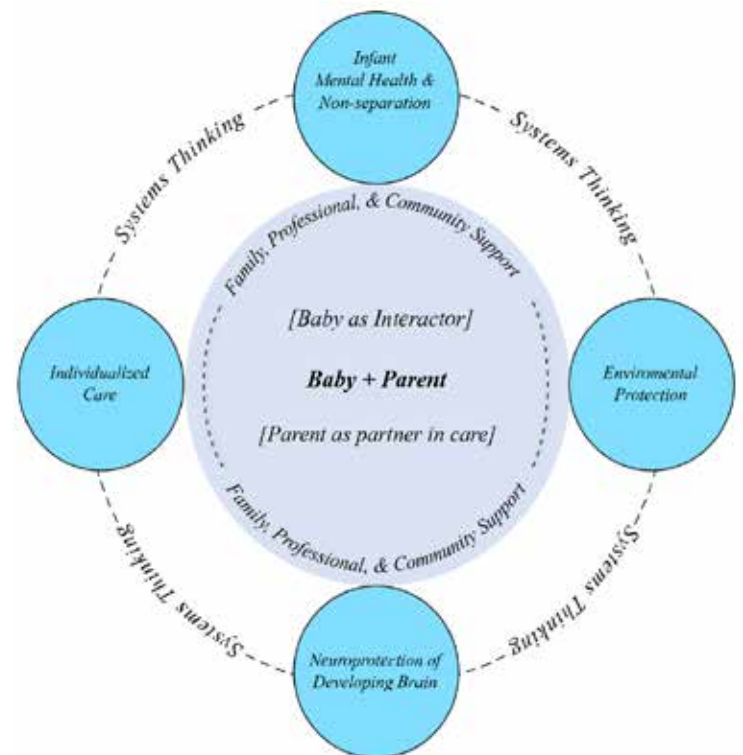


Figure 1 IFCDC Model 2024

Although many clinical approaches in the NICU look to the mental health needs of parents, IMH principles emphasize attention to the baby's ability to engage as an equal partner in relationships with their caregivers. "But what about the baby?" is a typical question asked in the context of IMH practice. In asking that question, attention is directed to the baby's behavioral communication, preferences, social bids, and emotional expression. The NIDCAP model (13, 20) provides extensive training in observation techniques to "interpret" the behavioral communication of the baby in order to provide "individualized and goal-inferred" caregiving. It uses systematic observation and interpretation of the baby's behavioral communication, *including affective expression*, to address the question, "What about the baby?" Caregiving is then guided by the baby's indicated needs and the parent's preferences.

“Although many clinical approaches in the NICU look to the mental health needs of parents, IMH principles emphasize attention to the baby’s ability to engage as an equal partner in relationships with their caregivers. ‘But what about the baby?’ is a typical question asked in the context of IMH practice. In asking that question, attention is directed to the baby’s behavioral communication, preferences, social bids, and emotional expression.”

Insights from the Gravens Annual Meeting 2024: The baby’s social and emotional development

The IFCDC field has benefitted from research on the impact of the environment of care on structural change, neuronal connectivity, and sensory influences on brain organization and maturation. Brain imaging techniques continue to reveal how babies’ brains develop and can inform clinical intervention. Several speakers at the 37th Annual Gravens meeting (March 2024) provided insights into how the newborn brain develops in the environment of the NICU. Dr. Elizabeth Rogers reminded us that “All Care is Brain Care” and offered strategies for implementing clinical practices related to brain protection (21).

Striking findings presented by other Gravens speakers indicate that care practices play a role in areas of the brain that are important for emotional development. Dr. Petra Huppi and her team have studied the influence of maternal voice and music on the preterm brain (22-24). They have found that specific elements of the caregiving environment significantly influence areas responsible for emotional and affect development. Dr. Nathalie Maitre and her team provided research indicating that infant-directed speech, particularly by the mother, plays a role in developing emotional areas in the brain (25, 26). Dr. Jeff Alberts described a new understanding of tactile communications networks, including two kinds of touch with separable neural pathways. Discriminative touch is the area typically used to describe tactile perception and understanding. However, another type of touch is sensed through the other neural pathways. Both individuals perceive affective touch in socially and emotionally rich physical interactions (27-29).

“Striking findings presented by other Gravens speakers indicate that care practices play a role in areas of the brain that are important for emotional development.”

Gravens speakers provided new ways of thinking about babies’ care to support their emotional development. Attention to understanding the baby’s affective experience, including their attempts to attend socially, can provide for rich emotional exchange and lay a foundation for optimal social and emotional development. Asking the question, “What is the experience of the baby?” should

be included in each interaction as babies have individual communication, needs, temperament, development, and emotional expressiveness.

Non-separation of the baby and parent, including skin-to-skin care opportunities, infers emotional advantages for both. Welch and colleagues have designed an approach that facilitates the emotional connectedness of mothers and babies during skin-to-skin care (14, 30). Their studies have revealed significant positive outcomes for the mother’s mental health and the baby’s development (31-33).

Although not reported at the 2024 Gravens conference, recent research into neurohormonal responsiveness during caregiving relates to this discussion. It sheds light on the biophysiological exchanges between parents and their babies that enhance bidirectional emotional responsiveness. Mounting evidence for the importance of early emotional development supports the need for caregiving to be sensitive to both babies’ and parents’ emotional needs (34-36). Hopefully, future studies will further prove the importance of emotional and affective brain and behavioral development.

“The implications for caring for babies’ emotional development in intensive care are significant and should help to expand thinking about how infant developmental and family-centered care is provided.”

The implications for caring for babies’ emotional development in intensive care are significant and should help to expand thinking about how infant developmental and family-centered care is provided. It adds a new dimension to our work with babies and is consistent with both IMH principles as well as the IFCDC model, including the understanding that:

1. There are emotional and affective regions of the baby’s developing brain that are sensitive to their environment of care and could impact later developmental outcomes.
2. Babies respond to infant-directed speech, which has implications for emotional and social recognition and relationships.
3. babies respond preferentially to their mother’s infant-directed speech
4. The kinds of touch provided to the baby during caregiving communicate emotional and social information as well as sensory perception, which are essential for the baby’s development.
5. Babies effectively receive emotional input and can communicate their emotional responsiveness in behavioral interactions.
6. In addition to cognitive, motor, and communication development, the foundation for later social and emotional development is likely influenced by the early NICU environment of care.
7. Babies need constant and familiar physical closeness and intimate interactions with their parents in order to support attachment relationships and further their emotional and affective development.
8. Professional caregivers may need additional training in interpreting the behavioral communication of babies in order to interpret the affective and emotional expressiveness of the baby.
9. Parents may need support to understand and respond to the affective behavioral communication of their baby.

Conclusion:

Emerging evidence for emotional and affective brain and behavioral organization indicates that intensive care for babies should include caregiving interactions that enhance bi-directional emotional exchange. The IFCDC model aims to infuse infant mental health perspectives into all standards and competencies to promote social and emotional well-being. Parents should be encouraged to engage in social touch and affective infant-directed speech. Opportunities for close physical contact can facilitate those exchanges. Professional staff should recognize the baby's individual communication during caregiving, including emotional expression, and provide vocal and handling communication that includes affective richness. Intensive care that includes attention to the affective, emotional, and social environment of vulnerable babies will lay a foundation for the infant's long-term neurodevelopmental and mental health outcomes.

References:

1. Inder TE, Volpe JJ, Anderson PJ. Defining the Neurologic Consequences of Preterm Birth. *N Engl J Med*. 2023;389(5):441-53. doi: 10.1056/NEJMra2303347. PubMed PMID: 37530825.
2. Wolke D. Early term, preterm and post-term gestation births increase the risk of special educational needs during schooling. *Evid Based Ment Health*. 2010. doi: 10.1136/ebmh1120. PubMed PMID: 21109674.
3. Raju TN, Buist AS, Blaisdell CJ, Moxey-Mims M, Saigal S. Adults born preterm: a review of general health and system-specific outcomes. *Acta Paediatrica*. 2017;106(9):1409-37.
4. Breeman LD, Jaekel J, Baumann N, Bartmann P, Wolke D. Preterm Cognitive Function Into Adulthood. *Pediatrics*. 2015;136(3):415-23. Epub 20150810. doi: 10.1542/peds.2015-0608. PubMed PMID: 26260714.
5. Als H. Developmental care in the newborn intensive care unit. *Curr Opin Pediatr*. 1998;10(2):138-42. PubMed PMID: 9608890.
6. Als H. Reading the premature infant. In: Goldson E, editor. *Nurturing the premature infant : developmental interventions in the neonatal intensive care nursery*. New York: Oxford University Press; 1999. p. 18-85.
7. Graven SN, Bowen FW, Jr., Brooten D, Eaton A, Graven MN, Hack M, et al. The high-risk infant environment. Part 2. The role of caregiving and the social environment. *Journal of perinatology : official journal of the California Perinatal Association*. 1992;12(3):267-75. Epub 1992/09/11. PubMed PMID: 1432286.
8. Ahlqvist-Bjorkroth S, Lehtonen L. Gravens by design: Close collaboration with parents intervention improves family-centered closeness in neonatal intensive care units. *Neonatology Today*. 2023;18(11):66-70.
9. Franck L, O'Brien K. Gravens by Design: Family Integrated Care: an evidence-based and inclusive model for delivering on your NICU's commitment to family centered care. *Neonatology Today*. 2023;18(6):81-5.
10. Johnson L, Bartlett J, Nugent K. Gravens by design: The Newborn Behavioral Observations System to support early parent-infant relationships in the NICU. *Neonatology Today*. 2023;18(9):76-84.
11. Richter M, Kellner P, Pineda R. Gravens by design: Supporting and enhancing NICU sensory experiences program—an evidence-based guideline for daily parent delivered positive multisensory exposures for infants in the NICU. *Neonatology Today*. 2023;18(10):66-74.
12. Saigal S. Gravens by design: Global research on transition to adulthood after preterm birth: Proceedings of the Gravens conference. *Neonatology Today*. 2023;18(7):103-9.
13. Vittner D, Buehler D. Gravens by design: NIDCAP Nursery Program: Implementation of the NIDCAP model of care. *Neonatology Today*. 2023;18(8):70-8.
14. Welch M, Ludwig R, Hane A, Myers M. Gravens by design: Six weeks that changed the preterm infant's brain: Insights from the Family Nurture Intervention (FNI) randomized controlled trials. *Neonatology Today*. 2023;18(5):2160229.
15. Murray J, Palaiologou I. Young children's emotional experiences. *Early Child Development and Care*. 2018;188(7):875-8. doi: 10.1080/03004430.2018.1449839.
16. Tyng CM, Amin HU, Saad MNM, Malik AS. The Influences of Emotion on Learning and Memory. *Frontiers in Psychology*. 2017;8. doi: 10.3389/fpsyg.2017.01454.
17. Browne JV. Fragile Infant Forums for Implementation of IF-CDC Standards: The Baby as a Competent Interactor. *Neonatology Today*. 2023;18(3):66-72.
18. Three Zt. Definition of infant mental health [www.zerotothree.org]. Arlington, VA,: Zero to Three; 2001 [cited 2016 August 30, 2016].
19. Three Zt. Infant and early childhood Mental health <https://www.zerotothree.org/espanol/infant-and-early-childhood-mental-health2020> [August 26, 2020].
20. Als H, Brazelton TB. A new model of assessing the behavioral organization in preterm and fullterm infants: two case studies. *J Am Acad Child Psychiatry*. 1981;20(2):239-63. PubMed PMID: 7196421.
21. Liebowitz M, Kramer KP, Rogers EE. All Care is Brain Care: Neuro-Focused Quality Improvement in the Neonatal Intensive Care Unit. *Clinics in perinatology*. 2023;50(2):399-420. Epub 20230309. doi: 10.1016/j.clp.2023.01.004. PubMed PMID: 37201988.
22. Loukas S, Lordier L, Meskaldji DE, Filippa M, Sa de Almeida J, Van De Ville D, et al. Musical memories in newborns: A resting-state functional connectivity study. *Hum Brain Mapp*. 2022;43(2):647-64. Epub 20211105. doi: 10.1002/hbm.25677. PubMed PMID: 34738276; PubMed Central PMCID: PMC8720188.
23. Chorna O, Filippa M, De Almeida JS, Lordier L, Monaci MG, Hüppi P, et al. Neuroprocessing Mechanisms of Music during Fetal and Neonatal Development: A Role in Neuroplasticity and Neurodevelopment. *Neural Plast*. 2019;2019:3972918. Epub 20190320. doi: 10.1155/2019/3972918. PubMed PMID: 31015828; PubMed Central PMCID: PMC6446122.
24. Sa de Almeida J, Baud O, Fau S, Barcos-Munoz F, Courvoisier S, Lordier L, et al. Music impacts brain cortical microstructural maturation in very preterm infants: A longitudinal diffusion MR imaging study. *Dev Cogn Neurosci*. 2023;61:101254. Epub

20230511. doi: 10.1016/j.dcn.2023.101254. PubMed PMID: 37182337; PubMed Central PMCID: PMC6838998.
25. Richard C, Jeanvoine A, Stark AR, Hague K, Kjeldsen C, Maitre NL. Randomized Trial to Increase Speech Sound Differentiation in Infants Born Preterm. *J Pediatr.* 2022;241:103-8.e3. Epub 20211025. doi: 10.1016/j.jpeds.2021.10.035. PubMed PMID: 34710395.
 26. Hamm EL, Chorna OD, Flanery A, Maitre NL. A parent-infant music therapy intervention to improve neurodevelopment after neonatal intensive care. *Acta Paediatr.* 2017;106(10):1703-4. Epub 20170725. doi: 10.1111/apa.13952. PubMed PMID: 28631850.
 27. Jönsson EH, Kotilahti K, Heiskala J, Wasling HB, Olausson H, Croy I, et al. Affective and non-affective touch evoke differential brain responses in 2-month-old infants. *Neuroimage.* 2018;169:162-71. Epub 20171211. doi: 10.1016/j.neuroimage.2017.12.024. PubMed PMID: 29242105.
 28. Manzotti A, Cerritelli F, Esteves JE, Lista G, Lombardi E, La Rocca S, et al. Dynamic touch reduces physiological arousal in preterm infants: A role for c-tactile afferents? *Dev Cogn Neurosci.* 2019;39:100703. Epub 20190821. doi: 10.1016/j.dcn.2019.100703. PubMed PMID: 31487608; PubMed Central PMCID: PMC6969366.
 29. Manzotti A, Cerritelli F, Monzani E, Savioli L, Esteves JE, Lista G, et al. Dynamic touch induces autonomic changes in preterm infants as measured by changes in heart rate variability. *Brain Res.* 2023;1799:148169. Epub 20221121. doi: 10.1016/j.brainres.2022.148169. PubMed PMID: 36410429.
 30. Welch MG, Hofer MA, Brunelli SA, Stark RI, Andrews HF, Austin J, et al. Family nurture intervention (FNI): methods and treatment protocol of a randomized controlled trial in the NICU. *BMC Pediatr.* 2012;12:14. doi: 10.1186/1471-2431-12-14. PubMed PMID: 22314029; PubMed Central PMCID: PMC3394087.
 31. Welch MG, Barone JL, Porges SW, Hane AA, Kwon KY, Ludwig RJ, et al. Family nurture intervention in the NICU increases autonomic regulation in mothers and children at 4-5 years of age: Follow-up results from a randomized controlled trial. *PloS one.* 2020;15(8):e0236930. Epub 2020/08/05. doi: 10.1371/journal.pone.0236930. PubMed PMID: 32750063; PubMed Central PMCID: PMC7402490.
 32. Welch MG, Firestein MR, Austin J, Hane AA, Stark RI, Hofer MA, et al. Family Nurture Intervention in the Neonatal Intensive Care Unit improves social-relatedness, attention, and neurodevelopment of preterm infants at 18 months in a randomized controlled trial. *Journal of child psychology and psychiatry, and allied disciplines.* 2015;56(11):1202-11. doi: 10.1111/jcpp.12405. PubMed PMID: 25763525.
 33. Welch MG, Halperin MS, Austin J, Stark RI, Hofer MA, Hane AA, et al. Depression and anxiety symptoms of mothers of preterm infants are decreased at 4 months corrected age with Family Nurture Intervention in the NICU. *Arch Womens Ment Health.* 2016;19(1):51-61. doi: 10.1007/s00737-015-0502-7. PubMed PMID: 25724391.
 34. Scatliffe N, Casavant S, Vittner D, Cong X. Oxytocin and early parent-infant interactions: A systematic review. *Int J Nurs Sci.* 2019;6(4):445-53. Epub 20190912. doi: 10.1016/j.ijnss.2019.09.009. PubMed PMID: 31728399; PubMed Central PMCID: PMC6838998.
 35. Vittner D, McGrath J, Robinson J, Lawhon G, Cusson R, Eisenfeld L, et al. Increase in Oxytocin From Skin-to-Skin Contact Enhances Development of Parent-Infant Relationship. *Biol Res Nurs.* 2018;20(1):54-62. Epub 20171011. doi: 10.1177/1099800417735633. PubMed PMID: 29017336.
 36. Uvnas-Moberg K. Oxytocin may mediate the benefits of positive social interaction and emotions. *Psychoneuroendocrinology.* 1998;23(8):819-35. PubMed PMID: 9924739.

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

NT

Corresponding Author

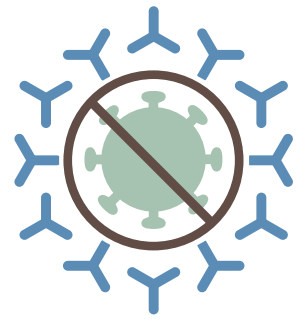


Joy Browne, Ph.D., PCNS, IMH-E(IV)
 Clinical Professor of Pediatrics and Psychiatry
 University of Colorado School of Medicine
 Aurora, Colorado
 Telephone: 303-875-0585
 Email: Joy.browne@childrenscolorado.org



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.

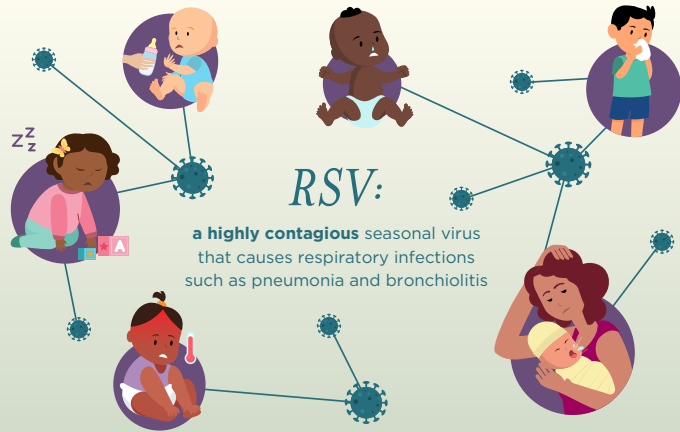


WE CAN HELP PROTECT EACH OTHER.



Respiratory Syncytial Virus

DID YOU KNOW?



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

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

LEARN MORE >

The Gap Baby: An RSV Story



Postpartum Revolution

@ANGELINASPICER



Readers can also follow

NEONATOLOGY TODAY

via our Twitter Feed

@NEOTODAY

99nicu

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

MedEd On The Go® presents

3 Accredited Education Programs in Short-Form Video Format
Available for CME/CNE Credits

The Role of Nutrition & Exclusive Human Milk for Very Low Birth Weight Infants



Preventing Bronchopulmonary Dysplasia

1.75 credit hours

WATCH NOW



www.MedEdOTG.com/video/program/599

Preventing Neonatal Sepsis

0.5 credit hours

WATCH NOW



www.MedEdOTG.com/video/program/609

Preventing Retinopathy of Prematurity

1.0 credit hour

WATCH NOW



www.MedEdOTG.com/video/program/608



Stephen E. Welty, MD

Clinical Professor of Pediatrics
University of Washington
School of Medicine
Seattle, WA



Dan L. Stewart, MD

Professor of Pediatrics & International Pediatrics
University of Louisville School of Medicine
Co-Director of NICU & ECMO
Norton Children's Hospital
Louisville, KY



Jonathan R. Swanson, MD, MSc

Associate Professor of Pediatrics
University of Virginia
Children's Hospital
Charlottesville, VA

GLO Preemies

Healthcare Executive Roundtable

EVERY 4TH WEDNESDAY

Virtual
10:00am - 1:00pm

"Creating real change in real time"

Talk Openly, Share Opinions & Ask Burning Questions

Scan the QR Code to learn more




More information
www.GLOPreemies.org




Neonatology Grand Round Series

Earn accredited CEs while learning about advancements in neonatology!



CENTER FOR RESEARCH, EDUCATION, QUALITY AND SAFETY

newly validated

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

7- Module Online Course in NICU Staff Education



National Perinatal Association and NICU Parent Network
mynicunetwork.org

COVID-19

National Network of NICU Psychologists


FREE for our NICU COMMUNITY

- Helping Children and Families Cope
- Bonding with Your Baby
- Caregivers Need Care Too



Download at www.nationalperinatal.org/psychologists

The National Urea Cycle Disorders Foundation



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

www.nucdf.org | Phone: (626) 578-0833

Towards —

Trauma-Responsive Perinatal Care

Featured Presentation

Healing Together

Utilizing Peer Support After Adverse Events

with _____
Angela Chaudhari MD



May 15-17 in Anaheim California

npaconference.org



JOIN US

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

Neonatology Today's Digital Presence

Neonatology Today's now has a digital presence. The site is operational now and defines the future look of our digital web presence. By clicking on this <https://www.neonatologytoday.org/web/>, researchers can download individual manuscripts both in digital format and as part of the original PDF (print journal). While the PDF version of Neonatology Today will continue in its present form, we envision that the entire website will be migrated to this format in the next several months. We encourage you to take a look, "kick the wheels," and let us know where we still need to improve.. We are working towards making the website more functional for subscribers, reviewers, authors and anyone else. Although we have not yet applied for inclusion in the National Library of Medicine Database (Pub-Med), this new format meets several of the important metrics for this ultimate goal. As of December, 2020, NT has its own account with Cross-Ref and will assign DOI to all published material.

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

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

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

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

fu-sheng.chou@neonatologytoday.net

Readers can also follow

NEONATOLOGY TODAY

via our Twitter Feed

@NEOTODAY

Towards —
Trauma-Responsive
Perinatal Care



Featured Presentation

Trauma and —
Punitive State Systems
Understanding the Harms
of Criminalization in the
Perinatal Period

with Farah Diaz-Tello, JD

May 15-17 in Anaheim, California

npaconference.org



REGISTER
\$675 Members get \$100 off

Which Infants are More Vulnerable
to Respiratory Syncytial Virus?

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

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

*Source: Respirator Syncytial Virus and African Americans

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



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

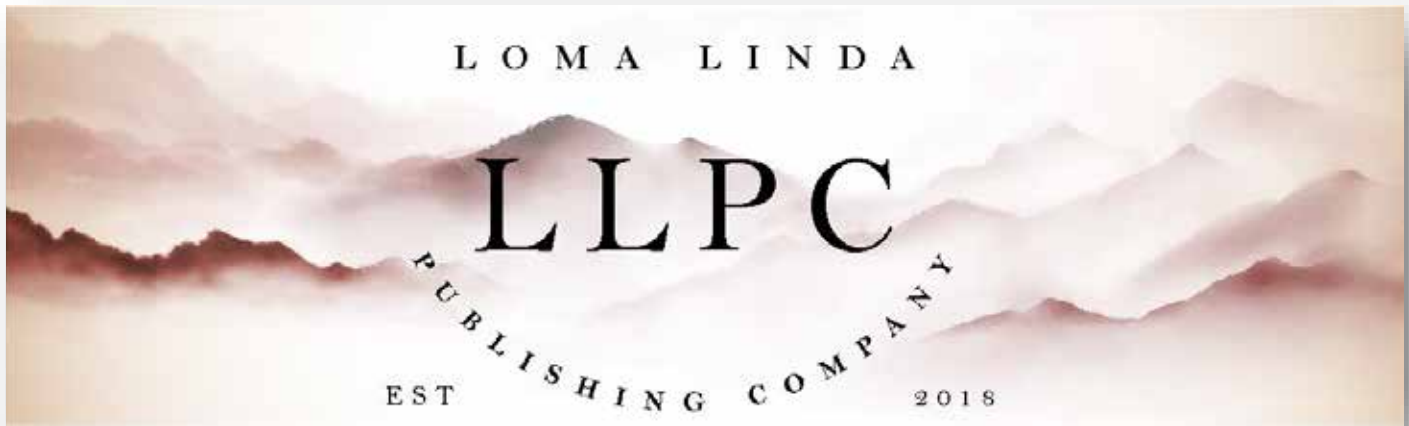


COVID-19

FREE for our NICU COMMUNITY

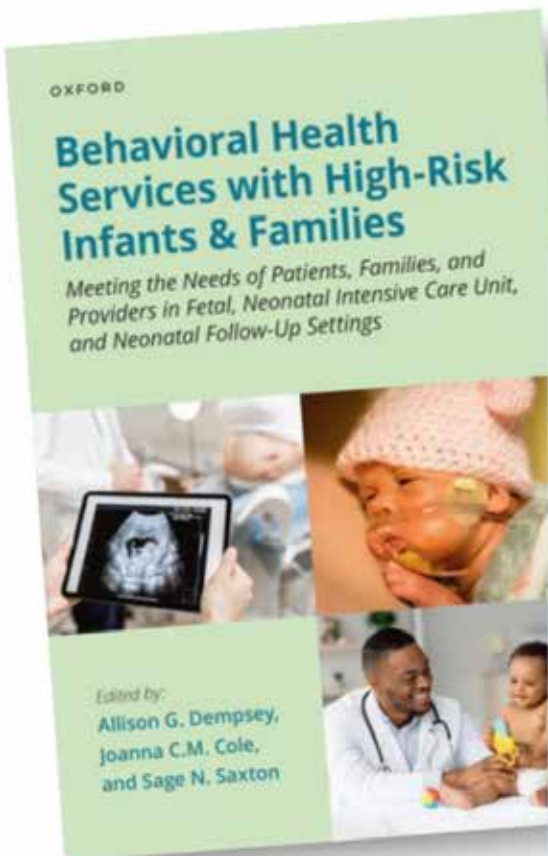
- Helping Children and Families Cope
- Bonding with Your Baby
- Caregivers Need Care Too





National Network
of **NICU**
Psychologists

Education, Resources, and
Support for Perinatal Mental
Health Professionals



We are pleased to announce
the Publication of this
NEW Essential Resource

Behavioral Health Services with High-Risk Infants and Families

Meeting the Needs of Patients,
Families, and Providers
in Fetal, Neonatal Intensive Care Unit,
and Neonatal Follow-Up Settings

Use discount code **ASPROMP8**
and save **33%**
online at www.oup.com

\$56.00



NATIONALPERINATAL.ORG/PSYCHOLOGISTS

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

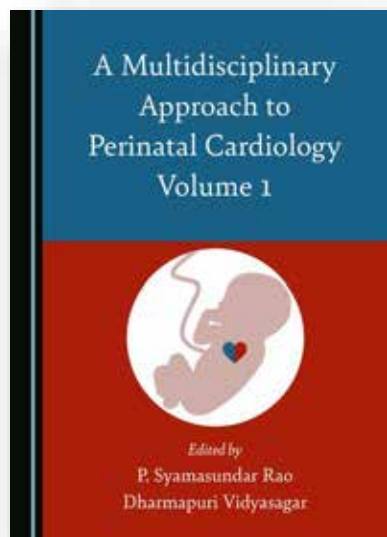
**Gary D. Miner, Linda A. Miner,
Scott Burk, Mitchell Goldstein,
Robert Nisbet, Nephi Walton,
Thomas Hill**



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](#).



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



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 PPRM 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 PPRM 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 PPRM 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 Contributors:**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 Provisership 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)™*. 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.

Follow us online at @MyNICUNetwork

www.myperinatalnetwork.org Phone: 805-372-1730



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

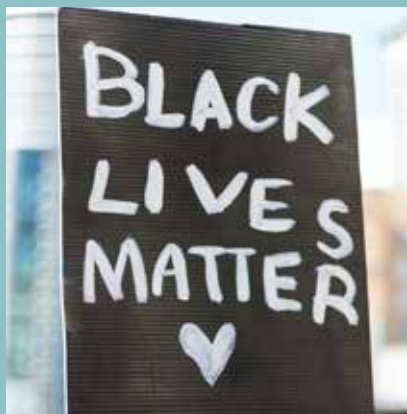


Coping with COVID-19



A viral pandemic

A racial pandemic within a viral pandemic



Will mental illness be the next inevitable pandemic?

WWW.MYNICUNETWORK.ORG



Congress Boosts “Hope” for Infants with Rare Diseases

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.



Congress needs to act to continue to spur new treatments for sick children with few options.

“The Creating Hope Reauthorization Act would extend an existing program that incentivizes the development of treatments for rare pediatric diseases by offering a voucher for expedited FDA review. Companies can then buy and sell these vouchers to capture a return on investment that rare drugs seldom deliver.”

The Creating Hope Reauthorization Act would extend an [existing program](#) (1) that incentivizes the development of treatments for rare pediatric diseases by offering a voucher for [expedited FDA review](#). (2) Companies can then buy and sell these vouchers to

capture a return on investment that rare drugs seldom deliver.

There have been 49 vouchers issued under the program, generated by the approval of treatments for 40 diseases impacting children, including a rare [muscular dystrophy mutation](#) (3), [cystic fibrosis](#) (4), and [haemophagocytic lymphohistiocytosis](#). (5) [No approved drugs](#) (6) were available for most of these conditions before the incentives program existed.

“Researchers and investors should prioritize technologies that can improve the well-being of children by addressing their unique diseases and challenges. The small number of patients affected by rare conditions makes it difficult to recover research and development costs, even if the treatment is wildly successful.”

Research and Rare Diseases in Children

A complex cost-benefit equation applies to treatments for rare diseases.

Researchers and investors should prioritize technologies that can improve the well-being of children by addressing their unique diseases and challenges. The small number of patients affected by rare conditions makes it difficult to recover research and development costs, even if the treatment is wildly successful.

The difficulty of conducting clinical trials for children, the effects of delayed diagnoses, and a 15-year average for drug approval further complicate matters.

Fully 95% of rare diseases have no FDA-approved treatment. These medications serve a small patient population and are difficult to develop, test, and make available. The challenges are magnified for disease treatments for children, often discouraging traditional investment.

Patients and Providers Urge Congress to Reauthorize Vouchers

More than 600 patients, caregivers, providers, and advocates converged on the U.S. Capitol to tell their stories and plea for [more public investment in policy solutions](#) to healthcare challenges, just days after the Creating Hope Reauthorization Act was introduced. (7)

The bipartisan bill is sponsored by U.S. Representatives Gus Bilirakis (R-FL), Anna Eshoo (D-CA), Michael McCaul (R-TX), Lori Trahan (D-MA), Michael Burgess (R-TX) and Nanette Barragán (D-CA.). In [remarks announcing](#) (8) their sponsorship, several

representatives referred to personal acquaintances or constituents whose children live with rare diseases.

“The voucher program, formally known as the Rare Pediatric Disease Priority Review Voucher Program, must be renewed before its September 2024 expiration, or programs currently developing treatments for America’s most vulnerable may be shuttered or delayed.”

The voucher program, formally known as the Rare Pediatric Disease Priority Review Voucher Program, must be renewed before its [September 2024 expiration](#) (9), or programs currently developing treatments for America’s most vulnerable may be shuttered or delayed.

References:

1. https://go2.bio.org/NDkwLUViWi05OTkAAAGRuwN-3BiLufOa6ucbOcA0-gwJybiJwhqe4N_86ZNMMyVuMy1OYT-2RbUmFISoHTw0oBQW7Fc=?_gl=1*1fc1arn*_gcl_au*NDUwNjAyMDczLjE3MDk1NjY5Mzg.&_ga=2.168779745.171284454.1709566938-1724185872.1709566938
2. <https://www.raps.org/news-and-articles/news-articles/2017/12/regulatory-explainer-everything-you-need-to-know>
3. <https://www.fda.gov/news-events/press-announcements/fda-grants-accelerated-approval-first-targeted-treatment-rare-duchenne-muscular-dystrophy-mutation>
4. <https://www.fda.gov/news-events/press-announcements/fda-approves-new-breakthrough-therapy-cystic-fibrosis>
5. <https://www.sobi.com/en/press-releases/fda-approves-gamifantr-emapalumab-first-and-only-treatment-primary-haemophagocytic>
6. <https://everlifefoundation.org/everlife-foundation-applauds-the-introduction-of-the-creating-hope-reauthorization-act-of-2024-urges-congress-to-act-swiftly/>
7. <https://everlifefoundation.org/rare-advocates/rare-disease-week-2023/rare-disease-week-attendee-corner-resource-library/>
8. <https://barragan.house.gov/2024/02/16/rebs-barragan-mc>

[caul-eshoo-bilirakis-trahan-and-burgess-introduce-creating-hope-reauthorization-act-of-2024/](#)

9. https://go2.bio.org/NDkwLUViWi05OTkAAAGRuwN3He6UwcMgj6JPxSbfXsZVID4_Y6uRRKiT-8pGHe6WB5QJmmT2XoWthleLAtt-r7S7vhA=?_gl=1*1fc1arn*_gcl_au*NDUwNjAyMDczLjE3MDk1NjY5Mzg.&_ga=2.168779745.171284454.1709566938-1724185872.1709566938

Disclosure: Josie Cooper is 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



CoSponsor of Clinical Trials Awareness NCJRH National Institutes for Rare Health

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

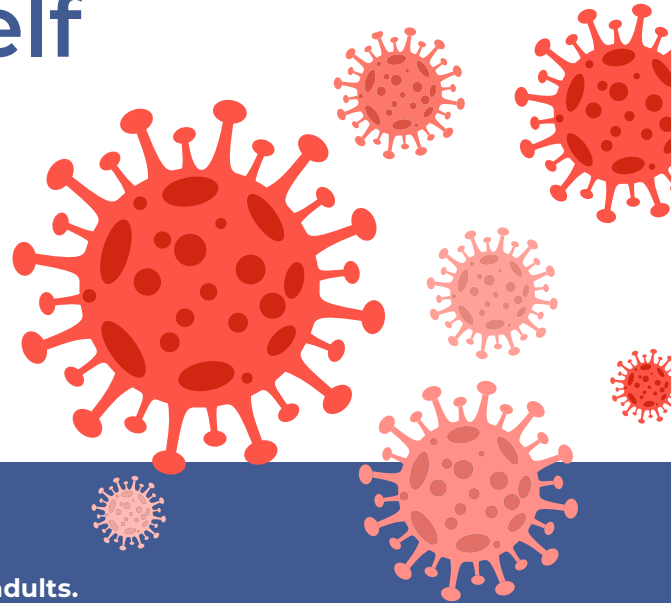
www.99nicu.org

99nicu

Immunizing Yourself Against COVID-19

COVID-19 vaccines have been shown to:

- ✓ Lessen the severity of symptoms¹
- ✓ Reduce disease transmission³
- ✓ Reduce risk of mortality²
- ✓ Make communities healthier and safer⁴



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.



PROTEIN SUBUNIT VACCINES

Used for three decades against the flu, whooping cough and hepatitis B.



VECTOR VACCINES

Used for decades against chickenpox, malaria and tuberculosis.

HOW THEY WORK:

Instruct cells to make COVID-like proteins that trigger the immune system to fight the virus.

Deliver harmless versions of the COVID protein that train the immune system to fight the virus.

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 participants⁶



Proven safe and effective

for adults as well as children⁷



Vetted and approved by

the US FDA and EMA and endorsed by the WHO⁸⁻¹⁰

Get Your Job

Vaccines are available at your:



Doctor's office



Neighborhood pharmacy



Community health center

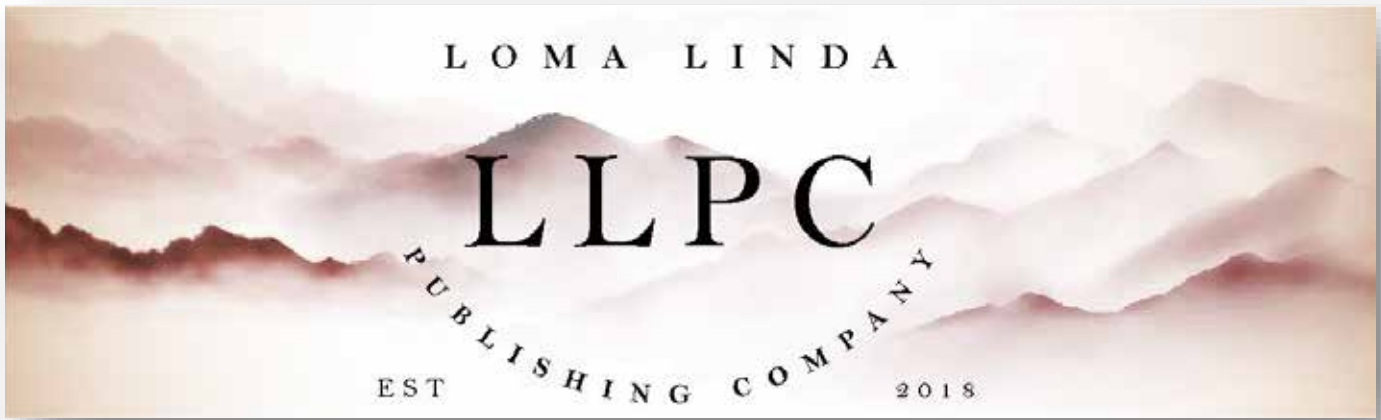


Talk to your health care provider or pharmacist about which vaccine is right for you.

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-2019/treatments-vaccines/vaccines-covid-19/covid-19-vaccines-authorized>
10. http://www.bccdc.ca/Health-Info-Site/Documents/COVID-19_vaccine/WHO-EUA-qualified-covid-vaccines.pdf





Supporting NICU Staff so they can support families



Providing online education that is...

- Story-Driven
- Trauma-Informed
- Evidence-Based



The preeminent provider of compelling perinatal education on psychosocial support created through interprofessional collaboration

www.mynicunetwork.org



CONGENITAL
CARDIOLOGY
TODAY

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



Subscribe Electronically
Free on the Home Page

www.CongenitalCardiologyToday.com

NPA 2024 CONFERENCE

Towards —

Trauma-Responsive Perinatal Care

Featured Presentation

All We Need is Love

Trauma-Responsive Living

with Mary Coughlin



May 15-17 in Anaheim California

npaconference.org

 National Perinatal Association

JOIN US

New subscribers are always welcome!

NEONATOLOGY TODAY

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

The 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 Updates: Empowering Pediatric Advisors Worldwide: iCAN's Latest Updates and Inspiring Achievements

Sabina Schmidt Goldstein-Becerra



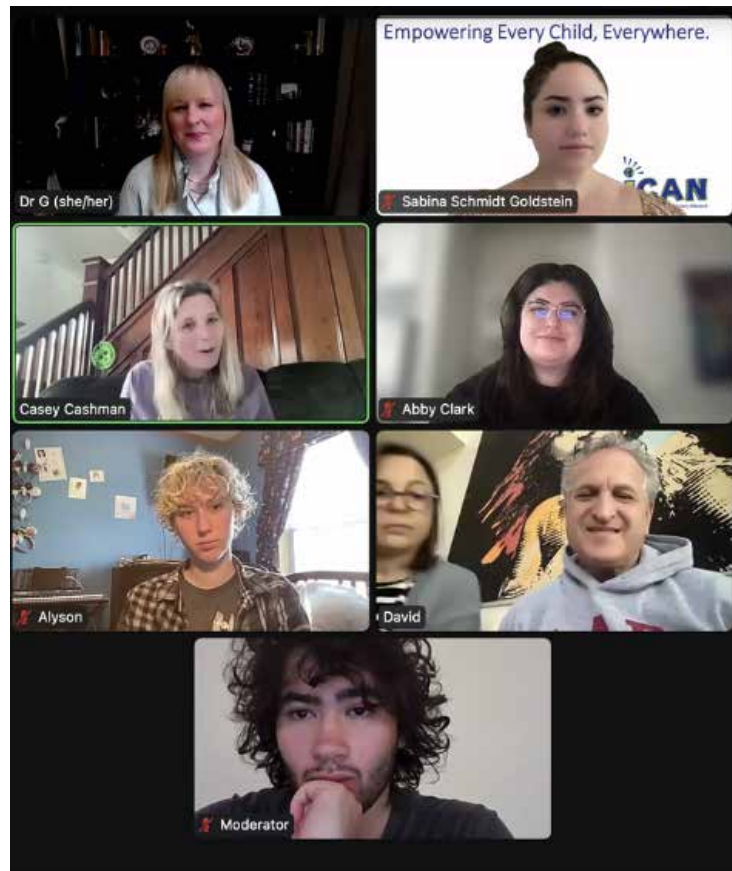
Get involved today and Join the iCAN Parent Council!

“iCAN, or the International Children’s Advisory Network, is committed to providing numerous opportunities for the pediatric community to come together and hear from the most crucial stakeholders in healthcare: the patients. Our organization is dedicated to empowering all pediatric patients worldwide by facilitating their active participation in innovation, research, and medicine.”

iCAN, or the International Children’s Advisory Network, is committed to providing numerous opportunities for the pediatric community to come together and hear from the most crucial stakeholders in healthcare: the patients. Our organization is dedicated to empowering all pediatric patients worldwide by facilitating their active participation in innovation, research, and medicine. Whether you are a patient, family member, healthcare professional, or supporter of the cause, we welcome you to visit our website at ican-research.org to learn more about our mission, various programs, and initiatives. Join us in the effort to ensure that every child’s voice is heard and that their unique experiences are taken into

account to improve healthcare outcomes for all pediatric patients.

Ask the Experts - March Recap and Looking Ahead



Navigating Chronic Pain and Emotional Well-being: Insights from Casey and Dr. Melissa Geraghty

In a recent session of our Ask the Experts series, we hosted two remarkable individuals, Casey and Dr. Melissa Geraghty, who shed light on the intersection of pain management and mental health. Their combined expertise provided invaluable insights that have impacted our understanding of chronic pain and emotional well-being.

Dr. Melissa Geraghty, a distinguished clinical health psychologist with over 15 years of experience, illuminated the vital connection between emotional well-being and chronic pain management. Drawing from her extensive background in supporting children facing diverse challenges, Dr. Geraghty emphasized the pivotal role of seeking guidance from a clinical pain psychologist. She shared practical strategies for coping and encouraged attendees to explore further resources available through platforms like Psychology Today.

Casey Cashman, the driving force behind the Pediatric Pain Warrior program at the U.S. Pain Foundation, offered a deeply personal perspective on navigating chronic pain. Through sharing her journey of overcoming health challenges, Casey imparted practi-

cal tips and highlighted the significance of resilience and community support. Her message resonated profoundly, underscoring the power of collective action in alleviating pain and fostering hope among individuals facing similar struggles.

The session concluded with gratitude for the wealth of knowledge generously shared by Casey and Dr. Geraghty. Their unwavering dedication to empowering individuals confronting pain is truly commendable, and we are honored to continue our collaboration with the U.S. Pain Foundation in furthering this mission.

As we look ahead, we remain committed to hosting empowering Ask the Experts sessions, where we will delve into critical topics and glean insights from inspiring leaders in their respective fields. Please let us know if you are interested in being a featured speaker for Ask the Experts!

[Mark your calendars- iCAN invites you to another installment of Ask the Experts!](#)

You are invited to an insightful Ask the Experts session titled “Innovative Play: Empowering Children with Medical Needs through Purposeful Toys” featuring Mary Jenner, RN. Join us on April 6 at 8 AM PST, 11 AM EST.

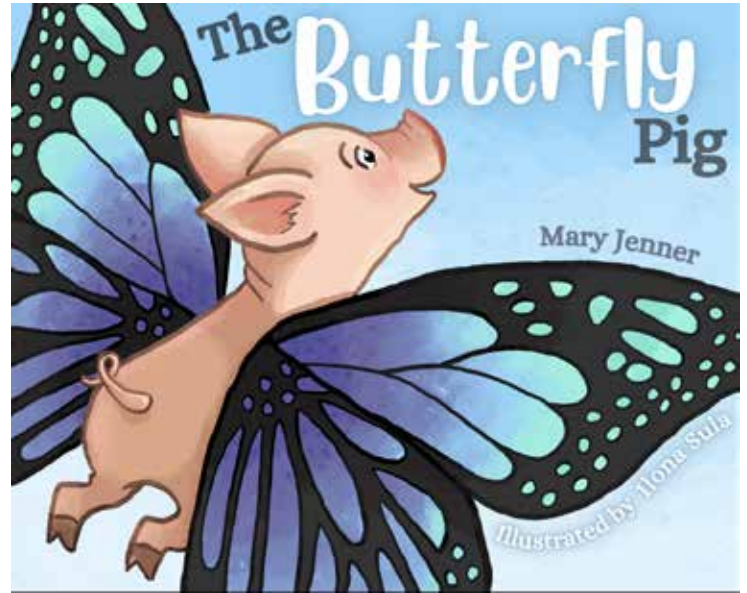
[Secure your spot by registering here today!](#)

In pediatric healthcare, the intersection of play and medical care has long been recognized as necessary for the emotional and psychological well-being of children facing medical challenges. On April 6, 2024, join us for an enlightening discussion with Mary Jenner, RN, a pioneer in leveraging purposeful toys to empower children with medical needs.



About Mary Jenner:

Mary Jenner's journey in healthcare began in Pediatric Oncology, where she witnessed firsthand the impact of medical procedures on children's emotional states. To alleviate the fear associated with medical interventions, she embarked on a mission to merge her nursing expertise with her entrepreneurial spirit. Jenner founded The Butterfly Pig, a company dedicated to diminishing medical fears through a unique line of toy medical devices.



“Mary Jenner’s journey in healthcare began in Pediatric Oncology, where she witnessed firsthand the impact of medical procedures on children’s emotional states. To alleviate the fear associated with medical interventions, she embarked on a mission to merge her nursing expertise with her entrepreneurial spirit. Jenner founded The Butterfly Pig, a company dedicated to diminishing medical fears through a unique line of toy medical devices.”

The Butterfly Pig's flagship creation, “The Butterfly Pig,” book epitomizes the essence of inclusion, self-love, and teamwork. At its core, the narrative revolves around Billie, a pig born with butterfly wings, who embarks on a journey of self-discovery, realizing the beauty of embracing one's uniqueness. Through Billie's story, children are encouraged to celebrate their differences and cultivate bravery in their individuality.



TOY FEEDING PUMP FOR DOLL OR STUFFED ANIMAL

“Central to The Butterfly Pig’s mission is its “You are You” collection, which features meticulously crafted medical device toys. Designed to foster conversations about self-love and inclusivity, these miniature replicas serve as tangible tools for educating children about various disabilities and medical needs.”

The “You are You” Collection:

Central to The Butterfly Pig’s mission is its “You are You” collection, which features meticulously crafted medical device toys. Designed to foster conversations about self-love and inclusivity, these miniature replicas serve as tangible tools for educating chil-

dren about various disabilities and medical needs. From doll-sized infusion pumps to stuffed animal wheelchairs, each toy embodies the ethos of representation and empathy. We look forward to seeing you there!

iCAN Spotlight!

Spotlight on Lindsay Carstairs, 2024 Military Child of the Year® for the Navy, Co-Founder of KIDS Rady, and Rising Tulane University Student



Meet Lindsay Carstairs, a remarkable young individual whose journey exemplifies resilience, compassion, and unwavering determination. At 18 years old, Lindsay has achieved remarkable milestones and garnered admiration for her altruistic spirit.

Born into a family rooted in service, Lindsay is the daughter of Navy heroes Shaun and Keri Carstairs, who instilled a profound sense of duty and empathy in her. Lindsay’s path took an unexpected turn when she was diagnosed with Jeavons Syndrome, a rare form of epilepsy, at the tender age of 8.

Despite the challenges posed by her diagnosis, Lindsay refused to be defined by it. With unwavering support from her family, notably her older brother Ian, Lindsay emerged as a beacon of hope and resilience. Drawing from her parents’ medical expertise, Lindsay navigated the complexities of her condition with grace and determination.

Among Lindsay’s many accomplishments is her co-founding of the KIDS-Rady San Diego chapter, a testament to her commitment to supporting children facing similar challenges. Reflecting

on this endeavor, Lindsay expresses, "Creating this community resource has been a dream realized, teaching me invaluable lessons in organization and advocacy."

However, Lindsay's impact extends beyond the realm of health-care advocacy. A dedicated Canyon Crest Academy varsity girls' flag football team member, Lindsay's leadership and tenacity on the field mirror her compassionate nature off the field. Her exemplary service has been recognized with the prestigious President's Gold Volunteer Service Award, underscoring her unwavering dedication to making a difference in the lives of others.

Looking ahead, Lindsay is poised to embark on a new chapter of her journey as she enters Tulane University as an Honors Scholar. With a keen interest in political science, international relations, and marketing, Lindsay is eager to continue her mission of effecting positive change on a global scale.

In celebrating Lindsay's achievements, we are reminded of the boundless potential of the human spirit. Lindsay, your resilience, kindness, and dedication inspire us all. Keep shining brightly, for the world is undoubtedly brighter with you in it.

Spotlight on KIDS Walter Payton



Exciting News from KIDS Walter Payton in the iCAN Challenge of 10!

We are thrilled to announce that KIDS Walter Payton is enthusiastically diving into the iCAN Challenge of 10 fervently! As part of this endeavor, they are embarking on creating 10 engaging and informative research videos on Instagram.

One of these captivating videos is dedicated to shedding light on the opioid crisis, a pressing issue causing significant concerns due to overdoses. However, fear not, as KIDS Walter Payton is here not only to raise awareness but also to educate us on a crucial intervention: the Narcan Nasal Spray, a life-saving tool in combating opioid overdoses.

"One of these captivating videos is dedicated to shedding light on the opioid crisis, a pressing issue causing significant concerns due to overdoses. However, fear not, as KIDS Walter Payton is here not only to raise awareness but also to educate us on a crucial intervention: the Narcan Nasal Spray, a life-saving tool in combating opioid overdoses."

Prepare yourself for an enlightening and entertaining journey with KIDS Walter Payton as they delve into this critical topic. Follow their Instagram account @icankidspayton for insightful content that promises to educate, engage, and empower.

Stay tuned for more updates and join KIDS Walter Payton in their mission to make a positive impact in the fight against the opioid crisis!




Also, we are so excited to highlight the active engagement of the KIDS Walter Payton team in our recent survey conducted in collaboration with our industry partner, Biomotum. This survey was thoughtfully designed with children in mind, aiming to gather valu-

able insights on innovative solutions tailored to their needs.


Among the participants, the KIDS Walter Payton team stood out with their enthusiastic involvement. They offered insightful feedback on a groundbreaking invention: a robotic exoskeleton to assist children facing mobility challenges. Their constructive input not only demonstrated their interest in advancements in pediatric healthcare but also showcased their dedication to improving the lives of all children.

We commend the KIDS Walter Payton team for their invaluable contributions and unwavering commitment to making a difference. Their active participation underscores the importance of collaboration and collective efforts in advancing pediatric healthcare innovations.

iCAN's Inaugural Fundraising Challenge: Join Us in Shaping Pediatric Healthcare!

 iCAN's 10 Challenge: Striving Towards Pediatric Healthcare Excellence

 Date: March 30, 2024

 Time: 24- Hour

 Location: Global Fundraising

Website: bit.ly/iCANchallengeof10

About the Event: Join us in our first-ever iCAN Challenge, a community-driven initiative for children living with rare or complex conditions, dedicated to fundraising for our 2024 Annual Research and Advocacy Summit in Bari, Italy. This event is a collective effort to help provide pediatric patients with a powerful voice in medicine, research, and innovation. Your participation will play a pivotal role in empowering young voices and advancing critical initiatives that will mold the future of pediatric healthcare.

“About the Event: Join us in our first-ever iCAN Challenge, a community-driven initiative for children living with rare or complex conditions, dedicated to fundraising for our 2024 Annual Research and Advocacy Summit in Bari, Italy. This event is a collective effort to help provide pediatric patients with a powerful voice in medicine, research, and innovation.”

To celebrate our 10th year anniversary, we encourage you to take on challenges based on the number 10.

Here are some inspiring ideas: Bake ten cakes, read ten books, complete ten sketches, pick up ten pieces of litter, do ten good deeds, plant ten trees, run or walk ten blocks, bike 10 miles, knit ten things, dance ten dances, decorate ten rocks, or swim ten laps. The challenge is up to you!

How to Get Started:

1. Decide whether you want to do the challenge as a group or if each member can do it independently and choose a fun challenge.
2. Set a fundraising goal; we suggest aiming for \$2500.
3. Find sponsors, either individually or as a group
4. Use Zeffy to collect money – download the app or visit the website, and donors will receive a donation email automatically.
5. Have a blast during the event. Wear iCAN gear (if you have it) and take lots of pictures! 6. Send the pictures to abbyclark@icanresearch.org

Get Involved!



The graphic is a promotional poster for the iCAN YPN Kick-Off Meeting. It features a green background with a woman in a white lab coat on the right. The text is arranged in several boxes: a top blue box with the title 'iCAN YPN Kick-Off Meeting', a central white box with text 'If you are ~18-29 years old and interested in healthcare and STEM, don't miss out this Saturday! Join iCAN's Young Professionals Network!', a blue box with a calendar icon and 'Kick-Off Meeting Saturday, March 30, 2024 @ 10 AM EST', a green cloud-shaped box with 'Express Your Interest Below!', and a bottom blue box with the survey link 'https://www.surveymonkey.com/r/PFSC5HG'. The iCAN logo is in the bottom left corner.

Exciting Update: Registration is now open for iCAN's 2024 Annual Research and Advocacy Summit, which Jumo Health will present!

To sponsor our Summit, visit bit.ly/iCANsponsorships

To register for our Summit, bit.ly/iCANSummit24Registration

Our upcoming 2024 Summit, Presented by Jumo Health, is set to unfold in the picturesque city of Bari, Italy, from July 15 to 19th! The anticipation among our enthusiastic young participants is palpable as they eagerly await this remarkable event. However, to make it truly unforgettable, we need your support!

Our annual Summit is a transformative platform for nurturing innovation, compassion, and collaboration in pediatric healthcare among youth.

If you believe in the power of education and inspiration, we invite you to participate in this life-changing event. You can contribute in two meaningful ways:



1. Sponsor the 2024 Summit: Your sponsorship plays a pivotal role in the seamless organization of the Summit. Your generous support ensures an impactful experience for all attendees.
2. Sponsor a Child to Attend: Your sponsorship directly impacts a child's life, granting them the chance to attend the Summit in Bari. Your support offers learning and empowerment and covers travel, accommodation, and participation.

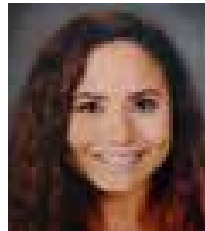
Together, we shape a brighter future for pediatric healthcare by nurturing the potential of our young members. Regardless of size, your contribution makes a significant difference in fostering innovative advancements.

Thank you for considering this opportunity to support the next generation of healthcare leaders. Your generosity and dedication are deeply valued. Let us unite in Bari, Italy, to create a summit experience that empowers young minds for years to come!

Disclosures: *There are no reported disclosures*

NT

Corresponding Author



Sabina Schmidt Goldstein-Becerra
Director of Educational Programs and Development at iCAN
Website: www.icanresearch.org
Phone: (+1) 818-256-7120
Email: sabina.goldstein@icanresearch.org

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

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.

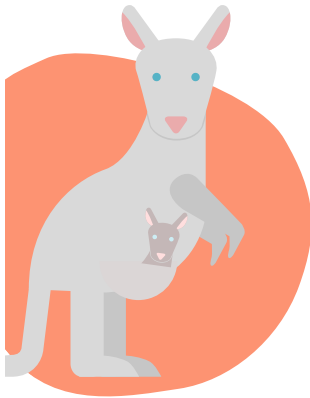
Survey Link: bit.ly/icanxkismet



Fill out the recruitment survey now and let your voice be heard!
Together, we can make a real difference in pediatric healthcare!

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



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



nicuparentnetwork.org
nationalperinatal.org/skin-to-skin



Academy of Perinatal Harm Reduction



www.perinatalharmreduction.org | www.nationalperinatal.org

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



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

KEEPING MOTHERS + INFANTS TOGETHER

Means balancing...



EVIDENCE

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

PARTNERSHIP SHARED DECISION-MAKING

What is the best for this unique dyad?

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



TRAUMA-INFORMED

Both parents and providers are confronting significant...

- FEAR
- GRIEF
- UNCERTAINTY

LONGITUDINAL DATA

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

- MENTAL HEALTH
- POSTPARTUM CARE DELIVERY



NEW DATA EMERGE DAILY.

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

Partnering for patient-centered care when it matters most.



National Association of Neonatal Nurses

nann.org

National Perinatal Association

nationalperinatal.org

Thank You, from iCAN



#iCANMakeADifference
Continue to Support at iCAN.health

*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

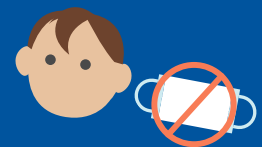
Vaccinations save lives. Protecting your baby from COVID-19, flu and pertussis lowers their risks for complications from respiratory infections.



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



PROTECT YOUR FAMILY FROM RESPIRATORY VIRUSES

flu coronavirus
pertussis RSV



WASH YOUR HANDS
often with soap and warm water.

SOAP

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



COVER COUGHS AND SNEEZES.
Sneeze and cough into your elbow.

USE AN ALCOHOL-BASED HAND SANITIZER.



STAY AWAY FROM SICK PEOPLE
Avoid crowds. Protect vulnerable babies and children.

www.nationalperinatal.org

National Perinatal Association

FREE RESOURCES FOR YOUR NICU

Coping During COVID-19



Targeted interventions to improve the mental health of parents, infants, families, and providers

BONDING WITH YOUR BABY



HELPING CHILDREN AND FAMILIES COPE

CAREGIVERS NEED CARE TOO



National Network of NICU Psychologists

nationalperinatal.org/psychologists

NPA 2024 CONFERENCE

Towards

Trauma-Responsive Perinatal Care



Featured Presentation

Neonatal Sleep Assessment Optimizing Sleep as a Trauma-Responsive Approach

with

Eline de Groot PhD

Christine Gliniak PhD, OTR/L, CNT, CPXP, NTMC

May 15-17 in Anaheim, California

npaconference.org



REGISTER

\$675 Members get \$100 off

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

Survey Says: RSV

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

- Hospitalization
- Lifelong health complications
- Death

for infants and young children.



ACCORDING TO A NATIONAL SURVEY,

Specialty Health Care Providers say:

80% They treat RSV as a priority, "often" or "always" evaluating their patients

77% RSV is the "most serious and dangerous" illness for children under four

77% Barriers to access and denials from insurance companies limit patients' ability to get preventive RSV treatment



But Parents are Unprepared.

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

22% Only 22% consider themselves "very well" prepared to prevent RSV



RSV EDUCATION & AWARENESS CAN HELP

After parents learned more about RSV, they were:

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



NCfIH National Coalition for Infant Health
Promoting Access for Perinatal Infections through Age Two

Learn More about RSV at:
www.infantHealth.org/RSV

Online survey conducted September 2018. Excludes 17% specialty health care providers and 80% parents of children 4 and under.

Briefly Legal: Should Midgut Volvulus Have Been Suspected in this Baby?

Maureen Sims, MD, Barry Schifrin, MD

A term baby was delivered by normal spontaneous vaginal delivery to a G₆P₃ with an uncomplicated pregnancy. Her cervical and rectal cultures for GBS were negative. Prenatal ultrasounds revealed exuberant fetal growth but no anomalies. There was no evidence of polyhydramnios or dilatation of the fetal bowel. At term, the mother went into spontaneous labor and delivered a 4,395-g female, who received Apgar Scores of 8 and 9 at 1 and 5 minutes, respectively. The newborn had no medical issues and was discharged home 48 hours after delivery.

“One month later, the baby suddenly developed poor feeding. The father describes the abdomen as becoming very hard and pale above the umbilicus and blue below it. He immediately brought the baby to the emergency department at a local hospital, where a physical examination revealed the baby to be non-responsive with weak pulses and a heart rate of 111 bpm. The temperature was 98 °F, and there was prolonged capillary refill. Spontaneous breathing was labored. The abdomen was markedly distended and firm. The skin above the umbilicus was pale and mottled from the waist down. Blood pressures were not attempted. A nasogastric tube was inserted with the return of 285 ml of bilious fluid, including some bright red blood.”

One month later, the baby suddenly developed poor feeding. The father describes the abdomen as becoming very hard and pale above the umbilicus and blue below it. He immediately brought the baby to the emergency department at a local hospital, where a physical examination revealed the baby to be non-responsive with weak pulses and a heart rate of 111 bpm. The temperature was 98 °F, and there was prolonged capillary refill. Spontaneous breathing was labored. The abdomen was markedly distended and firm. The skin above the umbilicus was pale and mottled from the waist down. Blood pressures were not attempted. A nasogastric tube was inserted with the return of 285 ml of bilious fluid, including some bright red blood. Because of multiple failed attempts at inserting a peripheral venous line, 200 ml of normal saline was

administered intraosseously (IO). Immediately following the IO infusion, the baby developed a profound bradycardia to 60 bpm, prompting a full resuscitation code, which lasted 4 minutes.

A complete blood count showed a hematocrit of 36%, a white blood count of 30,000, a normal platelet count, normal electrolytes except for a potassium level of 7.4 mEq/L, and elevated liver function tests. Following the successful resuscitation and the return to a normal heart rate, the baby was sent to the Radiology Department for chest and abdominal radiographs, abdominal ultrasound, and CT of the chest, abdomen, and pelvis. Upon return from the Radiology Department, her temperature was 92.7 °F. The radiologic studies were consistent with a small bowel obstruction. The ED physicians consulted the on-call surgeon, who was unable to come up with a diagnosis. He did not come to the hospital to see the baby but advised the ED team to continue observation and to send the baby to the Pediatric Intensive Care Unit (PICU). After blood cultures were taken, the baby was started on broad-spectrum antibiotics.

“Following the successful resuscitation and the return to a normal heart rate, the baby was sent to the Radiology Department for chest and abdominal radiographs, abdominal ultrasound, and CT of the chest, abdomen, and pelvis. Upon return from the Radiology Department, her temperature was 92.7 °F. The radiologic studies were consistent with a small bowel obstruction. The ED physicians consulted the on-call surgeon, who was unable to come up with a diagnosis. He did not come to the hospital to see the baby but advised the ED team to continue observation and to send the baby to the Pediatric Intensive Care Unit (PICU).”

After being admitted to the PICU, the baby received more boluses of fluid and multiple vasopressors to normalize her unstable blood pressure. On admission to the PICU, an arterial blood gas showed a pH of 6.8 and a base deficit of 30—a severe metabolic acidosis. A repeat hematocrit was 14%, for which blood transfusions were provided. She developed multiorgan failure with anuria, disseminated intravascular coagulopathy (DIC), and sustained hypotension. The following day, the baby was transported to a neighboring medical facility for dialysis. The admitting physicians, however, were concerned about her intestinal status and immediately set in motion preparations for exploratory laparotomy

within 2 hours of admission. At laparotomy, a midgut volvulus was found, with 70% of the intestine being necrotic. Following the surgery, the infant suffered through a prolonged, stormy postoperative course involving seizures, central line infections, and bacterial endocarditis. A brain MRI showed multiple foci of restricted diffusion one month after the surgery. At five months of age, the child was discharged from the hospital with diagnoses of small bowel syndrome and difficult-to-control seizures. Subsequently, she had multiple admissions due to problems with abdominal adhesions, complications from her central line, and intractable seizures. Follow-up at seven years of age revealed that she has severe cerebral palsy, developmental delays, short gut syndrome, cholestasis, and ongoing seizures. She is entirely dependent on parenteral nutrition and will require 24-hour care for the rest of her life.

“The admitting physicians, however, were concerned about her intestinal status and immediately set in motion preparations for exploratory laparotomy within 2 hours of admission. At laparotomy, a midgut volvulus was found, with 70% of the intestine being necrotic.”

The Emergency Department, PICU physicians, and the hospital were sued. The trial resulted in a sizeable verdict for the plaintiff.

Allegations by Plaintiff:

Against the Emergency Department:

- A prolonged period in ED before evaluating blood pressure
- Failure to consider midgut volvulus or any other intraabdominal condition in the differential diagnosis
- Failure to keep baby euthermic
- Failure to perform a timely exploratory laparotomy
- Failure to stabilize in the ED
- Transporting infant to Radiology Dept before stabilizing
- Failure to order upper gastrointestinal examination

Against the Pediatric Intensive Care Unit physicians, including surgeon:

- Failure to consider midgut volvulus or other intraabdominal conditions in the differential diagnosis
- Failure to order upper gastrointestinal examination
- Failure to perform a timely exploratory laparotomy
- Failure to timely transport to another facility when the surgeon declined to do an exploratory laparotomy

Positions taken by the defense:

- Signs of volvulus were not present.
- Her abdominal distension was secondary to an ileus from sepsis or trauma.
- She was not stable enough to take to surgery.

She was not stable enough to do an upper gastrointestinal series.

Concern for aspiration if UGI were performed.

Her GI and neurologic sequelae were not preventable; they were secondary to a lack of blood flow (ischemia) during her cardiac arrest.

The differential diagnosis included sepsis, liver protein allergy syndrome, abdominal distension from postcardiac arrest, and volvulus.

Everyone met the standard of care.

Discussion:

General:

Rotational anomalies of the gastrointestinal system occur due to an arrest of normal rotation and fixation of the intestinal tract in the abdomen. In the normal course of embryonic development, between 6 and 12 weeks of gestation, the gastrointestinal tract undergoes two definable, independent, 270-degree counterclockwise rotations. The first rotation involves the duodenojejunal junction around the axis of the superior mesenteric artery, and the second involves the ileocolic junction around the same axis. Under normal circumstances, the bowel does not twist, obstruct, or compromise its blood supply. Malrotation, however, does occur in about 1 in 6,000 live births. Sixty-two percent of these children have an associated anomaly, most being GI-related, but there may be concurrent congenital heart disease, especially heterotaxy syndrome and Cornelia de Lange syndrome.

“Rotational anomalies of the gastrointestinal system occur due to an arrest of normal rotation and fixation of the intestinal tract in the abdomen. In the normal course of embryonic development, between 6 and 12 weeks of gestation, the gastrointestinal tract undergoes two definable, independent, 270-degree counterclockwise rotations. The first rotation involves the duodenojejunal junction around the axis of the superior mesenteric artery, and the second involves the ileocolic junction around the same axis.”

Intestinal malrotation is prone to midgut volvulus, thereby causing intestinal obstruction, leading to ischemia and necrosis and requiring emergent surgical intervention. Rare instances of in-utero midgut volvulus have been reported in the literature and carry a high mortality, given the difficulty in establishing a diagnosis prior to the development of signs of intestinal ischemia and necrosis. However, more recent advancements in imaging and increasing awareness have made it possible to diagnose malrotation prenatally, raising the question of optimal timing of delivery, especially in cases of prenatally diagnosed midgut volvulus. Failing a prenatal diagnosis, the newborn may present

at birth with abdominal distension and the need for emergency care and operation. Malrotation may exist without volvulus or compromise. Non-emergent malrotation may present in older children or adults; they are found during an evaluation for intermittent chronic pain or vague GI symptoms or as an incidental finding on upper gastrointestinal contrast studies, about 2/1000.

“Intestinal malrotation is prone to midgut volvulus, thereby causing intestinal obstruction, leading to ischemia and necrosis and requiring emergent surgical intervention.”

Prenatal Detection:

Advances in ultrasound imaging have facilitated the intrauterine diagnosis of malrotation, which demands deciding on the optimal timing of delivery, especially in cases of prenatally diagnosed midgut volvulus. Here, the risks of premature birth must be weighed against the risks of fetal intestinal ischemia and potential fetal demise. Abnormal FHR patterns may assist in the diagnosis of systemic involvement. Ultrasonographic signs can be direct and specific (‘whirlpool sign,’ ‘twining sign,’ ‘coffee bean sign’) or indirect and non-specific (abdominal mass, dilated bowel loops, pseudocysts, ascites, absence of abdominal peristalsis, polyhydramnios, echogenic bowel). Early suspicion of intestinal volvulus allows the clinician to refer the patient to a tertiary center for confirmation of the diagnosis and pursue appropriate follow-up.

Presentation:

Several variations of malrotation exist, which may present with different clinical pictures. An acute presentation may be due to duodenal obstruction. Here, the patient usually presents with vomiting, especially bilious, hemodynamic instability from hypovolemia and/or septic shock. Physical examination includes abdominal distension and tenderness, and at times, hematochezia secondary to bowel ischemia and possible necrosis—more than half of the patients with duodenal obstruction present in the first month of life. The prognosis of babies with intestinal volvulus depends on the length of the segment involved, the level of intestinal obstruction, the presence of meconium peritonitis, and the gestational age at birth.

“The diagnosis of intestinal malrotation should be suspected in any infant who presents with bilious emesis, acute abdominal distension or tenderness, or evidence of duodenal obstruction on a radiograph. Depending on the completeness and duration of the obstruction, hemodynamic deterioration soon follows. Midgut volvulus is a life-threatening condition that requires emergent evaluation and intervention.”

The diagnosis of intestinal malrotation should be suspected in any infant who presents with bilious emesis, acute abdominal distension or tenderness, or evidence of duodenal obstruction on a radiograph. Depending on the completeness and duration of the obstruction, hemodynamic deterioration soon follows. Midgut volvulus is a life-threatening condition that requires emergent evaluation and intervention. No additional evaluation is warranted if the patient has volvulus with signs of systemic decompensation. The patient should be rapidly resuscitated and immediately taken to surgery for exploration. Midgut volvulus with obstruction is one of the few pediatric emergencies in which the need for emergency surgery takes precedence over the need for hemodynamic stability. Resuscitation will have to be continued during surgery. As the operation gets underway, intravenous fluids continue, bladder and stomach catheters can be placed, blood is drawn for type and cross-match, and broad-spectrum antibiotics are administered. Time is critical. In patients with malrotation without an obstruction, urgency is somewhat less.

“No additional evaluation is warranted if the patient has volvulus with signs of systemic decompensation. The patient should be rapidly resuscitated and immediately taken to surgery for exploration. Midgut volvulus with obstruction is one of the few pediatric emergencies in which the need for emergency surgery takes precedence over the need for hemodynamic stability. Resuscitation will have to be continued during surgery.”

Older children may present less dramatically, if at all. Symptoms may be present over hours or days or as chronic intermittent pain over weeks, months, or years. Intermittent vomiting, chronic diarrhea, malabsorption, or failure to thrive comprise other potential presenting symptoms in the pediatric population.

Images for Diagnosis:

If the pediatric patient is hemodynamically stable, the diagnosis should be confirmed by radiologic evaluation, typically beginning with **plain radiographs**. These are not diagnostic but are valuable as a screening tool to exclude perforation and expedite surgical exploration. The plain radiograph may show a nasogastric tube extending into an abnormally positioned duodenum or slow a “double-bubble,” signifying duodenal obstruction. Partial obstruction of the duodenum causes distension of the stomach and the first part of the duodenum. Once perforation is excluded by left lateral decubitus or cross-table lateral films, plain radiographs are followed by an **upper gastrointestinal (UGI) contrast** series to visualize the duodenum. This is specific and sensitive for the diagnosis of malformation and volvulus. The UGI will show a misplaced duodenum with the ligament of Treitz on the right side of the abdomen, a duodenum with a “corkscrew” appearance, and duodenal obstruction, which may appear similar to that seen with duodenal atresia or may present with a “beak” appearance if a volvulus is present. An UGI is the gold standard for imaging to diagnose malrotation.

“If the pediatric patient is hemodynamically stable, the diagnosis should be confirmed by radiologic evaluation, typically beginning with plain radiographs. These are not diagnostic but are valuable as a screening tool to exclude perforation and expedite surgical exploration. The plain radiograph may show a nasogastric tube extending into an abnormally positioned duodenum or show a “double-bubble,” signifying duodenal obstruction. Partial obstruction of the duodenum causes distension of the stomach and the first part of the duodenum. Once perforation is excluded by left lateral decubitus or cross-table lateral films, plain radiographs are followed by an upper gastrointestinal (UGI) contrast series to visualize the duodenum. This is specific and sensitive for the diagnosis of malformation and volvulus. The UGI will show a misplaced duodenum with the ligament of Treitz on the right side of the abdomen, a duodenum with a “corkscrew” appearance, and duodenal obstruction, which may appear similar to that seen with duodenal atresia or may present with a “beak” appearance if a volvulus is present. An UGI is the gold standard for imaging to diagnose malrotation.”

Historically, a barium enema was considered the procedure of choice in these circumstances, but it has several limitations. Most importantly, the cecum can be in the proper position in the patient with duodenojejunal malrotation, and the latter can be missed. As the risk for midgut is related to duodenojejunal malrotation and not jejunoileal, the barium enema cannot be depended on to reach the affected portion of the intestines.

If the medical center has an experienced pediatric radiologist available, an **abdominal ultrasound** may be performed as the initial imaging. The findings on newborn ultrasound suggestive of malrotation include: a) the 3rd part of the duodenum is not in

the normal retro-mesenteric position (between the mesenteric artery and the aorta in the retroperitoneal space); b) abnormal position of the superior mesenteric vein; and c) the “whirlpool” sign of volvulus caused by the vessels twisting around the base of the mesenteric pedicle, dilated duodenum indicating duodenal obstruction by Ladd’s bands, duodenal obstruction with distal air. Magnetic resonance imaging (MRI) is more reliable for confirming intestinal malrotation than computed tomography (CT) and avoids ionizing radiation (e.g., pregnant patients). However, experience with this modality is limited, and practical matters such as sedation and length of study limit its usefulness in clinical situations where the diagnosis of volvulus is being entertained. Laparoscopy is a less invasive option than laparotomy for determining the presence of volvulus in equivocal situations.

“The findings on newborn ultrasound suggestive of malrotation include: a) the 3rd part of the duodenum is not in the normal retro-mesenteric position (between the mesenteric artery and the aorta in the retroperitoneal space); b) abnormal position of the superior mesenteric vein; and c) the “whirlpool” sign of volvulus caused by the vessels twisting around the base of the mesenteric pedicle, dilated duodenum indicating duodenal obstruction by Ladd’s bands, duodenal obstruction with distal air.”

Suggested Reading:

1. Montironi R, Tosto V, Quintili D, Crescenzi D, Battistoni GI, Cobellis G, et al. Antenatal Diagnosis and Management of Fetal Intestinal Volvulus: Case Series and Literature Review. *Journal of Clinical Medicine*. 2023;12(14).
2. Olutoye OO, 2nd, Hammond JD, 2nd, Gilley J, Beckman RM, Bulathsinghala M, Keswani SS, et al. Fetal malrotation with midgut volvulus: Prenatal diagnosis and planning. *J Pediatr Surg Case Rep*. 2023;93.
3. Yang L, Chen H, Lv G, Li F, Liao J, Ke L. Evaluation of ultrasonography in fetal intestinal malrotation with midgut volvulus. *Ginekol Pol*. 2022;93(4):296–301.
4. Chen J, Wu D. Prenatal diagnosis of fetal midgut volvulus: a case description. *Quant Imaging Med Surg*. 2022;12(8):4326–30.
5. Sciarrone A, Teruzzi E, Pertusio A, Bastonero S, Errante G, Todros T, et al. Fetal midgut volvulus: report of eight cases. *J Matern Fetal Neonatal Med*. 2016;29(8):1322–7.
6. Schiermeier S, Reinhard J, Westhof G, Hatzmann W. [The significance of electronic CTG for intrauterine volvulus in the 32nd week of gestation]. *Z Geburtshilfe Neonatol*. 2008;212(1):30–3.

7. Aboagye J, Goldstein SD, Salazar JH, et al. Age at presentation of common pediatric surgical conditions: Reexamining dogma. *J Pediatr Surg* 2014; 49:995.
8. American College of Radiology. ACR appropriateness criteria. Vomiting in infants up to 3 months of age. <http://www.acr.org/~media/ACR/Documents/AppCriteria/Diagnostic/VomitingInInfantsUpTo3MonthsOfAge.pdf> (Accessed on August 06, 2012).
9. Zhang W, Sun H, Luo F. The efficiency of sonography in diagnosing volvulus in neonates with suspected intestinal malrotation. *Medicine (Baltimore)* 2017;96:e8287

Disclosures: *There are no reported disclosures*

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



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

2024

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

which is especially dangerous for babies younger than 3 months



www.nationalperinatal.org/rsv

PREEMIE BOOK ON SALE

ONCE UPON A PREEMIE

BY JENNÉ JOHNS
AUTHOR | SPEAKER | ADVOCATE



OU
AP

“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

Premie Family



wgts 91.9
Washington, D.C.

HEALTH & WELLNESS GUIDE
heart&soul

TARAJI P. HENSON
A GLIMPSE INTO TARAJI P. HENSON'S HEART & SOUL

HOLIDAY PARTIES MADE SIMPLE

THE ONCE UPON A PREEMIE STORY

ESSENCE PLANNING



PEBBLES of Hope
Using the world's smallest babies to lighten lives

MAJIC
102.3 92.7
The Real Sound of the DMV

WDAS
105.3 FM

CBS RADIO

AVAILABLE FOR \$12.99 ON AMAZON OR ONCEUPONAPREEMIE.COM

Still a Premie?

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

But that's not every preemie's story.

Born between 34 and 36 weeks' gestation?

STILL A PREMIE

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



Jaundice



Feeding issues



Respiratory problems

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



Born preterm at a "normal" weight?

STILL A PREMIE

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

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

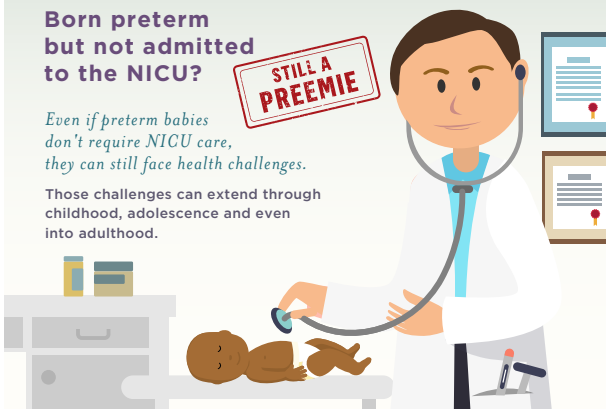


Born preterm but not admitted to the NICU?

STILL A PREMIE

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

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



Some Premies



Will spend weeks in the hospital



Will have lifelong health problems



Are disadvantaged from birth

All Premies



Face health risks



Deserve appropriate health coverage



Need access to proper health care

NCJFH National Coalition for Infant Health
Protecting Access for Premature Infants through Age Two
www.infanthealth.org

How to Care for a Baby with Signs of Withdrawal

Use the Right Words



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

Treat Us as a Dyad



Parents and babies need each other. Help us bond. Whenever possible, provide my care alongside my parents and teach them how to meet my needs.

Support Rooming-In



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

Promote Kangaroo Care



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

Try Non-Pharmacological Care



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

Provide Lactation Support



Human milk is important to my gastrointestinal health and breastfeeding is recommended when my parent is HIV-negative and receiving medically-supervised care. Help my family reach our pumping and feeding goals.

Treat My Symptoms



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



www.perinatalhormoreduction.org



www.nationalperinatal.org



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.



Eunice Kennedy Shriver National Institute
of Child Health and Human Development



Medical News, Products & Information

Compiled and Reviewed by Sandeep Lankireddy, BA, OMS IV

Section celebrating 50 years of advocacy, improving newborn health

NEWS PROVIDED BY

[American Academy of Pediatrics](#)

by Steve Schering, Staff Writer

March 1, 2024

The AAP Section on Neonatal-Perinatal Medicine (SONPM) is celebrating 50 years of improving the health of newborns and supporting the neonatology community on March 23 during its annual workshop in Scottsdale, Ariz.

SONPM is the largest specialty subgroup of the AAP with more than 4,800 members, including neonatologists, nurse practitioners and other licensed health care providers.

The section traces its origins to the early 1970s when L. Joseph Butterfield, M.D., submitted a resolution to the Colorado Chapter to petition for the creation of a Section on Perinatal Pediatrics. After approval by the AAP Board of Directors, seven neonatologists from Arizona, Colorado, New Mexico and Utah met informally to discuss their experiences in setting up regional programs in the newly emerging field of neonatal medicine. They concluded that either an independent organization for neonatologists should be formed or a niche for neonatologists within the AAP should be established.

“The first meeting was in 1974 and in 1976, the core group decided to structure its professional home within the AAP,” said Lily J. Lou, M.D., FAAP, past chair of SONPM.

In 2015, the Section on Perinatal Pediatrics was renamed the Section on Neonatal-Perinatal Medicine.

SONPM has prioritized member engagement. Its special interest groups have grown to over a dozen, including Women in Neonatology, Trainees and Early Career Neonatologists, Mid-Career Neonatologists, Well-Established Career Neonatologists, All Pathways and groups focused on equity, quality metrics and clinical leadership.

“We’ve supported a lot of activity over the past few years,” Dr. Lou said. “Our advocacy committee is really robust, and we do things like advise on neonatal legislation (such as access to donor milk), author journal articles on neonatal advocacy topics and provide scholarships to attend the AAP Advocacy

Conference. One year, we had 40 neonatologists at the Advocacy Conference.”

Over the decades, SONPM has won numerous awards, including the AAP Section Innovation Award for its group that supports trainees and for its podcast Cross Section. It also took home the Outstanding Section Award for Advocacy in 2022 and 2023 and received recognition for its National Reg-



NPA 2024 CONFERENCE

Towards —

Trauma-Responsive Perinatal Care

Featured Presentation

Healing Together

Utilizing Peer Support After Adverse Events

with —

Angela Chaudhari MD

May 15-17 in Anaheim California

npaconference.org

 **JOIN US**

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

Please submit your manuscript to: LomaLindaPublishingCompany@gmail.com

istry for the Surveillance and Epidemiology of Perinatal COVID-19, which provided information on the effects of perinatal SARS-CoV-2 and how to continue necessary care of newborns during the pandemic.

“We were recognized for the COVID registry, which had included 42 states, Washington, D.C., and Puerto Rico,” Dr. Lou said. “Within weeks, we were back to caring for babies and mothers together, allowing breastfeeding and allowing skin-to-skin care. We were innovative about sharing information. We not only collected the data, but we put it on our website every Friday so people could act on that real-time data.”

The section’s goals include providing educational offerings for postgraduate trainees, neonatologists and members of the perinatal delivery team; fostering the development of evidence-based practice guidelines and outcomes research to identify best practice styles for members; and supporting research efforts to foster the health and well-being of the fetus, pregnant mother and newborn infant.

“Much that the AAP currently does for newborns was born from the efforts of neonatal section members,” said SONPM Chair-elect Clara Song, M.D., FAAP. “The Neonatal Resuscitation Program, Helping Babies Breathe and Survive programs, Organization of Neonatal-Perinatal Training Program Directors and NeoPREP course all originated from the neonatal section and its members. NeoPREP is the largest and longest running PREP course, and we celebrated its 30th anniversary this January.”

SONPM members also can apply for Strategic Priority Grants. Projects supported by the grants include development and dissemination of multicultural and bilingual family education videos on AAP-recommended discharge practices for high-risk infants; promotion of sustainable, equitable, diverse and

inclusive staffing models for neonatologists; support for the development of physician scientists in the neonatal-perinatal medicine field; development and evaluation of a women in neonatology mentorship program; and improving data capture for race and ethnicity in the neonatal intensive care unit.

“All other pediatric subspecialties may belong to some kind of larger umbrella organization,” Dr. Song said. “We have no other neonatal-perinatal association. The AAP is our professional home.”

NT

Study: Black, Hispanic children have higher odds of hospital safety issues than white children

NEWS PROVIDED BY

[American Academy of Pediatrics](#)

by Melissa Jenco, News Content Editor

February 12, 2024

Black and Hispanic children are more likely to experience safety issues in hospitals than white children, a new study found.

Children with public insurance also have higher rates of safety issues compared to children with private insurance, according to “Disparities in Racial, Ethnic, and Payer Groups for Pediatric Safety Events in US Hospitals” (Parikh KP, et al. *Pediatrics*. Feb. 12, 2024).

“Furthering our understanding of disparities in pediatric safety events is a critical, foundational step to ultimately testing and implementing interventions to improve patient safety for historically disadvantaged children and achieve health equity for all children,” authors wrote.

The team analyzed data on 5.2 million hospital patients under 18 years of age from the 2019 Kids’ Inpatient Database. They looked at the odds of seven pediatric-specific quality indicators — accidental puncture or laceration, iatrogenic pneumothorax, postoperative hemorrhage or hematoma, postoperative sepsis, postoperative respiratory failure, central venous catheter-related bloodstream infections and neonatal bloodstream infections.

Black patients had significantly higher odds of postoperative hemorrhage or hematoma, postoperative respiratory failure, postoperative sepsis, central venous catheter-related bloodstream infection and neonatal bloodstream infection compared to white patients. The biggest difference between the two groups was seen in postoperative sepsis, for which Black children had an adjusted odds ratio of 1.55.

Hispanic patients had significantly higher odds of postoperative respiratory failure, postoperative sepsis and neonatal bloodstream infections compared to white children. The adjusted odds ratio was 1.34 for postoperative respiratory failure in Hispanic children.

Readers can also follow
NEONATOLOGY TODAY
via our Twitter Feed
[@NEOTODAY](#)

NPA 2024 INTERDISCIPLINARY CONFERENCE
Towards Trauma-Responsive Perinatal Care
JOIN US in Anaheim, California
May 15 - 17
npaconference.org
National Perinatal Association

The National Urea Cycle Disorders Foundation



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

www.nucdf.org | Phone: (626) 578-0833

Odds of iatrogenic pneumothorax were lower for Black and Hispanic children compared to white children, and there were no disparities for accidental puncture/laceration, according to the study.

Medicaid patients had higher rates of all three postoperative conditions as well as central venous catheter-related bloodstream infections compared to those with private insurance. When looking only at children with private insurance, racial disparities persisted.

“It is reasonable ... to consider several plausible factors, including structural racism in the US health care system, clinician bias, insufficient cultural responsiveness, communication barriers, and/or impaired access to high-quality and timely health care,” authors wrote.

They cited several frameworks for addressing health equity that called for examining quality and safety data in depth, partnering with communities and families, and designing and testing equity-focused quality improvement initiatives.

The author of a related commentary said the findings put pediatricians at a crossroads in addressing disparities in health care.

“Despite proudly identifying ourselves as child health advocates, we are letting them down,” the author wrote. “... We must mobilize around this issue, and we

will. For if we don't, we will fail not just our patients but ourselves.”

Addressing racial inequities in health care has been a priority for the AAP, which has created an Equity Agenda, released the policy Eliminating Race-Based Medicine and hired its first chief health equity officer and senior vice president, equity initiatives.

NT

Drug Development for the Treatment of Congenital Cytomegalovirus Infection and Neonatal Enterovirus Infection

Health Care Providers

NEWS PROVIDED BY

[U.S. Food & Drug Administration](#)

Public Virtual Event scheduled for May 7-8, 2024. More details on FDA website.

DESCRIPTION AND SUMMARY

The Food and Drug Administration is holding a public, two-day workshop entitled “Devel-

opment of Drugs for the Treatment of Congenital Cytomegalovirus (CMV) Infection and Neonatal Enterovirus Infection.” The purpose of the public workshop is to discuss clinical trial design considerations, including endpoints, study population, and comparators, related to the development of drugs for the treatment of congenital CMV infection and neonatal enterovirus infection.

MEETING MATERIALS

All meeting materials—including agenda, panelist affiliations/disclosures, speaker slides, workshop recording, and transcript—will be posted shortly before and/or after the completion of the workshop. Please check this page regularly for updates. Transcripts of the workshop will be posted here approximately 30-45 days after the completion of the workshop.

ONLINE ATTENDANCE (WEBCAST)

This virtual public workshop will be webcast via Zoom. You will receive a link for viewing via email, or you can check back here for the link on the day of the event.

For more information about Zoom, please visit this [Zoom Support Webpage](#) [External Link Disclaimer](#).

EVENT POINT OF CONTACT

Antoinette Ziolkowski

Center for Drug Evaluation and Research
Food and Drug Administration



Make a Plan for your...
Perinatal
Mental Health

Let's work together to improve support for families.
nationalperinatal.org/mental-health

FREE TOOLS

QR code linking to free tools.

10903 New Hampshire Ave.
Bldg. 22, Room 6221
Silver Spring, MD 20993-0002
301-796-1300

REGISTRATION

This meeting will be held in virtual format only. Register in advance for this webinar using the Zoom link [External Link Disclaimer](#). After registering, you will receive a confirmation email containing information about joining the webinar for both days of the meeting.

NT

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

NT

Children surpass a year of HIV remission after treatment pause

NEWS PROVIDED BY

[National Institute of Health](#)

March 6, 2024

NIH-funded trial shows promising outcomes with treatment started promptly after birth.

Four children have remained free of detectable HIV for more than one year after their antiretroviral therapy (ART) was paused to see if they could achieve HIV remission, according to a presentation today at the 2024 Conference on Retroviruses and Opportunistic Infections (CROI) in Denver. The children, who acquired HIV before birth, were enrolled in a clinical trial funded by the National Institutes of Health in which an ART regimen was started within 48 hours of birth and then closely

monitored for drug safety and HIV viral suppression. The outcomes reported today follow planned ART interruptions once the children met predefined virological and immunological criteria.

“These findings are clear evidence that very early treatment enables unique features of the neonatal immune system to limit HIV reservoir development, which increases the prospect of HIV remission,” said NIAID Director Jeanne Marrazzo, M.D., M.P.H. “The promising signals from this study are a beacon for future HIV remission science and underscore the indispensable roles of the global network of clinicians and study staff who implement pediatric HIV research with the utmost care.”

Advances in ART have significantly reduced perinatal HIV transmission, when a child acquires HIV while in the uterus, during birth, or through consumption of milk from a lactating person. If transmission does occur, children must take lifelong ART to control replication of the virus and protect their immune systems from life-threatening complications. Typically, inter-

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

Join  NPA

nationalperinatal.org/mental_health

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. Now there are new vaccines for RSV for adults and antibody shots for babies that can help protect them.



WE CAN HELP PROTECT EACH OTHER.



ruption in treatment will lead to rapid resumption of HIV replication and detectable virus in the blood within weeks. However, in 2013, a case report described an infant born with HIV in Mississippi who initiated treatment at 30 hours of life, was taken off their ART at 18 months of age and remained in remission with no evidence of detectable HIV for 27 months.

Building on the observation that very early ART initiation may limit HIV's ability to establish reservoirs of dormant virus in infants researchers began an early-stage proof-of-concept study of very early ART in infants conducted in Brazil, Haiti, Kenya, Malawi, South Africa, Tanzania, Thailand, Uganda, the United States, Zambia, and Zimbabwe. Previous publications from the clinical study showed that ART initiated within hours of birth was safe and effective at achieving and maintaining HIV suppression. A small subset of children achieved sustained HIV suppression and met other predefined study criteria for interrupting ART. These criteria include a durable absence of HIV replication from 48 weeks of ART initiation onward, no detectable antibodies near the time of ART interruption, and having a CD4+ T-cell count (the main immune cell target of HIV) similar to those of a child without HIV. Children who met these criteria, were older than 2 years and had stopped consuming human milk were eligible to interrupt ART.

Data presented at CROI summarized the experience of six children, all aged 5 years, who were eligible for ART interruption with close health and safety monitoring. Four of the six children experienced HIV remission, defined as the absence of replicating virus for at least 48 weeks off ART. One of them experienced remission for 80 weeks, but then their HIV rebounded to detectable levels. Three others have been and remain in remission for 48, 52 and 64 weeks, respectively. However, two children did not experience remission, and their HIV became detectable within three and eight weeks after ART interruption, respectively. The two children whose HIV returned at eight and 80 weeks experienced mild acute retroviral syndrome (ARS) with symptoms including headache, fever, rash, swollen lymph nodes, tonsillitis, diarrhea, nausea and vomiting. One child had markedly low white blood cells, which are a type of immune cell. Both the ARS and white blood deficiency resolved either prior to or soon after restarting ART. The three children who experienced viral rebound

resumed HIV suppression within six, eight and 20 weeks of restarting ART.

"This is the first study to rigorously replicate and expand upon the outcomes observed in the Mississippi case report," said lead study virologist Deborah Persaud, M.D., professor of pediatrics at the Johns Hopkins University School of Medicine, and director of the Division of Pediatric Infectious Diseases at Johns Hopkins Children's Center, Baltimore. "These results are groundbreaking for HIV remission and cure research, and they also point to the necessity of immediate neonatal testing and treatment initiation in health care settings for all infants potentially exposed to HIV in utero."

The latest findings show that very early ART initiation has varying but favorable outcomes on control of HIV. While ARS was generally mild and resolved in both cases, the authors cautioned that close monitoring for this potential event is needed in ongoing and future HIV remission research involving ART interruption. The children participating in this study took ART regimens with medicines that have been part of standard first-line therapy for decades. Further research is planned or underway to understand how these observations could differ in children receiving newer, more potent generations of antiretroviral drugs, and to identify biomarkers to predict the likelihood of HIV remission or rebound following ART interruption. Additional studies are also needed to understand the mechanisms by which neonatal immunity and very early ART initiation limited the formation of HIV reservoirs and contributed to the remission observed in this study.

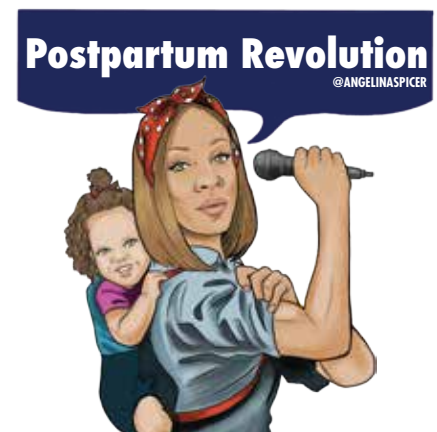
"ART shifted the HIV care paradigm, but treatment is a long road, especially for children as lifetime HIV survivors" said Adeodata Kekitiinwa, MBChB, MMed, emeritus clinical associate professor in the Department of Pediatrics at Baylor College of Medicine, study investigator of record and clinical research site leader in Kampala, Uganda. "This trial takes us a step closer to realizing another paradigm shift in which our approach to ART could be so effective that it might be used for a season of life, rather than its entirety."

This ongoing research is being conducted by the International Maternal Pediatric Adolescent AIDS Clinical Trials (IMPAACT) Network, which is funded by the National Institute of Allergy and Infectious Diseases

(NIAID), part of the National Institutes of Health, with co-funding from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), and the National Institute of Mental Health (NIMH).

The research was led by study co-chairs Ellen Chadwick, M.D., professor of pediatrics at Northwestern University Feinberg School of Medicine, Chicago, and Yvonne Bryson, M.D., professor of pediatrics at the David Geffen School of Medicine and Mattel Children's Hospital at UCLA, and director of the Los Angeles Brazil AIDS Consortium. Dr. Kekitiinwa, Boniface Njau, M.S., study coordinator at Kilimanjaro Christian Medical Centre in Tanzania and Teacler Nematadzira, MBChB, site investigator at the University of Zimbabwe-University of California San Francisco Collaborative Research Program continue to lead the study teams overseeing care of children who experienced HIV remission. Jennifer Jao, M.D., M.P.H., professor of pediatrics at Northwestern University Feinberg School of Medicine has since assumed a study co-chair role with Dr. Chadwick. The full IMPAACT P1115 study team consists of hundreds of staff across 30 NIAID- and NICHD-supported sites in the 11 study countries.

NIH is grateful to the research sites and study participants, and to the families, caregivers, and communities that continue to support their involvement in HIV science.



For more information about the trial, known as IMPAACT P1115, please see ClinicalTrials.gov using the identifier NCT02140255.

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

About the National Institutes of Health (NIH): NIH, the nation's medical research agency, includes 27 Institutes and Centers and is a component of the U.S. Department of Health and Human Services. NIH is the primary federal agency conducting and supporting basic, clinical, and translational medical research, and is investigating the causes, treatments, and cures for both common and rare diseases. For more information about NIH and its programs, visit www.nih.gov.

NT

Assessing the Mechanism of Immunotherapy for Allergy and Allergic Asthma: Effect of Viral Respiratory Infections on Pathogenesis and Clinical Course of Asthma and Allergy

NEWS PROVIDED BY

[U.S. Food and Drug Administration](https://www.fda.gov/)

Principal Investigator: Ronald Rabin, MD

Office / Division / Lab: OVRR / DBPAP / LI

Content current as of: March 6, 2024

General Overview

The nutritional management of neonates with kidney disease is complex. There may be significant differences in nutritional needs based on the duration and cause of kidney dysfunction, including acute kidney injury (AKI) and chronic kidney disease (CKD). Furthermore, the treatment modality, including acute (continuous renal replacement therapy and peritoneal dialysis [PD]) and chronic (intermittent hemodialysis and PD) approaches may differentially affect nutritional losses and dietary needs. In this review, we discuss the pathophysiology of compromised nutrition in neonates with AKI and CKD. We also summarize the existing data and consensus recommendations on the provision of nutrition to neonates with AKI and CKD. We highlight the paucity of data on micronutrient losses and the need for future prospective studies to enhance nutritional supplementation to hopefully improve outcomes in these patients.

One in five Americans have allergies or asthma. Our laboratory regulates biologics intended for diagnosis and treatment of allergies and asthma (most commonly allergenic extracts for "allergy shots"). Only a few allergenic extracts are standardized for potency to insure consistent dosing among manufactured lots of allergenic extracts. Our lot release lab provides reagents to manufacturers to insure uniform potency testing, and validates manufacturers' potency measurements with our own. Currently, allergy extracts contained unmodified allergens, which modify hay fever or asthma, but are not effective for treatment of food allergy, and risk dangerous

Human Milk
is made for babies.
#BestMilk

The Composition of **HUMAN MILK** 200+ components
Made for Babies
90% water
fats (lipids, fatty acids)
carbohydrates (lactose, oligosaccharides)
proteins (casein, whey, lactoferrin)
vitamins, minerals
hormones
antibodies
stem cells

Let's help families meet their goals.
nationalperinatal.org/feeding-our-babies

FREE TOOLS

allergic reactions. FDA is evaluating novel products for treatment of food and environmental allergy, many of which different mechanisms of action. Our research program insures that scientists and reviewers have the appropriate knowledge base to evaluate these novel therapies, and strives to expand the number of allergenic extracts that are standardized for potency.

Our laboratory has two overall projects: The first project explores environmental factors that trigger allergic diseases and asthma. One factor is respiratory syncytial virus (RSV). RSV may infect lower airways of infants, which increases disease severity and may trigger asthma. We seek to understand why, in addition to their location, infection of lower airways with RSV triggers asthma. We use in vitro culture systems to study biological responses to RSV by cells from the upper and lower airways. In particular, we focus on the balance between expression and responses to interferons (IFN), which protect cells from infection, and pro-inflammatory cytokines, which may be detrimental to infection. We propose that characterizing cellular responses to RSV infection will reveal novel insights towards the pathogenesis of allergic asthma.

Our second project is to characterize house dust mite (HDM) allergens. Indoor allergens, including HDM are a second environmental factor that triggers allergic diseases and asthma. HDM allergy is complex because as many as 32 proteins contribute to the allergic response; how many are clinically important is not known. Allergenic extracts used for diagnosis or treatment of HDM allergy may vary widely in their content of allergenic proteins depending on differences in methods of culturing HDM, source materials, or extraction methods. The current method of standardization of HDM extracts for potency does not measure the concentration of individual allergens and cannot detect qualitative or differences in individual allergen content among HDM allergen extracts. We propose that measurement of all clinically relevant allergenic proteins may reveal clinically important differences among HDM preparations that may inform patient care and provide direct benefit to public health. Current methods aren't feasible, so we are developing the use of mass

spectrometry to biochemically characterize and standardize HDM extracts. We believe that standardization of HDM extracts by MS will provide a benchmark to standardize other complex allergenic extracts, thus expanding the number of extracts that are standardized for potency.

Scientific Overview

Asthma and atopy are quintessential diseases for which genetics loads the gun and environment pulls the trigger. GWAS studies reveal associations of asthma with polymorphisms in genes associated with type 2 adaptive responses and the epithelial cell barrier. Two viral pathogens that cause the common cold are also environmental factors associated with asthma: respiratory syncytial virus (RSV) and rhinovirus (RV). Both RSV and RV can infect lower airways, and asthma concurrent with either virus is associated with poor expression of types I or III interferons (IFN).

Our laboratory uses in vitro tissue culture models of respiratory epithelium to compare the cellular factors that determine mild versus severe RSV infection, and which components of the IFN response locally contain RSV infection. Human type I IFNs include IFN and twelve subtypes of IFN-alpha, all of which signal through the ubiquitously expressed IFNAR1/2 receptor complex. There are four type III IFNs, all of which signal through a receptor dimer comprised of IFNLR, selectively expressed by cells of epithelial lineage, and IL10RB. Although they signal through distinct receptors, types I and III IFN share a common signaling pathway that induces autocrine and paracrine expression of more than 600 genes, collectively referred to as interferon response genes (ISG). Many ISGs code for proteins that directly inhibit viral replication and protect against spread of viral infection to neighboring cells.

In addition to IFNs, viral pathogens simultaneously induce expression of NF-kB dependent pro-inflammatory cytokines. For example, IL-6 drives STAT3 mediated IL-17 expression, which in turn drives canonical NF-B mediated expression of IL-6, CXCL8 and CCL2--a positive feedback

loop that contributes to immune-mediated pathology of viral lower respiratory infections. Because the same pattern recognition receptors (RIG-I or MDA5) activate IFN and proinflammatory cytokine expression, they may be considered a point of bifurcation. Properly balanced, viral infection is locally contained. Improperly balanced, prolonged expression of IFNs or more likely, high expression of pro-inflammatory cytokines mediates auto-inflammatory tissue destruction and promotes allergic sensitization or asthma.

Of interest, some allergenic proteins mimic or enhance the pro-inflammatory response. For example, Der p 2, a house dust mite (HDM) allergen, enhances TLR signaling and NF-kB activation in response to LPS. Because they are ubiquitous in American homes, infants are exposed to HDM early. In genetically susceptible individuals, HDM are among the first environmental allergens to elicit allergic disease, and may initiate the allergic march towards multiple allergies and allergic asthma.

We focus on factors that determine successful local immunity to respiratory viruses, and that shift the response from one that is primarily anti-viral towards a one that is pro-inflammatory. Our Specific Aims are:

- Define cellular factors that direct the balance between expression of IFN versus pro-inflammatory cytokines in response to viral infection.
- Define non-redundant functions of types I versus type III IFNs, and of individual IFN subtypes
- Mass Spectrometry for characterization and rapid, quantitative, and definitive standardization of potency of house dust mite allergenic extracts

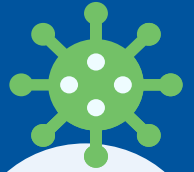
For a full list of relevant publications, please visit source [here](#).

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

Keeping Your Baby Safe from respiratory infections



RSV
COVID-19
colds
flu

How to protect your little ones from germs and viruses

Cold and flu season can be dangerous - 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 hand sanitizers.



Limit Contact with Others

- Stay home when you can.
- Avoid sick people.
- 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

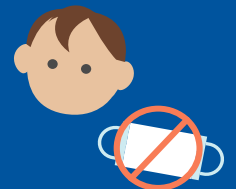
Vaccinations save lives. Protecting your baby from RSV, COVID-19, flu, and pertussis lowers their risks for complications from respiratory infections.



WARNING

Never Put a Mask on Your Baby

- Because babies have smaller airways, a mask can make it harder for them to breathe.
- Face masks and their straps pose a risk of suffocation and strangulation.
- Remember, a baby can't remove their mask if they're having trouble breathing.



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 viruses from spreading.
- Watch out for symptoms like fever, confusion, or trouble breathing.
- Ask for help caring for your baby and yourself while you recover.



2024

We can help protect each other.
www.nationalperinatal.org/rsv



When do new therapies or medications become 'standard of care'?

NEWS PROVIDED BY

[American Academy of Pediatrics](#)

by James P. Scibilia, M.D., FAAP, and Robert M. Turbow, M.D., J.D., FAAP

March 1, 2024

Malpractice actions require four components: duty to an individual, breach of care, causation and damages. In simplest terms, a breach of care means the "standard of care" was not met due to what a practitioner did or failed to do.

Though standard of care is a legal term and is decided by the court, it generally is described as the care that would be rendered by a reasonable physician of similar training given a similar patient and clinical circumstance.

So when does new technology or a new therapeutic agent become the standard?

Consider the adoption of therapeutic hypothermia for infants with hypoxic-ischemic encephalopathy. Initially, hypothermia protocols were instituted with variable recommendation depending on the patient, institution and provider. In some parts of the country, the procedure was adopted rapidly despite many unknowns. In many areas, however, the therapy was not available or used routinely.

From approximately 2005-'12, this therapy evolved from experimental into the widely accepted standard of care (Cornette L. Facts Views Vis Obgyn. 2012;4:133-139). By 2012, a growing body of data suggested benefits outweighed risks, and it largely was considered negligent not to offer (or transfer a baby for) therapeutic hypothermia.

Now, the therapy essentially has universal acceptance for qualifying asphyxiated newborns. The increase in acceptance and acknowledgment of the science of hypothermia has created a more universal

expectation for delivery of this care. In less than 10 years, therapeutic hypothermia shifted from an experimental therapy to the purported standard of care.

The issue of standard of care has been brought into sharper focus with the recent release of nirsevimab to protect babies from respiratory syncytial virus (RSV) disease and guidelines for its use from the AAP and Centers for Disease Control and Prevention.

Although recommended for all infants younger than 8 months born during or entering their first RSV season, infrastructure is not in place or supplies adequate to distribute the product comprehensively. In addition, questions remain regarding the equitable distribution of nirsevimab to minoritized communities, parental acceptance of this new product and broader efficacy and safety.

Given these issues, universal use of nirsevimab recommended by national guidelines would not be the standard of care.

Treatment or medication guidelines by even the most reputable organizations would not be considered a national standard of care unless the treatment/medication is universally available and accepted in clinical practice. Regional variability also is considered when determining standard of care.

Until a therapy is broadly available; accepted as safe, effective and beneficial; and has known and acceptable side effects, it is problematic to describe that therapy as the standard of care.

Take-home points

- In a malpractice suit, standard of care is determined when a verdict is rendered in court.
- National guidelines do not, on their own, create a standard of care.
- New therapies that are considered experimental may gain national acceptance rapidly.
- Regional variations may affect what constitutes a standard.
- Standard of care generally is based on a reasonably prudent standard

performed by a physician of similar training in the same clinical situation.

Dr. Scibilia is chair of the AAP Committee on Medical Liability and Risk Management (COMLRM). Dr. Turbow is a member of COMLRM.

NT

OPIOIDS and NAS

When reporting on mothers, babies, and substance use

LANGUAGE MATTERS



I am not an addict.

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



I was exposed to opioids.

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



NAS is a temporary and treatable condition.

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



My mother may have a SUD.

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



My potential is limitless.

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

Learn more about Neonatal Abstinence Syndrome at www.nationalperinatal.org



newly validated

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

7- Module Online Course in NICU Staff Education



National Perinatal Association and NICU Parent Network

mynicunetwork.org

REGISTER

\$675 NPA MEMBERS
get \$100 off

\$250 STUDENT/PARENT

* includes continuing ed credits

NPA's ANNUAL INTERDISCIPLINARY CONFERENCE



Towards

Trauma-Responsive Perinatal Care



 WHEN:

May 15 - 17

 WHERE:



**Sheraton Park
Hotel** in Anaheim,
California

 National
Perinatal
Association

* Continuing Education credits available at
no additional cost through our joint provider

WWW.NPACONFERENCE.ORG



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

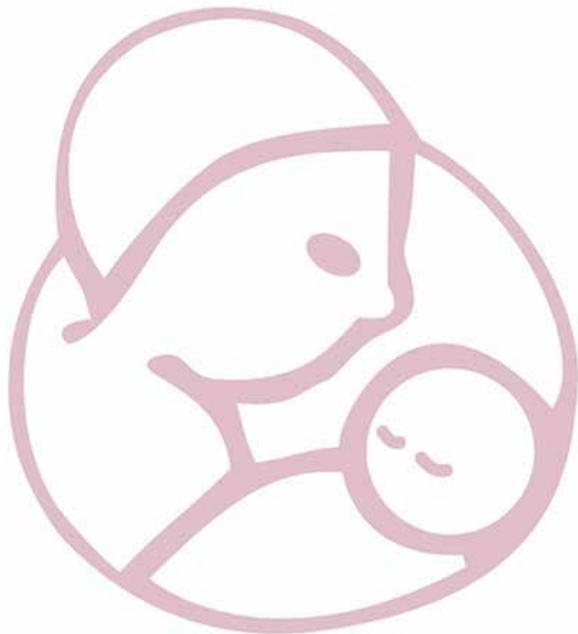
PAC/LAC is an accredited provider of continuing education by Accreditation Council for Continuing Medical Education / Institute for Medical Quality, the California Board of Registered Nursing, the California Association of Marriage and Family Therapists, the National Commission for Health Education Credentialing,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



National Perinatal Association
and NICU Parent Network
mynicunetwork.org

Section on Neonatal-Perinatal Medicine Update – Abstracts, Scholarships, and PAS

Munish Gupta MD, MMSc, FAAP

Dear All,

We have a few announcements and updates to share. List of announcements if followed by details on each.

1. Call for Abstracts – SONPM Program at AAP National Conference and Exhibition (NCE)
2. SONPM Scholarships Available for the 2024 AAP Advocacy Conference
3. Neonatology sessions at PAS?

“We will accept abstracts describing original research, advocacy projects, QI initiatives, and more. The top 10 abstracts by fellows or residents will receive a best abstract award and \$1,000, and the top two oral presentations by fellows or young investigators will receive a young investigator award and \$1,500.”

Call for Abstracts – SONPM Program at AAP National Conference and Exhibition (NCE)

The 2024 AAP National Conference and Exhibition (NCE) will be from September 27 to October 1 in Orlando. Our SONPM section program will be from September 27 to 29th. As always, one of the highlights of the section program will be abstract presentations in a poster fair and platform presentations. We will accept abstracts describing original research, advocacy projects, QI initiatives, and more. The top 10 abstracts by fellows or residents will receive a best abstract award and \$1,000, and the top two oral presentations by fellows or young investigators will receive a young investigator award and \$1,500. QI presentations that meet certain criteria will be eligible for 25 ABP MOC Part 4 points. Please note that for the SONPM program, we will accept original and adaptation abstracts but not encore (meaning abstracts presented at other meetings are not eligible).

Our section program is a great venue to share your work in an informal setting and get direct feedback from leaders in our field. **Abstracts are now being accepted, with a deadline for submission of April 12, 2024.** More information and the application portal are here: <https://aapexperience.org/abstracts/>.

“This year’s advocacy conference is April 14-16, 2024. We have been fortunate in SONPM to have a long history of active participation in the conference, with numerous vital initiatives supported by the meeting. As in previous years, SONPM offers five scholarships for the meeting, covering registration and \$1,000 in travel expenses.”

SONPM Scholarships Available for the 2024 AAP Advocacy Conference

The annual AAP Advocacy Conference is the anchor of the AAP’s robust efforts to impact national policy around health care for newborns, children, and families. **This year’s advocacy conference is April 14-16, 2024.** We have been fortunate in SONPM to have a long history of active participation in the conference, with numerous vital initiatives supported by the meeting. **As in previous years, SONPM offers five scholarships for the meeting, covering registration and \$1,000 in travel expenses.** Please see the attached letter from Lily Lou and Shetal Shah, chairs of the SONPM Advocacy Committee, for information on the application process. Please note, given a relatively tight timeline, **applications for the advocacy scholarships are due March 14.** Conference details are here: <https://www.aap.org/2024-AAP-Advocacy-Conference>. If you have any questions, contact Lily (lilylou@mindspring.com).

“Several folks suggested we share a list of neonatology-related sessions at PAS. If you have a session at PAS that interests SONPM members, please send details along to me; I will put together a list and share it in a future email. There is nothing against abstracts, but given the sheer number of oral and poster abstract presentations, let us keep this to workshops, scholarly sessions, breakouts, SIGs, pre-conference programs, and receptions.”

Neonatology sessions at PAS?

Several folks suggested we share a list of neonatology-related sessions at PAS. If you have a session at PAS that interests SONPM members, please send details along to me; I will put together a list and share it in a future email. There is nothing against abstracts, but given the sheer number of oral and poster abstract presentations, let us keep this to workshops, scholarly sessions, breakouts, SIGs, pre-conference programs, and receptions.

Munish

Disclosure: There are no reported conflicts.

NT

Corresponding Author



*Munish Gupta MD, MMSc, FAAP
Chair, AAP Section on Neonatal-Perinatal Medicine
Assistant in Medicine, Division of Newborn Medicine
Assistant Professor of Pediatrics, Harvard Medical School
Department of Neonatology
330 Brookline Avenue, Rose Building, 3rd Floor
Boston, Massachusetts 02115
Phone: 617-667-3276
Email: mgupta@bidmc.harvard.edu*

Save the Date!
47th Annual AAP District VIII SONPM Conference

June 20 – 23, 2024
Hosted at the Banff Centre
for Arts and Creativity
Banff, Alberta, Canada

<https://cumming.ucalgary.ca/cme/SONPM>

Image by Rita Taylor, Banff Centre for Arts and Creativity

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



Toronto, Ontario

NICU Follow-Up Club

Saturday, May 4, 2024

12:30 – 2:00 pm

Neurodevelopmental Disability Risks in Children with Tracheostomies and Ventilators

Sarah Sobotka, MD, MSCP

Supporting Development in Infants with Severe BPD: Hospital to Home

Audrey Miller, MD

Preparing an Infant with Severe BPD for Discharge Home: A Family-Centered Interdisciplinary Approach to Optimize Development

Connie Williams, MD, PhD, FRCPC

Moderators: Deborah Campbell, MD, FAAP

Ricki Goldstein, MD, FAAP

Yvette Johnson, MD, FAAP

Raye-Ann DeRegnier, MD, FAAP

Supported by a grant from Abbott

William Silverman, MD Lecture

Sunday, May 5, 2024

10:00-10:45 am

Parent Voices and Evidence-Based Neonatal Care:

Where We've Been and Where We Need to Go


Annie Janvier, MD, FAAP

Rebecca Pearce

Introduction by Munish Gupta, MD, FAAP

Chair, AAP Section on Neonatal-Perinatal Medicine

Sponsored by the AAP Section on Neonatal-Perinatal Medicine



“Even in the middle of taking this course, I could see myself changing the way that I spoke to parents. After taking this course, I am much better at emotionally supporting our NICU families.”

COURSE PARTICIPANT

Learn How Now

validated online NICU staff education

WWW.MYNICUNETWORK.ORG

My NICU Network
My Perinatal Network



+



National Perinatal
Association

NICU Parent
Network

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

Help Our Youth Share Their Story

The International Children's Advisory Network, Inc., (iCAN) is a worldwide network of children's advisory groups, known as Kids Impacting Disease Through Science (KIDS) and Young Persons Advisory Groups (YPAGS). These dedicated youth member groups work in unison around the world to provide a voice for children and families in medicine, research, and innovation. Every year iCAN hosts a summit that brings these groups together in shared experience and camaraderie. iCAN is a tax exempt organization as described in Section 501(c)3 of the Internal Revenue Code.

We want as many children to come to the summit as possible. However, attending the Summit is not always possible for our families who often experience financial hardships. So iCAN pays for lodging, most food, and a transportation stipend in addition to summit activities. As more youth join iCAN, we need your help more than ever! Your tax-deductible donation of \$1,000 will help bring a child to the Summit, to make it possible for that child to share their voice, and to interact with medical professionals and other kids like them. We will acknowledge you as an individual donor or you may dedicate the donation in honor of a loved one, as you wish.



www.icanresearch.org #iCANMakeADifference   



Save the date for our upcoming Neonatal-Perinatal CME Courses!

We've got you covered for
neonatal-perinatal education.

Visit shop.aap.org/live-activities
for the latest updates.

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN



NANT 14

Champions of Neonatal Development



PRE-CONFERENCE

April 11, 2024

MAIN CONFERENCE

April 12-13, 2024



LOCATION

Miramar Beach, FL



Sponsored By: National Association of Neonatal Therapists*

NANT 14

NANT 14 will be held at the Sandestin Golf & Beach Resort, Miramar, FL from April 12 -13, 2024, with the Pre-Conference on April 11, 2024.

[NANT 14 Info](#)

[Submit an Abstract](#)

LOMA LINDA

LLPC

PUBLISHING COMPANY

EST

2018

Genetics Corner: A Term Infant with a Bilateral Cleft Lip and Palate and Coarctation of the Aorta

Robin Dawn Clark, MD

Case Summary:

A genetics consultation was requested for a term male infant with bilateral cleft lip and palate diagnosed at birth. He was transferred to our hospital at 16 days of age for poor feeding and concern for aspiration risk from the birth hospital.

“A genetics consultation was requested for a term male infant with bilateral cleft lip and palate diagnosed at birth. He was transferred to our hospital at 16 days of age for poor feeding and concern for aspiration risk from the birth hospital.”

This baby was born AGA at 40 weeks 0 days gestation by NSVD in the vertex presentation through meconium-stained fluid with aspiration to a 27-year-old primigravida mother. Apgar scores were 1¹, 5⁵, and 8¹⁰. A bilateral cleft lip and palate (complete L cleft lip, incomplete R cleft lip) was appreciated at birth. He had poor tone and no respiratory effort; he did not cry spontaneously at birth. He required positive pressure bag and mask ventilation, but his heart rate remained in the 80s. He was intubated at 2 minutes of life after three attempts. A large quantity of particulate meconium was suctioned from the ET tube. His respiratory effort improved by 10 minutes of life. He was extubated at 12 minutes and brought to the NICU after delivery.

Cord blood gas pH 7.17/BE -4.6. BW 2890 g (16th %ile), BL 50.8 cm (68th %ile), HC 32.5 cm (6th %ile). He was reintubated for 48 hours for meconium aspiration and extubated on the third day of life to a high-flow nasal cannula via Vapotherm at FiO₂ 30%. He could not be weaned off nasal cannula. He received one dose of Curosurf. A respiratory virus panel was negative. He received total parenteral nutrition for five days and was on full feeds by gavage only due to concern for aspiration. An echocardiogram on the day of birth showed a small ASD, PDA, dilated right atrium, right ventricle, and main pulmonary artery. The repeat echocardiogram on the second day of life was unchanged. Blood culture was negative. He received seven days of ampicillin and gentamicin. A chromosome microarray was negative. He was transferred at 16 days of life for further evaluation of poor feeding and concern

for aspiration. Breath sounds were equal and clear. There was no cardiac murmur.

After transport to this NICU, a swallow study was normal at 17 days. An abdominal ultrasound showed minimal central calyceal dilation of both kidneys (UTD P1). The head ultrasound was normal. He had persistent desaturations and could not be weaned off supplemental oxygen, requiring 1L of 23–30% FiO₂. Upon admission at 16 days of age, mean arterial pressure was elevated at 59/42 mmHg, and it remained elevated subsequently: 86/65 at 17 days, 65/27 at 18 days, 69/39 at 19 days, and 65/40 at 20 days.

At 22 days of age, an echocardiogram showed a discrete coarctation of the aorta with narrowing of the isthmus, ~2.8 mm, and a peak gradient of ~29 mmHg in the descending aorta. There was a moderate patent foramen ovale with a left to right shunting, mean gradient ~8 mmHg, persistent left superior vena cava draining to the coronary sinus, and a small apical muscular VSD. The mitral valve was borderline hypoplastic, 7.8 mm (Boston Z-score -2.1), with mild stenosis, mean gradient ~4 mm Hg. The cardiologist noted diminished lower extremity pulses with good capillary refill, warm extremities, and no murmur. He was started on prostaglandin (PGE) infusion, and his ductus arteriosus opened overnight with increased flow across the isthmus compared to the day before PGE began. Peak lactate level was within expected limits at 1.5 mMol/L.

“At 22 days of age, an echocardiogram showed a discrete coarctation of the aorta with narrowing of the isthmus, ~2.8 mm, and a peak gradient of ~29 mmHg in the descending aorta. There was a moderate patent foramen ovale with a left to right shunting, mean gradient ~8 mmHg, persistent left superior vena cava draining to the coronary sinus, and a small apical muscular VSD. The mitral valve was borderline hypoplastic, 7.8 mm (Boston Z-score -2.1), with mild stenosis, mean gradient ~4 mm Hg.”

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

At 25 days of age, he had an urgent surgical repair with isthmus excision, end-to-end repair of the coarctation, and ligation of a small patent ductus arteriosus. Post-operatively, the patient tolerated room air without apnea, bradycardia, or desaturation. He was advanced to breastmilk fortified to 24 calories/oz by nipple gavage, taking 5–15 mL by mouth using a Dr. Brown's Ultra Preemie nipple at discharge. He passed the newborn hearing screen. A gene panel for cardiac anomalies was pending at the time of discharge at 33 days of age.

The pregnancy history was noncontributory except for maternal obesity (prepregnancy BMI 30.7). The family history was negative for oral clefts or congenital cardiac anomalies. The parents denied consanguinity. The physical exam after surgery was pertinent for an irritable, vigorous infant with a lusty cry who calmed after the exam. He had hypertelorism, long transverse ear crus bilaterally, and bilateral cleft lip (complete on the left, incomplete on the right) and palate.

“At 25 days of age, he had an urgent surgical repair with isthmus excision, end-to-end repair of the coarctation, and ligation of a small patent ductus arteriosus. Post-operatively, the patient tolerated room air without apnea, bradycardia, or desaturation. He was advanced to breastmilk fortified to 24 calories/oz by nipple gavage, taking 5–15 mL by mouth using a Dr. Brown's Ultra Preemie nipple at discharge. He passed the newborn hearing screen. A gene panel for cardiac anomalies was pending at the time of discharge at 33 days of age.”

Discussion:

This term, AGA infant had a bilateral cleft lip with a cleft palate complicated by meconium aspiration and neonatal depression. His initial echocardiograms and normal chromosome microarray did not explain his poor feeding and continuing need for supplemental oxygen. After a normal swallow study, a diagnostic echocardiogram at just over three weeks of age identified a coarctation of the aorta.

These two congenital anomalies, oral clefts, and cardiac defects, frequently occur together.

Cleft lip with or without cleft palate (CL+/-P) occurs in about 1 in 1000 liveborn infants in the United States, with an excess of males. Coarctation of the aorta (CoA), an anomaly in the left-sided obstruction lesion (LSOL) group of disorders, makes up about 7% of all congenital heart defects. CoA has a prevalence of approximately 4 per 10,000 births, and, like cleft lip, it is more common in males.

“The initial evaluation of a child with an oral cleft should include a careful evaluation for other anomalies, the most common of which is a congenital cardiac defect.”

The initial evaluation of a child with an oral cleft should include a careful evaluation for other anomalies, the most common of which is a congenital cardiac defect. In their study of 200 patients with cleft lip and palate, Kasatwar and colleagues (1) found that 30 patients (15%) had a congenital cardiac anomaly, of which the most common defect was ventricular septal defect. Sun et al. (2) reported that among 2180 patients with orofacial clefts, 657 (30.1%) had other congenital abnormalities. These associated anomalies were significantly more common in the cleft palate group (47.9%; 329/687) than in the cleft lip group (10.6%; 80/755) but still quite substantial in the cleft lip and palate group (33.6%; 248/738)($p < 0.01$). A congenital heart defect accounted for 45.1% (296/657) of all associated malformations. The most common heart defect was an atrial septal defect, representing 39.7% (118/296) of all congenital heart defects. These studies justify the recommendation that every child with an oral cleft should have a detailed cardiac evaluation, with an echocardiogram, before discharge.

The fact that neither of the baby's congenital anomalies was diagnosed prenatally may not be such a rare event. Although about 70% of cleft lip is diagnosed prenatally, this baby's mother was obese, which is an important factor. The quality of second-trimester scans is reduced in obese women, which could also reduce the detection rate of fetal congenital anomalies in this group. In a prospective study, Fuchs et al. (3) compared the quality of 20–24 weeks scans in 223 pregnant women with a prepregnancy body mass of $>30 \text{ kg/m}^2$ with a control group of 60 pregnant women with normal BMI (20–24.9 kg/m^2). Anatomical quality scores were significantly lower in the obese group (22.3 vs. 27.2; $p = 0.001$). The authors concluded that “image quality and global anatomical scores are significantly lower among obese than normal-weight women.”

“The fact that neither of the baby's congenital anomalies was diagnosed prenatally may not be such a rare event. Although about 70% of cleft lip is diagnosed prenatally, this baby's mother was obese, which is an important factor. The quality of second-trimester scans is reduced in obese women, which could also reduce the detection rate of fetal congenital anomalies in this group.”

Around 60% of coarctation of the aorta is not detected prenatally. Zwanenburg et al. (4) reviewed prenatal detection of aortic coarctation from 2012–2021 in Holland. Only 49/116 (42.2%) were detected prenatally. The authors illustrated the importance of prenatal detection by showing the medical cost of lack of detection: undetected cases presented with acute circulatory shock in 20.9% and were more likely to have severe lactic acidosis ($p=0.02$) and impaired cardiac function ($p<0.001$) before surgery.

“Around 60% of coarctation of the aorta is not detected prenatally. Zwanenburg et al. reviewed prenatal detection of aortic coarctation from 2012–2021 in Holland. Only 49/116 (42.2%) were detected prenatally. The authors illustrated the importance of prenatal detection by showing the medical cost of lack of detection: undetected cases presented with acute circulatory shock in 20.9% and were more likely to have severe lactic acidosis ($p=0.02$) and impaired cardiac function ($p<0.001$) before surgery.”

Between 2015 and 2016, van Nisselrooij et al. (5) found that half of severe cardiac defects were not diagnosed prenatally with standard second-trimester anatomy scans in the Netherlands. They analyzed the factors that contributed to the lack of prenatal diagnosis of severe congenital heart defects (CHD). A total of 114 cases of isolated severe CHD at birth were analyzed. Of these, 58 (50.9%) were missed, and 56 (49.1%) were detected on the standard anatomy scan. The defects comprised transposition of the great arteries (17%), aortic coarctation (16%), tetralogy of Fallot (10%), atrioventricular septal defect (6%), aortic valve stenosis (5%), ventricular septal defect (18%) and other defects (28%). Although more cases were missed among obese mothers, this failed to reach statistical significance. In 49% of missed cases, the lack of detection was due to poor adaptational skills, resulting in inadequate images in which the CHD was not clearly visible. In 20%, the cardiac planes had been obtained properly but showed normal anatomy. In 31%, the images showed an abnormality, mainly septal defects and aortic arch anomalies, which had not been recognized at the time of the scan, a factor that can be attributed to variable operator education, training, and experience.

Artificial intelligence (AI) may improve the prenatal diagnosis of CoA by reducing operator variability, standardizing the ultrasound planes for cardiac imaging, and improving the accuracy of cardiac measurements. Researchers in Denmark (6) examined prenatal images from individuals subsequently diagnosed with coarctation of the aorta within a ten-year study period. They found that fetuses postnatally diagnosed with CoA displayed significant deviations from healthy controls in their cardiac structures, but

the quality of prenatal CoA images varied considerably, and that variability potentially impacted the accuracy of measurements. They developed an AI algorithm to recognize cardiac planes and perform automatic biometric measurements during the 18–22-week anatomy scan to ensure a standard approach. In their study, AI measurements on routine screening images yielded 20–40% better results than current detection rates, comparable to specialized echocardiography settings. By improving prenatal diagnosis, AI algorithms may also improve outcomes in the NICU.

“Artificial intelligence (AI) may improve the prenatal diagnosis of CoA by reducing operator variability, standardizing the ultrasound planes for cardiac imaging, and improving the accuracy of cardiac measurements... AI measurements on routine screening images yielded 20–40% better results than current detection rates, comparable to specialized echocardiography settings. By improving prenatal diagnosis, AI algorithms may also improve outcomes in the NICU.”

Until his aortic coarctation was detected, this baby’s oral clefts and a possible associated swallowing defect were suspected to be the cause of his poor feeding. Was this a reasonable assumption? Are babies with oral clefts generally poor feeders? Most term newborns with oral clefts do not have feeding problems. Reid et al. (7) identified a feeding problem in about one-third of 2-week-old infants with oral clefts. In their review of feeding abilities in 62 Australian infants with oral clefts, these authors noted that “at two weeks of age, babies with [a] syndrome or Pierre-Robin sequence were *15 times more likely* to have poor feeding skills than their nonsyndromic counterparts” (italics mine). My default position is that term infants with an isolated cleft lip and/or palate are capable oral feeders, and those who do not feed well are likely to have other contributing factors beyond the cleft. My motto: Poor feeding is the baby’s way of telling us to look beyond the cleft.

“My default position is that term infants with an isolated cleft lip and/or palate are capable oral feeders, and those who do not feed well are likely to have other contributing factors beyond the cleft. My motto: Poor feeding is the baby’s way of telling us to look beyond the cleft.”

This infant had no record of pulse oximetry screening at the birth hospital prior to transfer, but it may not have made a difference in terms of a timely diagnosis of his aortic coarctation had it been done. Geggel (8) reviewed 200 consecutive cases of aortic coarctation in 2006–2011 and 2015–2019, before and after pulse oximetry screening, respectively. Pulse oximetry was abnormal in only 8/47 patients. Coarctation was diagnosed by fetal echocardiography more often, 30.5%, in the 2015–2019 cohort compared with 20.5% in the earlier group ($p < 0.03$). Despite these modest improvements in detection, many children with CoA were still undiagnosed. He noted that about 50% of patients in both groups were diagnosed in the first five days, and in each group, about 25% were diagnosed after one year. In both cohorts, decreased femoral pulses or systemic hypertension were infrequently documented by referring physicians. He concluded that “although fetal echocardiography and neonatal pulse oximetry contribute to the diagnosis of coarctation, physical examination has an important complementary role. Evaluation of peripheral pulses on initial and early follow-up neonatal examinations and consideration of coarctation in any patient with hypertension are needed to improve timely detection.” This adds to the importance of the careful physical examination of all newborns.

“Evaluation of peripheral pulses on initial and early follow-up neonatal examinations and consideration of coarctation in any patient with hypertension are needed to improve timely detection.” This adds to the importance of the careful physical examination of all newborns.”

In 1978, Graham et al. (9) documented the first use of prostaglandin infusion as emergency palliation in a one-day-old with symptomatic aortic coarctation. It significantly increased lower body perfusion by dilating the ductus arteriosus. Although the patient described above was over three weeks old at the time, prostaglandin therapy was still successful in increasing perfusion by opening the PDA prior to surgery.

Nonsyndromic left-sided heart defects are often observed in multiple family members and are associated with high sibling recurrence risk (10). From a genetic point of view, I recommend parental echocardiograms after the birth of all children with a left-sided obstructive heart defect, but perhaps this recommendation should be limited to the families of infants with isolated heart defects.

“Nonsyndromic left-sided heart defects are often observed in multiple family members and are associated with high sibling recurrence risk (10).”

This baby benefited from a repeat echocardiogram, timely prostaglandin therapy, and surgery. At discharge, however, he was still not taking full oral feedings, so there may be more to learn about his condition. Given his low initial Apgar scores and meconium aspiration, he might benefit from a brain MRI. His cardiac gene panel test results are still pending. His genetic evaluation is ongoing, but a whole exome sequencing test may be worth considering if the gene panel test is negative. In one study, exome testing identified a diagnosis in 9.6% of individuals with isolated cleft lip+/-P and 16.7% of patients with syndromic CL+/-P (11). Several monogenic disorders can cause cleft lip and cardiac anomalies; not all responsible genes are included in gene panels. The differential diagnosis includes the more common CHARGE syndrome (OMIM #214800) and the much rarer *HYAL2* deficiency (12), an autosomal recessive syndrome of cleft lip, myopia, hearing loss, and cor triatriatum sinister.

“His genetic evaluation is ongoing, but a whole exome sequencing test may be worth considering if the gene panel test is negative. In one study, exome testing identified a diagnosis in 9.6% of individuals with isolated cleft lip+/-P and 16.7% of patients with syndromic CL+/-P (11). Several monogenic disorders can cause cleft lip and cardiac anomalies; not all responsible genes are included in gene panels.”

Practical Applications:

1. Do not rely on a normal prenatal anatomy scan as a confirmation that a baby does not have other congenital anomalies.
 - a. Understand that many factors limit the quality of prenatal ultrasound anatomy scans, including operator variability and maternal obesity, which may result in poor image quality and reduced detection rates.
2. Recall that coarctation of the aorta is not reliably detected by prenatal anatomy scan or by neonatal pulse oximetry screening.
 - a. Watch for incorporating AI-associated algorithms that may increase the prenatal detection rate for CoA.
 - b. Recognize that a newborn echocardiogram performed prior to closure of the PDA *does not* rule out CoA.
 - c. Because most patients with CoA are diagnosed after delivery, examine infants carefully for signs of CoA, such as decreased femoral pulses and hypertension.
3. Examine all infants with oral clefts for other associated congenital anomalies, of which cardiac anomalies are the most common.

4. Realize that most infants with isolated oral clefts are capable oral feeders.
 - a. Recognize that poor feeding in an infant with an oral cleft indicates a syndrome. Remember to look beyond the cleft.
5. Understand that there is an increased recurrence risk for siblings of nonsyndromic left-sided obstructive cardiac defects, including CoA.
6. Consider a whole exome sequencing test in infants with isolated or syndromic oral clefts.
9. Graham TP, Atwood GF, Boucek RJ. Use of prostaglandin E1 for emergency palliation of symptomatic coarctation of the aorta. *Cathet Cardiovasc Diagn.* 1978;4(1):97–102. doi: 10.1002/ccd.1810040114. PMID: 77192.
10. Parker LE, Landstrom AP. Genetic Etiology of Left-Sided Obstructive Heart Lesions: A Story in Development. *J Am Heart Assoc.* 2021 Jan 19;10(2):e019006. doi: 10.1161/JAHA.120.019006. Epub 2021 Jan 12. PMID: 33432820; PMCID: PMC7955312.
11. Yan S, Fu F, Li R, Yu Q, Li F, Zhou H, Wang Y, Huang R, Ma C, Guo F, Wang D, Yang X, Han J, Lei T, Li D, Liao C. Exome sequencing improves genetic diagnosis of congenital orofacial clefts. *Front Genet.* 2023 Sep 7;14:1252823. doi: 10.3389/fgene.2023.1252823. PMID: 37745857; PMCID: PMC10512413.
12. Muggenthaler MM, Chowdhury B, Hasan SN, Cross HE, Mark B, Harlalka GV, Patton MA, Ishida M, Behr ER, Sharma S, Zahka K, Faqeih E, Blakley B, Jackson M, Lees M, Dolinsky V, Cross L, Stanier P, Salter C, Baple EL, Alkuraya FS, Crosby AH, Triggs-Raine B, Chioza BA. Mutations in *HYAL2*, Encoding Hyaluronidase 2, Cause a Syndrome of Orofacial Clefting and Cor Triatriatum Sinister in Humans and Mice. *PLoS Genet.* 2017 Jan 12;13(1):e1006470. doi: 10.1371/journal.pgen.1006470. PMID: 28081210; PMCID: PMC5230738.

References:

1. Kasatwar A, Borle R, Bhola N, K R, Prasad GSV, Jadhav A. Prevalence of congenital cardiac anomalies in patients with cleft lip and palate - Its implications in surgical management. *J Oral Biol Craniofac Res.* 2018 Sep–Dec;8(3):241–244. doi: 10.1016/j.jobcr.2017.09.009. Epub 2017 Oct 3. PMID: 30191117; PMCID: PMC6107920.
2. Sun T, Tian H, Wang C, Yin P, Zhu Y, Chen X, Tang Z. A survey of congenital heart disease and other organic malformations associated with different types of orofacial clefts in Eastern China. *PLoS One.* 2013;8(1):e54726. doi: 10.1371/journal.pone.0054726. Epub 2013 Jan 21. PMID: 23349958; PMCID: PMC3549991.
3. Fuchs F, Houllier M, Voulgaropoulos A, Levallant JM, Colmant C, Bouyer J, Senat MV. Factors affecting feasibility and quality of second-trimester ultrasound scans in obese pregnant women. *Ultrasound Obstet Gynecol.* 2013 Jan;41(1):40–6. doi: 10.1002/uog.12311. PMID: 23023941.
4. Zwanenburg F, Ten Harkel ADJ, Snoep MC, Bet BB, Linskens IH, Knobbe I, Pajkrt E, Blom NA, Clur SB, Haak MC. Prenatal detection of aortic coarctation in a well-organized screening setting: Are we there yet? *Prenat Diagn.* 2023 May;43(5):620–628. doi: 10.1002/pd.6291. Epub 2023 Jan 5. PMID: 36549919.
5. van Nisselrooij AEL, Teunissen AKK, Clur SA, Rozendaal L, Pajkrt E, Linskens IH, Rammeloo L, van Lith JMM, Blom NA, Haak MC. Why are congenital heart defects being missed? *Ultrasound Obstet Gynecol.* 2020 Jun;55(6):747–757. doi: 10.1002/uog.20358. PMID: 31131945; PMCID: PMC7317409.
6. Taksoee-Vester CA, Mikolaj K, Petersen OBB, Vejstrup NG, Christensen AN, Feragen A, Nielsen M, Svendsen MBS, Tolsgaard MG. Role of AI-assisted automated cardiac biometrics in screening for fetal coarctation of aorta. *Ultrasound Obstet Gynecol.* 2024 Feb 9. doi: 10.1002/uog.27608. Epub ahead of print. PMID: 38339776.
7. Reid J, Kilpatrick N, Reilly S. A prospective, longitudinal study of feeding skills in a cohort of babies with cleft conditions. *Cleft Palate Craniofac J.* 2006 Nov;43(6):702–9. doi: 10.1597/05-172. PMID: 17105331.
8. Geggel RL. Coarctation of the Aorta: Delay in Diagnosis and Referral Basis from Infancy to Adulthood. *J Pediatr.* 2022 Mar;242:57–62. doi: 10.1016/j.jpeds.2021.11.066. Epub 2021 Dec 1. PMID: 34863817.

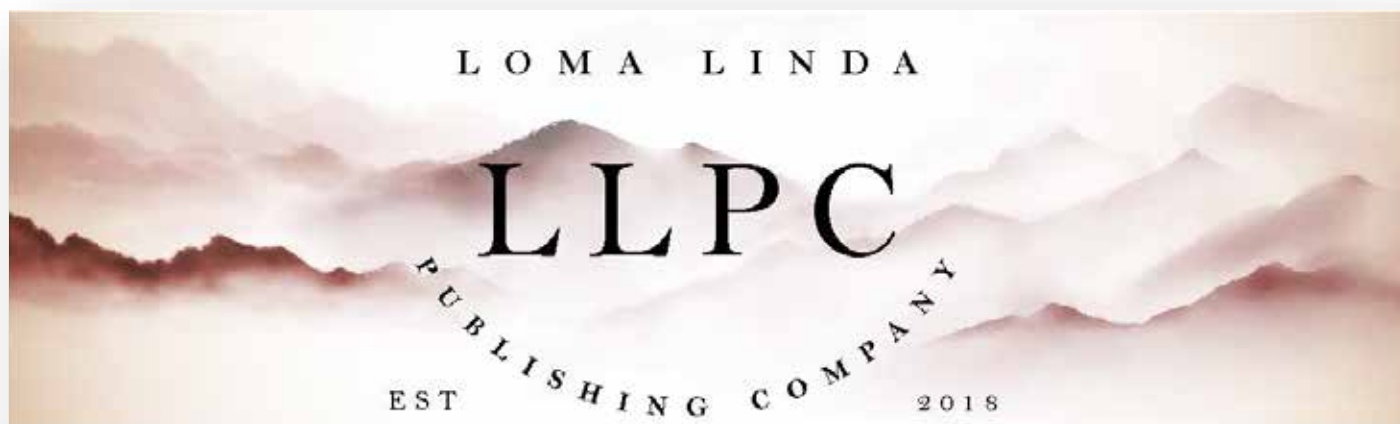
Disclosure: The author has no conflicts of interests to disclose.

NT

Corresponding Author



Robin Clark, MD
 Professor, Pediatrics
 Loma Linda University School of Medicine
 Division of Genetics
 Department of Pediatrics
 E-mail: rclark@llu.edu



GLO Preemies

Healthcare Executive Roundtable

**EVERY 4TH
WEDNESDAY**

Virtual
10:00am - 1:00pm

**"Creating real
change in real time"**

Talk Openly, Share Opinions
& Ask Burning Questions

Scan the QR Code to learn more



More information:

www.GLOPreemies.org



breathe,

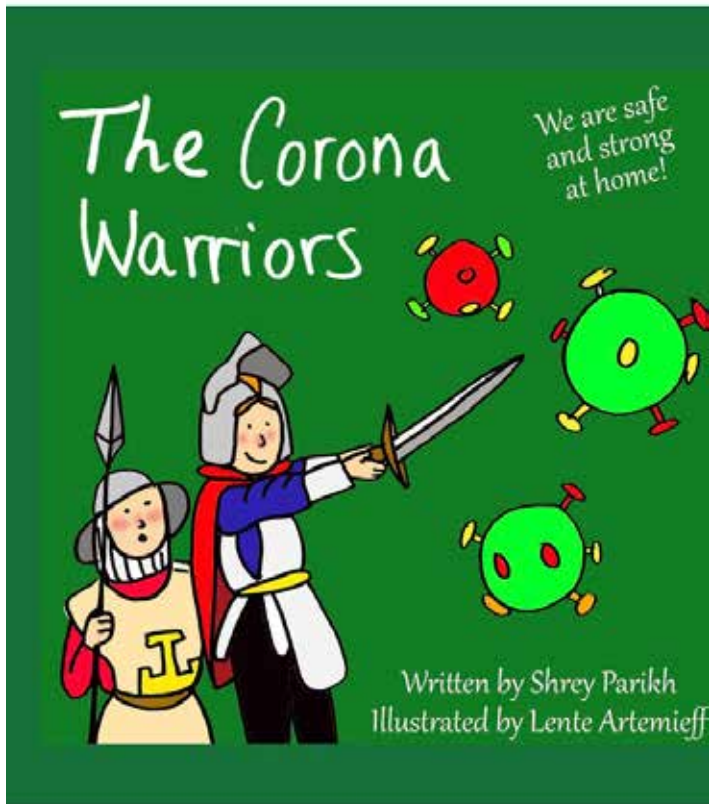
baby,

breathe!

NEONATAL
INTENSIVE CARE,
PREMATURITY, AND
COMPLICATED
PREGNANCIES

Annie Janvier, MD, PhD

Translated by Phyllis Aronoff and Howard Scott



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

Postpartum Revolution
@ANGELINASPICER



Neonatology Grand Round Series
Earn accredited CE while learning about pressing neonatology topics!

CENTER FOR RESEARCH, EDUCATION, QUALITY AND SAFETY

The Use and Misuse of Cord Blood Gases in HIE Litigation

Jay P. Goldsmith, MD, Jonathan K. Muraskas, MD

“Umbilical cord blood gases are often used as evidence for or against the presence of intrapartum asphyxia in litigated cases of hypoxic-ischemic brain injury...However, there are many variables and questions regarding the cord blood gas values which are often not completely understood and may mislead the clinician in the assessment of the neonate for therapeutic hypothermia (TH) as well as obfuscate the facts in a hypoxic-ischemic encephalopathy (HIE) malpractice suit.”

Umbilical cord blood gases are often used as evidence for or against the presence of intrapartum asphyxia in litigated cases of hypoxic-ischemic brain injury. If blood is free-flowing in the umbilical cord, the measured values of the umbilical cord blood gas provide valuable objective evidence of the metabolic condition of the newborn at the time of birth. However, there are many variables and questions regarding the cord blood gas values which are often not completely understood and may mislead the clinician in the assessment of the neonate for therapeutic hypothermia (TH) as well as obfuscate the facts in a hypoxic-ischemic encephalopathy (HIE) malpractice suit. This article will deal with a number of these potentially confusing and contradictory issues. The following questions will be addressed:

1. Is the blood gas arterial or venous? How can you tell?
2. If the cord gas is venous, can you reliably predict what the arterial gas would have been?
3. Is there a change in the blood gas values if there is a delay in running the sample?
4. If the blood gas is collected in heparin, how will that affect blood gas values? How about an air bubble?
5. How does delayed cord clamping (DCC) affect the blood gas values?
6. What if the blood gas and the baby's condition are inconsistent (e.g., the baby has a 1-minute Apgar score of

0–2, and the cord gas looks relatively normal)?

7. Does a blood gas with a pH < 7.00 mean the baby has HIE? Why was this sharp line drawn in the criteria for HIE and cooling?

The reader is referred to two general references for a complete discussion of this topic: *Interpreting Umbilical Cord Blood Gases*, 2nd Edition by JJ Pomerance (1) and a recent comprehensive review by Per Olofsson. (2)

Is the blood gas arterial or venous? How can you tell?

In the fetus, the umbilical vein carries oxygenated blood from the placenta to the baby, and the blood passes through the ductus venosus in the liver and cardiac shunts into the left side of the heart and then into the aorta. The two umbilical arteries carry blood back to the placenta to be reoxygenated. When there is no obstruction to flow in the umbilical cord, the blood flows in equal volumes in both directions. The placenta functions as the fetal lung, and umbilical cord blood gases should reflect this function. The umbilical artery (UA) pH should be lower than the umbilical venous (UV) pH, the UA pCO₂ should be higher than the UV pCO₂, and the UA pO₂ should be lower than the UV pO₂. Normal values and ranges can be seen in Table 1. (1)

“In the fetus, the umbilical vein carries oxygenated blood from the placenta to the baby, and the blood passes through the ductus venosus in the liver and cardiac shunts into the left side of the heart and then into the aorta. The two umbilical arteries carry blood back to the placenta to be reoxygenated...The umbilical artery (UA) pH should be lower than the umbilical venous (UV) pH, the UA pCO₂ should be higher than the UV pCO₂, and the UA pO₂ should be lower than the UV pO₂. ”

The overall success rate of obtaining an arterial cord blood sample is <80%. Sometimes, only one umbilical cord blood gas sample is collected, and the clinician has to decide if it is appropriately labeled UA or UV. If two samples are obtained and the UV has a lower pH, higher pCO₂, or lower pO₂ than the UA, then the samples potentially are mislabeled, or other factors have affected

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

Table 1: From Pomerance JJ (1)(with permission)

Normal Umbilical Cord Blood Gases		
	Venous Blood Normal Range (Mean \pm 2SD)	Arterial Blood Normal Range (Mean \pm 2SD)
pH	7.25 – 7.45	7.18 – 7.38
pCO ₂ (mmHg) (kPa)	26.8 – 49.2 3.57 – 6.56	32.2 – 65.8 4.29 – 8.77
pO ₂ (mmHg) (kPa)	17.2 – 40.8 2.29 – 5.44	5.6 – 30.8 0.75 – 4.11
HCO ₃ ⁻ (mmol/L)	15.8 – 24.2	17 – 27
BD (mmol/L)	0 to 8	0 to 8

the credibility of the values. One study revealed that at least 18% of paired samples were taken from the same vessel. (3) Moreover, samples are often mislabeled, labeling a UV sample as UA since the UV is much easier to access than the UA. A UA pO₂ cannot be higher than 32 mmHg; thus, a pO₂ greater than 32 in the sample would alert the clinician that a supposed UA sample is probably from the UV.

“One study revealed that at least 18% of paired samples were taken from the same vessel. Moreover, samples are often mislabeled, labeling a UV sample as UA since the UV is much easier to access than the UA. A UA pO₂ cannot be higher than 32 mmHg; thus, a pO₂ greater than 32 in the sample would alert the clinician that a supposed UA sample is probably from the UV.”

If the cord gas is venous, can you reliably predict what the arterial gas would have been?

The UA and UV samples usually reflect a standard value difference when blood flows freely in the umbilical cord. If the fetus is becoming acidemic and there is no obstruction to blood flow, the returning UA pH can only be improved to a limited extent by the placenta’s ability to restore acid-base balance. Thus, the standard difference between the UA and UV pH is 0.02–0.10 units. A pH of 7.25 in the UV will generally reflect a pH of no lower than 7.15 in the UA. Cantu et al. (4) looked at 11,455 paired umbilical cord blood gas samples and found a very high correlation between the UV and UA values. For example, if the UV pH was 7.23 or greater, the chance of the UA blood gas pH being < 7.0 was \leq 1%. Similar findings were reported by Swanson et al. in paired samples collected from 36,325 births. (5) In a small number of cases, there may be obstruction to umbilical cord blood flow or a

“The UA and UV samples usually reflect a standard value difference when blood flows freely in the umbilical cord. If the fetus is becoming acidemic and there is no obstruction to blood flow, the returning UA pH can only be improved to a limited extent by the placenta’s ability to restore acid-base balance. Thus, the standard difference between the UA and UV pH is 0.02–0.10 units. A pH of 7.25 in the UV will generally reflect a pH of no lower than 7.15 in the UA.”

significant decrease in fetal cardiac output. In these cases, A-V differences may be as large as 0.4–0.5 units. Thus, a UV pH of 7.20 may be associated with a UA pH of 6.7–6.8. Often, these cases are associated with an obstetric sentinel event such as a cord prolapse, uterine rupture, shoulder dystocia, or maternal cardiac collapse.

“In a small number of cases, there may be obstruction to umbilical cord blood flow or a significant decrease in fetal cardiac output. In these cases, A-V differences may be as large as 0.4–0.5 units. Thus, a UV pH of 7.20 may be associated with a UA pH of 6.7–6.8. Often, these cases are associated with an obstetric sentinel event such as a cord prolapse, uterine rupture, shoulder dystocia, or maternal cardiac collapse.”

Is there a change in the blood gas values if there is a delay in running the sample?

Often, there is a delay in analyzing the umbilical cord blood gases after delivery. Optimally, the analysis should be done as soon as possible, but emergent care of the mother and newborn may delay this examination. The cord gas may represent the first gas in neonatal resuscitation, and many NICU units take an I-STAT device to the delivery room to facilitate the rapid processing of the sample, which may help guide neonatal care. In litigation, lawyers may claim that a delay of 30–60 minutes in analyzing a gas may invalidate the results. Studies have shown that no significant changes are seen in a cord gas if drawn from a segment of a doubly clamped cord, kept at room temperature, or collected into a plastic syringe and left at room temperature for 60 minutes after

“Studies have shown that no significant changes are seen in a cord gas if drawn from a segment of a doubly clamped cord, kept at room temperature, or collected into a plastic syringe and left at room temperature for 60 minutes after delivery.”

If the blood gas is collected in heparin, how will that affect blood gas values? How about an air bubble?

In most hospitals, cord blood gases are drawn in pre-heparinized syringes, and the effect of heparin contamination is moot. However, if heparin is used, there is the potential to lower the pH and pCO₂ levels in the sample and worsen the base deficit. Many blood gas analyzers will not process a sample with air bubbles, but even a small amount of air in a sample can cause significant errors. Room air has a p_AO₂ of about 150 mm Hg and a p_ACO₂ of nearly 0. Therefore, an air bubble in a cord blood gas sample will erroneously increase the pO₂ value, decrease the pCO₂ value, increase the base deficit, and have a negligible effect on the pH. (1)

What is the effect of delayed cord clamping on the blood gas values?

Delayed cord clamping (DCC) of 30–60 seconds is now recommended for both term and preterm newborns who do not require significant resuscitation. (8) There are conflicting data on whether this practice, which has been shown to have multiple benefits to the baby, will affect the umbilical cord blood gas. One study found no difference in umbilical cord arterial pH values and increased pO₂ levels after DCC. However, two other studies found that there was a small but statistically significant decrease in the UA pH (0.03 units) with DCC. (8) In clinical practice, babies who are non-vigorous at birth and likely to need resuscitation should not have DCC anyway, and the cord blood gas values will not be affected.

“One study found no difference in umbilical cord arterial pH values and increased pO₂ levels after DCC. However, two other studies found that there was a small but statistically significant decrease in the UA pH (0.03 units) with DCC. In clinical practice, babies who are non-vigorous at birth and likely to need resuscitation should not have DCC anyway, and the cord blood gas values will not be affected.”

What if the blood gas and the baby’s condition are inconsistent (e.g., the baby has Apgar scores of 0–2, and the cord gas looks relatively normal)?

Occasionally, the cord blood gas values are inconsistent with those of the baby at birth. In an HIE litigation, the defense lawyer will argue that a baby born with an Apgar score of 0 or 1 at 1 minute was not asphyxiated in utero because the cord blood gas values were normal. In a non-dysmorphic newborn, this argument is not logical. There are many reasons why this phenomenon occurs, but usually, some event in utero has obstructed blood flow through the umbilical cord, or the fetal heart has lost the ability to perfuse the umbilical cord arteries. Clinically, there may be terminal bradycardia or a sentinel event such as cord prolapse or prolonged dystocia, but often, an adequate explanation may not be apparent.

“Occasionally, the cord blood gas values are inconsistent with those of the baby at birth... There are many reasons why this phenomenon occurs, but usually, some event in utero has obstructed blood flow through the umbilical cord, or the fetal heart has lost the ability to perfuse the umbilical cord arteries. Clinically, there may be terminal bradycardia or a sentinel event such as cord prolapse or prolonged dystocia, but often, an adequate explanation may not be apparent.”

When the umbilical cord is obstructed, blood flow in both the arteries and the vein may stop, and the sample taken at birth will reflect the condition of the fetus prior to the obstruction. This may allow the defense attorney to argue that the fetal monitoring strip did not show signs of significant fetal compromise prior to the terminal obstruction and that the terminal event was unpredictable. In a clamped cord in an animal model, the cord arterial pH falls approximately 0.02–0.04 units per minute. (1) Thus, a fetus who suffers a complete cord obstruction while the mother is pushing at the end of labor may drop from an acceptable cord pH of 7.2 to a pH of 6.8 in 10 minutes. The baby is born severely depressed, but the cord gas reflects the condition of the fetus prior to the obstruction (i.e., pH 7.2). This may also affect the clinical care given to the baby since the provider may find that the baby does not meet the blood gas criteria for TH, and the baby does not receive the potential benefits of that therapy. (9)

“When the umbilical cord is obstructed, blood flow in both the arteries and the vein may stop, and the sample taken at birth will reflect the condition of the fetus prior to the obstruction.”

This condition may become even more problematic if the cord is partially obstructed, affecting only flow through the thin-walled umbilical vein and not affecting flow through the thicker-walled umbilical arteries. Now, the fetus is not only deprived of fresh oxygen from the placenta, but the arteries continue to flow blood to the placenta without the same amount returning to the fetus through the vein. The baby will then become hypovolemic as well as asphyxiated during this period of partial obstruction.

Following cord occlusion, blood gases often do not reflect the baby's condition. In these circumstances, believe the baby; and get an early neonatal blood gas and lactate, which should reflect the true condition of the baby at birth. Post hoc evaluation of this condition can be supported by a clinical history compatible with an obstruction (i.e., cord prolapse or shoulder dystocia) or physical findings (i.e., a true knot in the cord, decreased twists (coiling) per 10 cm in the cord, absent or decreased Wharton's jelly around the cord and vascular ectasia in the fetal vessels in placental evaluation). A tight nuchal cord has been associated with obstruction, but the evidence for this phenomenon is not compelling.

“Following cord occlusion, blood gases often do not reflect the baby’s condition. In these circumstances, believe the baby; and get an early neonatal blood gas and lactate, which should reflect the true condition of the baby at birth.”

Does a blood gas with a pH < 7.00 mean the baby has HIE? Why was this sharp line drawn in the criteria for HIE and cooling?

Since the first ACOG statement on criteria for intrapartum asphyxia (ACOG Technical Bulletin #163, 1992), the College has used the benchmarks of cord pH < 7.0 and base deficit of ≥ 12 mmol/L as criteria for the diagnosis of intrapartum asphyxia. These criteria were repeated in the 2003 and 2014 monographs on neonatal encephalopathy, although the 2014 Task Force no longer required these values to be “essential criteria” for diagnosing an acute intrapartum hypoxic event sufficient to cause brain injury. (10) However, when these values are critically examined, only a small fraction of babies born with these cord gas values end up with HIE. Goodwin et al. showed that when the UA pH was 6.90 to 6.99, only 12% of newborns developed HIE. In that study, it was not until the pH was < 6.8 that a majority of babies had neurologic and systemic

“It should be noted that asphyxia usually progresses from respiratory to mixed acidosis and then to predominant metabolic acidosis. Respiratory acidosis rarely causes brain injury since it causes vasodilation in the brain. Every 10 mmHg rise in pCO₂ decreases the pH by 0.08 units.”

features of intrapartum asphyxia. (11) Low and colleagues showed similar results with their review of UA base deficit. When the base deficit was 12–16 mmol/L, 72% of babies had no encephalopathy, and 19% had only minor symptoms such as irritability or jitteriness. (12) Thus, 91% of babies with a base deficit of 12–16 mmol/L had no or only minor symptoms of encephalopathy. It should be noted that asphyxia usually progresses from respiratory to mixed acidosis and then to predominant metabolic acidosis. Respiratory acidosis rarely causes brain injury since it causes vasodilation in the brain. (10) Every 10 mmHg rise in pCO₂ decreases the pH by 0.08 units. Thus, for example, a cord blood gas with a pH of 6.90, pCO₂ of 110 mmHg, and base deficit of 10 would generally indicate a much higher pH (possibly close to normal) based on the minimal metabolic contribution, a very recent asphyxial event and a very low chance of HIE or long term sequelae in the baby. (13)

Why, then, were these numbers chosen as indicia of intrapartum asphyxia? The incidence of cerebral palsy (CP) in the United States is approximately 1–4/1000 in term infants. The incidence of HIE in the academic patients described in the Goodwin study is 12%. In comparison, there is a 100-fold increase in CP in a term patient with a cord pH < 7.0 versus a baby whose cord pH is above 7.0. On the other hand, only approximately 1 in 10 newborns with a pH of 6.90 to 6.99 will have HIE, potentially leading to cerebral palsy. The cord blood gas values in and of themselves do not tell the whole story and must be viewed in the context of the rest of the maternal and neonatal history. Appropriately, in the last iteration of the neonatal encephalopathy monograph, published in 2014 and reaffirmed in 2019, the “essential criteria” were retired. Providers were advised to review the entire clinical history, fetal monitoring strips, labs, neuroimaging, and other factors before ascribing a neonatal encephalopathy to an acute intrapartum asphyxia event. (10)

“The cord blood gas values in and of themselves do not tell the whole story and must be viewed in the context of the rest of the maternal and neonatal history. Appropriately, in the last iteration of the neonatal encephalopathy monograph, published in 2014 and reaffirmed in 2019, the “essential criteria” were retired. Providers were advised to review the entire clinical history, fetal monitoring strips, labs, neuroimaging, and other factors before ascribing a neonatal encephalopathy to an acute intrapartum asphyxia event.”

References:

1. Pomerance JJ. Interpreting Umbilical Cord Blood Gases, 2nd Edition, 2012. BNMG, California.
2. Olofsson P. Umbilical cord pH, blood gases, and lactate at birth: normal values, interpretation, and clinical utility. Am J Obstet

Gynecol. 2023 May;228(5S):S1222–S1240. doi: 10.1016/j.ajog.2022.07.001. Epub 2023 Mar 19.PMID: 37164495

3. Westgate J, Garibaldi JM, Greene KR. Umbilical cord blood gas analysis at delivery: a time for quality data. Br J Obstet Gynaecol. 1994 Dec;101(12):1054–63. doi: 10.1111/j.1471-0528.1994.tb13581.x.PMID: 7826958
4. 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
5. Swanson K, Whelan AR, Grobman WA, et al. Can venous cord gas values predict fetal acidemia? Am J Obstet Gynecol; . 2017 Sep;217(3):364.e1–364.e5. doi: 10.1016/j.ajog.2017.05.047. Epub 2017 May 31.
6. Armstrong L, Stenson B. Effect of delayed sampling on umbilical cord arterial and venous lactate and blood gases in clamped and unclamped vessels. Arch Dis Child Fetal Neonatal Ed 2006; 91: F342–5
7. Manor M, Blickstein I, Hazan Y, et al: Postpartum determination of umbilical artery blood gases: Effect of time and temperature. ClinChem 1998; 44:681–3
8. American College of Obstetricians and Gynecologists' Committee on Obstetric Practice. Delayed Umbilical Cord Clamping After Birth: ACOG Committee Opinion, Number 814. Obstet Gynecol. 2020 Dec;136(6):e100–e106. doi: 10.1097/AOG.0000000000004167.PMID: 33214530
9. Papile LA, Baley JE, Benitz W, et al. Hypothermia and neonatal encephalopathy. Pediatrics 2014; 133(6): 1146–50.
10. Neonatal Encephalopathy and Neurologic Outcome, second edition.2014. Report of the American College of Obstetricians and Gynecologists' Task Force on neonatal encephalopathy. American College of Obstetricians and Gynecologists, Washington D.C.
11. Goodwin TM, Belai I, Hernandez P, et al. Asphyxial complications in the term newborn with severe umbilical acidemia. Am J Obstet Gynecol.1992, 167:1506–1512.
12. Low JA, Lindsay BG, Derrick EJ. Threshold of metabolic acidosis associated with newborn complications. Am J Obstet Gynecol, 1997; 177: 1391–1394.
13. Blickstein I, Green T. Umbilical cord blood gases. Clin Perinatol. 2007 Sep;34(3):451–9. doi:10.1016/j.clp.2007.05.001.PMID: 17765493.

Disclosure: The authors have no conflicts of interests to disclose.

NT

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



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





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

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

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

"Even in the middle of taking this course, I could see myself changing the way that I spoke to parents. After taking this course, I am much better at emotionally supporting our NICU families."

COURSE PARTICIPANT

Learn How Now

validated online NICU staff education

WWW.MYNICUNETWORK.ORG

My NICU Network
My Perinatal Network



PROTECT YOUR FAMILY FROM RESPIRATORY VIRUSES

flu

COVID-19

pertussis

RSV



WASH YOUR HANDS
often with soap and water for 20+ seconds. Dry well.

SOAP

GET VACCINATED

for COVID-19, flu, and pertussis. Ask about protective injections for RSV. Vaccines save lives.



COVER COUGHS AND SNEEZES

Wear a mask. Sneeze and cough into your elbow.

USE A HAND SANITIZER THAT IS 60% ALCOHOL



STAY AWAY FROM SICK PEOPLE

Stay at home to protect vulnerable babies and children. Avoid crowds when out.

projectsweetpeas.com
nationalperinatal.org



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. Now there are new vaccines for RSV for adults and antibody shots for babies that can help protect them.



WE CAN HELP PROTECT EACH OTHER.



www.nationalperinatal.org/rsv



Family-Centered Care Taskforce March 2024 Webinar Summary

Tamara Bledsoe, MS, NNP, APRN-BC-C-ONQS, Vargabi Ghei, MD, MSHS, Pamela Torreblanca, RN

The Family-Centered Care Taskforce stands as a pioneering force, being the FIRST international, multicenter, collaborative initiative solely dedicated to quality improvement in family-centered care. The task force employs a small group model with monthly office hours and a large group model with bi-monthly webinars, enabling effective communication and facilitating change across various healthcare settings. By sharing evidence-based practices and critical family perspectives during webinars and by promoting accountability through small groups, we are creating a forward movement to close the healthcare gap. Our 13th webinar, which took place March 14th, was sponsored by Draeger, whose mission is 'Care for babies like never before,' and Reckitt/Mead Johnson, who 'Protect, heal and nurture in the pursuit of a healthier world.' Our webinar speakers share their skin-to-skin and family-centered care practices in the FCC column below. Find a complete recording and accompanying resources at no cost at www.fcctaskforce.org, and subscribe to receive future Zoom calendar invites for our free educational webinars.

“Our 13th webinar, which took place March 14th, was sponsored by Draeger, whose mission is ‘Care for babies like never before,’ and Reckitt/Mead Johnson, who ‘Protect, heal and nurture in the pursuit of a healthier world.’ Our webinar speakers share their skin-to-skin and family-centered care practices in the FCC column below. Find a complete recording and accompanying resources at no cost at www.fcctaskforce.org, and subscribe to receive future Zoom calendar invites for our free educational webinars.”

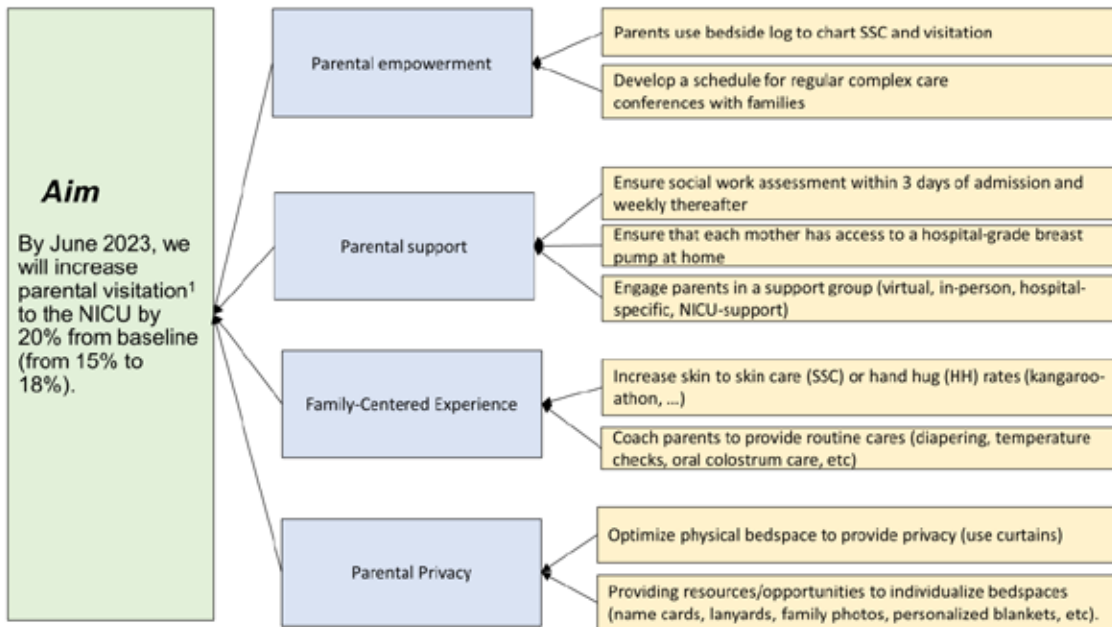
In their talk, entitled “Improving Skin-to-Skin and Family Centered Care in a Community Level 3 NICU,” Vargabi, Tamara, and Pame-

la discussed how their Level III NICU at HCA Northwest Medical Center improved their time to first episode of skin-to-skin care and their staff's perception of family-centered care. In 2021 and 2022, they faced several barriers, including low parental presence at the bedside due to COVID-19 pandemic policies that limited parental visitation and a lack of standardization regarding skin-to-skin care. In general, there was a lot of fear and anxiety around skin-to-skin care, especially with infants who were intubated or had central lines. Staff felt they had not received enough education about skin-to-skin with such patients and were unsure they could safely help caregivers perform skin-to-skin in these situations.

“In 2021 and 2022, they faced several barriers, including low parental presence at the bedside due to COVID-19 pandemic policies that limited parental visitation and a lack of standardization regarding skin-to-skin care. In general, there was a lot of fear and anxiety around skin-to-skin care, especially with infants who were intubated or had central lines. Staff felt they had not received enough education about skin-to-skin with such patients and were unsure they could safely help caregivers perform skin-to-skin in these situations.”

In 2022, our NICU joined the Florida Perinatal Quality Collaborative's (FPQC) PAIRED initiative. The primary goal of this initiative was to decrease the time to the first episode of skin-to-skin care by a baseline of 20% (see Figure 1 Key Driver Diagram). The unit also aimed to make the care in their unit more family-centered. The HCA Northwest NICU formed an interdisciplinary team of three nurses, three neonatologists, a hospital leader, a data champion, and a respiratory therapist. Their main interventions (figure 2) included performing simulations of transfers of intubated small babies who had central lines to caregivers. They also pro-

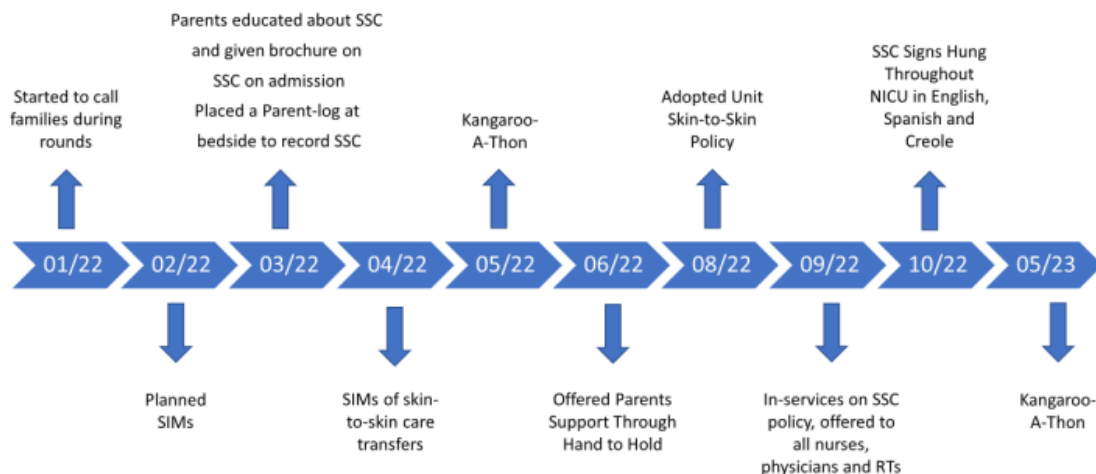




¹* Any parent or caregiver present in-person in the NICU within a calendar day.

Balancing measure: Percent of adverse events (AE) during SSC (# of adverse events during SSC/# of total SSC events); AE = unplanned extubation and/or dislodged central line
Process Measure: Percent of patients receiving HH or SSC (# of patients receiving either HH or SSC on any given day/total daily NICU census that day)

Timeline



vided caregiver education through distributing a brochure on the benefits of skin-to-skin care to parents upon admission. The team hung signs in the NICU reminding parents to ask to do skin-to-skin care with their infants, creating an excellent opportunity for advocacy. Lastly, they created an official skin-to-skin policy for staff in the unit to reference.

“The team hung signs in the NICU reminding parents to ask to do skin-to-skin care with their infants, creating an excellent opportunity for advocacy. Lastly, they created an official skin-to-skin policy for staff in the unit to reference.”

Regarding advancing family-centered care, HCA Northwest NICU started to include parents on rounds via phone when they could not be present in person. Since they did not have a Family Advisory Council, they offered parents the opportunity to receive peer support through Hand-to-Hold. The FPQC provided monthly coaching calls, ongoing feedback, and guidance on the NICU’s data.

HCA Northwest reduced their average time to first hold from 7 days to 2.8 days. By completing this initiative, they rose from roughly the 45th percentile to about the 90th percentile for prompt initiation of skin-to-skin care among all of the NICUs participating in the initiative. Based on feedback from staff, the NICU’s care also became more family-centered. They mentioned that it was no longer uncommon for intubated patients to do skin-to-skin care, that parents were now asking for skin-to-skin care more often, and found great comfort in having an official skin-to-skin policy to reference.

“Based on feedback from staff, the NICU’s care also became more family-centered. They mentioned that it was no longer uncommon for intubated patients to do skin-to-skin care, that parents were now asking for skin-to-skin care more often, and found great comfort in having an official skin-to-skin policy to reference.”

Overall, this is just the beginning of the journey towards improving skin-to-skin and family-centered care at HCA Northwest. Future directions include eventually forming a Family Advisory Council and, of course, holding many more Kangaroo-A-Thons!

Disclosure: *The authors have no conflicts of interests to disclose.*

NT

Corresponding Author



*Tamara Bledsoe, MS, NNP, APRN-BC-C-ONQS,
Envision Healthcare
Email: tbledsoearnp@gmail.com*



*Vargabi Ghei, MD, MSHS
Medical Director
Envision Healthcare
HCA Northwest Hospital*



*Pamela Torreblanca, RN
Clinical Nurse Coordinator
HCA Northwest Hospital*

Readers can also follow

NEONATOLOGY TODAY

via our Twitter Feed

@NEOTODAY

JOIN NNNP

INVEST
in your
community.

\$75

MISSION:

Optimizing care for all NICU infants and their families through

- direct family involvement
- staff support
- research
- education

VISION:

To be the leading voice and resource for mental health services in the NICU.



National Network
of **NICU**
Psychologists



nationalperinatal.org/psychologists

nationalperinatal.org/membership

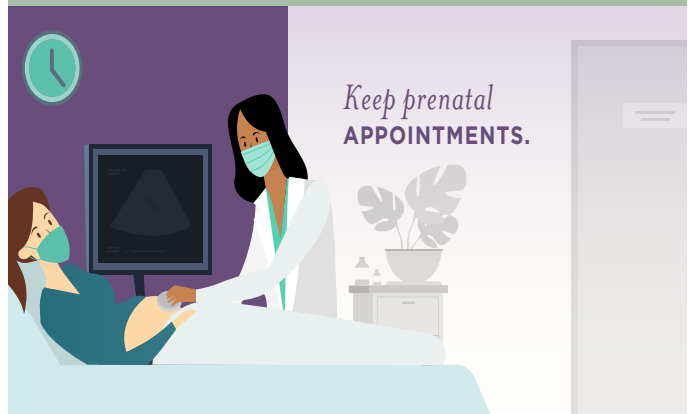
The **PREGNANT MOM'S** *Guide To*
Staying **SAFE DURING COVID-19**



Maintain at least
A 30-DAY SUPPLY
OF YOUR MEDICATIONS.



Keep prenatal
APPOINTMENTS.



Talk to your health
care provider about
STAYING SAFE
DURING COVID-19.



[LEARN MORE >](#)

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



VACCINES

PREVENTIVE MONOCLONAL ANTIBODIES

Teach the body to create antibodies that fight off a specific disease.

Introduce antibodies that are ready to ward off disease in the body.

By introducing an inactive piece of a disease or proteins that look like the disease, they trigger an immune response, training the body to create antibodies that defeat the disease.

Instead of teaching the body to create antibodies and defenses, they provide antibodies that are readily available.



How does it work?

Both support the immune system's defenses.

Many vaccines are readily and easily available.

The technology behind vaccines has been around for decades.



What are the benefits?

Preventive monoclonal antibodies can provide protection for diseases where there isn't an existing vaccine or there isn't an existing vaccine for certain patient groups.

Both protect against disease and provide a public health benefit by decreasing the burden of disease.

Polio
Measles
COVID-19
And more



What can this immunization protect against?

RSV
COVID-19

Both can provide tailored protection from a variety of diseases.



Is it safe?

Yes

Yes

Both vaccines and preventive monoclonal antibodies undergo extensive testing for safety and efficacy.

Vaccines and Preventive Monoclonal Antibodies

WHAT'S THE DIFFERENCE?

The Importance of Immunization

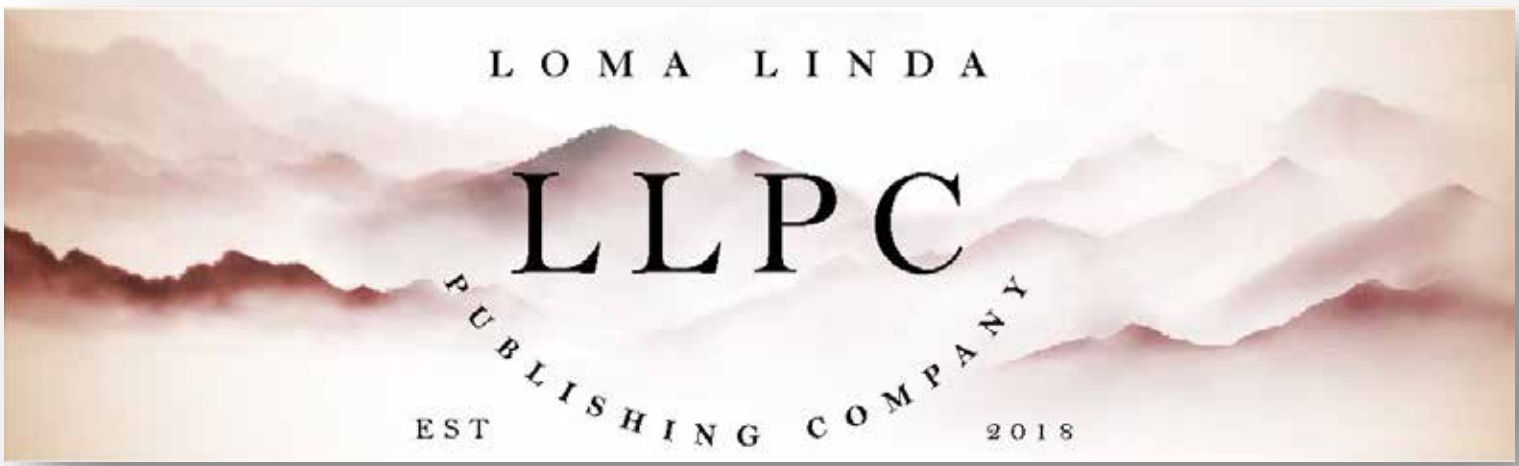
Vaccines and preventive monoclonal antibodies are two different types of immunization. While they function differently, they both serve the same purpose: protecting people from serious illnesses and diseases.

Different Technology, Same Protective Value



<https://www.who.int/news-room/feature-stories/detail/how-do-vaccines-work> - text=Vaccines%20contain%20weakened%20or%20inactive,rather%20than%20the%20antigen%20itself.

https://static1.squarespace.com/static/5523ef7e46b0ef011e688e6/v/62445af0134140ff954f206/1648646910465/NCIH_Monoclonal+Antibodies+Inclusion+in+the+VFC+Program_Positon+Paper_Mar+2022.pdf



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

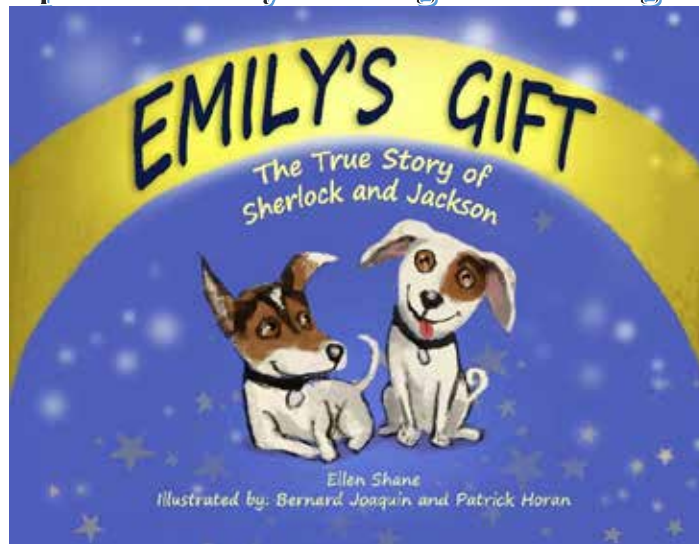
RESPIRATORY SYNCYTIAL VIRUS

is a highly contagious seasonal virus that can lead to hospitalization for some babies and young children.

Know the Signs.



“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 Premie Parent's SURVIVAL GUIDE to the NICU

By

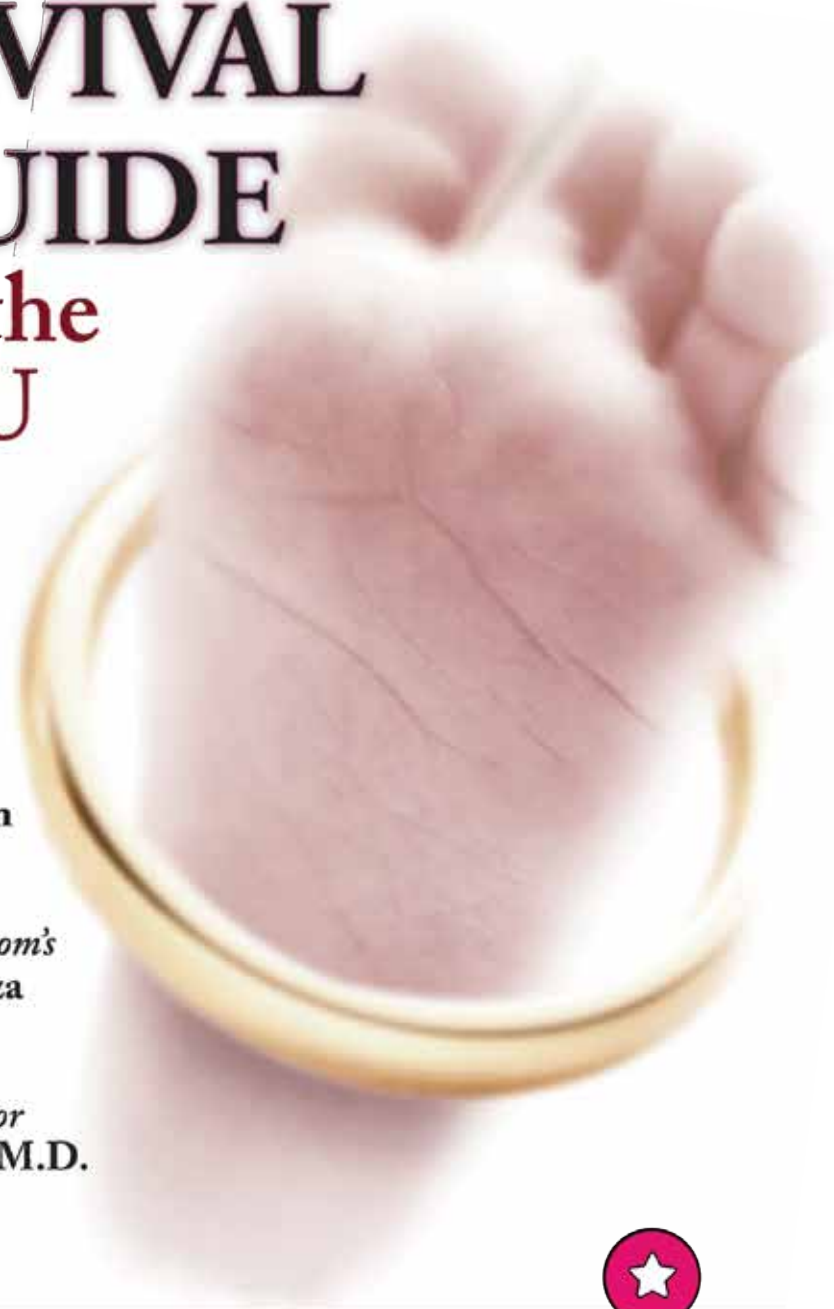
little man's
Nicole Conn

&

PremieWorld.com's
Deb Discenza

with

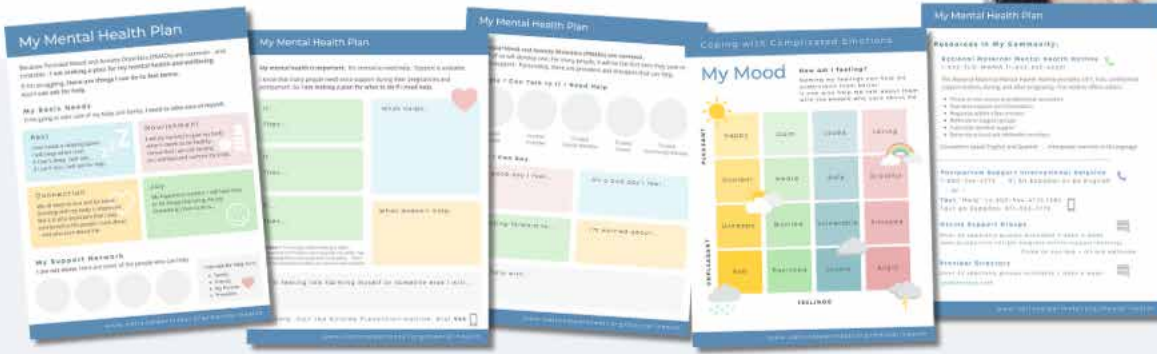
Medical Editor
Alan R. Spitzer, M.D.



HOW TO
MAINTAIN YOUR SANITY
& CREATE A NEW NORMAL

second edition

Make a Plan for your... Perinatal Mental Health



FREE TOOLS

Let's work together to improve support for families.

nationalperinatal.org/mental-health

National Network of
NICU Psychologists



NICU MENTAL HEALTH

OFFER ANTICIPATORY GUIDANCE

Parents need to know that they are more likely to develop depression and anxiety during the first year after childbirth than at any other time in their life.

Let's work together to improve support for NICU families.

nationalperinatal.org/psychologists

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



CONGENITAL
CARDIOLOGY
TODAY

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



Subscribe Electronically
Free on the Home Page

www.CongenitalCardiologyToday.com

CDH International

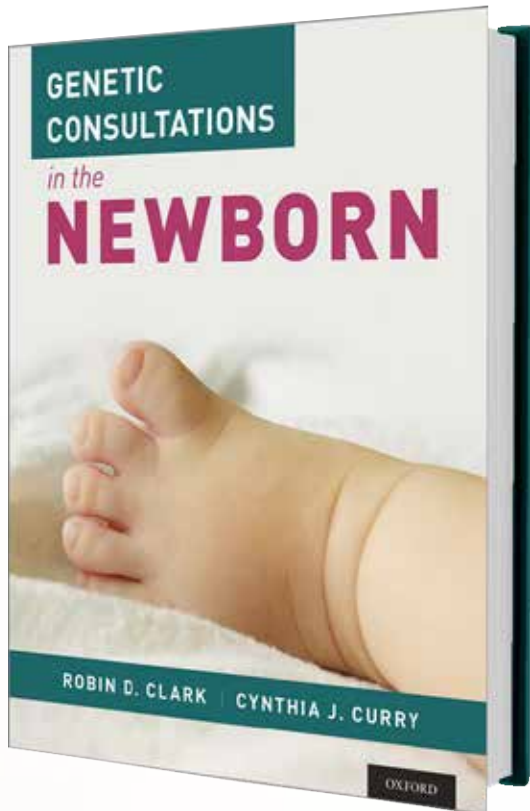
A global initiative to stop Congenital Diaphragmatic Hernia

*“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

REGISTER

\$675 NPA MEMBERS
get \$100 off

\$250 STUDENT/PARENT
* includes continuing ed credits

NPA's ANNUAL INTERDISCIPLINARY CONFERENCE

Towards

Trauma-Responsive Perinatal Care



 WHEN:

May 15 - 17

 WHERE:

**Sheraton Park
Hotel** in Anaheim,
California



 **National
Perinatal
Association**

* Continuing Education credits available at no additional cost through our joint provider.

WWW.NPACONFERENCE.ORG

Clinical Pearl: The Clinical Relevance of Neonatal Informatics

Gustave H. Falciglia, MD, Joseph R. Hageman, MD, Walid Hussain, MD, Lolita Alcocer Alkureishi, MD, Kshama Shah, MD, Mitchell Goldstein, MD, MBA, CML

“In our previous clinical pearl, we discussed the clinical relevance of artificial intelligence (AI) to neonatal acute kidney injury (1). Our primary responsibility in the neonatal intensive care unit (NICU) and the nursery is to care for newborn infants, and with that, we try to keep up with new technology.”

In our previous clinical pearl, we discussed the clinical relevance of artificial intelligence (AI) to neonatal acute kidney injury (1). Our primary responsibility in the neonatal intensive care unit (NICU) and the nursery is to care for newborn infants, and with that, we try to keep up with new technology. Technological advancements via clinical informatics have made electronic health records (EHR) mainstream and continue to lead to its evolution. New clinical informatics tools have equal potential to become critical resources for clinicians. In caring for the neonate, a very specialized set of data is required to track their health – for example, maternal labs and history, including labor and delivery, daily weights and fluid balance, and titrated support are only a few of the data points very specific to the newborn's care. Meeting these specialized data needs led to the development of neonatal informatics and neonatologists being among the first pediatric subspecialists to adopt EHRs in 1992 (3). NeoData (Isoprene Corp, Lisle, IL) is one of the first EHRs designed explicitly for the NICU (3).

Even with these many efforts to use neonatal informatics to improve our EHR, the question remains: is clinical informatics helpful in understanding all the information we accumulate as we care for critically ill term and preterm infants? That question can be broken down into two parts: 1) how helpful is clinical informatics in the daily, real-time management of our patients (i.e., practice), and 2) does clinical informatics help us improve care through research and quality improvement? Stepping back even further, what exactly is the definition of clinical informatics? One definition found in AIMA, which we found helpful, is that informatics is information science and involves the storage and retrieval of data (2). When one adds clinical information to informatics, it also includes computer science, algorithms, and healthcare data that improves communication, understanding, and management of medical information to help support both arms of practice and research and quality improvement (2).

“New clinical informatics tools have equal potential to become critical resources for clinicians. In caring for the neonate, a very specialized set of data is required to track their health – for example, maternal labs and history, including labor and delivery, daily weights and fluid balance, and titrated support are only a few of the data points very specific to the newborn's care.”

While significant progress has been made in developing the EHR in the NICU, we still have a long way to go to refine this system. According to a 2023 commentary by Patel et al. (3), progress notes in the United States are four times longer than those of other developed countries, frequently including daily lab values and test results duplicated from other EHR areas (3). The authors suggest that the progress note “captures the patient's clinical status and the decision-making for that day” (3). They believe that there should be a separate “hospital course” section in the chart and a “succinct patient review screen” that can be used for daily rounds (3). The failure of many EHRs to streamline access to the most immediately relevant clinical data has led to many neonatologists and/or trainees continuing to use a paper version of the “patient review screen in the NICU.

“Speaking of paper, another area for improvement is the transition of paper flowsheets to the EHR. Paper flowsheets contain data structured on a grid with a horizontal axis organizing data by time and a vertical axis organizing data by category (4).”

Speaking of paper, another area for improvement is the transition of paper flowsheets to the EHR. Paper flowsheets contain data structured on a grid with a horizontal axis organizing data by time and a vertical axis organizing data by category (4). In 2015, Varpio

NEONATOLOGY TODAY is interested in publishing manuscripts from Neonatologists, Fellows, NPs 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

et al. studied the differences between paper flowsheets and EHR flowsheets and how these differences affected clinical reasoning among pediatric intensive care unit clinicians during the hospital's transition to an EHR (4). They noted that, unlike paper flowsheets, data were frequently "chronologically and contextually isolated" and that clinicians reported difficulty understanding their patient's constantly changing status, which is necessary in any intensive care unit. The efficiency of a compact paper flowsheet allowed the clinician to make assessments from disparate pieces of data (4). For example, a clinician can see that several days after discontinuing diuretics, an infant has rapidly increased weight, increased FiO2 requirement, and decreased urine output. The clinician can reason that the infant is in a state of fluid overload. To review the same data in an EHR flowsheet, the clinician must review the growth parameters in the growth chart or vital flowsheet, the medication list in the medical administration record (MAR), the intake and output summary, and the ventilator flowsheet. The compartmentalization of data hinders the formation of connections that support reasoning.

"The clinician can reason that the infant is in a state of fluid overload. To review the same data in an EHR flowsheet, the clinician must review the growth parameters in the growth chart or vital flowsheet, the medication list in the medical administration record (MAR), the intake and output summary, and the ventilator flowsheet. The compartmentalization of data hinders the formation of connections that support reasoning."

Before attempting to find solutions to these problems, we should ask ourselves: *what is the goal of clinical informatics?* We would argue that the goal is to facilitate acquiring information and knowledge. According to "Biomedical Informatics," 4th Edition by Shortliffe and Cimino (Editors), they

*"Refer to a **datum** as a single observational point that characterizes a relationship. It generally can be regarded as the value of a specific parameter for a particular object (e.g., a patient) at a given point in time. The term **information** refers to analyzed data that have been suitably curated and organized to have meaning. Data do not constitute information until they have been organized in some way, e.g., for analysis or display. **Knowledge**, then, is derived through the formal or informal analysis (or interpretation) of information that was in turn derived from data (5)" (bolding is theirs)."*

EHRs do a great job storing data but do a poor job of cultivating information and knowledge. Thus, you have very long notes with last month's CBC but no clear summary of the patient's status or electronic flowsheets that do not optimally support clinical reasoning. EHRs can potentially improve our practice by facilitating data entry, data visualization, and user experience. Clinical decision support systems can provide clinicians with the right data at the right time to make the best decision (6). EHRs can also potentially improve research and quality by combining individual granular

data, identifying cohorts of interest (e.g., extremely preterm infants or those with bronchopulmonary dysplasia), extracting data, and providing analysis. Advances in research can then flow back to our practice, truly "bench to bedside." Perhaps AI can augment these tasks by supporting clinicians in writing lengthy discharge summaries that require a high-level narrative of infants who may have been in the NICU for months or by accessing more data for research by deciphering free-text data.

Before we can expect more from the EHR, however, we need to take an active role in their design by ensuring that EHRs have an intimate knowledge of the end user (nursing, physicians, and others involved in documentation), their roles, how they chart, and what information is essential to them. We should also ensure that products are backed by evidence. The evidence could be accumulated from trials evaluating which note template or style conveys and communicates the patient's status the best or which flowsheet format generates the most information and knowledge or produces the best decisions. Rather than working for the EHR, the EHR could work for us and our patients.

References:

1. Hageman JR, Alkureishi LA, Hussain W, Goldstein M. Clinical pearl: Artificial intelligence, machine learning models in neonatology: Neonatal acute kidney injury. *Neonatology Today* 2024;19(1):208-209.
2. <https://amia.org/about-amia/why-informatics/informatics-research-and-practice>
3. Patel SY, Palma JP, Hoffman JM, Lehman CU. Neonatal informatics: past, present, and future. *J Perinatology*; <https://10.1038/s41372-024-01924-4>.
4. Varpio L, Day K, Elliot-Miller P, King JW, Kuziemsy C, Parush A, Roffey T, Rashotte J. The impact of adopting EHRs: How losing connectivity affects clinical reasoning. *Medical Education*. 2015;49:476-486. doi:10.1111/medu.12665.
5. Shortliffe EH, Barnett GO. Biomedical Data: Their Acquisition, Storage, and Use. In: Shortliffe EH, Cimino JJ, eds. *Bio-medical Informatics: Computer Applications in Health Care and Biomedicine*. 4th ed. Springer; 39-66.
6. Centers for Medicare & Medicaid Services. CDS - Clinical Decision Support. eCQI Resource Center. Published 2018. Accessed November 17, 2018. <https://ecqi.healthit.gov/cds>

Conflict of Interest Disclosure: Gustave H. Falciglia has received a small business technology transfer grant (STTR) from the Medical Predictive Science Corporation (MPSC) through the National Institutes of Health to develop a clinical decision support system to support nutrition. He does not have a financial relationship with MPSC outside the grant. Disclosures: The other authors have no disclosures

NT

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

Corresponding Author



Gustave H. Falciglia, MD
Assistant Professor of Pediatrics (Neonatology),
Northwestern University
Feinberg School of Medicine
Ann & Robert H. Lurie Children's Hospital of Chicago
225 E. Chicago Ave.
Chicago, Illinois 60611
Email: GFalciglia@luriechildrens.org

Corresponding Author



Lolita Alcocer Alkureishi, MD
Associate Professor of Pediatrics
Assistant Director,
Ambulatory Care Residency Program
Director, Pediatric Clerkship
The University of Chicago Medicine
5841 S. Maryland Avenue
Chicago, IL 60637

Corresponding Author



Joseph R. Hageman, MD
Senior Clinician Educator
Pritzker School of Medicine
University of Chicago
5841 S. Maryland Ave.
Chicago, IL 60637
Phone: 773-702-7794
Fax: 773-732-0764
Email: josephhageman6@gmail.com



Kshama Shah, MD
Assistant Professor of Pediatrics
The University of Chicago Medicine
5841 S. Maryland Avenue
Chicago, IL 60637



Walid Hussain, MD
Associate Professor of Pediatrics
The University of Chicago
Department of Pediatrics
Email: whussain1@uchicago.edu



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

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

MedEd On The Go® presents

3 Accredited Education Programs in Short-Form Video Format
Available for CME/CNE Credits

The Role of Nutrition & Exclusive Human Milk for Very Low Birth Weight Infants



Preventing Bronchopulmonary Dysplasia

1.75 credit hours

WATCH NOW



www.MedEdOTG.com/video/program/599

Preventing Neonatal Sepsis

0.5 credit hours

WATCH NOW



www.MedEdOTG.com/video/program/609

Preventing Retinopathy of Prematurity

1.0 credit hour

WATCH NOW



www.MedEdOTG.com/video/program/608



Stephen E. Welty, MD

Clinical Professor of Pediatrics
University of Washington
School of Medicine
Seattle, WA



Dan L. Stewart, MD

Professor of Pediatrics & International Pediatrics
University of Louisville School of Medicine
Co-Director of NICU & ECMO
Norton Children's Hospital
Louisville, KY



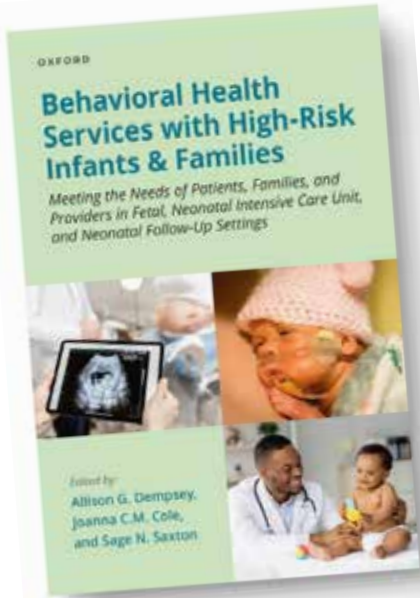
Jonathan R. Swanson, MD, MSc

Associate Professor of Pediatrics
University of Virginia
Children's Hospital
Charlottesville, VA



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.

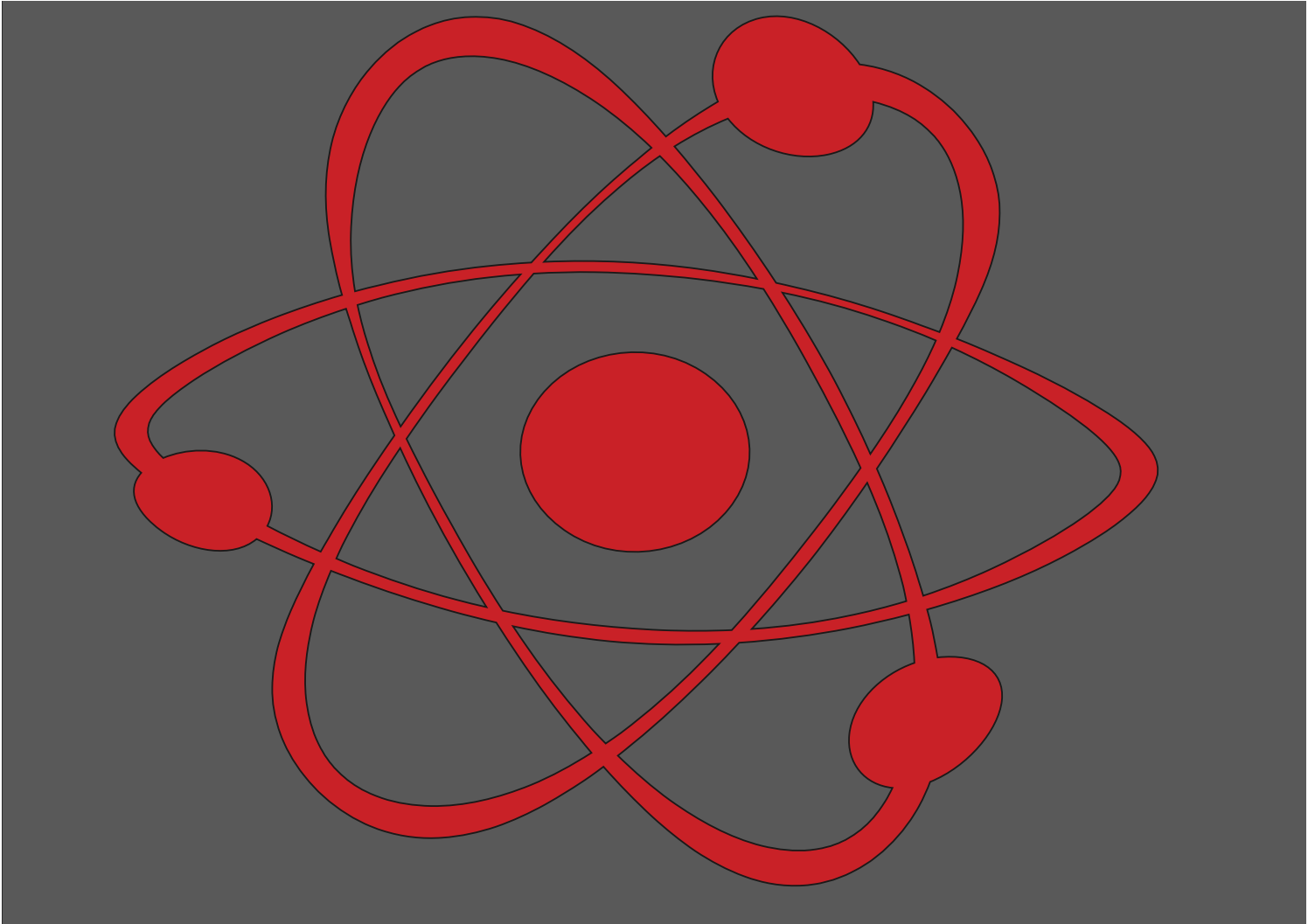
Download our perinatal Mental Health Plan worksheets.

Support NICU families and staff during COVID-19.

See resources created by the National Network of NICU Psychologists.



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.
© 2006-2020 by Neonatology Today
Published monthly. All rights reserved.
ISSN: 1932-7137 (Online), 1932-7129 (Print)

Readers can also follow

NEONATOLOGY TODAY

via our Twitter Feed

@NEOTODAY

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

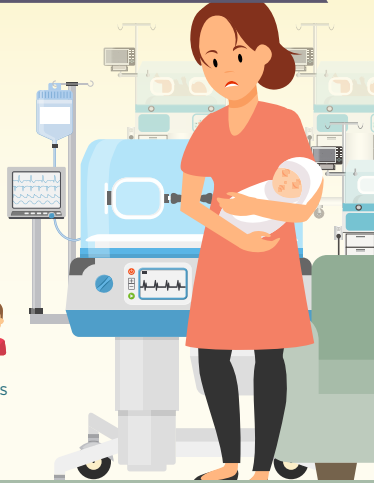
Preterm infants are:

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



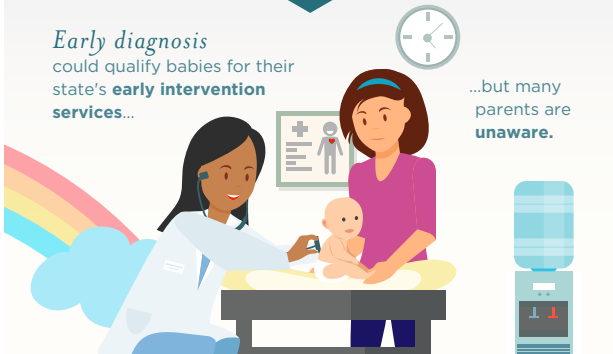
Address physical challenges



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



Sin embargo, sólo el **15%** recibe tratamiento!

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

El sueño, la alimentación y el comportamiento del bebé a medida que crece?



La salud de la madre

La capacidad para cuidar de un bebé y sus hermanos

PARA AYUDAR A LAS MADRES A ENFRENTAR LA DEPRESIÓN POSPARTO



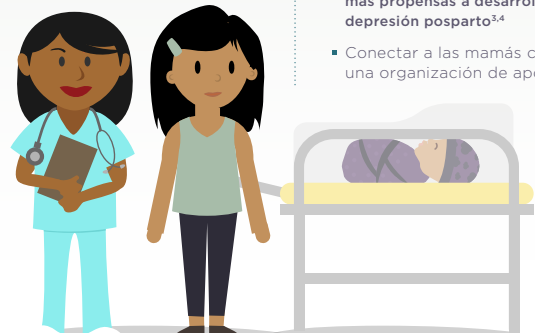
LOS ENCARGADOS DE FORMULAR POLÍTICAS PUEDEN:

- Financiar los esfuerzos de despistaje y diagnóstico
- Proteger el acceso al tratamiento



LOS HOSPITALES PUEDEN:

- Capacitar a los profesionales de la salud para proporcionar apoyo psicosocial a las familias... **Especialmente aquellas con bebés prematuros, que son 40% más propensas a desarrollar depresión posparto**^{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. Accessed on: <http://www.apa.org/women/resources/reports/postpartum-depression.aspx>

² National Institute of Mental Health. Accessed on: <http://www.nimh.nih.gov/health/publications/postpartum-depression-facts/index.shtml>

³ Journal of Perinatology (2015) 35, 529–536. doi:10.1097/JP.0000000000000147

⁴ Prevalence and risk factors for postpartum depression among women with problem and low-birth-weight infants: a systematic review. Vigod SN, Villages L, Dennis CL, Ross LE. *BMC*. 2010 Apr; 11:79. doi:10.1186/1471-2900-11-79

Upcoming Medical Meetings

14th annual National Association
of Neonatal Therapists (NANT)
Conference in
Miramar Beach, Florida,
April 11th - 13th, 2024
[https://nantconference.com/early-
notification/](https://nantconference.com/early-notification/)

PAS 2024
Toronto, Canada
May 2-6, 2024
<https://www.pas-meeting.org/>

National Perinatal Association
TRAUMA-RESPONSIVE PERINATAL
CARE
May 15-17 2024
Anaheim, California.
[https://www.npaconference.org/
event-details/towards-trauma-
responsive-perinatal-care](https://www.npaconference.org/event-details/towards-trauma-responsive-perinatal-care)

NeoHeart 2024 Conference
July 30, 2024 – August 2, 2024
Columbia University, New York, NY
[https://web.cvent.com/
event/FE874AD0-526B-
4C3F-BE22-0735E8DB0CF7/
summary?environment=P2](https://web.cvent.com/event/FE874AD0-526B-4C3F-BE22-0735E8DB0CF7/summary?environment=P2)

2024 AAP National Conference &
Exhibition
September 27 - October 1, 2024
Orlando, Florida
[https://aapexperience.org/
conference-registration/](https://aapexperience.org/conference-registration/)

NEO: The Conference for
Neonatology
Feb, 2025
[https://www.pediatrrix.com/for-
clinicians/neo-conference](https://www.pediatrrix.com/for-clinicians/neo-conference)

Pediatrrix: Specialty Review in
Neonatology
Feb 2025
[https://www.pediatrrix.com/
for-clinicians/specialty-review-
conference](https://www.pediatrrix.com/for-clinicians/specialty-review-conference)

38th International Gravens Meeting
on the the Environment of Care
for High Risk Newborns and their
Families "Providing Safe Spaces for
Babies, Families, and Staff"
March 5-8, 2025
Sheraton Sand Key Resort
Clearwater Beach, FL
[https://paclac.org/https-paclac-org-
gravens-conference/](https://paclac.org/https-paclac-org-gravens-conference/)

*For up to date Meeting
Information, visit
[NeonatologyToday.net](https://www.NeonatologyToday.net) and click
on the events tab.*

NEONATOLOGY TODAY

© 2024 by Neonatology Today
ISSN: 1932-7137 (Online). ISSN: 1932-
7129 (Print). Published monthly. All rights
reserved.

Publication

Mitchell Goldstein, MD
Loma Linda Publishing Company
11175 Campus Street
Suite #11121
Loma Linda, CA 92354
www.NeonatologyToday.net
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 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



CONGENITAL
CARDIOLOGY
TODAY

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



Subscribe Electronically
Free on the Home Page

www.CongenitalCardiologyToday.com

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



**Join Us!
For the 38th International
GRAVENS meeting on the
Environment of Care for High
Risk Newborns and their
Families**

*“Providing Safe Spaces for Babies, Families
and Staff”*

March 5-9, 2025

**Sheraton Sand Key Resort
Clearwater Beach, Florida**

For more information go to NeonatologyToday.net or PACLAC.org



Abstracts due September 30, 2024.



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



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



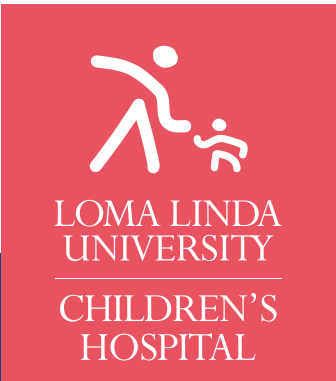
For more information, please contact:

Karin Colunga, MSN, RN, PNP-BC
Director of Advanced Practice Nursing
kecolunga@llu.edu | 909-558-4486

*Offering a **sign-on bonus** with relocation reimbursement for full-time, direct applicants who meet requirements.



HEALING. HEALTHY. HAPPY.
A Seventh-day Adventist Organization



Looking for a new adventure in your nursing career?

- Are you a nurse who is creative and enjoys being an innovator?
- Are you often looking at things and asking how could we do this better?
- Do you enjoy problem solving? Having something new to do every day?
- Are you interested in growing in nursing leadership and also in advanced practice nursing skills?

Scan the QR Code to see if
the Clinical Nurse Specialist
job is for you!



**WE HAVE A NEW
CLINICAL NURSE
SPECIALIST
FELLOW
POSITION
POSTED NOW!**



NEONATOLOGY TODAY

News and Information for BC/BE Neonatologists and Perinatologists



**We Can Help
You Recruit
from 1,045
NICUs in the
USA & Canada**

Your Recruitment Advertising Includes:

- Full color Recruitment Ad in the issue(s)
- Your recruitment listing in the e-mail blast for the issue(s) with a hot link
- 3-Step Special Recruitment Opportunity Website Section on three (3) areas of the website
- *We can create your recruitment ad at no extra charge!*

For more information, contact:

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

© 2020 Neonatology Today | ISSN: 1932-7137 (digital). Published monthly. All rights reserved.

Editorial Board



Mitchell Goldstein, MD - Editor-in-Chief
LomaLindaPublishingCompany@gmail.com
MGoldstein@llu.edu
Professor of Pediatrics
Loma Linda University School of Medicine
Division of Neonatology, Department of Pediatrics
Loma Linda University Children's Hospital



T. Allen Merritt, MD - Senior Associate Editor for Contributions & Reviews
AllenMerritt.md@gmail.com
Professor of Pediatrics
Loma Linda University School of Medicine
Division of Neonatology, Department of Pediatrics
Loma Linda University Children's Hospital



Larry Tinsley, MD - Senior Managing Editor
LTinsley@llu.edu
Associate Professor of Pediatrics
Division of Neonatology-Perinatal Medicine
Loma Linda University Children's Hospital



Elba Fayard, MD - Interim Fellowship Editor
Efayard@llu.edu
Professor of Pediatrics
Division Chair
Division of Neonatology-Perinatal Medicine
Loma Linda University Children's Hospital



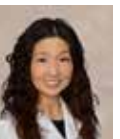
Munaf Kadri, MD - International Editor
MKadri@llu.edu
Executive Board
UMMA Clinic
Los Angeles, CA
Assistant Professor Loma Linda
Loma Linda University Children's Hospital



Michael Narvey, MD - Canada Editor
MNarvey@exchange.hsc.mb.ca
Section Head of Neonatology
Children's Hospital Research Institute of Manitoba



Joseph R. Hageman, MD - Clinical Pearls Editor
jhageman@peds.bsd.uchicago.edu
Senior Clinician Educator
Pritzker School of Medicine
University of Chicago



Clara H. Song, MD - Social Media Editor
clara.h.song@kp.org
Southern California Permanente Medical Group



Thomas A Clarke, MD - Western Europe Editor
tclarke347@gmail.com
Emeritus Consultant in Neonatology
The Rotunda Hospital,
Dublin, Ireland



Jan Mazela, MD - Central Europe Editor
janco@pol-med.com.pl
Associate Professor
Poznan University of Medical Sciences
Poznan, Greater Poland District, Poland



Stefan Johansson, MD PhD - Scandinavian Editor
stefan.johansson@99nicu.org
Consultant Neonatologist, Sachs' Childrens Hospital
Associate Professor, Karolinska Institutet
Stockholm, Sweden



Francesco Cardona, MD - European Editor at Large
francesco@99nicu.org
Consultant, Medical University of Vienna
Department of Paediatrics and Adolescent Medicine
Vienna, Austria



Arun Pramanick, MD - India Editor
aprama@lsuhsc.edu
Professor, Pediatrics,
Louisiana State University School of Medicine,
Shreveport, LA



Melissa LaMarca
Senior Editorial Project Director
Melissa.LaMarca@NeonatologyToday.net
Loma Linda, CA



Mita Shah, MD - Arts Editor
mitashah@llu.edu
Neonatal Intensive Care Unit Medical Director
Queen of the Valley Campus,
Emanate Health
West Covina, CA



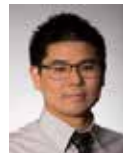
Giang Truong, MD - QI/QA Editor
GTruong@llu.edu
Associate Professor of Pediatrics
Division of Neonatology-Perinatal Medicine
Loma Linda University Children's Hospital



Jerassimos Ballas, MD, MPH - Perinatology Editor
jballas@ucsd.edu
Associate Professor of Obstetrics and Gynecology
University of California, San Diego



Maha Amr, MD - Wellness and Ethics Editor
maha.amr@neonatologytoday.net
 Assistant Professor of Pediatrics
 Division of Neonatology, Department of Pediatrics
 Loma Linda University Children's Hospital



Fu-Sheng Chou, MD, PhD - Senior Associate Editor,
 Director, Digital Enterprise
FChou@llu.edu
 Assistant Professor of Pediatrics
 Division of Neonatology, Department of Pediatrics
 Loma Linda University Children's Hospital



Mikko Hallman MD, Ph.D. - Finnish Editor
mikko.hallman@oulu.fi
 PEDEGO Research Unit, and MRC Oulu,
 University of Oulu
 Department of Children and Adolescents,
 Oulu University Hospital, Oulu, Finland
 Kimberly Hillyer, DNP, RN, LNC, NNP-BC - News Anchor



KHillyer@llu.edu
 Neonatal Nurse Practitioner/ Neonatal Intensive Care
 Loma Linda University Health Advanced Practice
 Services



Joy Browne, Ph.D., PCNS, IMH-E(IV) - FIFi-S Editor
Joy.browne@childrenscolorado.org
 Clinical Professor of Pediatrics and Psychiatry
 University of Colorado School of Medicine
 Aurora, Colorado



Robert D. White, MD - Gravens Editor
Robert_White@pediatrix.com
 Director, Regional Newborn Program
 Beacon Children's Hospital
 615 N. Michigan St.
 South Bend, IN 46601



Hun-Seng Chao, MD - Senior Associate Editor for
 Editorial Review and Layout
[Hunseng.Chao <hunseng@aol.com>](mailto:Hunseng.Chao@aol.com)
 Emeritus Neonatologist
 Irvine, CA



Tiffany A Moore, PhD, RN, SANE-A, FAWHONN
 National Perinatal Association Column Editor
tamoore@unmc.edu
 Associate Professor School of Nursing
 Interim Associate Dean for Academic Programs
 University of Nebraska Medical Center



Carolyn TenEyck, RN
 Advocacy Director
 Lake Worth, Florida

Dilip R. Bhatt, MD - Kaiser Fontana, Fontana, CA
 Barry D. Chandler, MD
 Anthony C. Chang, MD - Children's Hospital of Orange County
 K.K. Diwakar, MD - Malankara Orthodox Syrian Church Medical College
 Willa H. Drummond, MD, MS (Informatics)
 Philippe S. Friedlich, MD - Children's Hospital Los Angeles
 Benjamin Hopkins, OSMIV - Western University
 Andrew Hopper, MD - Loma Linda University Children's Hospital
 Lucky Jain, MD - Emory School of Medicine
 Prakash Kabbur, MBBS, DCH (UK), MRCPCH (UK) - Kapiolani
 Medical Center of Women & Children
 Gail Levine, MD - Loma Linda University Children's Hospital
 Lily Martorell, MD - Loma Linda University Children' Hospital
 Patrick McNamara, MD - Sickkids, Toronto, ON
 Rita Patel, NNP - Loma Linda University Children's Hospital
 John W. Moore, MD - Rady Children's Hospital
 Raylene Phillips, MD - Loma Linda University Children's Hospital
 Michael A. Posencheg, MD - Children's Hospital of Philadelphia
 DeWayne Pursley, MD, MPH - Boston Children's Hospital
 Luis Rivera, MD - Loma Linda University Children's Hospital
 Sandeep Lakireddy, OSMIV - Western University
 P. Syamasundar Rao, MD - UT-Houston Medical School
 Joseph Schulman, MD, MS - California Department of Health Care Services
 Steven B. Spedale, MD, FAAP - Woman's Hospital
 Alan R. Spitzer, MD
 Cherry Uy, MD, FAAP - University of California, Irvine
 Dharmapuri Vidysagar, MD - University of Illinois Chicago
 Farha Vora, MD, Loma Linda University Children's Hospital
 Leonard E. Weisman, MD - Texas Children's Hospital
 Stephen Welty, MD - Seattle Children's Hospital
 T.F. Yeh, MD - Cook County and Taipei Medical University



99nicu

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

www.99nicu.org

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 feature artistic works created by our readers on the next to last page as well as photographs of birds on rear cover. For this edition, our art was again graciously provided by Colleen Kraft, MD. It is a work called "Infinity" done by her son Tim.. Our Bird is an "original" from Dr. Goldstein. This photo represents the longstanding amicable relationship between polar bears and penguins. To our knowledge, there has never been a penguin harmed by a polar bear in their natural environs.



Mita Shah, MD,
Neonatal Intensive Care Medical Director
Queen of the Valley Campus
Emanate Health, West Covina, 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. 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.

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



NICU BABY'S Bill of Rights

1- THE RIGHT TO ADVOCACY

My parents know me well. They are my voice and my best advocates. They need to be knowledgeable about my progress, medical records, and prognosis, so they celebrate my achievements and support me when things get challenging.

2- THE RIGHT TO MY PARENTS' CARE

In order to meet my unique needs, my parents need to learn about my developmental needs. Be patient with them and teach them well. Make sure hospital policies and protocols, including visiting hours and rounding, are as inclusive as possible.

3- THE RIGHT TO BOND WITH MY FAMILY

Bonding is crucial for my sleep and neuroprotection. Encourage my parents to practice skin-to-skin contact as soon as and as often as possible and to read, sing, and talk to me each time they visit.

4- THE RIGHT TO NEUROPROTECTIVE CARE

Protect me from things that startle, stress, or overwhelm me and my brain. 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 am cared for today will help my brain when I grow up. Connect me with my parents for the best opportunities to help my brain develop.

5- THE RIGHT TO BE NOURISHED

Encourage my parents to feed me at the breast or by bottle, whichever way works for us both. Also, let my parents know that donor milk may be an option for me.

6- THE RIGHT TO PERSONHOOD

Address me by my name when possible, communicate with me before touching me, and if I or one of my siblings pass away while in the NICU, continue referring to us as multiples (twin/triplets/quads, and more). It is important to acknowledge our lives.

7- THE RIGHT TO CONFIDENT AND COMPETENT CARE GIVING

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 educate them about my unique needs, development, diagnoses, and more.

8- THE RIGHT TO FAMILY-CENTERED CARE

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

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 parents about resources such as peer-to-peer support programs, support groups, and counseling, which can help reduce PMAD, PPD, PTSD, anxiety and depression, and more.

10- THE RIGHT TO INCLUSION AND BELONGING

Celebrate my family's diversity and mine; including our religion, race, and culture. Ensure that my parents, grandparents, and siblings feel accepted and welcomed in the NICU, and respected and valued in all forms of engagement and communication.

Presented by:



NICU Parent Network

NICU PARENT NETWORK

Visit nicuparentnetwork.org to identify national, state, and local NICU family support programs.

* The information provided on the NICU Baby's Bill of Rights does not, and is not intended to, constitute legal or medical advice. Always consult with your NICU care team for all matters concerning the care of your baby.

copyright © 2020 NICU Parent Network



NT

