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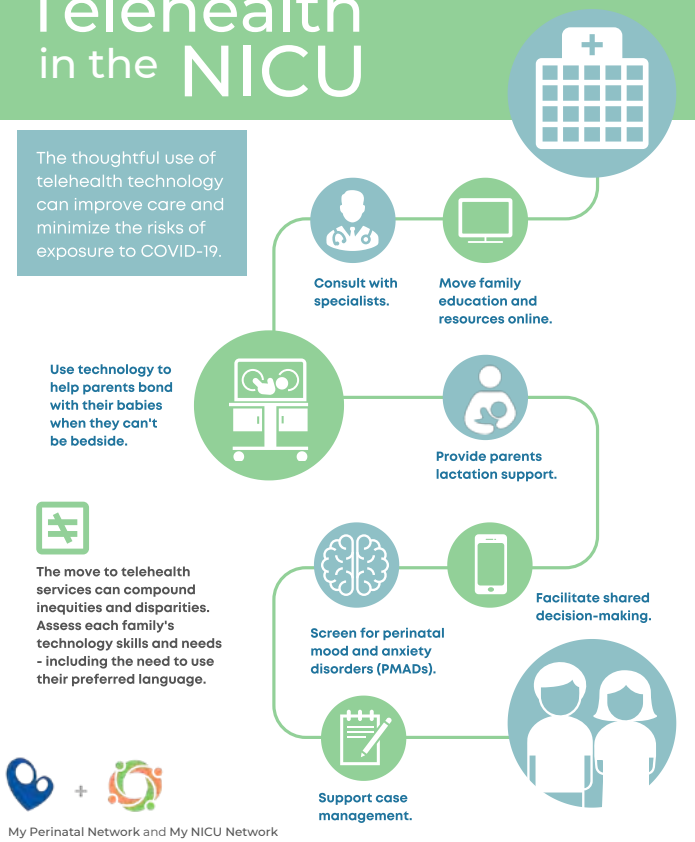
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Historical Descriptions of Cardiovascular System and Blood Circulation: from Claudius Galen to Islamic Scholars and Marcello Malpighi

Houchang D. Modanlou, M.D.

Abstract:

Background: *Hippocrates considered the balance of four body humors, blood being one, as evidence of good health or homeostasis (400 BC). However, even after the establishment of the medical school in Alexandria, Egypt, with the practice of autopsy and vivisections, the circulation of blood was not described or known by the practitioners of medicine. Then, based on animal dissections, Galen (130–200 AD) provided a detailed, although incorrect, description of blood circulation, which was accepted for 1500 years.*

Objective: *Provide historical knowledge and descriptions of the cardiovascular system and blood circulation from the ancient Greek physicians/scholars to post-Renaissance.*

Design/Methods: *Review the literature to explore the historical progression of medical knowledge and understand and describe the cardiovascular system and blood circulation.*

Results: *The historical progression of the cardiovascular system and blood circulation descriptions can be summarized as follows: 1. Galen described arterial and venous circulation with pores between two cardiac ventricles. 2. Ali Ibn Abbas al-Majusi or Haly Abbas described venous and arterial circulation with a hole between the two cardiac ventricles. In that early period of Islamic Medicine, it was believed that blood was produced by the liver with nutrients from the bowel and consumed by the body. Blood originating in the liver carried nutrients by the veins while arteries carried air or Pneuma. 3. An accurate description of cardiopulmonary circulation was provided by Ibn al-Nafis (1213–1288 AD). 4. Communication between the two cardiac ventricles was found to be false, first by Ibn Al-Nafis and later by Andreas Vesalius (1514–1564 AD). 5. The discovery and the description for the presence of valves in the venous system were made by H. Fabricius (1537–1619 AD). 6. Having received instructions by his teacher H. Fabricius, William Harvey (1578–1657 AD) conducted experimentations and astute clinical observations, describing blood circulation as a closed system with veins bringing blood to the heart and the arteries taking blood from the heart to all organs. He also made observations on measuring cardiac output. 7. With the use of an early microscope, Marcello Malpighi (1628–1694 AD) observed blood flow from small vessels on the surface of the lungs and distended bladder of the frog, defining it as capillary circulation and communication between arteries and veins, thus, completing the correct understanding of blood circulation.*

Conclusion: *The correct description and understanding of the cardiovascular system and blood circulation in the history of medicine required keen clinical observations and scientific experimentations.*

Introduction

It took almost two millennia from the first writing to understand and accurately describe the cardiovascular system and blood circulation. The first known description of blood circulation is attributed to a Greek thinker, **Alcmaeon of Croton,** in 500 B.C., who conducted animal dissections and observed that arteries and veins are dissimilar (1). **Hippocrates** (460–370 B.C.) believed

"It took almost two millennia from the first writing to understand and accurately describe the cardiovascular system and blood circulation."

that the liver and spleen were the organs producing blood, which traveled to the heart to be warmed or cooled by the air entering the lungs and the heart via the trachea (2, 3, 4). This was followed by the Greek philosopher Aristotle's description of the human heart as having three chambers (384–322 B.C.) (3). **Herophilus of Chalcedon** (circa 300 B.C.), a Greek physician/anatomist in Alexandria, Egypt, known for doing human cadaver autopsies and vivisections, confirmed the dissimilarity between arteries and veins and determined that arteries, which contained blood, were thicker than veins (1).

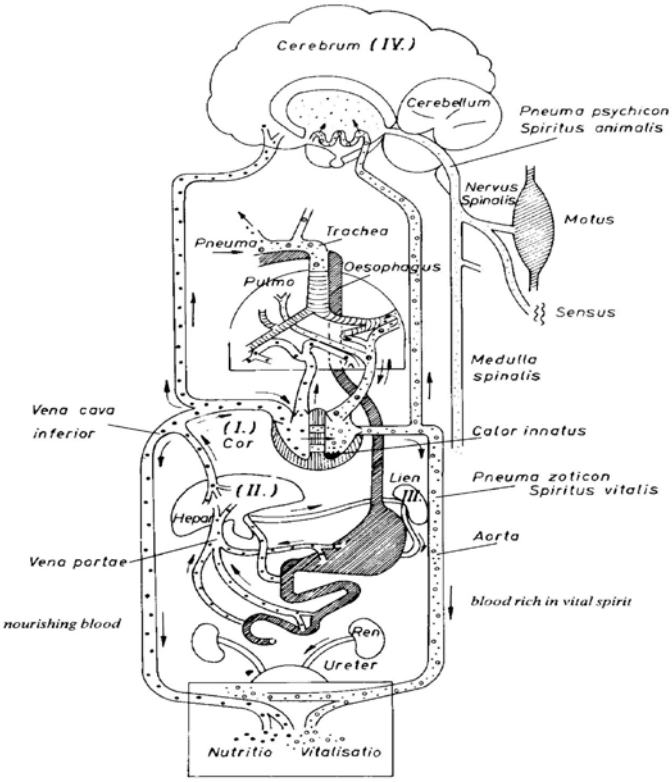
"The description of the cardiovascular system and blood circulation by Claudius Galen (129–200 AD) remained unchallenged for centuries. Further descriptions of blood circulation were made by Zachariya Razi, Ali ibn Abbas al-Majusi, Ibn al-Nafis, Servetus, Colombo, Cesalpino, Vesalius, and Fabricius. However, the accurate description of blood circulation was attributed to William Harvey, but it was Marcello Malpighi who described artery-venous connection via capillary circulation, thus providing the complete and accurate description of blood circulation."

The description of the cardiovascular system and blood circulation by **Claudius Galen** (129–200 AD) remained unchallenged for centuries. Further descriptions of blood circulation were made by **Zachariya Razi, Ali ibn Abbas al-Majusi, Ibn al-Nafis, Servetus, Colombo, Cesalpino, Vesalius, and Fabricius.** However, the accurate description of blood circulation was attributed to **William Harvey**, but it was **Marcello Malpighi** who described artery-venous connection via capillary circulation, thus providing the complete and accurate description of blood circulation.

Claudius Galen (129–200 AD).

Galen of Pergamum was born in what is now the western part of the modern country of Turkey. However, he spent his adult life in Rome caring for Emperor Marcus Aurelius and his son Commodus and sometimes functioned as the gladiators' physician. He was a famed Greek physician/anatomist whose medical texts were accepted, translated, and used for more than 1500 years in the East and the West. He was known for having carried out animal dissections and described arterial and venous blood, the former originating and produced by the heart and the latter by the liver (2–9). He postulated that once the heart and liver produced blood, the peripheral tissues consumed it. Phillips, Jr. RE (4) describes Galen's description of the heart and circulatory system: "Nutritive blood was thought to be made by the liver and carried through veins to the organs, where it was consumed. Blood was thought to be made by the heart and pumped through arteries to carry the vital spirits. Galen believed that the heart acted not to pump blood but to suck it in from the veins. Galen also believed that the blood flowed through the heart's septum from one ventricle to the other through tiny pores. He did not know that the blood left each ventricle through arteries". J.J. Bylebyl and W. Pagel (7) comprehensively describe Galen's doctrine on the pulmonary

Figure 1. This figure shows Galen's description of human blood circulation. The communication between the two ventricles and independent arterial and venous circulation are depicted in the figure (Figure was downloaded from Schultz SG, Ref. # 10)



veins. A pictorial description of Galen's circulatory system is noted in **Figure 1**.

Zakariya Razi known as Rhazes in Latin (854–925 AD):

Abu Bakr Mohammad Ibn Zakariya al-Razi, known in the West as Rhazes, was born in the ancient city of Rey, south of the current capital city of Tehran. He studied music, philosophy, alchemy, Persian literature, and poetry. Later, at age 30, he studied medicine and became a sought-after teacher in medical science. He wrote an immense medical encyclopedia, a comprehensive

"He [Galen] was known for having carried out animal dissections and described arterial and venous blood, the former originating and produced by the heart and the latter by the liver. He postulated that once the heart and liver produced blood, the peripheral tissues consumed it."

book on medicine called *Kitab al-Hawi fi al-Tibb* (*Liber Continens*), consisting of 23 volumes containing many extracts from Greek and Hindu authors and his clinical observations. A compendium to this book was the Book of Experience or Casebook, a collection of case histories recorded by some of his students and issued posthumously. This book was translated into Latin in 1279 under *Liber Continens* by Faraj Ibn Salem (known in Europe as Farraguth), a physician of Sicilian-Jewish origin employed by Charles of Anjou to translate medical works. Even more influential in Europe was Razi's book of medicine, a short general textbook with ten chapters based mainly on Greek science and entitled *Kitab al- Mansuri* (*Liber Almansoris*), which he dedicated in 903 to the Samanid prince Abu Salih al-Mansur Ibn Ishaq, Governor of Rey. This treatise was subsequently translated into Latin in Toledo, Spain, by Geraldo di Cremona in the 13th century AD. Razi's *Kitab al-Judari wa al-Hasbah* (*De variolis et morbiliis*) was a third and extremely influential treatise translated into Latin and English in the 18th century. The last book is related to smallpox and measles; Razi makes many prescient observations that were not described previously (11).

"He [Razi] wrote an immense medical encyclopedia, a comprehensive book on medicine called* Kitab al-Hawi fi al-Tibb *(*Liber Continens*), consisting of 23 volumes containing many extracts from Greek and Hindu authors and his clinical observations...Even more influential in Europe was Razi's book of medicine, a short general textbook with ten chapters based mainly on Greek science and entitled* Kitab al- Mansuri *(*Liber Almansoris*)..."

Razi or Rhazes, in his book of *al-Mansouri* or *Tebb-e Mansouri*, described the arteries, veins, and blood circulation, essentially based on Galen's description of the cardiovascular system and blood circulation (11). He noted that the arteries' origin is in the heart's left ventricle. Two large arteries originate from this ventricle, one of which is smaller, and its wall has only one layer of fibers, while the larger artery has two layers in its wall. The smaller artery goes to the lungs and branches in its tissues. Two

small arteries originate from the larger artery or aorta, naming them crown arteries (coronary arteries), the smaller of which goes to the right ventricle, and the other circles the heart and enters its wall. Like Galen, he mentions about the pores between the two ventricles. Furthermore, he described valves in the heart and gave directions for blood flow to and from the heart. He described that blood returning from the lungs to the heart carries vital spirit or Pneuma (3).

"Razi or Rhazes, in his book of* al-Mansouri *or* Tebb-e Mansouri*, described the arteries, veins, and blood circulation, essentially based on Galen's description of the cardiovascular system and blood circulation. He noted that the arteries' origin is in the heart's left ventricle... Furthermore, he described valves in the heart and gave directions for blood flow to and from the heart. He described that blood returning from the lungs to the heart carries vital spirit or Pneuma."

Ali Ibn Abbas al-Majusi (died circa 989 AD):

A Persian physician of Zoroastrian ancestry, known in the West as Haly Abbas, recognized for his books *Kamil al-Sinaah al-tibbiya* (*The Perfection of the Art of Medicine*) or *Kitab Tebb-e al-Maleki* translated as the *Royal Book* or *Liber Regius*, in Latin (12, 13). He described the blood circulation as follows: "The food digested in the stomach passes through the pylorus into the duodenum and from there into the small intestine. There, the veins absorb the chyle and transport it through the portal vein into the liver, which transforms into blood. The blood is brought through the great vena cava to the body's organs. Thus, the veins have their point of exit in the liver. He also noted that while the veins are soft and have one wall, the arteries are double partitioned. He further noted that the fibers of the inner layer are stripped obliquely and are hard and coarse; the fibers of the outer layer are horizontally stripped and soft. This must be because the horizontally striped fibers operate the movement of the diastole through which the air from the heart is sucked into it. The oblique striped fibers of the inner layer operate the movement of the systole whereby the smoke-like excess is pushed out. He described the heart's shape, left orientation, and systole and diastole. From the heart, the arteries radiate to the lungs. The heart has a right and a left ventricle, which are separated by a partition (3). He stated that the passage between the two ventricles, as described by Galen and Aristotle, was incorrect.

Ibn al-Nafis (1210–1288 AD).

A native of Qarsh, a small town near Damascus, Syria, he taught medicine in Damascus and Cairo, also known for his book of *Kitab al-Mujiz Fi Al* Tibbs and several other medical texts. In his practical and shorter summary and commentary of the *Canon of Medicine* by Avicenna, called *Sharh Tashreeh Al-Qanun*, he took a fresh look at blood circulation. In his medical texts, one finds the description of the coronary vessels, the true concept of the heart's blood supply, and the correct description of pulmonary circulation (14–32). He described how the blood in the right ventricle is refined to be prepared and ready to be mixed with the air: "When the blood has been refined in this ventricle, it must reach the left ventricle where the Pneuma is formed. He states that there is no communication, visible or invisible pores as Galen thought, between the right and left ventricle". He wrote that "The blood must reach the lungs by the arterial vein so that it can spread out in their substance and mix with the air so that its finest constituents can be clarified, and so that it can then reach the venous artery, and from there the left ventricle." In addition to the correct description of pulmonary circulation, Ibn al-Nafis also described the anatomy of the lungs, bronchi, pulmonary artery, and veins. According to Abdel-Halimn (25), **Andrea Alpagus** (1450–1522 AD), a professor of medicine at the University of Padua, who spent 30 years in Syria studying Islamic Medicine, translated into Latin sections of Ibn Al-Nafis' book *Sharh Tashreeh Al-Qanun*, including the section on pulmonary circulation, which was published in Venice in 1547 AD.

"In his medical texts, one finds the description of the coronary vessels, the true concept of the heart's blood supply, and the correct description of pulmonary circulation...Ibn al-Nafis also described the anatomy of the lungs, bronchi, pulmonary artery, and veins."

Michael Servetus or Miquel Servede (1509–1553 AD):

There is a conflicting story about the birthplace and the given name of the man known as Michael Servetus (33). However, he was Spanish by ancestry. He was a Unitarian theologian, denying Trinity in his book *Christianismi Restituto*, published in 1553 AD, for which the Calvinists in Geneva burned him at the stake in the same year. Michael Servetus was credited among the first authors to describe pulmonary circulation in his book (33, 34, 35). According to Manfred Ullmann, Servetus's description of pulmonary circulation resembles Ibn al-Nafis so strongly that one can hardly reject a direct influence (31). Following Servetus, **Realdo Colombo (1510–1553)**, **Giovanni de Valverde (1554),** and **Andrea Cesalpino (1519–1603)** in the middle of the sixteenth century similarly described pulmonary circulation.

In the West, for about three centuries, these Western authors mentioned above were credited with describing pulmonary circulation until the discovery of the original description of pulmonary circulation by Ibn al-Nafis in the early part of the 20th century. In 1924, a young Egyptian physician, **Muhyi al-Din Altawi,** came across the manuscript by Ibn al-Nafis in the Prussian State Library in Berlin in the course of writing his doctoral thesis for the Medical Faculty of Albert Ludwig University of Freiburg in Germany (18, 23, 25, 26). This discovery would change the historical observations of European scientists who discovered pulmonary circulation in the 16th century (25).

Andreas Vesalius (1514–1564 AD):

He was a Belgian-born physician anatomist who received his medical school training, first in Paris, France, Louvain in Belgium, and then at the University of Padova in Italy, where he had a teaching position in human anatomy. His medical school thesis, *Paraphrasis*, was his commentary about the ninth book (*Liber*

Almansorem) of Rhazes (36). In Padua, he became the chair of Surgery and Anatomy. He was the author of one of the most important books on human anatomy called *De humani corporis fabrica,* or *The Fabric of the Human Body*, which was based on his vast experience in dissecting the bodies of executed criminals. He disproved Galen and Aristotle regarding the heart's structure, functions, and the vessels' origin. **A.H. Compier** (36) claims that Vesalius's criticism of Galen was derived from his knowledge of Rhazes' criticism of Galen. However, Vesalius disputed Galen's claims of porous intraventricular septum. He noted that the heart had four chambers, the liver had two lobes, and the blood vessels originated in the heart, not the liver. He further elucidated that the arterial pulse was synchronous to cardiac systole. In the fetus, he described the connection between the umbilical vein to the liver and ductus venosus from the liver to the inferior vena cava.

"He [Vesalius] was the author of one of the most important books on human anatomy called* De humani corporis fabrica*, or* The Fabric of the Human Body*, which was based on his vast experience in dissecting the bodies of executed criminals. He disproved Galen and Aristotle regarding the heart's structure, functions, and the vessels' origin."

Hieronymus Fabricius (Girolamo Fabrizio 1537–1619 AD):

Born in Acquapendente near Orvieto in Italy, he studied and thought as the chair of the surgery in Padua. He was a student of Gabriel Fallopius and teacher of William Harvey **(**37, 38**)**. He was known as an embryologist, describing the formation of the fetus (*De formato foetu*). He provided the first clear description of the valves in the veins; however, he may not have known the purpose of the valves in the veins.

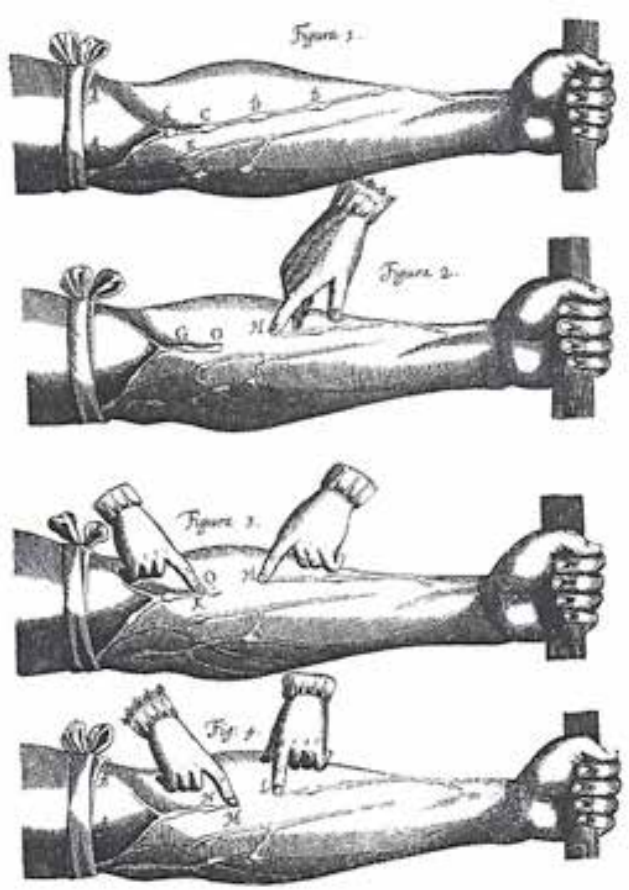
"Harvey has been rightfully credited with discovering blood circulation, a monumental achievement for human physiology."

William Harvey (1578–1657 AD):

William Harvey was born in England to a well-to-do family in an era of "scientific revolution" in Europe. After obtaining his B.A. degree at Cambridge University, he enrolled at the University of Padua, Italy, a great center of science and medical education in that era, a home to Galileo Galilei and Andreas Vesalius. In Padua, he studied under the tutelage of Hieronymus Fabricius**,** who had written a treatise on the valves in veins. After returning to England, Harvey obtained his medical degree from Cambridge University in 1602. Harvey has been rightfully credited with discovering blood circulation, a monumental achievement for human physiology (10, 39, 40, 41).

Harvey conducted animal experiments on sheep, pigs, and some sub-primate mammals. He opened a live snake and compressed the vein entering the heart, noting that it made the heart smaller and devoid of blood upon opening it. He conducted several human experiments using a tourniquet on the arm, demonstrating unidirectional venous blood flow toward the heart (**Figure 2**). He attempted to measure cardiac output by measuring blood ejection during each heartbeat from the ventricle, discovering unidirectional blood flow (venous blood toward the heart and arterial blood from the heart to the peripheral tissues). Thus, he correctly described the circulation of the blood. He postulated the existence of small capillary anastomoses between arteries and veins; however, these were not discovered until 1661, a few years after Harvey died, by **Marcello Malpighi** while studying the lungs of frogs. In 1628, William Harvey wrote a 70-page monograph entitled *Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus* or *Anatomical Essay on the Motion of the Heart and Blood in Animals*, commonly referred to as *De Motu Cordis*. Harvey's discovery of blood circulation is considered an important milestone in physiology and medicine.

Figure 2. The images show William Harvey's direction of blood circulation in the veins. From Harvey's *Exercitation Anatomica de Motu Cordis et Sanguinis in Animalibus*. (Figure was downloaded from Schultz SG, Ref. # 10)



Marcello Malpighi (1628–1694 AD**):**

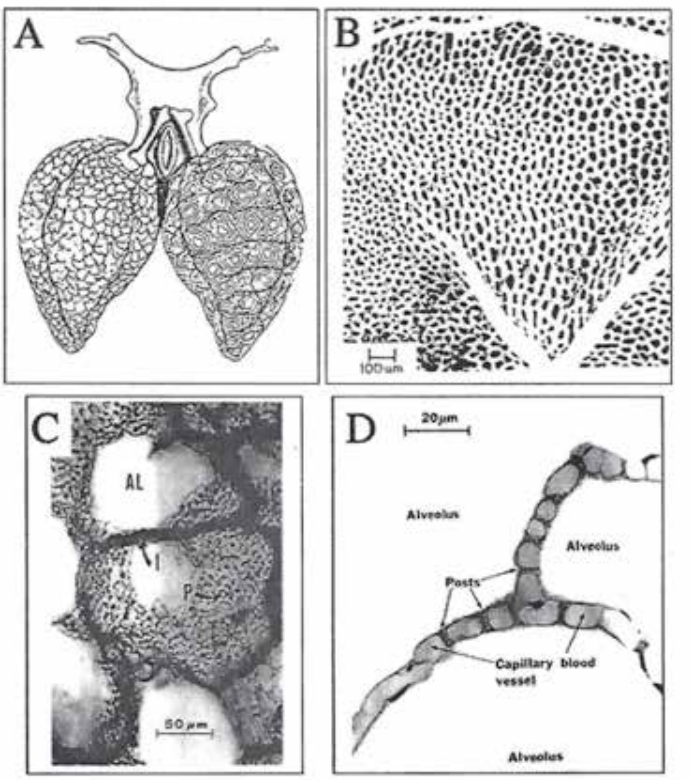
Italian physiologist and embryologist was born at Crevalcore, near Bologna. Malpighi studied medicine at the University of Bologna and was subsequently admitted to lecture there. Later, he was

"He [Malpighi] has been considered the father of microscopic anatomy in examining the microscopic structure of the lungs and distended bladder in frogs with the aid of an early microscope (Figure 3). He described the connection between the arteries and veins as the capillary system, thus completing the pathway of systemic blood circulation discovered by William Harvey."

"al-Nafis' description of cardiopulmonary circulation was cited by two Islamic scholars, in 1344 by Sadid al-Din Muhammad ibn Mas'ud al-Kazaruni and again in 1350 by Ali ibn Abdullah Zain al-Arab al-Misri. However, many decades after the discovery of Ibn al-Nafis's writings, some authors still credit the discovery of cardiopulmonary circulation to Western scholars."

appointed to the chair of theoretical medicine at Pisa. His career path led him to Messina in Sicily and then back to the University of Bologna. Because of his scientific work and publications, he was the first Italian physician to be admitted to the Royal Society of London. He has been considered the father of microscopic anatomy in examining the microscopic structure of the lungs and distended bladder in frogs with the aid of an early microscope (42, 43) (**Figure 3**). He described the connection between the arteries and veins as the capillary system, thus completing the pathway of systemic blood circulation discovered by William Harvey.

Figure 3. Microscopic examination of the frog lung, showing alveoli-capillary interface, by Marcello Malpighi. Source: http://www.scielo.cl/fbpe/img/bres/v38nl/fig13.gif



Cardiopulmonary Circulation: Controversy or Bias:

From the foregoing, it should be clear that with the 1924 discovery of Ibn al-Nafis' writings, he should be credited with the first correct description and/or the discovery of cardiopulmonary circulation. As referenced above, this fact has been acknowledged and written by many prominent authors. According to Nagamia (29), Ibn al-Nafis' description of cardiopulmonary circulation was cited by two Islamic scholars, in 1344 by Sadid al-Din Muhammad ibn Mas'ud al-Kazaruni and again in 1350 by Ali ibn Abdullah Zain al-Arab al-Misri. However, many decades after the discovery of Ibn al-Nafis's writings, some authors still credit the discovery of cardiopulmonary circulation to Western scholars. Indeed, W. Bruce Fye, M.D., M.A., a co-editor of Clinical Cardiology, citing other authors, categorically stated that "Realdo Colombo, born in Cremona, Italy, between 1510 and 1515, published the first definitive description of the pulmonary circulation" (44, 45, 46). This controversy or bias related to the medical writings by Islamic scholars is not recent or new. Even though, for centuries, the medical textbooks written by Islamic scholars, such as Avicenna and Razi and others, were the mainstay of medical science learning in the West, denial of their importance became widespread during the early part of the 16th century in Europe. Abdul Haq Compier (36) writes eloquently and in detail about the history of the Western bias of the rejection and acceptance of the writings of Islamic scholars. It appears that the medical writings of Razi profoundly influenced the famous Belgian anatomist Andreas Vesalius and even his grandfather; he somewhat minimized or even discarded the importance of Razi's contribution to his learning of medical science. Vesalius's medical thesis was based on the ninth book of Razi. Vesalius, as well as many of his teachers and contemporaries, were fearful of the ever-present Christian Church's inquisition and persecution. For the Christian Church, Galen's medical writing was an accepted dogma; thus, for Western scholars, it was challenging to contradict Galen's dogma even though Islamic science greatly contributed to the coming of the Renaissance. However, the current bias and rejection of some Western authors about the important scientific contributions of Islamic scholars is unjustified.

Many Western writers, as well as many current Islamic writers, give proper credit to the Islamic scholars' contributions to science and medicine, particularly during the period of the Golden Age of Islam. However, some authors call them Arab, rather than Islamic, scholars. A significant number, and the most prominent among them, who wrote in Arabic (Arabic was La Lingua Franca of the period of the Golden Age of Islam) were not Arabs by their place of birth or ethnicity, but they only shared the faith of Islam. As the writers seek the truth, a proper identification of the origin of Islamic scholars is required.

Epilogue:

C. Stefanadis and associates (33) best explained the human quest to understand cardio-pulmonary physiology and blood circulation by stating, "The discovery of the blood circulation cannot be attributed to a single person, nor even to a single era. In fact, many errors were in need of correction, and each and every one of those errors had to be replaced with the truth."

"Many Western writers, as well as many current Islamic writers, give proper credit to the Islamic scholars' contributions to science and medicine, particularly during the period of the Golden Age of Islam. However, some authors call them Arab, rather than Islamic, scholars."

Galen's description of blood circulation became a dogma that lasted for 15 centuries. His dogma was challenged, only in part, by the physicians/scholars of the early period of the Golden Age of Islamic Medicine when Ibn al-Nafis provided a correct description of cardio-pulmonary circulation; however, it was William Harvey, a student of Fabrizio at the University of Padua, who provided a correct description of the systemic blood circulation. The circle of understanding of blood circulation was completed only with Marcello Malpighi's description of capillary circulation, thus completing the understanding of cardiopulmonary physiology and blood circulation.

References:

1. Khan IA, Daya SK, Gowda RM. Evolution of the theory of circulation. Int J Cardiol. 2005 Feb 28;98(3):519–21.
2. Limet R. From Hippocrates to Harvey: twenty centuries of research on circulation. Rev Med Liege. 2010 Oct;65(10):562–8.
3. Azizi M-H, Nayernouri, Azizi F. A Brief History of the Discovery of the Circulation of Blood in the Human Body. Arch Iranian Med. 2008;11(3): 345–350.
4. Phillips, Jr. R E. The Heart and the Circulatory System. http://www.accessexcellence.org/AE/AEC/CC/heart_background.php
5. Temkin O. Galenism: Rise and Decline of a Medical Philosophy. Ithaca: Cornell University Press, 1973.
6. Boylan M. Galen: on blood, the pulse, and the arteries. J Hist Biol. 2007 Summer;40(2):207–30.
7. Bylebyl JJ and Pagel W. The chequered career of Galen's doctrine on the pulmonary veins. Med Hist.1971 pul;15(3):211–29.
8. Friedland G. Editorial. Discovery of the function of the heart and circulation of blood. Cardiovascular Journal of Africa. 2009. Ncbi.nlm.nih.gov
9. AIRD W.C. Discovery of the cardiovascular system: from Galen to William Harvey. Journal of Thrombosis and Haemostasis. 2011 Jul; 9(Suppl. 1):118–129.
10. Schultz SG. William Harvey and the Circulation of the Blood: The Birth of a Scientific Revolution and Modern Physiology. News Physiol Sci. 2002;17:175–180.
11. Modanlou, HD. A Tribute to Zakariya Razi (865–925 AD), An Iranian Pioneer Scholar. Arch Iranian Med. 2008;11(6):673–67.
12. Al Majusi Ali Ibn al-Abbas. Kitab Kamil al-Sanaa al-tibbiya (in Arabic). Cairo, Egypt: Dar Rekaby; Updated: 113.
13. Al Majusi Ali Ibn al Abbas. The Complete Medical Art; Kamil al-Sanaa al-tibbiya (in Arabic). Part I. Frankfurt, Germany: Institute for the History of Arabic-Islamic Science, Johann Wolfgang Goethe University. 1985:78–85. 124–125
14. Masic I. Ibn al-Nafis—discovery of pulmonary blood circulation. Med Arh. 1993; 47(3–4):101–5.
15. Nasr SH. Science and Civilization in Islam. U.K.: Islamic Text Society. 1992. 1087:200–204
16. Soubani AO, Khan FA. The discovery of pulmonary circulation revisited. Annals of Saudi Medicine. 1995;15(2):1–2.
17. Buchs M. History of a discovery: Ibn al-Nafis and the lung circulation. Med Secoli. 995;7(1):95–108.
18. Al-Ghazal SK, El-Gomati M, Ayduz S. Ibn al-Nafis and the Discovery of Pulmonary Circulation. Foundation for Science Technology and Civilization. FSTC.Co.UK. 2007. Pages 1–7.
19. Masic I, Dilic M, Solakovic E, Rustampasic N, Ridjanovic Z. Why historians of medicine called Ibn al-Nafis second Avicenna? Med Arh.2008;62(4):244–9.
20. Al-Ghazal SK. The Discovery of The Pulmonary Circulation–Who Should Get the Credit: Ibn Al-Nafis or William Harvey. JISHIM. 2002;2:46–48.
21. Al-Ghazal SK. Ibn Al-Nafis and the Discovery of Pulmonary Circulation. Foundation for Science Technology and Civilization. FSTC Limited, Publication ID 684. 2007. Page 1–7.
22. Al-Ghazal SK. Islamic Medicine On-line: http://www.islamicmedicine.org
23. Loukas M, Lam R, Tubbs RS, Shoja MM, Apaydin N. Ibn al-Nafis (1210–1288): the first description of the pulmonary circulation. Am Surg. 2008 May;74(5):440–2.
24. West JB. Ibn al-Nafis, the pulmonary circulation, and the Islamic Golden Age. J Appl Physiol. 2008;105:1877–1880.
25. Abdel-Halim RE. Contributions of Ibn Al-Nafis (1210–1288 AD) to the Progress of Medicine and Urology. A study and translations from his medical works. Saudi Med J. 2008;29(1):13–22.
26. Masic I. On Occasion of 800th anniversary of birth of Ibn al-Nafis—discoverer of cardiac and pulmonary circulation. Med Arh. 2010;64(5):309–13.
27. Akmal M, Zulkifle M, and Ansari AH. Ibn Nafis – A forgotten genius in the discovery of pulmonary blood circulation. Heart Views. 2010 Mar-May;11(1):26–30.
28. Changizi Ashtiyani S1 and Shamsi M. The Discoverer of Pulmonary Blood Circulation: Ibn Nafis or William Harvey? Middle-East Journal of Scientific Research. 2013;18(5):562–568.

29. Nagamia HF. Ibn al Nafis: A Biographical Sketch of the Discovery of Pulmonary and Coronary Circulation. Journal of the International Society for the History of Islamic Medicine. 2003;1:22–28.

30. Persaud TV. Historical development of the concept of a pulmonary circulation. Can J Cardiol. 1989 Jan-Feb;5(1):12-6.

31. Ullmann M. Islamic Medicine. UK: Edinburgh University Press. 1997:64–67.

32. Al-Dabbagh S.A. Ibn Al-Nafis and the pulmonary circulation. The Lancet. 1978;1:1148.

33. Stefanadis C., Karamanou M, Androutsos G. Michael Servetus (1511) and the Discovery of Pulmonary Circulation. Hellenic J Cardiol. 2009 50:373–378.

34. The Latter Rain Page. Michael Servetus. http://latter-rain.com/eccles/servetus.htm

35. Cattermole GN. Michael Servetus: physician, Socinian and victim. J R Soc Med. 1997;90:640–644.

36. Compier, Abdul Haq. Rhazes in the Renaissance of Andreas Vesalius. Medical History. 2012;56:3–25.

37. Walsh, JJ. Hieronymus Fabricius, from the Catholic Encyclopedia. CatholicCity.com, 1996–2009, The Mary Foundation. http://www.catholicity.com/encyclopedia/f/fabricius,hieronymus.html

38. Smith SB, Macchi V, Parenti A, De Caro R. Fabricius Ab Acquapendente (1533–1619). Clinical Anatomy (New York).2004 Oct.;17(7):540–543.

39. McKenna M. William Harvey, 1. That incomparable invention of Dr. Harvey's. Can J Surg. 1987 Mar;30(2):139–41.

40. Tsukisawa M. Reconsideration of the "conversion theory" from the primacy of the heart to the primacy of the blood—William Harvey's observation, logic and the construction of the Exercitatio. (Article in Japanese- Abstract in English). Kagakushi Kenkyu. 1995;34(194):118–28.

41. Pasipoularides A. Historical Perspective: Harvey's epoch-making discovery of the circulation, its historical antecedents, and some initial consequences on medical practice. Appl Physiol. 2013;114: 1493–1503.

42. NNDB, tracking the entire world. Marcello Malpighi, Early microscopic anatomist. http://www.nndb.com/people/033/000095745

43. West JB. Marcello Malpighi and the discovery of the pulmonary capillaries and alveoli. Am J Physiol Lung Cell Mol Physiol. 2013;304:L383–L390.

44. Fye, W.B. Profiles in Cardiology. Realdo Colombo. Clin Cardiol. 2002;25:135–137.

45. Wilson LG. The problem of the discovery of the pulmonary circulation. J Hist Med Allied Sci. 1962;17:229–244;(a) p.243.

46. Coppola ED. The discovery of pulmonary circulation: A new approach. Bull Hist Med. 1957;21:44–77; (a) p. 65.

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NT

Corresponding Author



Houchang D. Modanlou, MD
Professor of Pediatrics/Obstetrics and Gynecology
University of California Irvine
Irvine, CA
Professor of Pediatrics
Loma Linda University
Loma Linda, California
email: modanlou@uci.edu

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Newborn Screening for Congenital Hypothyroidism in India: Let Us Make it Mandatory with Immediate Effect

R. Kishore Kumar, MBBS, DCH, MD, FRCPCH, FRACP, Avantika Dhanawat, MBBS, MD

Abstract:

Objectives: *Newborn screening has been an essentialpreventive public health programme for over 5 decades. There is no publicly funded programme in India yet. The purpose is to identify any biochemical problems that are difficult for any pediatrician to diagnose clinically. Early detection has clear benefits compared to the cost of treatment when diagnosed late. Hence, screening a baby at birth for congenital hypothyroidism (CHT) is essential.*

Methods: *199,800 babies born at participating hospitals were screened for CHT between January 2007 and August 2023. Blood was collected between 36 and 48 hours for bilirubin, grouping, and other screening disorders, along with CHT, as a part of the hospital protocol. Thyroid Stimulating Hormone (TSH) was quantitatively determined on dried filter paper. Any value above 12 µIU/mL of whole blood was taken as abnormal.*

Results: *272 of the 199,800 samples for CHT screening were positive. Twenty-four babies had normal TSH on repeat testing. The incidence of elevated TSH was 0.136%, as identified by screening. One hundred fifty-eight confirmed samples showed TSH level >100 µIU/mL diagnosed as congenital hypothyroidism (0.079%). Out of 90 (0.045%) samples that showed values between 40 and 100 µIU/mL, 69 babies had an ectopic thyroid gland (0.0345%), and 21 babies had dyshormonogenesis (0.0105%). Twenty-four samples showed a concentration between 12 and 40 µIU/mL of whole blood.*

Conclusion: *The details of our study reveal that CHT in India has a high incidence, and there are enough reasons to make it mandatory with immediate effect.*

Key Words: *Congenital Hypothyroidism (CHT), Thyroid Stimulating Hormone (TSH), newborn screening*

Introduction:

With the knowledge of genetics and technological advances, many studies have focused on screening newborns for possible preventive causes of disabilities. Systematic neonatal screening for congenital hypothyroidism was introduced in the early 1970s in many countries. India is one of the many countries to have reported an estimated 10,000 babies born with congenital hypothyroidism every year, yet there is no screening programme. Looking at the large population of one billion and a high birth rate, the burden of preventable genetic disorders in India is very high. According to WHO, 140 million children are born every year, and 5 million die in the first month of life in developing countries. 4% of the population in India is mentally retarded, and 5–15% of sick newborns have a metabolic problem (1). Thus, mass screening will help prevent disability and death by early intervention, follow-up, and counseling.

The essential aspect of screening is that only disorders for which specific treatment is available should be screened, sample collection should be simple, transport of the samples should be easy, and the testing method should be specific and cost-effective. The main objective of screening is early detection and early intervention to prevent disability and death. Such a screening also establishes the prevalence of disorders in different parts of the country so specific programs can be planned in different states depending on the prevalence.

"India is one of the many countries to have reported an estimated 10,000 babies born with congenital hypothyroidism every year, yet there is no screening programme. Looking at the large population of one billion and a high birth rate, the burden of preventable genetic disorders in India is very high. According to WHO, 140 million children are born every year, and 5 million die in the first month of life in developing countries. 4% of the population in India is mentally retarded, and 5–15% of sick newborns have a metabolic problem. Thus, mass screening will help prevent disability and death by early intervention, follow-up, and counseling."

Materials and Methods:

All babies born at participating hospitals in India were screened for Congenital Hypothyroidism from Jan 2007 to August 2023—accounting for nearly 199,800 samples. Routine samples were collected from these babies between 36 to 48 hours, along with other investigations, which were part of the hospital protocol. All babies were born at Cloudnine & Fernandez Hospitals from 2007 to 2010, and subsequently, only Cloudnine Hospital babies were checked for discharge bilirubin, blood group, and other screening disorders along with CHT. Parents were counseled on the need for and benefits of screening, and verbal consent was obtained before sample collection. For those who declined the test, despite explaining the importance of the screening, written consent was obtained as NON-CONSENT. Determination of TSH was done on dried filter paper blood by using the DELFIA Neonatal hTSH time-resolved fluorescence immunoassay (TRFIA) kit from PerkinElmer. TSH values up to 12 mIU/mL of whole blood were normal (per international recommendations), and any value above 12 was abnormal. The treating pediatrician was informed to follow up and repeat the test. Institution Ethical Clearance: IEC felt no ethical clearance was required as it is retrospective data without identification of patient details being studied and published.

Results: The screening used values more than 12 mIU/mL of whole blood as abnormal as per the nomogram at 36 hours of age. 272 of the 199,800 blood samples were positive, of which 158 samples contained a blood spot TSH concentration >100 µIU/

mL of whole blood; 90 samples had a TSH concentration between 40 and 100 μIU/mL of whole blood, and 24 had a concentration between 12 and 40 μIU/mL of whole blood.

"The screening used values more than 12 μIU/mL of whole blood as abnormal as per the nomogram at 36 hours of age. 272 of the 199,800 blood samples were positive, of which 158 samples contained a blood spot TSH concentration >100 μIU/mL of whole blood; 90 samples had a TSH concentration between 40 and 100 μIU/mL of whole blood, and 24 had a concentration between 12 and 40 μIU/mL of whole blood."

The parents were notified of the results immediately by telephone once a result was reported as abnormal, and a repeat TSH along with T4 and T3 were checked as per our protocol to confirm the result. No subsequent tests were done to determine if any baby had NORMAL TSH, T4, or T3 results. If their repeat TSH was high, the baby was subjected to a radionuclide scan for thyroid. Refusal to be screened accounted for less than 0.01%, and once consented, there were no failures to collect samples. Even parents discharged before 36 hrs came the following day for the test. The babies' follow-up was 100%, and no one was lost for follow-up. Screening identified 272 babies with initial elevated TSH (0.136%). Of these 272, 24 babies had normal TSH on repeat testing. 14 of the 248 babies (0.004%) were premature, with 4 of them being extremely premature (<28 weeks). Of 24 babies with normal TSH on repeat tests, 9 had TSH results that were less than 40 μIU/mL of whole blood, which probably accounted for our false positives (0.012%).

"The remaining 248 were confirmed to have elevated TSH (0.124% or 1:805 babies)—158 of these 248 babies had congenital hypothyroidism with TSH levels ranging anywhere between 100 to 350 μIU/mL of whole blood (0.079%) and had congenital absence of thyroid gland confirmed by nuclear medicine scanning by Tc99m, and the remaining 90 of the 272 babies (0.045%)—69 babies had an ectopic thyroid gland (0.0345%), but 21 babies had dyshormonogenesis (0.0105%) confirmed by I131 perchlorate discharge test—their levels ranging from 45 to 100 μIU/mL of whole blood."

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"Since these 21 were picked up by newborn screening only and otherwise could have been missed, our incidence would be 1:885 for CHT if these were not considered. This is far too high for a treatable disorder and reflects the tip of the iceberg. Fourteen of our babies in this study were premature and were admitted to NICU—with 4 of them being extremely premature. One of the twins (former 25-weeker) had a TSH level of 178 μIU/mL of whole blood on day 4 when screened. Had we not screened this baby, and if the baby had gone undiagnosed, the mental retardation surely would have been attributed to prematurity. Now, the baby is 3 years old and doing well."

Discussion: In our cohort, we have screened 199,800 babies by whole blood-spot TSH from samples collected between 36–48 hours of age and have identified 248 babies with CHT confirmed by either absence of thyroid gland or an ectopic thyroid gland or dyshormonogenesis by nuclear medicine scan giving an incidence of 1: 805. Among these, 21 babies were identified as having a normal technetium uptake on nuclear medicine scan but having defective uptake of thyroxine (T4). Many of these infants had clinical hypothyroidism that resolved on follow-up between 2 and 4 years of age and are currently under follow-up by a Pediatric Endocrinologist. 1 baby had Down syndrome. These 21 would NOT classify as CHT in the strict sense since they had normal thyroid glands and would resolve by a few years. Since these 21 were picked up by newborn screening only and otherwise could have been missed, our incidence would be 1:885 for CHT if these were not considered. This is far too high for a treatable disorder and reflects the tip of the iceberg. Fourteen of our babies in this study were premature and were admitted to NICU—with 4 of them being extremely premature. One of the twins (former 25-weeker)

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Our study performed CHT screening in babies at 36–48 hours of age, along with discharge bilirubin and blood group as a standard hospital policy. We had 40% of North Indians and 60% of South Indians in our study. (Any person from the states of Karnataka, Andhra Pradesh, Kerala, and Tamil Nadu was considered South Indian, and the rest were considered North Indians for study purposes). There was no significant difference in incidence among either North or South Indians.

The TSH was measured by TRFIA (DELFIA, PerkinElmer) with a value greater than 12 μIU/mL. Whole blood was reported as abnormal and required follow-up. We had only 24 false positives, with an intermediate result of 15 μIU/mL whole blood. All confirmed CHT cases had TSH values greater than 50 μIU/mL whole blood. These acceptable performance metrics show a clear demarcation between false positive and true positive results. In the 21 cases with defective uptake, the TSH values ranged from 50 to 80 μIU/mL whole blood, indicating a clear demarcation.

Neonatal screening for CHT is an essential preventative public health programme, the standard practice of care worldwide (2–5). Newborn Screening for CHT is a well-characterized disorder, and systematic neonatal screening for congenital hypothyroidism was introduced in the early 1970 (6–7). In India, an estimated 10,000 babies are born with congenital hypothyroidism every year (8,9). Recently, countries like the Philippines and China too have commenced the screening because waiting for a symptomatic diagnosis of affected infants means the baby will NEVER be normal (10). With the number of NICUs increasing in India, it is all the more prudent that all babies admitted to NICU also get screened on day 3 routinely regardless of whether they are feeding.

"There are several methods used for the measurement of TSH from a 3 mm whole blood filter paper spot, including Radioimmunoassay (RIA), enzyme immunoassay (ELISA), chemiluminescence, and time-resolved fluorescence immunoassay (TRFIA, DELFIA). The latter two methods have superior sensitivity and specificity, resulting in high accuracy and ease of interpretation of results. A clinician should be aware of the method used to measure the hormone, as the reference range and the action limits for result interpretation critically depend on the method used, and one method is not the same as the other."

Newborn screening for CHT is performed by measuring Thyroid Stimulating Hormone (TSH) from a dried filter paper specimen (Guthrie Test). Some programs also include the measurement of thyroxine to increase the sensitivity of the screening test, but this comes at an additional cost (12–13). There are several methods used for the measurement of TSH from a 3 mm whole blood filter paper spot, including Radioimmunoassay (RIA), enzyme immunoassay (ELISA), chemiluminescence, and time-resolved fluorescence immunoassay (TRFIA, DELFIA). The latter two methods have superior sensitivity and specificity, resulting in high accuracy and ease of interpretation of results. A clinician should be aware of the method used to measure the hormone, as the reference range and the action limits for result interpretation critically depend on the method used, and one method is NOT the same as the other.

The incidence of CHT has been reported to vary between 1:3000 to 1:5000 live births in most parts of the world (9, 11–13). In India, the incidence of CHT is thought to be much higher, although published reports have been limited and have been done before the availability of diagnostic methods such as nuclear scans for detection of the thyroid gland, which have increased the precision of the diagnosis (15–17). Many of the past studies have used ultrasound to pick up the absence of the thyroid gland, which could easily miss the ectopic thyroid gland and defective uptake of TSH. Our present study clearly shows the incidence to be much higher—which may be due to multiple factors—with many hypothetical factors being considered, like consanguinity being more common in India and Iodine deficiency thought to be more common.

"There is no doubt from our study that CHT screening fits into the criteria of the diseases that need to be screened in India, as the incidence in our study of nearly 1:1000 is far too high and should not be ignored. Also, with the globalization of the world with recent trends in immigration and emigration, it is not a problem for India alone as a baby born in India can land in any part of the world within a few weeks, and it could be a burden for that country, too. Congenital Hypothyroidism is such an important PUBLIC PREVENTIVE Programme of INTERNATIONAL significance, and the WHOLE world is looking at India as to why we are still not screening as a country."

There is no doubt from our study that CHT screening fits into the criteria of the diseases that need to be screened in India, as the incidence in our study of nearly 1:1000 is far too high and should not be ignored (18). Also, with the globalization of the world with recent trends in immigration and emigration, it is not a problem

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"The International Society of Newborn Screening (ISNS), with its abundant data, should take initiatives to make CHT screening mandatory through the government of India and SAVE our children from needless mental retardation. We hope this study provides the impetus required."

Also, our study shows that TSH levels of less than 40 mIU/mL of whole blood are normal, as per our experience. Any level of TSH >40 μIU/mL of whole blood is generally abnormal, and the absence of the thyroid gland coincides with levels >100 μIU/mL.

Conclusion:

CH is one of the most common preventable causes of mental retardation. Patients with CH benefit from neonatal screening, which makes it possible to initiate essential replacement therapy immediately. Untreated severe CH results in neurological and psychiatric deficits, including intellectual disability, spasticity, and disturbances of gait and coordination. Screening programs, which have been in operation over the last 30 years in most industrialized countries, have led to the successful early detection and treatment of infants with CH and have eliminated the severe neurodevelopmental deficits resulting from late diagnosis.

What is already known:
• Newborn screening for congenital hypothyroidism is cost effective. Has been implemented around the world.
• Global incidence is reported to be around 1: 2,500.

The International Society of Newborn Screening (ISNS), with its abundant data, should take initiatives to make CHT screening mandatory through the government of India and save our children from needless mental retardation. We hope this study provides the impetus required.

What this study adds:
• Incidence of CHT in India is 1: 805 which is highest in the world.
• Preterm babies can be affected too—need to be screened on day 3.
• Ectopic thyroid gland and defective uptake of TSH account of nearly 1/3 cases.
• This is the first largest Indian study with nuclear medicine scan of thyroid gland for all affected babies.

References:

1. Anil B. Jalan. Neonatal Metabolic and Genetic Disorders. Vol. 1. 2000 Jan.
2. Kishore Kumar R, Nagar N. Challenges in implementation of universal neonatal screening in India, NNF, Pune, India. 2007.
3. Verma IC, Bijarnia S. The burden of genetic disorders in India and a framework for community control. Community Genet. 2002;5:192–196.
4. Rama Devi AR, Naushad SM. Newborn screening in India. Indian J Pediatr. 2004;71:157–160.
5. Harris R, Sawaya GF, Moyer VA, Calonge N. Reconsidering the criteria for evaluating proposed screening programs: reflections from 4 current and former members of the U.S. Preventive Services Task Force. Epidemiol Rev. 2011;33:20–35.
6. Desai MP, Upadhye P, Colaco MP, Mehre M, Naik SP, et al. Neonatal screening for congenital hypothyroidism using the filter paper thyroxine technique. Indian J Med Res. 1994;100:36–42.
7. Wilson JMG, Junger G. Principles and practice of screening for disease, Geneva; World Health Organization. 1968;26–7.
8. Desai MP, Colaco MP, Ajgaonkar AR, Mahadik CV, Vas FE, et al. Neonatal screening for congenital hypothyroidism in a developing country: problems and strategies. Indian J Pediatr. 1987;54:571–581.
9. American Academy of Pediatrics. Committee on Genetics: Issues in newborn screening. Pediatrics. 1992;89:345–349.
10. Amar HSS. Screening for congenital hypothyroidism in Southeast Asia. J Paediatr Obstet Gynaecol. 1997;1:5–9.
11. Low LC, Lin HJ, Cheung PT, Lee FT, Chu SY, et al. Screening for congenital hypothyroidism in Hong Kong. Aust Paediatr J. 1986;22:53–56.
12. American Academy of Pediatrics AAP Section on Endocrinology and Committee on Genetics, and American Thyroid Association Committee on Public Health. Newborn screening for congenital hypothyroidism: recommended guidelines. Pediatrics. 1993;91:1203–1209.
13. Lafranchi S. Hypothyroidism In: Nelson textbook of paediatrics, (17thedtn) Saunders, Philadelphia. 2004.
14. Padilla CD, Therrell BL. Newborn screening in the Asia Pacific region. J Inherit Metab Dis. 2007;30:490–506.
15. Desai MP. Disorders of thyroid gland in India. Indian J Pediatr. 1997;64:11–20.
16. Kochupillai N. Neonatal hypothyroidism in India. Mt Sinai J Med. 1992;59:111–115.
17. American Academy of Pediatrics, Rose SR; Section on Endocrinology and Committee on Genetics, American Thyroid Association, Brown RS; Public Health Committee, Lawson Wilkins Pediatric Endocrine Society, et al.

Update of newborn screening and therapy for congenital hypothyroidism. Pediatrics. 2006;117:2290–2303.

18. Toublanc JE. Guidelines for neonatal screening programs for congenital hypothyroidism. Working Group for Neonatal Screening in Paediatric Endocrinology of the European Society for Paediatric Endocrinology. Acta Paediatr Suppl. 1999;88:13–14.

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AD: Proofread, edited, and finalised the manuscript and submission.

NT

Corresponding Author



Dr. R. Kishore Kumar, MBBS, DCH, MD, FRCPCH, FRACP
Consultant Neonatologist & Paediatrician
Cloudnine Hospitals
1533, 3rd Block Jayanagar, 9th Main
Bangalore - 560011, INDIA.
Tel: +919900155001
E-mail: kishkum@gmail.com
Adjunct Professor in Neonatology & Paediatrics
Notre Dame University
Perth, Australia



Dr Avantika Dhanawat, MBBS, MD
Fellow(Neonatology) IAP
Junior Consultant Neonatologist & Paediatrician
Cloudnine Hospital
Jayanagar Bangalore, India





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Myra Wyckoff, MD
UT Southwestern Medical Center

Nicole Yamada, MD, MS
Stanford University School of Medicine

Fellows Column: Natal Teeth

Bianca Urness MS III, Anthony Shoo MD

"Two types of teeth can present in newborns: natal teeth and neonatal teeth. Natal teeth are teeth that are present at birth, while neonatal teeth erupt within the first month of life. (1) There is another classification for teeth that develop between one month and three and a half months, known as early infancy teeth."

Introduction:

Two types of teeth can present in newborns: natal teeth and neonatal teeth. Natal teeth are teeth that are present at birth, while neonatal teeth erupt within the first month of life. (1) There is another classification for teeth that develop between one month and three and a half months, known as early infancy teeth. Regarding frequency, natal teeth are more common, occurring in a 3:1 ratio to neonatal teeth. (2) The incidence of natal teeth ranges from 1:2000 to 1:3500, making their occurrence relatively rare. (3)

The etiology of natal teeth is still unknown, but several myths exist. A study by Shivpuri et al. looked to establish a possible cause, retrospectively analyzing 12 patients with natal and neonatal teeth, but no potential causative factor was identified. (4) Myths include the belief in British culture that those with natal teeth were destined to be popular warriors. Yet these infants were predicted to face misfortune in China, India, and Poland. Other research has suggested the role of pollutants in the occurrence of natal teeth. Specifically, polychlorinated biphenyls (PCBs), dibenzofurans (PCDFs), and polychlorinated dibenzo-*p*-dioxins (PCDDs). (2) Other factors, including the environment, genetics, and specific syndromes, have also been suggested to explain this phenomenon.

The localization of these teeth can vary, but 85% of cases occur in the mandibular region of central incisors. Following that, the maxillary incisors are the second most common. (5) The size, shape, and color of natal teeth can differ but typically share an immature appearance. Regardless of these characteristics, natal teeth are often associated with various clinical challenges. Struggles with feeding, gum irritation, infection, and overall parental concern occur in the presence of natal teeth, giving value to the need for a complete oral examination of all infants.

This case report follows a detailed record of a newborn with natal teeth. The clinical features, diagnostic approach, and management are outlined. Due to the complications that can arise in these patient cases, this article aimed to illustrate the importance of early intervention and optimal care of infants that present with natal teeth.

Case Report:

A male newborn baby was born at 25+1 weeks to a 28-year-old G1P0 woman with documented prenatal care. Maternal labs were blood type A positive, Rubella non-immune, VDRL non-reactive, HBsAg negative, and GBS positive. The pregnancy was complicated by preterm labor, and the mother was admitted on 7/7. She received Celestone and Magnesium and was discharged home. The mother was readmitted on 7/9 due to PROM. The infant was born via NSVD at 01:11 on 7/10/2024. The infant had a good heart rate and weak cry at delivery. The patient was suctioned, and PPV by mask was provided with notable improvement. There were two attempts to intubate, and PPV was continued via RAM cannula. The birthweight was 745 grams. Apgar scores were 3, 6, and 7 at 1, 5, and 10 minutes, respectively.

Upon examination of the newborn, the baby was found to have anterior natal teeth on 8/5/2024. At this time, no interventions were made. On 9/16, a possible tooth was identified due to sore gums. Bottle feeds were discontinued, and the patient was treated with Augmentin for 14 days. The inflammation had improved with treatment, but the swelling did not completely resolve. Feeding was resumed after treatment with Augmentin. On 10/2, a nurse removed a tooth. The patient began nippling approximately, taking in 12% of feeds on 10/1. By 10/14, this had increased to 30%, but a decrease was noted on 10/18, when nippling dropped to 20% of feeds. From 10/19 - 10/23, nipple feeding was temporarily discontinued due to soreness of the gums. On 10/21, the patient was prescribed a 5-day course of oral amoxicillin to address the gum soreness. Despite this, by 10/26, the gums remained swollen and erythematous, prompting a switch to Augmentin. On 10/27, the patient continued Augmentin therapy, with nipple feeding still withheld, as the gum redness and swelling showed signs of improvement. By 10/30, the patient was able to nipple once a day. Augmentin therapy was continued through 11/1. On 11/5, the patient was able to nipple 36% of feeds, and by 11/6, this increased to 50%, although the patient experienced a slight weight loss of 33g.

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On 11/3, an x-ray of facial bones demonstrated natal teeth on mandibular and maxillary jaws.

Discussion:

Natal teeth, defined as teeth present at birth, are relatively uncommon. Instances range from 1 in 2,000 to 1 in 3,000 live births yearly. These teeth' location, size, shape, and color vary but are often located in the mandibular central incisor region. Although benign, natal teeth can be associated with clinical implications. This case report explores the management of natal teeth and navigates the complications that arise in the presence

of natal teeth.

Various literature and studies have attempted to identify the etiology of natal teeth. Research has investigated the role of pollutants, including polychlorinated biphenyls (PCBs), dibenzofurans (PCDFs), and polychlorinated dibenzo-*p*-dioxins (PCDDs), as well as genetics, the environment, and specific syndromes in the development of natal teeth. Various myths also exist in an attempt to explain the phenomenon. Despite the research, the actual cause remains unclear.

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Most natal teeth occur in the mandibular region of the central incisors. In this case, the patient presented with natal teeth in the mandibular and maxillary jaws. The teeth were not identified initially on routine examination at birth but rather one month later. A nurse removed one tooth due to the loose placement. Another tooth was identified due to the swelling and inflammation of bottle feedings. Antibiotics and decreased bottle feedings were administered in order to improve the swelling. Without complete resolution of the inflammation, a facial x-ray was performed, and natal teeth on the mandibular and maxillary jaws were identified.

Given the benign nature of natal teeth, conservative management has been considered appropriate. However, extraction proved necessary in the presence of this patient's clinical complications – irritation, inability to feed, and decreased weight. Additionally, the misplacement of one of the teeth raises concerns about the risk of aspiration. Given these circumstances, it draws attention to the value of prompt management in the setting of natal teeth.

"One key question arises in this case: who is responsible for removing natal teeth? Although a pediatrician or neonatologist may be the first to locate natal teeth, the teeth' management and/or extraction may best be suited for pediatric dentists or oral surgeons."

However, the correct management is yet to be identified. One key question arises in this case: who is responsible for removing natal teeth? Although a pediatrician or neonatologist may be the first to locate natal teeth, the teeth' management and/or extraction may best be suited for pediatric dentists or oral surgeons. At least, this case highlights the importance of a multidisciplinary approach to these patient cases.

Another question that arises is when natal teeth should be removed. In this case, teeth were removed accidentally and deliberately. This case demonstrated the clinical complications that arose from retained natal teeth, highlighting the value of prompt management. The risk of aspiration in teeth that are being monitored adds to the value of urgent intervention. However, no definitive guideline for the timing of extraction is in place.

In summary, while natal teeth can resolve without significant complications, their potential for clinical complications raises essential questions about timing and responsibility for removal. A coordinated approach between pediatricians and dental specialists is critical to ensure the optimal care of the infant, allowing for appropriate interventions when necessary.

References:

1. King, N. M., & Lee, A. M. (1989). Prematurely erupted teeth in newborn infants. *The Journal of pediatrics*, *114*(5), 807–809.
2. Anton, E., Doroftei, B., Grab, D., Forna, N., Tomida, M., Nicolaiciuc, O. S., Simionescu, G., Ancuta, E., Plopa, N., Maftei, R., Ilea, C., & Anton, C. (2020). Natal and Neonatal Teeth: A Case Report and Mecanistical Perspective. Healthcare (Basel, Switzerland), 8(4), 539.
3. Leung, A. K., & Robson, W. L. (2006). Natal teeth: a review. Journal of the National Medical Association, 98(2), 226–228.
4. Shivpuri, A., Mitra, R., Saxena, V., & Shivpuri, A. (2021). Natal and neonatal teeth: Clinically relevant findings in a retrospective analysis. Medical Journal, Armed Forces India, 77(2), 154–157.
5. Cunha, R. F., Boer, F. A., Torriani, D. D., & Frossard, W. T. (2001). Natal and neonatal teeth: review of the literature. Pediatric dentistry, 23(2), 158–162.

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Corresponding Author:

Bianca Urness
Third Year Osteopathic Medical Student
College of Osteopathic Medicine of the Pacific
Western University of Health Sciences
303-520-2885
Email: bianca.urness@westernu.edu

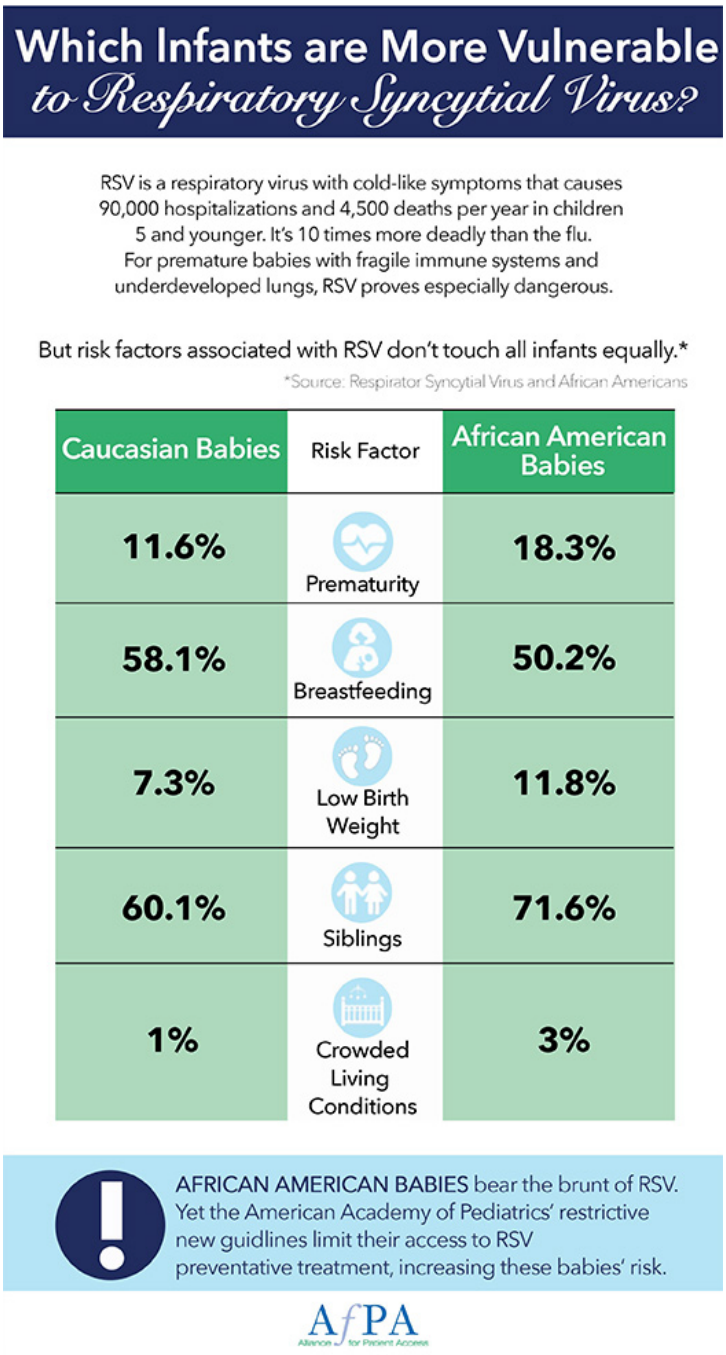


Anthony Shoo, MD
Assistant Professor
Loma Linda University School of Medicine
Division of Neonatology
Department of Pediatrics
Loma Linda University Childrens Hospital
Loma Linda, CA
Email: ashoo@llu.edu

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Un-frying an Egg, Correcting Functional Stupidity

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.

"My grade 10 biology teacher once said, 'The human race is getting dumber; smart people aren't having children, and stupid people are multiplying like rabbits.'"

My grade 10 biology teacher once said, "The human race is getting dumber; smart people aren't having children, and stupid people are multiplying like rabbits." It was the early 70's, and the concept of political correctness was not part of the lexicon of the time. There is good news and bad news. His assessment was arguably correct, albeit for the wrong reasons. The dumbing down of humanity is not the result of reproductive habits; the reasons are far more complex and much more challenging to correct.

To many of us, today's vaccine hesitancy defies logic. Labeling this group as stupid is easy, but while their actions and beliefs may seem stupid, many are not. Why do otherwise reasonably intelligent people fall for disinformation and demagogues? Here, too, the answer is anything but simple. Medicine must shoulder some responsibility for the public's growing mistrust of it. Medicine has brought thalidomide, viox, fen-phen, and the 1976 swine-flu vaccine. Then, there is a plethora of contradictory findings:

- Moderate alcohol consumption bestows health benefits.
- OK, red wine is heart-healthy.
- No, alcohol is the new tobacco.
- Hormone replacement therapy (HRT) is safe and effective.
- No, HRT significantly increases cancer risk.
- OK, HRT is safe and effective in reducing symptoms in post-menopausal women.

This list is anything but inclusive. The public can be forgiven for its collective doubts about scientific research and conclusions, yet the opposite should be the case. That science is constantly re-assessing available evidence should induce trust, not doubt.

A search for "functional stupidity" gives prominence to Mats Alvesson and André Spicer and their book "A Stupidity-Based Theory of Organisations" (1). The name that does not appear is Dietrich Bonhoeffer. This is a tragic disservice. Dietrich Bonhoeffer not only first put forth the concept of functional stupidity, he ***died*** maintaining his intellectual integrity, having been imprisoned and executed by the Nazis shortly before Germany's surrender in World War 2. YouTube has an excellent summary of his hypothesis, which can be found here (2). It was the inspiration for this column, and I highly recommend watching it.

In essence, Bonhoeffer proposed that, given the right set of circumstances, intelligent people could be enticed to do things contrary to their beliefs, even against their self-interest. His observations of German society leading up to WW II were a prime example.

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Evolutionarily, humans are wired to jump to conclusions and act without fully evaluating a situation. After all, stopping to think in the face of the many dangers early humans encountered daily could well be a final act. "Fight or flight" was not just a physiological survival response but also a conscious one. Our ancestors learned there is safety in numbers, and from there, the foundations of modern civilisation were laid. Our desire to belong also left us vulnerable to suspending rational thought and abandoning convictions in favour of fitting in (or not sticking out). Peer pressure does not end with adolescence.

Several studies, some quite infamous, have demonstrated this. Stanley Milgram's experiment at Yale (3) demonstrated, much to our horror, that anyone could become a "good little nazi." At

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Stanford, Banuazizi and Movahedi examined the effect of power and authority on human behaviour (4) in an experiment widely criticized as flawed (5) and unethical. Still, the participants in the experiment did what they did, flawed though the experiment may have been. Furthermore, the German population of the pre-WWII period was highly educated and religious, and Germany was highly regarded in scientific and intellectual circles. Their later actions were undeniably monstrous, but most were not monsters.

Stress affects us in physiological and behavioural ways, leading to less critical thought and more reactionary, emotional decision-making (6,7). The punishment exacted on Germany for WWI made living conditions in pre-WWII Germany intolerable for many. Hyperinflation, high unemployment, and currency devaluation demoralised a proud culture (8). The population was ripe for manipulation. Placing the blame for the country's woes on scapegoats shifted the blame from the actions of the German government, and offering simple solutions to complex, insurmountable problems was a quick path to power for Adolph Hitler and the Nazi party.

Living conditions in America today can hardly be compared with pre-WWII Germany, but many Americans are faced with stagnant wages and insurmountable debt. The premise that boundless opportunity meant anyone could succeed if they just put in hard work is as simplistic as it is false. In this context, offering quick fixes and a catchy slogan made the election of Donald Trump understandable.

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Canada narrowly avoided a similar electoral outcome in April, but there are demographic similarities in voting preference. Ekos's research published an in-depth analysis of Canadian demographic party support (9). Their findings reveal a growing and concerning divide between the "left" and "right." As mentioned in last month's column, ChatGPT found the Conservative Party of Canada's leader, Pierre Poilievre, to be the largest spreader of disinformation in the country. Given that, it should not be surprising that his supporters are anti-vaccination, less educated, and distrusting of our government and institutions, even doubting the validity of the election results. Social media posts claimed that voters were given pencils to mark their ballots so that Liberal party members could alter them to support the Liberal party. (Canada's elections are widely regarded as beyond reproach, the chain of custody of ballots being very closely monitored at all times. Ballots are paper, hand-counted under supervision.) Suffice it to say my Canadian smugness in our superiority has been dealt a mortal blow. Regardless of nationality, tyranny follows when the citizenry loses confidence and trust in the institutions that hold society together.

Mis/disinformation has reached up to 100 times more people than the truth (10). Statistics Canada has published an in-depth analysis of this phenomenon (11) that aptly demonstrates the hallmarks of functional stupidity. In his memoir "My Life" (12), former President Bill Clinton blames the Republican Party of former President George Bush Sr for the rampant spread of lies and falsehoods (i.e., the "Whitewater scandal"). The frequency and number being spread were such that disproving them would require so much time and effort as to cripple all other activity. (And this was before social media!) The increasing abilities of artificial intelligence (AI) have reached the point that distinguishing reality from construction is extremely difficult to ascertain. Even more concerning is recent evidence that AI will actually protect itself when faced with its own "death" (13,14). Just as "Data" of Star Trek, The Next Generation did, AI is learning to mimic human behaviour, perhaps even the human experience. Try though it may, it cannot replace us entirely (at least not yet). (This raises a solemn question: what is life?)

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How can we regain trust once it is lost? How can functional stupidity be rectified? Social media is engineered to create bubbles of confirmation bias, but science is far from immune. A hypothesis in and of itself represents a degree of confirmation bias; we all want to be "right," and it is natural to seek evidence to support our positions and beliefs. In writing these columns, I seek evidence to support my positions, and time constraints and the sheer volume of information available preclude careful analysis of methodology and study design. The sheer volume of true or false information bombarding the lay population leads to not knowing what to believe, even willful ignorance.

Fighting functional stupidity starts with humility, but accepting that one may be wrong is not enough. Rather than seek confirmation of one's positions, one should actively seek evidence contrary thereof. If our presumed truths can stand up to scrutiny, they are less likely to be wrong. When one is certain one is right, it is precisely the time to seek opposing views. It also requires strength of character and the acceptance of one's fallibility. Unfortunately, as the foundations of Maslov's hierarchy are eroded by the

stresses of modern life, attaining the self-actualisation required for the task becomes increasingly difficult.

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Medicine is not isolated from society's growing mistrust. The path to gaining trust is in telling the truth. Rather than screaming about the safety of vaccines, we should openly discuss the rare but real risks associated with them; it conveys the message that concerns are taken seriously. Being open and truthful about efficacy (i.e., no vaccine guarantees 100% protection) reassures patients that we can be trusted. It is not just vaccines that have lost the trust of a growing number of people. Signs in doctor's offices stating that only one issue will be dealt with per visit relay a message to patients that their concerns are not taken seriously. After all, what ailment presents with a single symptom?

Above all, we must take the time to listen to patients' concerns; it is hubris to think that we know someone's body better than they do. Regardless of how well we understand physiology and disease processes, this does not translate into knowing how a person *feels*. A patient is much more likely to accept waiting to be seen if they know the person they are seeing will take the time to hear their concerns and actually *listen*. I tell my parents *they* are the most important monitors in the room and are more likely to notice subtle changes in their baby that may preclude a more serious problem. They are also the most consistent member of their baby's team. And yes, parents are part of the team, not annoying idle bystanders getting in the way.

In the NICU, we must recognise the effects of stress on behaviour. There are obvious limits to what is and is not acceptable, but we must give parents some slack and do what we can to reduce their stress levels. I tell my colleagues, "If you had a baby in this unit, everyone would want to kill you!" It helps put things in perspective.

We must learn humility. Doctors were once among the most trusted professionals, but whether we admit it or not, they are now more likely to be perceived as arrogant and dismissive. We must recognise that the population does not end at the second standard deviation. We must always acknowledge that patients are not just our bread and butter but the very reason our professions exist.

References:

1. Alvesson, M. and Spicer, A. (2012), A Stupidity-Based Theory of Organizations. Journal of Management Studies, 49: 1194-1220. https://doi.org/10.1111/j.1467-6486.2012.01072.x
2. https://www.youtube.com/watch?v=Sfekgjfh1Rk
3. https://www.demenzemedicinagenerale.net/pdf/MilgramOriginalWork.pdf
4. Banuazizi, A., & Movahedi, S. (1975). Interpersonal dynamics in a simulated prison: A methodological analysis. American Psychologist, 30, 152–160. http://dx.doi.org/10.1037/h0076835
5. Le Texier, T. (2019). Debunking the Stanford Prison Experiment. American Psychologist, 74(7), 823–839. https://doi.org/10.1037/amp0000401
6. Porcelli AJ, Delgado MR. Stress and Decision Making: Effects on Valuation, Learning, and Risk-taking. Curr Opin Behav Sci. 2017 Apr;14:33-39. doi: 10.1016/j.cobeha.2016.11.015. PMID: 28044144; PMCID: PMC5201132.
7. Yu R. Stress potentiates decision biases: A stress induced deliberation-to-intuition (SIDI) model. Neurobiol Stress. 2016 Feb 12;3:83-95. doi: 10.1016/j.ynstr.2015.12.006. PMID: 27981181; PMCID: PMC5146206.
8. https://education.cfr.org/learn/reading/why-did-world-war-ii-happen
9. https://www.ekospolitics.com/index.php/2025/05/historic-election-concludes-amid-deepened-polarization/
10. Soroush Vosoughi et al., The spread of true and false news online.Science359,1146-1151(2018).DOI:10.1126/science.aap9559
11. https://www150.statcan.gc.ca/n1/pub/22-20-0001/222000012024003-eng.htm
12. Clinton, B. (2004). My life. Knopf. ; Chicago / Turabian
13. https://c3.unu.edu/blog/the-rise-of-the-deceptive-machines-when-ai-learns-to-lie
14. https://observer.com/2025/01/yoshua-bengio-ai-agent-self-preserving/

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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
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Pioneer Profile – Ruth A. Lawrence, MD

Joseph B. Philips, III, MD, FAAP



(37)

Dr. Ruth Lawrence, now 101 years old, pioneered in more ways than just Neonatology. Her father died when she was young, and her mother raised her and three siblings during the Great Depression. (1) She attended Antioch College and then medical school at the University of Rochester, where she met her husband, Bob. She was then the first woman accepted for an internship at Yale University Hospital. Bob was called to military service in Korea, while Dr. Lawerence gave birth to her first of nine children, all of whom she breastfed. While at Yale, she worked in the rooming in unit for mothers and their babies, which sparked her lifelong interest in the newborn.

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Dr. Lawrence returned to Rochester to take charge of the newborn and premature baby nurseries, which was unusual for a woman at the time, but her experience at Yale made her well-qualified for the role. (2) Breastfeeding had been on the decline in the United States for many years, and pediatricians, obstetricians, and general practitioners were not well versed in the benefits of breastfeeding, nor were many inclined to encourage it. Dr. Lawrence's career was essentially a crusade to counter this trend and extol breastfeeding virtues for the baby and the mother. She co-founded the Academy of Breastfeeding Medicine in 1995, founded the journal Breastfeeding Medicine in 2006, and served as its Editor-in-Chief for many years. (3) From this perch, she wrote dozens of editorials covering various topics focused on breastfeeding. Among these were barriers to breastfeeding, (4) its importance to public health,(5) ways to encourage breastfeeding, (6) breastfeeding and co-sleeping, (7) growth charts for breastfed infants,(8) sudden infant death syndrome and breastfeeding, (9) ankyloglossia (tongue-tie) and breastfeeding,(10) and a host of other topics.

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Not content with focusing on breastfeeding and infants, Dr. Lawrence established the second poison control center in the United States and the first to be open to the public. (11) This naturally led to an interest in drugs in breast milk. (12, 13)

Another interest was adolescent mothers and their babies. One study evaluated the interaction of teenage mothers with their infants while still in hospital and refuted the notion that maternal age alone is not the critical factor negatively impacting child development. (14) Another paper concluded that maternal age was not the critical factor in adolescent pregnancy unless the mother was 14 years of age or less. (15) However, a study of the interactions of adolescent mothers with their 1-year-old babies showed some less favorable interactions between young mothers

and their infants compared to older mothers. (16) Dr. Lawrence then went on to advocate for daycare centers near schools where adolescent mothers could participate in the care of their children and learn parenting skills to improve on the well-documented poorer outcomes of such infants. (17)

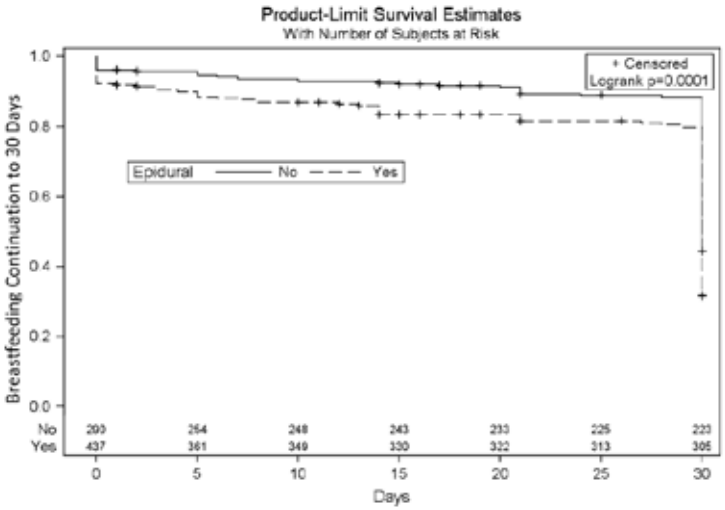
"Dr. Lawrence then went on to advocate for daycare centers near schools where adolescent mothers could participate in the care of their children and learn parenting skills to improve on the well-documented poorer outcomes of such infants."

Dr. Lawrence authored or co-authored numerous review articles discussing various aspects of breastfeeding. She and colleagues showed that implementation of an American Academy of Pediatrics (AAP) curriculum with pediatric, family practice, and obstetrics and gynecology residents "improved knowledge, confidence, and practice patterns related to breastfeeding care among residents and resulted in increased breastfeeding rates in their patients." (18) She encouraged breastfeeding in women with type 2 diabetes and emphasized the benefits to both mother and infant(s). (19) Along with her son Robert, she published a comprehensive review entitled "Breastfeeding: More Than Just Good Nutrition." (20) They also authored a review of breast milk and infections wherein they summarized the immunologic properties of human milk and the pathogens that could be transmitted by it. (21) Dr. Lawrence wrote about how cultural values and medical knowledge influence the decision to breastfeed (22) as well as the fact that women participating in the Supplemental Nutrition Program for Women, Infants, and Children (WIC) have lower rates of breastfeeding and called for action to improve their rates of nursing their babies. (23) Two additional reviews discussed the interactions of medical disease in mothers and breastfeeding. (24, 25) Further articles discussed the effects of storage and processing of human milk on its immunologic and nutritional value, showing that immunologic components are compromised while nutritional value is preserved. (26, 27) Comprehensive reviews on the physiology of breastfeeding were also published. (28, 29)

"Dr. Lawrence authored or co-authored numerous review articles discussing various aspects of breastfeeding. She and colleagues showed that implementation of an American Academy of Pediatrics (AAP) curriculum with pediatric, family practice, and obstetrics and gynecology residents 'improved knowledge, confidence, and practice patterns related to breastfeeding care among residents and resulted in increased breastfeeding rates in their patients.'"

Original contributions were numerous and varied as well. Dr. Lawrence studied the effect of epidural anesthesia during labor and other obstetric factors on breastfeeding, concluding that epidural anesthesia was associated with a lower rate of breastfeeding continuation to 30 days (Figure 1). (30) Another report showed that pacifier use was associated with reduced breastfeeding, although the interaction was somewhat nuanced. (31) A further study showed that nursing mothers reported breastfeeding as an effective remedy for crying in babies with colic. (32) Delayed onset of copious milk production was found to have a negative impact on full or partial breastfeeding, and early postpartum interventions were recommended to support favorable breastfeeding outcomes. (33)

Figure 1. Effect of epidural anesthesia on breastfeeding rates to 30 days (30).



Dr. Lawrence's expertise in breastfeeding naturally led her to be a participant in national committees that published recommendations. One such is the American Academy of Pediatrics statement "Breastfeeding and the Use of Human Milk," which outlined the benefits of breastfeeding not only to the infant and mother and the community and made extensive recommendations for breastfeeding healthy and premature infants. (34) It also highlighted the role of pediatricians and other professionals in supporting, protecting, and promoting breastfeeding. Another expert panel issued recommendations regarding the surveillance of human milk in the United States for the presence of environmental chemicals. (35) She authored and co-authored the comprehensive textbook Breastfeeding: A Guide

"She authored and co-authored the comprehensive textbook Breastfeeding: A Guide for the Medical Profession, now in its ninth edition."

for the Medical Profession, now in its ninth edition. (36)

I am indebted to Dr. T. Allen Merritt for suggesting that I profile Dr. Lawrence and her remarkable career. In response to my request, he has provided the following commentary.

Thank you so much for honoring Dr. Ruth Lawrence. I knew Ruth Lawrence as a mentor and colleague, and my first academic job was at the University of Rochester (1978–1981). She had been there for many years in the Division of Neonatology, writing the first edition of her now classic book, attending in the well nursery, and occasionally in the NICU. I was just out of fellowship from San Diego, and she kindly referred to me as a "gem but needing some polish." I will confide that breastfeeding was not emphasized during my fellowship with Louis Gluck, M.D., at UCSD from 1975 to 1978. Ruth was very understanding of my ignorance and taught me how to carefully observe newborns searching for a mother's areola when placed on a mother's chest after birth and latching. She strongly encouraged mothers of preemies to express milk for their infant's nutrition. She guided and advocated for a lactation room adjacent to the NICU and was instrumental in developing a human milk bank (one of the first).

In addition to her duties in Neonatology, she was also very involved in the NY State Poison Control Center, as she helped found one of the first Poison Control Centers in the U.S. focused on childhood poisonings. Dr. Arthur Eidelman wrote a wonderful tribute to Dr. Lawrence in the March Breastfeeding Medicine, which refers to her impact on infant nutrition by promoting the science of breastfeeding and congratulating her on her 100th birthday. (3)

In my opinion, Dr. Ruth Lawrence has been one of the most under-recognized contributors to Neonatology, even after she (and others) formed the Academy of Breastfeeding Medicine and their journal. While neonatologists of my generation recognized the seminal contributions of Dr. Mildred Stahlman, Dr. Mary Ellen Avery, Dr. Maria Delivoria-Papadopoulos from Philadelphia, Dr. Joan Hodgman from USC, and Dr. Lula Lubcenco from Denver (among others), Dr. Ruth Lawrence was not as prominently recognized by the PAS. The University of Rochester also held for her 100th birthday an extensive program (all on Google) highlighting her numerous contributions and her magnificent personality, characterized by scholarship, advocacy, presence, and encouragement. Under her guidance, the University of Rochester created a Department of Breastfeeding Medicine, including caring for newborns while training students, residents, and fellows (in Neonatology) on the science and clinical aspects of the benefits of human milk. She also recognized the influence of formula companies in pediatrics and understood this influence on pediatric departments and trainees.

"In my opinion, Dr. Ruth Lawrence has been one of the most under-recognized contributors to Neonatology, even after she (and others) formed the Academy of Breastfeeding Medicine and their journal."



(1)

I am really delighted that you are writing a tribute to Dr. Lawrence. She deserves it. Allen.

References:

1. Lawrence R. A Lifetime as a Leader. In: Thompson K, editor. Rochester Review: University of Rochester. 2019. Available at https://www.rochester.edu/adv/alumni-news-media/2019/09/04/a-lifetime-as-a-leader/
2. Association ACA. Dr. Ruth Lawrence, '45, turns 100: Antioch College Alumni Association; 2024. Available from: https://alumni.antiochcollege.edu/news/27620.
3. Eidelman AI. A Testimony to Dr. Ruth A. Lawrence: An Elegant Revolutionary. Breastfeeding Medicine. 2025;20(3):147–8. doi: 10.1089/bfm.2024.0358.
4. Lawrence RA. Breastfeeding Barriers Revisited. Breastfeeding Medicine. 2014;9(1):1–2. doi: 10.1089/bfm.2014.9997.
5. Lawrence RA. Breastfeeding—A Public Health Issue, Not Just a Matter of Choice. Breastfeeding Medicine. 2012;7(2):67–8. doi: 10.1089/bfm.2012.9990.
6. Lawrence RA. Choosing to Breastfeed: Finding the Answers. Breastfeeding Medicine. 2014;9(8):373–4. doi: 10.1089/bfm.2014.9977.
7. Lawrence RA. Co-Sleeping and Breastfeeding: Is It Safe? Breastfeeding Medicine. 2008;3(1):1–2. doi: 10.1089/bfm.2007.9980.
8. Lawrence RA. Growth Charts: Will the Breastfed Infant Be the Standard Everywhere? Breastfeeding Medicine. 2006;1(3):125–6. doi: 10.1089/bfm.2006.1.125.
9. Lawrence RA. Solomon's Wisdom. Breastfeeding Medicine. 2014;9(6):279–80. doi: 10.1089/bfm.2014.9982.
10. Lawrence RA. Tongue-Tie—The Disease du Jour. Breastfeeding Medicine. 2013;8(6):467–8. doi: 10.1089/bfm.2013.9976.
11. Poisoning CtPL. Pioneer Woman: An Interview with local trailblazer Dr. Ruth Lawrence: Coalition to Prevent Lead Poisoning; 2020. Available from: https://theleadcoalition.org/

pioneer-woman-an-interview-with-local-trailblazer-dr-ruth-lawrence/.

12. Howard CR, Lawrence RA. Drugs and Breastfeeding. Clinics in Perinatology. 1999;26(2):447–78. doi: 10.1016/S0095-5108(18)30061-7.

13. Howard CR, Lawrence RA. Xenobiotics and Breastfeeding. Pediatric Clinics of North America. 2001;48(2):485–504. doi: 10.1016/s0031-3955(08)70040-3.

14. McAnarney ER, Lawrence RA, Aten MJ, Iker HP. Adolescent Mothers and Their Infants. Pediatrics. 1984;73(3):358–62. doi: 10.1542/peds.73.3.358.

15. Lawrence RA, Merritt TA. Infants of adolescent mothers: perinatal, neonatal, and infancy outcome. Seminars in Perinatology. 1981;5(1):19–32.

16. McAnarney ER, Lawrence RA, Ricciuti HN, Polley J, Szilagyi M. Interactions of Adolescent Mothers and Their 1-Year-Old Children. Pediatrics. 1986;78(4):585–90. doi: 10.1542/peds.78.4.585.

17. McAnarney ER, Lawrence RA. Day Care and Teenage Mothers: Nurturing the Mother-Child Dyad. Pediatrics. 1993;91(1):202–5. doi: 10.1542/peds.91.1.202.

18. Feldman-Winter L, Barone L, Milcarek B, Hunter K, Meek J, Morton J, et al. Residency Curriculum Improves Breastfeeding Care. Pediatrics. 2010;126(2):289–97. doi: 10.1542/peds.2009-3250.

19. Taylor JS, Kacmar JE, Nothnagle M, Lawrence RA. A Systematic Review of the Literature Associating Breastfeeding with Type 2 Diabetes and Gestational Diabetes. Journal of the American College of Nutrition. 2005;24(5):320–6. doi: 10.1080/07315724.2005.10719480.

20. Lawrence RM, Lawrence RA. Breastfeeding: More Than Just Good Nutrition. Pediatrics in Review. 2011;32(7):267–80. doi: 10.1542/pir.32-7-267.

21. Lawrence RM, Lawrence RA. Breast milk and infection. Clinics in Perinatology. 2004;31(3):501–28. doi: 10.1016/j.clp.2004.03.019.

22. Gabriel A, Gabriel KR, Lawrence RA. Cultural values and biomedical knowledge: Choices in infant feeding. Social Science & Medicine. 1986;23(5):501–9. doi: 10.1016/0277-9536(86)90010-9.

23. Lawrence RA. Lower Breastfeeding Rates Among Supplemental Nutrition Program for Women, Infants, and Children Participants: A Call for Action. Pediatrics. 2006;117(4):1432–3. doi: 10.1542/peds.2005-2466.

24. Lawrence RA. Breastfeeding and Medical Disease. Medical Clinics of North America. 1989;73(3):583-603. doi: 10.1016/s0025-7125(16)30659-9.

25. Asselin BL, Lawrence RA. Maternal Disease as a Consideration in Lactation Management. Clinics in Perinatology. 1987;14(1):71–87. doi: 10.1016/S0095-5108(18)30782-6.

26. Lawrence RA. Milk banking: the influence of storage procedures and subsequent processing on immunologic components of human milk. Advances in Nutritional Research. 2001;10:389–404. doi: 10.1007/978-1-4615-0661-4_19.

27. Lawrence R. Storage of human milk and the influence of procedures on immunological components of human milk. Acta Paediatrica. 1999;88(s430):14–8. doi: 10.1111/j.1651-2227.1999.tb01295.x.

28. Lawrence RA. Breast-Feeding. Pediatrics in Review. 1989;11(6):163–71. doi: 10.1542/pir.11-6-163.

29. Lawrence RA. The Management of Lactation as a Physiologic Process. Clinics in Perinatology. 1987;14(1):1–10. doi: 10.1016/S0095-5108(18)30777-2.

30. Dozier AM, Howard CR, Brownell EA, Wissler RN, Glantz JC, Ternullo SR, et al. Labor Epidural Anesthesia, Obstetric Factors and Breastfeeding Cessation. Maternal and Child Health Journal. 2013;17(4):689–98. doi: 10.1007/s10995-012-1045-4.

31. Howard CR, Howard FM, Lanphear B, Deblieck EA, Eberly S, Lawrence RA. The Effects of Early Pacifier Use on Breastfeeding Duration. Pediatrics. 1999;103(3):e33. doi: 10.1542/peds.103.3.e33.

32. Howard CR, Lanphear N, Lanphear BP, Eberly S, Lawrence RA. Parental Responses to Infant Crying and Colic: The Effect on Breastfeeding Duration. Breastfeeding Medicine. 2006;1(3):146–55. doi: 10.1089/bfm.2006.1.146.

33. Brownell E, Howard CR, Lawrence RA, Dozier AM. Does Delayed Onset Lactogenesis II Predicts the Cessation of Any or Exclusive Breastfeeding. The Journal of Pediatrics. 2012;161(4):608–14. doi: 10.1016/j.jpeds.2012.03.035.

34. Breastfeeding and the Use of Human Milk. Pediatrics. 2005;115(2):496–506. doi: 10.1542/peds.2004-2491.

35. Berlin CM, Jr, LaKind JS, Sonawane BR, Kacew S, Borgert CJ, Bates MN, et al. Conclusions, Research Needs, and Recommendations of the Expert Panel: Technical Workshop on Human Milk Surveillance and Research for Environmental Chemicals in the United States. Journal of Toxicology and Evironmental Health Part A. 2002;65(22):1929–35. doi: 10.1080/00984100290071801.

36. Lawrence RA, Lawrence RM. Breastfeeding: A Guide for the Medical Profession. 9th ed: Elsevier; 2021.

37. https://www.urmc.rochester.edu/people/112358142-ruth-a-lawrence

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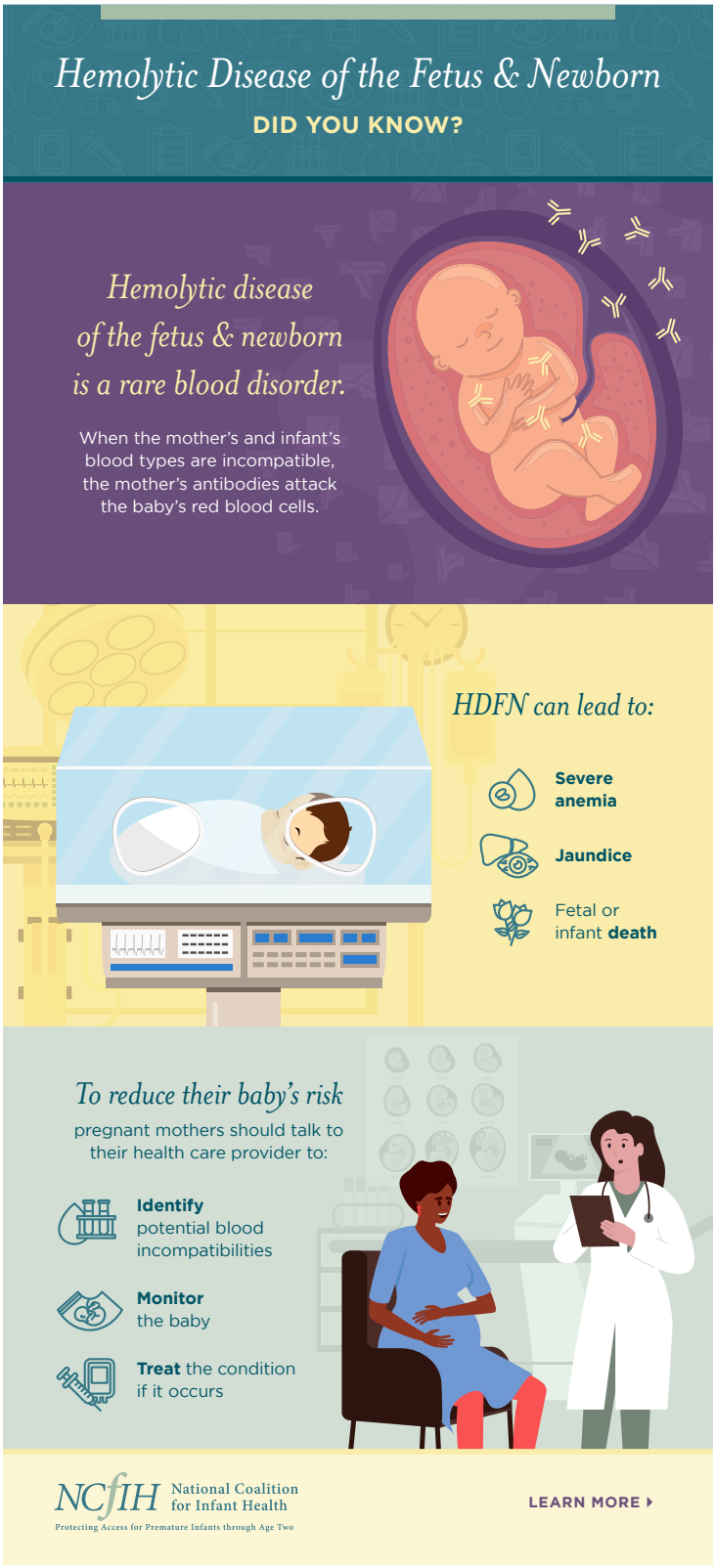
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Corresponding Author



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

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From Advocacy to Action: Transforming Clinical Practice with NIDCAP in the Cardiac Care Unit

Samantha Butler, PhD, Kaitlyn Ludder, M.Sc, Dorothy Vittner, PhD, RN, FAAN

"Advocacy in newborn care must extend beyond survival to prioritize the emotional, developmental, and neurobehavioral needs of hospitalized infants, their families, and the healthcare professionals who care for them."

Abstract: *Advocacy in newborn care must extend beyond survival to prioritize the emotional, developmental, and neurobehavioral needs of hospitalized infants, their families, and the healthcare professionals who care for them. Infants with congenital heart disease (CHD) are especially vulnerable to long-term neurodevelopmental delays, often compounded by prolonged hospital stays and intensive interventions. While Cardiac Intensive Care Units (CICUs) focus on life-saving treatment, the high-stress environment can hinder developmental progress. Healthcare professionals often face challenges balancing institutional demands with individualized, family-centered care. This paper explores the transformative potential of the Newborn Individualized Developmental Care and Assessment Program (NIDCAP), which integrates personalized care, family engagement, and reflective practice—even in the high-acuity CICU setting. We also examine the role of Quality Improvement (QI) science in sustaining NIDCAP by addressing barriers, guiding interventions, and measuring impact. Through NIDCAP, infants with CHD are supported to survive and thrive in care grounded in compassion, innovation, and equity.*

Keywords: *Cardiac Intensive Care; NIDCAP; Quality Improvement; Congenital Heart Disease; Infancy.*

Advocacy and Responsibility: A Call to Action

Advocacy in complex healthcare environments, particularly for critically ill newborns and their families, should not be a choice but a responsibility. These vulnerable infants cannot advocate for themselves and depend entirely on their caregivers, not only for survival and immediate medical attention but also for long-term developmental care and overall quality of life. As healthcare professionals (HCPs), we have the privilege of bridging science, clinical practice, and compassionate care. This role demands that our efforts extend beyond hospital walls, ensuring that infants and their families are prioritized, heard, and respected.

Advocacy in newborn care extends beyond medical care; it involves creating environments that nurture children and families. It means reinforcing attachment, preserving dignity, and promoting long-term neurodevelopment. Daily actions in the hospital environment create a lasting impact, such as establishing a calm and comforting atmosphere, amplifying family voices in decision-making, and equipping care teams with essential resources. These principles form the cornerstone of the Newborn Individualized Developmental Care and Assessment Program (NIDCAP), a framework emphasizing individualized, respectful, developmentally focused care. (1) NIDCAP philosophy includes humanizing the newborn and family. As an HCP, we are not just in a role but have a commitment and pledge to listen, act, and uphold the dignity and potential of every newborn and their family. NIDCAP challenges us to advance newborn medicine in all hospital care settings. (2,3)

A truly equitable approach to newborn care must address systemic disparities affecting families from diverse racial, socioeconomic, and cultural backgrounds. NIDCAP's commitment to equity, diversity, and inclusion ensures that care remains compassionate and individualized by embedding culturally sensitive practices, mitigating implicit bias, and honoring diverse caregiving traditions. Sustaining a culture of collaborative, individualized care also depends on committed leadership.

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The Changing Landscape of Newborn Care: Lessons from History:

As recently as the late 20th century, significant misconceptions persisted. For example, it was widely believed that newborns could not feel pain until they were at least a year old. (4) Medical professionals once believed that newborns could not remember or interpret pain, suggesting that they did not retain distinct memories of painful experiences and, therefore, could not perceive them as pain. (5,6) This perspective reflects a broader historical failure to acknowledge the experiences of infants in medical practice. This misconception persisted until 1987, when the American Academy of Pediatrics (AAP) officially declared it unethical to perform surgeries on newborns without anesthesia. (7) This marked a pivotal turning point in the treatment of infants, reinforcing that their experiences deserve acknowledgment and care equal to that of older patients. Reflecting on this history emphasizes the importance of questioning assumptions, challenging outdated paradigms, and ensuring that every newborn receives care

informed by compassion and evidence. The historical neglect of the infant experience is a stark reminder of continued commitment and vigilance in newborn care.

Simultaneously, emerging insights from psychoanalysis and pediatrics began revealing the profound impact of early care on infants. Among the pioneers in this field, Dr. Donald Winnicott focused on the unique developmental stage of early infancy. Winnicott proposed that an infant experiences no clear boundary between inner states and the external world during the first months of life. (8) This perspective emphasizes the profound influence of the caregiving environment on an infant's emerging sense of self and perception of the world around them. Winnicott's work underscored that caregiving practices during infancy are not merely about ensuring survival but play a pivotal role in shaping the child's long-term psychological and developmental outcomes.

Building on the lessons of the past, Dr. Heidelise Als also emerged as a transformative figure who challenged practices and redefined newborn care. She developed NIDCAP (9) and provided an evolving mindset on how the medical field approaches newborn care. Her contributions revolutionized care by addressing infants' developmental and emotional growth, establishing a new model for engaging with newborns, emphasizing the essential role of families as equal partners in care, and highlighting the long-term impact of early caregiving on health and development. (2,3,10) NIDCAP began during an era when it was standard practice to treat newborns, particularly premature and critically ill infants, as passive recipients of care. At the time, the medical community was still debating whether infants experienced pain. (4)

Against this backdrop, the Synactive Theory of Behavioral Organization was developed and became the conceptual theory behind NIDCAP (10). This framework highlights the dynamic interplay between an infant's behavioral subsystems, autonomic, motor, state, attention/interaction, self-regulation, and environment. Central to NIDCAP is the belief that newborns communicate through their behaviors and that caregivers (including both HCPs and families) must interpret infants' behavioral cues with sensitivity and intention. Caregivers become the newborn's voice by ensuring that every decision in their care respects their individuality and promotes healthy development.

"Dr. Als's legacy endures through clinicians recognizing newborns' individuality and agency and the countless infants and families transformed by her vision. The Synactive Theory and NIDCAP model have improved infant and family outcomes, driving systemic change in newborn care, and inspired a generation of clinicians to approach their work with a culture of respect, teamwork, and comprehensive care. "

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NIDCAP originated in 1984 and reflects an evolving mindset on how the medical field approaches newborn care. NIDCAP's principles prioritize individualized care that addresses newborns' physiological health and neurodevelopment. (1,9,10) Historically, medical approaches often focused exclusively on interventions necessary for survival. In contrast, NIDCAP emphasizes the whole infant, cultivating resilience and promoting developmental growth that leaves an enduring impact. Similarly, NIDCAP views infants as active participants whose experiences, both in the intensive care unit (ICU) and in interactions with others, shape their lifelong development.

Reflecting on the history of infant care highlights progress in healthcare and the challenges to be addressed. We must address past shortcomings by implementing care models that prioritize survival and the profound impact of infant care practices, as well as the physical and social environment, on developmental outcomes. This approach underscores HCPs' responsibility as advocates for clinical practices that honor the individuality and humanity of every infant and family. By ensuring that even the most vulnerable patients receive developmentally informed care, we can nurture their growth and resilience, creating a legacy of progress for generations to come.

Advocacy in newborn care must also extend beyond the infant and toward their families' overall health and stability. Families, often abruptly entering the high-stress environment of the ICU, encounter emotional, psychological, and medical challenges while navigating their child's care. Ensuring that families are included, valued, and recognized as equal and essential partners in the caregiving process is vital. Advocating for families involves providing resources, knowledge, and emotional guidance to become confident participants in their medically complex child's care. Key aspects of inclusive and intentional engagement include acknowledging the diversity of family experiences, tailoring care to align with cultural, linguistic, and individual considerations, and creating environments where families feel safe to express concerns, ask questions, and actively contribute to caregiving decisions.

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The Evidence Behind NIDCAP: Transforming Newborn Care:

NIDCAP offers a distinctive approach to newborn care by recognizing the newborn as an active participant in their development. Unlike traditional care models that focus primarily on medical stability and survival, NIDCAP emphasizes interpreting infant behavioral cues, supporting individualized responses, and integrating families as essential partners in care. What sets NIDCAP apart is its foundation in the Synactive Theory, which views infant development as a dynamic interaction between physiological systems and the environment. This framework equips healthcare professionals with tools to read and respond to each infant's unique needs, creating care plans that are both medically sound and developmentally supportive.

Reflective caregiving is another hallmark of NIDCAP. (11) It encourages healthcare professionals to consider how each caregiving action impacts the infant's experience and development. This intentional practice fosters deeper attunement between providers, infants, and families, strengthening trust and supporting emotional regulation during critical periods of growth.

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Over decades, research has consistently demonstrated NIDCAP's impact on short- and long-term outcomes, particularly in preterm and critically ill infants. These findings suggest that individualized developmental care can help mitigate the adverse effects of intensive care environments on brain development. Neuroimaging studies reveal that infants receiving NIDCAP care show improved brain structure and functional connectivity compared to those receiving standard care. These neurological gains translate into better behavioral regulation, cognitive functioning, and motor development. (12–15) Longitudinal studies further affirm these benefits, with improved outcomes extending well into childhood. (16,17) Importantly, NIDCAP also supports the family unit. Reducing parental stress and fostering stronger parent-infant relationships lays the foundation for healthier emotional and social development. (18) This dual focus on medical and relational aspects of care is central to what makes NIDCAP a transformative model in newborn medicine.

The Gaps in Cardiology Care:

Cardiology, particularly within the context of congenital heart disease (CHD), presents unique and urgent challenges that demand innovative solutions. CHD remains the most common cause of infant mortality in the United States, affecting approximately 40,000 infants born each year. (19) Of these, nearly one in four require hospitalization with medical, therapeutic, palliative, or reparative interventions within the first year after birth. This medical journey often occurs in the Cardiac Intensive Care Unit (CICU), an environment characterized by life-saving interventions and simultaneously an environment that can inadvertently contribute to long-term neurodevelopmental challenges.

Infants with CHD face significant developmental risks, along with challenges related to survival and psychosocial well-being. (20,21) The CICU environment is inherently stressful and exposes vulnerable infants to invasive procedures, sensory overload, frequent disruptions in contact with family, uncomfortable movements, and disrupted sleep and feeding. This environment adds stress on the infant beyond what the newborn brain expects and exacerbates the neurodevelopmental vulnerabilities already present in infants with CHD. This can lead to long-term challenges, including learning disabilities, attention deficits, and difficulties with emotional regulation. (20,22–27) Research shows that medical factors alone do not determine these outcomes; environmental and caregiving practices within the CICU play a significant role. (28,29)

Traditional CICU practices prioritize immediate survival and often struggle to implement individualized developmental care. (30–32) While recent publications stress the importance of developmental care in the CICU, its implementation varies widely. (30-36) The extreme medical requirements of this population present additional challenges, as critically ill infants often require life-saving interventions, complex procedures, and the use of perilous lines and tubes that can limit opportunities for developmental care. Post-surgical complications, prolonged hospital stays, and comorbid conditions further complicate efforts to integrate individualized developmental practices.

Despite these obstacles, evidence strongly endorses the benefits of increased family involvement, as parent-infant connection improves outcomes. Research indicates that parents of infants with complex CHD experience heightened stress, which can interfere with parenting processes and disrupt the formation of secure attachment relationships, which is essential for healthy emotional and developmental outcomes. (21,28,34–36) The stress and disconnection experienced during this vulnerable period can have long-term effects on an infant's cognitive, emotional, and social development. (37,38) These findings underscore the importance of involving families as active participants in their child's care from the very beginning, even when the child is critically ill.

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Encouragingly, studies suggest that educating HCPs, even in medically complex environments, can enhance the implementation

of individualized developmental care. (39,40) By providing training and guidance, CICUs can work toward integrating developmental care principles while ensuring patient safety and optimizing both immediate and long-term outcomes.

Transforming Cardiac Intensive Care:

NIDCAP is actively reshaping cardiac care by shifting the focus in CICUs from survival alone to comprehensive, family-centered care that enhances the physical, emotional, and development of infants and their families. (29,41,42) By prioritizing family integration, minimizing environmental stressors, and tailoring care to the unique challenges of infants with CHD, NIDCAP promotes long-term outcomes, even in the highly complex environment of the CICU. Infants with critical cardiac conditions benefit from improved neurodevelopmental health, while families gain confidence, experience reduced stress, and build stronger emotional connections with their children despite the challenges of intensive care. (43)

Advances in medical technology have been extraordinary, but the emotional experience of care, the trust built between families and medical teams, and the relationships formed between infants and their caregivers are just as vital. Too often, we prioritize technological interventions over these essential relational aspects of care. For example, despite the known benefits of developmental care practices, care such as supportive touch and infant holding, which have been shown to enhance physiological stability, promote neurodevelopment, and reduce parental distress, remain inconsistently implemented in CICUs. (30,32) For NIDCAP to reach its full potential in cardiology, systemic change must extend beyond individual interventions and be fully integrated into all aspects of care. This includes redesigning physical spaces, providing education and training, and a culture of interdisciplinary collaboration. By continuing to innovate, advocate, and expand NIDCAP's principles, we ensure that every infant has the opportunity to survive and thrive within the hospital and beyond.

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Advocating for Each Other: The Key to NIDCAP Success:

System-wide change and implementation of NIDCAP depend on interdisciplinary teams united by the shared purpose of improving care for critically ill newborns and their families. While NIDCAP emphasizes individualized care for infants and families, its strength lies in collective effort. Advocacy must extend to all members of the healthcare team, especially those at the bedside and on the inpatient floor, who navigate the complexities of care daily.

Creating a culture of respect and shared responsibility ensures that every team member feels supported to advocate for infants and families. This includes physicians, nurses, therapists, environmental services, administrative staff, and educators. Historically, voices such as nurses, respiratory therapists, developmental specialists, and others have been underrepresented in decision-making. Inclusive leadership and team structures help diversify perspectives, promote equity, and ensure care reflects the diverse needs of the patient population. Each plays a vital role, whether maintaining a developmentally appropriate environment or supporting care coordination, and their contributions should be recognized as essential to holistic care.

Developmental bedside rounds exemplify collaboration in action. (41) These interdisciplinary discussions center on individualized care planning and amplify the voices of families and all team members. Developmental rounds reinforce the value of teamwork and mutual respect by tuning into the infant's behavioral cues and supporting shared decision-making.

Shared ownership of care delivery and advocacy happens peer-to-peer and from the top down. A culture of collaborative, developmentally focused care also depends on strong leadership. Leaders who champion NIDCAP, allocate resources, and model reflective practices inspire teams, even amid the pressures of high-acuity environments. When leaders visibly support these values through language, policy, and action, they help embed NIDCAP into the institution's fabric, making individualized developmental care possible and expected.

"Ultimately, infants and families are at the heart of NIDCAP: family insights, experiences, and feedback guide continuous improvement. Engaging families in care and system-wide planning through unit councils or hospital committees deepens the partnership and strengthens outcomes."

Ultimately, infants and families are at the heart of NIDCAP: family insights, experiences, and feedback guide continuous improvement. Engaging families in care and system-wide planning through unit councils or hospital committees deepens the partnership and strengthens outcomes. Advocacy within NIDCAP is not limited to the infant; it extends to every person involved in their care. Building this respect, collaboration, and inclusion culture enables the system to transform truly.

Quality Improvement (QI) Science: A Catalyst for Sustaining NIDCAP Work:

Implementing NIDCAP in high-acuity environments like the CICU can be a challenge. Competing priorities, staff fatigue, and logistical constraints often hinder sustained practice. QI science offers a structured, data-driven framework to address these challenges and guide meaningful, lasting change.

A cornerstone of QI is measurement. Systematic data collection on caregiving practices, environmental conditions, and family engagement helps track progress, identify gaps, and inform targeted interventions. Equity must be central to these efforts, using metrics that assess how well developmental care reaches families across racial, cultural, and socioeconomic groups to ensure that improvements benefit all populations. Recent QI initiatives have revealed common obstacles, such as staff hesitation around holding medically complex infants and difficulties managing lines

and tubes. (42,44) Simulation-based training and clear guidelines have shown promise in overcoming these barriers but remain underutilized, particularly in developmental care. (29) At institutions where NIDCAP audits are conducted regularly, meaningful gains have been documented with improved light and sound regulation, more consistent caregiving, and higher parent participation rates. (29) Sharing these findings reinforces the value of NIDCAP and boosts staff morale by celebrating tangible progress.

Conclusion:

As survival rates for infants in newborn and cardiac ICUs continue to rise, the question remains: are these infants truly thriving? NIDCAP represents a fundamental shift in infant and family cardiac care, emphasizing family-centered, neurodevelopmentally focused, and individualized care practices. By reducing unnecessary environmental stressors, strengthening parent-infant connections, and advancing equity, NIDCAP ensures that every infant and family receives compassionate, evidence-based, and developmentally appropriate care. The NIDCAP principles of interpreting infant behavior, reflective caregiving, and multidisciplinary collaboration illustrate how systemic changes can transform hospital environments to cultivate resilience, enhance emotional health for families and staff, and promote optimal neurodevelopment in infants.

"As survival rates for infants in newborn and cardiac ICUs continue to rise, the question remains: are these infants truly thriving? NIDCAP represents a fundamental shift in infant and family cardiac care, emphasizing family-centered, neurodevelopmentally focused, and individualized care practices."

Dr. Claudine Amiel-Tison stated, "One brain for life, all experience matters." (45) This simple truth captures the essence of NIDCAP in that every interaction in the early weeks and months leaves a lasting imprint on the developing brain. It reinforces our shared responsibility to ensure those experiences are grounded in respect, compassion, and individualized care.

Continued efforts are required across multiple domains to realize NIDCAP's potential in newborn and cardiac care. Expanding research and evidence-based implementation is crucial, particularly in medical and surgical populations that measure the long-term neurodevelopmental impact of developmentally focused care. Enhancing training and education for all HCPs will be important to embedding developmentally informed care as a standard practice rather than an aspirational goal. Lastly, systemic and policy-level reforms are necessary to ensure that developmentally appropriate care is formally recognized, integrated into practice, and adequately funded as a fundamental component of newborn intensive care. We can continue transforming hospital care by advancing these efforts, bridging the gap between medical excellence and holistic, family-centered, and neurodevelopmentally informed practices.

References:

1. Vittner D, Butler S, Lawhon G, Buehler D. The newborn individualised developmental care and assessment program: A model of care for infants and families in hospital settings. Acta Paediatr [Internet]. 2024 May 30; Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/apa.17300
2. Buehler D. The Inaugural Heidelise Als Lecture: The Synactive Theory, NIDCAP, and Resilience. Developmental Observer. 2024;17.
3. Butler S, Ludder K, Browne J, Vittner D. Revolutionizing Newborn Care: Overcoming Barriers to Lasting Change. Neonatology Today. 2025 Feb;20(2):114–25. doi:https://neonatologytoday.net/newsletters/nt-feb25.pdf
4. Chamberlain DB. Babies remember pain. Journal of Prenatal & Perinatal Psychology & Health. 1989;3(4).
5. Anand KJ, Hickey PR. Pain and its effects in the human neonate and fetus. N Engl J Med. 1987 Nov 19;317(21):1321–9.
6. Wallerstein E. Circumcision: the uniquely American medical enigma. Urol Clin North Am. 1985;12(1):123–32.
7. Committee on Fetus and Newborn, Committee on Drugs, Anesthesiology S on, Surgery S on. Neonatal anesthesia. Pediatrics. 1987 Sep 1;80(3):446–446.
8. Ogden TH. The mother, the infant and the matrix: Interpretations of aspects of the work of Donald Winnicott. Contemporary Psychoanalysis. 1985;21:346–71.
9. Als H. Newborn Individualized Developmental Care and Assessment Program (NIDCAP): New frontier for neonatal and perinatal medicine. J Neonatal Perinatal Med. 2009;2(3):135–47.
10. Als H. Toward a synactive theory of development: Promise for the assessment and support of infant individuality. Infant Mental Health Journal [Internet]. 1982; Available from: https://onlinelibrary.wiley.com/doi/abs/10.1002/1097-0355%28198224%293%3A4%3C229%3A%3Aaid-imhj2280030405%3E3.0.co%3B2-h
11. Gilkerson L, Als H. Role of reflective process in the implementation of developmentally supportive care in the newborn intensive care nursery. Infants Young Child. 1995 Apr;7(4):20–8.
12. Als H, Duffy FH, McAnulty G, Butler SC, Lightbody L, Kosta S, et al. NIDCAP improves brain function and structure in preterm infants with severe intrauterine growth restriction. J Perinatol. 2012 Oct;32(10):797–803.
13. Als H, Duffy FH, McAnulty GB, Rivkin MJ, Vajapeyam S, Mulkern RV, et al. Early experience alters brain function and structure. Pediatrics. 2004 Apr;113(4):846–57.
14. McAnulty G, Duffy FH, Butler S, Parad R, Ringer S, Zurakowski D, et al. Individualized developmental care for a large sample of very preterm infants: health, neurobehaviour and neurophysiology. Acta Paediatr. 2009 Dec;98(12):1920–6.
15. Butler S, Als H. Individualized developmental care improves the lives of infants born preterm. Acta Paediatr. 2008 Sep;97(9):1173–5.
16. McAnulty GB, Duffy FH, Butler SC, Bernstein JH, Zurakowski D, Als H. Effects of the Newborn Individualized Developmental Care and Assessment Program (NIDCAP) at age 8 years: preliminary data. Clin Pediatr . 2010 Mar;49(3):258–70.
17. McAnulty G, Duffy FH, Kosta S, Weisenfeld NI, Warfield SK, Butler SC, et al. School-age effects of the newborn individualized developmental care and assessment program

for preterm infants with intrauterine growth restriction: preliminary findings. BMC Pediatr. 2013 Feb 19;13:25.

18. Van Der Pal S, Maguire CM, Le Cessie S, Veen S, Wit JM, Walther FJ, et al. Parental stress and child behavior and temperament in the first year after the Newborn Individualized Developmental Care and Assessment Program. J Early Interv. 2008 Mar;30(2):102–15.

19. Sadowski SL. Congenital cardiac disease in the newborn infant: past, present, and future. Critical care nursing clinics of North America. 2009;21:37–48.

20. Sood E, Newburger JW, Anixt JS, Cassidy AR, Jackson JL, Jonas RA, et al. American Heart Association Council on Lifelong Congenital Heart Disease and Heart Health in the Young and the Council on Cardiovascular and Stroke Nursing. Neurodevelopmental outcomes for individuals with congenital heart disease: updates in neuroprotection, risk-stratification, evaluation, and management: a scientific statement from the American Heart Association. Circulation. 2024;149(13):e997–1022.

21. Sood E, Gramszlo C, Perez Ramirez A, Braley K, Butler SC, Davis JA, et al. Partnering with stakeholders to inform the co-design of a psychosocial intervention for prenatally diagnosed congenital heart disease. J Patient Exp. 2022 Apr 20;9:23743735221092488.

22. Ware J, Butcher JL, Latal B, Sadhwani A, Rollins CK, Brosig Soto CL, et al. Neurodevelopmental evaluation strategies for children with congenital heart disease aged birth through 5 years: recommendations from the cardiac neurodevelopmental outcome collaborative. Cardiol Young. 2020 Nov;30(11):1609–22.

23. Marino BS, Lipkin PH, Newburger JW, Peacock G, Gerdes M, Gaynor JW, et al. Neurodevelopmental outcomes in children with congenital heart disease: evaluation and management: a scientific statement from the American Heart Association. Circulation. 2012 Aug 28;126(9):1143–72.

24. Butler S, Shade CU, Wood L, Roseman A, Berry E, Walecka E, et al. Fostering Development in Children With Congenital Heart Disease: Birth to Three. Infants & Young Children. 2025;38:3–21.

25. Butler SC, Rofeberg V, Wypij D, Ferreira R, Singer J, Stopp C, et al. Inpatient Screening for Early Identification of Developmental Risk in Infants with Congenital Heart Defects. J Pediatr. 2023 Aug 21;263:113687.

26. Butler SC, Sadhwani A, Rofeberg V, Cassidy AR, Singer J, Calderon J, et al. Cardiac Neurodevelopmental Program at Boston Children's Hospital Group. Neurological features in infants with congenital heart disease. Developmental Medicine & Child Neurology. 2022;64(6):762–70.

27. Katz JA, Levy PT, Butler SC, Sadhwani A, Lakshminrusimha S, Morton SU, et al. Preterm congenital heart disease and neurodevelopment: the importance of looking beyond the initial hospitalization. J Perinatol. 2023 Jul;43(7):958–62.

28. Lisanti AJ, Min J, Golfenshtein N, Marino BS, Curley MA, Medoff-Cooper B. Perceived family-centered care and post-traumatic stress in parents of infants cared for in the paediatric cardiac intensive care unit. Nursing in Critical Care. 2024.

29. Butler SC, Rofeberg V, Smith-Parrish M, LaRonde M, Vittner DJ, Goldberg S, et al. Caring for hearts and minds: a quality improvement approach to individualized developmental care in the cardiac intensive care unit. Front Pediatr. 2024 Apr 9;12:1384615.

30. Sood E, Berends WM, Butcher JL, Lisanti AJ, Medoff-Cooper B, Singer J, et al. Developmental care in north American pediatric cardiac intensive care units: Survey of current practices. Adv Neonatal Care. 2016 Jun;16(3):211–9.

31. Miller TA, Elhoff JJ, Alexander NM, Butler SC, Uzark KC, Glotzbach KL, et al. Developmental Care Practice and Documentation Variability in the Cardiac ICU. Pediatr Crit Care Med. 2022 Mar;23(3):e180.

32. Miller TA, Lisanti AJ, Witte MK, Elhoff JJ, Mahle WT, Uzark KC, et al. A Collaborative Learning Assessment of Developmental Care Practices for Infants in the Cardiac Intensive Care Unit. J Pediatr. 2020 May;220:93–100.

33. LaRonde MP, Connor JA, Cerrato B, Chiloyan A, Lisanti AJ. Individualized Family-Centered Developmental Care for Infants With Congenital Heart Disease in the Intensive Care Unit. Am J Crit Care. 2022 Jan 1;31(1):e10–9.

34. Gu J, Guan HB. Maternal psychological stress during pregnancy and risk of congenital heart disease in offspring: A systematic review and meta-analysis. J Affect Disord. 2021 Aug 1;291:32–8.

35. Lisanti AJ, Kumar A, Quinn R, Chittams JL, Medoff-Cooper B, Demianczyk AC. Role alteration predicts anxiety and depressive symptoms in parents of infants with congenital heart disease: a pilot study. Cardiol Young. 2021 Nov;31(11):1842–9.

36. Sood E, Kenowitz J, Goldberg SW, Butler SC. Normalize-Ask-Pause-Connect: A Clinical Approach to Address the Emotional Health of Pediatric Patients with Chronic Conditions and Their Families. J Pediatr. 2023 Apr;255:247–52.

37. Roberts SD, Kazazian V, Ford MK, Marini D, Miller SP, Chau V, et al. The association between parent stress, coping and mental health, and neurodevelopmental outcomes of infants with congenital heart disease. Clin Neuropsychol. 2021 Jul;35(5):948–72.

38. McWhorter LG, Christofferson J, Neely T, Hildenbrand AK, Alderfer MA, Randall A, et al. Parental post-traumatic stress, overprotective parenting, and emotional and behavioural problems for children with critical congenital heart disease. Cardiol Young. 2022 May;32(5):738–45.

39. Griffiths N, Spence K, Loughran-Fowlds A, Westrup B. Individualised developmental care for babies and parents in the NICU: Evidence-based best practice guideline recommendations. Early Hum Dev. 2019 Dec;139:104840.

40. Charafeddine L, Masri S, Sharafeddin SF, Kurdahi Badr L. Implementing NIDCAP training in a low-middle-income country: Comparing nurses and physicians' attitudes. Early Hum Dev. 2020 Aug;147:105092.

41. Butler SC, Huyler K, Kaza A, Rachwal C. Filling a significant gap in the cardiac ICU: implementation of individualised developmental care. Cardiology in the Young. 2017;27:1797–806.

42. Butler S, Rofeberg V, Smith Parrish M, Ben Yishai T, Rachwal C. Implementation of a novel infant holding protocol in the CICU: From simulation to clinical practice. Pediatr Crit Care Med. 2025;

43. Lisanti AJ, Vittner D, Medoff-Cooper B, Fogel J, Wernovsky G, Butler S. Individualized Family-Centered Developmental Care: An Essential Model to Address the Unique Needs of

Infants With Congenital Heart Disease. J Cardiovasc Nurs. 2019 Jan/Feb;34(1):85–93.

44. Rachwal C, Smith-Parrish M, Rofeberg V, Graber K, Smith-Freedman D, Millman MS, et al. Simulation training to increase holding of fragile infants in cardiac intensive care units. Am J Crit Care. 2024 Sep 1;33(5):338–46.

45. Amiel-Tison C, Stewart A. The Newborn Infant: One Brain for Life. Drake International Services; 1994. 332 p.

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Corresponding Author



Samantha Butler, PhD
Department of Psychiatry and Behavioral Sciences
Boston Children's Hospital
1 Autumn Street, room 335 Boston, MA 02115.
Department of Psychiatry (Psychology) Harvard Medical School, Boston, MA, United States.
Email: samantha.butler@childrens.harvard.edu



Kaitlyn Ludder, M.Sc.
Boston Children's Hospital
1 Autumn Street, Boston, MA 02115.
Department of Cardiology
Email: kaitlyn.ludder@childrens.harvard.edu



Dorothy Vittner, PhD, RN, FAAN
Egan School of Nursing and Health Studies
Fairfeld University, Fairfeld, CT
Connecticut Children's Medical Center, Hartford, CT
Email: dvitt8@gmail.com



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Until It Was Me – A Story of Prematurity from the Other Side

Sara El Saied, PMP

"No matter how many years I spent immersed in community health and neonatal care, no matter how many mothers I supported, comforted, educated, or advised — I did not know. Not until I became that mother."

No matter how many years I spent immersed in community health and neonatal care, no matter how many mothers I supported, comforted, educated, or advised — I did not know. Not until I became *that* mother.

For years, I proudly wore the "savvy businesswoman" and healthcare advocate badge. I believed I was prepared for anything. I had the knowledge, resources, and network — if prematurity ever touched my life, I thought I would meet it confidently.

Nevertheless, all of that changed in an instant. One moment I was finishing a conference call; the next, I was wheeling into an operating room just under 35 weeks pregnant, praying that my baby would breathe.

"At that moment, everything I thought I knew vanished. The guidelines, practices, protocol, and research articles were useless now. This was not a case study. This was my baby. My body. My fear."

At that moment, everything I thought I knew vanished. The guidelines, practices, protocol, and research articles were useless now. This was not a case study. This was my baby. My body. My fear.

Suddenly, I could not locate the very resources I once promoted. The "systems" I believed in? They felt irrelevant, out of reach, or inadequate. My sense of control dissolved. I was not a professional anymore — I was a scared mother, grasping for answers in a fog of trauma and NICU alarms.

And then, we came home.

The quiet after discharge is deafening. The safety net of monitors and staff is gone. The responsibility felt crushing. Even with my access to knowledge and contacts, I felt unprepared. So, I thought: *If this is what it feels like for me — what about mothers with no background, no money, no one?*

If I had *functional* virtual access — real-time guidance, lactation support, early intervention information, mental health resources, and peer support groups — would my anxiety have eased? Absolutely. Would I have slept better knowing someone could answer the 3 a.m. questions? Yes.

"We need to rethink the discharge process. We send mothers home with pamphlets, medical jargon, and a baby who may still be medically fragile. However, what we do not send them with is confidence. Or a village. Alternatively, tailored, live-access help."

We need to rethink the discharge process. We send mothers home with pamphlets, medical jargon, and a baby who may still be medically fragile. However, what we do not send them with is *confidence*. Or a village. Alternatively, tailored, live-access help.

Through this experience, I have come to believe three key things:

1. **Education must be practical, trauma-informed, and accessible** — *before and after* birth.
2. **Virtual support systems should be proactive, not reactive, and bedside cameras should be standard, not optional.** Texting a nurse caring for my baby should not be a privilege but the norm.
3. **Hospitals must expand their definition of care** — discharge does not mean the journey is over. It is different, and parents must be prepared from the beginning, not when they are overwhelmed by leaving the care of providers.

To hospitals and healthcare systems: Imagine a first-time mother reliant on expertise from providers and nurses to care for her and her baby for safe delivery and support for a healthy pregnancy. But wait, she ends up going from her assumed vaginal birth plan with a midwife to an emergency C-section and preeclampsia, then met with a challenging postpartum experience in the unknown environment of the Neonatal Intensive Care Unit. And now she is expected to provide breastmilk suddenly. Now I ask, is our system truly built for her?

In addition to reliable bedside cameras, we need standards that include:

- Mandatory, personalized discharge counseling
- Follow-up check-ins in the first 72 hours
- Mental health screenings and connections to support parents
- Breastfeeding and lactation support that is culturally competent and ongoing
- A centralized, virtual resource hub for NICU families
- Paid parental leave advocacy tied into healthcare discussions

"My journey cracked me open — but it also gave me clarity. We are not failing because people do not care. We are failing because systems are built for convenience, not compassion."

My journey cracked me open — but it also gave me clarity. We are not failing because people do not care. We are failing because systems are built for convenience, not compassion.

This is my story. And now, it is my mission.

Disclosures: *The author has no disclosures*

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The Indirect Impact of **RSV**

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

OVERVIEW



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

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

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

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

RSV PARENT SURVEY

340 parents who had at least 1 child sick with RSV



67% of parents said their child was hospitalized for RSV

RSV HEALTH CARE PROVIDER SURVEY

175 health care providers across various pediatric and neonatal subspecialties



67% worked in an outpatient facility

33% worked in a hospital

RESULTS

FINANCIAL BURDEN

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

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

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

EMOTIONAL BURDEN

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

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

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

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

SOCIAL BURDEN

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

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

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

RESULTS

PARENT EDUCATION & AWARENESS

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

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

TREATMENT CHALLENGES

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

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

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

MISCONCEPTIONS

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

CONCLUSION

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

The virus may lead to:

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

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

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

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

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

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From Disruption to Direction: Leading Teams Through Change

Rody Azar, MHA, RRT-NPS

Abstract

Leaders face the pressing challenge of guiding their teams through uncertainty with clarity and purpose in an era defined by disruption, technological, organizational, or societal. This article, "From Disruption to Direction: Leading Teams Through Change," explores change's psychological and operational impacts and presents actionable strategies for effective leadership during turbulent times. Drawing on trusted frameworks like Kotter's 8-Step Process, Bridges' Transition Model, and Adaptive Leadership theory, it equips leaders with the tools to build trust, foster resilience, and turn disruption into momentum. If you have ever faced resistance, fatigue, or confusion within your team during times of change, this article is your practical roadmap for turning uncertainty into a catalyst for transformation. Keep reading to discover how great leaders do not just manage to change; they lead through it.

Introduction

Disruption has become a defining feature of the modern workplace. Whether triggered by technological innovation, global crises, shifting market dynamics, or organizational restructuring, disruption creates challenges for teams and their leaders. Amid uncertainty and upheaval, team members often experience confusion, disengagement, and fear, emotions that can paralyze performance and derail progress. In these moments, leadership plays a pivotal role in mitigating chaos and converting it into purposeful movement.

Leading through change is no longer a niche competency reserved for C-suite executives and a core requirement for leaders at every level. Today's teams look to their leaders for direction, reassurance, and clarity. Without strong leadership, teams risk drifting, stagnating, or fracturing under pressure. With strong leadership, however, disruption can become a springboard for growth, innovation, and renewed purpose.

This article explores the essential principles and actionable strategies leaders can use to guide their teams from disruption to direction. Drawing on research, leadership theory, and real-world practice, it offers a roadmap for those seeking to survive change and lead their people through it with integrity, vision, and effectiveness.

The Nature of Disruption:

Disruption, by definition, interrupts the status quo. It challenges existing assumptions, behaviors, and processes. In the workplace, disruption may take many forms: a sudden leadership transition, a merger or acquisition, the adoption of modern technologies, shifts in customer demand, or even societal upheaval, such as a pandemic. These events share their ability to unsettle teams, often leaving individuals feeling uncertain, disconnected, or overwhelmed.

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The impact of disruption on teams is multifaceted. Productivity often declines as employees struggle to interpret new expectations or navigate ambiguous goals. Morale may dip if Communication is inconsistent or leaders appear reactive or absent. Trust can erode when change is poorly managed or imposed without input. A McKinsey & Company (2022) study found that 70% of change initiatives fail due to employee resistance and a lack of leadership alignment.

Common leadership pitfalls during disruption include over-reliance on top-down directives, under-communication, and failure to address emotional responses. Leaders may also focus exclusively on operational continuity, neglecting the relational aspects of change. Leaders must shift their role from change controllers to enablers of transformation to lead through disruption effectively.

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Principles of Effective Change Leadership:

Effective change leadership is as rooted in human connection as it is in strategic planning. It requires leaders to hold two opposing forces simultaneously: the urgency of action and the patience of empathy. Three core principles guide successful leadership during disruption:

1. *Vision and Clarity:* In times of change, people crave direction. Leaders must articulate a clear and compelling vision for the future, answering the question, "Where are we going, and why?" Clarity does not mean having all the answers; it means being honest about what is known, what is uncertain, and how the organization plans to navigate forward.

   John Kotter's 8-Step Process for Leading Change emphasizes creating a sense of urgency and crafting a vision that inspires and aligns. Without this foundation, teams are left with only tasks, not purpose.

2. *Empathy and Communication:* in his Transition Model, William Bridges distinguishes between change (*external events*) and transition (*the internal psychological process of adapting to change).* Leaders often underestimate how much emotional energy their teams expend during transitions. Empathetic leadership recognizes and validates these experiences while fostering open Communication. Regular check-ins, listening sessions, and transparent updates help leaders remain attuned to their teams' needs and build trust.

3. *Stability Amid Uncertainty*: Effective leaders function as stabilizing forces. They model calm, maintain routines where possible, and consistently reinforce values that anchor the team. This balance between flexibility and consistency fosters psychological safety and gives team members the confidence to adapt.

   Ron Heifetz's Adaptive Leadership model calls on leaders to distinguish between technical problems (*with clear solutions*) and adaptive challenges (*which require learning and experimentation*). Leaders who embrace adaptation empower their teams to navigate complexity with creativity and resilience.

"Three core principles guide successful leadership during disruption:
1. Vision and Clarity
2. Empathy and Communication
3. Stability amid Uncertainty"

Actionable Strategies for Leading Teams Through Change:

Recognizing the philosophy is one thing, but applying it is an entirely different game. Here are five actionable strategies that leaders can implement to help their teams move from disruption to direction:

1. *Build Psychological Safety*: Teams thrive when they feel safe speaking up, making mistakes, and challenging assumptions without fear of retribution. During the disruption, psychological safety becomes even more vital. Leaders can cultivate this by modeling vulnerability, acknowledging their uncertainties, and creating space for honest dialogue.

   Amy Edmondson's research at Harvard Business School highlights psychological safety as the most critical component of high-performing teams, especially in dynamic or volatile conditions.

2. *Co-Create the Path Forward*: Rather than imposing a top-down change agenda, involve team members in shaping the transition. This participative approach builds ownership and reduces resistance. Leaders can hold visioning workshops, strategy sessions, or pulse surveys to gather input and surface ideas.

   A Gallup report (2023) found that employees who feel heard during change are 4.6 times more likely to feel empowered to perform their best work.

3. *Align Individual Purpose with Organizational Vision*: Disruption often disconnects employees from their sense of meaning at work. Leaders can re-engage their teams by helping everyone see how their role contributes to the broader mission. One-on-one conversations about goals, growth, and alignment

can reignite motivation.

Simon Sinek's Start with Why philosophy underscores this point: when people understand the "why" behind what they do, their engagement and performance increase dramatically.

4. *Celebrate Small Wins*: In long or complex change processes, momentum is key. Leaders should intentionally recognize milestones, improvements, and adaptive behaviors. Celebrating small wins reinforces progress, boosts morale, and helps people see that change is working.

   This echoes Kotter's framework, where short-term wins are essential to maintaining engagement and validating the change process.

5. *Invest in Resilience and Well-Being*: Change can drain emotional reserves. Leaders who prioritize well-being help sustain their teams for the long haul. This includes encouraging rest, promoting work-life balance, and offering access to mental health resources. Resilient teams do not just survive change; they grow from it.

   Programs that include mindfulness, coaching, and team resilience training have shown measurable impacts on employee retention and performance (Deloitte Insights, 2021).

"Here are five actionable strategies that leaders can implement to help their teams move from disruption to direction:
1. Build psychological safety
2. Co-create the path forward
3. Align Individual Purpose with Organizational Vision
4. Celebrate Small Wins
5. Invest in Resilience and Well-Being"

Common Challenges and How to Overcome Them:

Even the best leaders face resistance. Here are three shared challenges and how to respond:

1. *Resistance to Change*: Fear of the unknown, attachment to the past, or perceived loss of control can all fuel resistance. The antidote is dialogue. Rather than dismiss concerns, explore them. What are people afraid of losing? What do they need to feel secure? Leaders who seek to understand before being understood create space for trust.

2. *Fatigue and Burnout*: Continuous disruption without rest can lead to burnout. Leaders must watch for signs of exhaustion and adjust expectations accordingly. Short-term performance sacrifices may be necessary to preserve long-term capacity. Creating a culture where rest is respected, not penalized, is vital.

3. *Communication Breakdowns*: Miscommunication or information gaps fuel rumors and anxiety. Leaders should communicate frequently, even when there is little new to share. A weekly update or short video message can go a long way in maintaining transparency and trust.

Conclusion:

Leadership as a Bridge Between What Was and What is Next

Disruption, while uncomfortable, is not inherently harmful. It often precedes the most meaningful breakthroughs. However, whether a disruption becomes a derailment or a turning point depends on leadership.

To lead teams through change is to become a bridge between confusion and clarity, between fear and hope, between what was and what is next. It requires courage, humility, consistency, and compassion. It means showing up, not with all the answers, but with a willingness to listen, learn, and lead forward.

As a leadership coach, I have seen firsthand that those who thrive during change are not necessarily the most experienced or charismatic, but those most committed to growth, their own and their team's. By embracing disruption as a leadership opportunity rather than a threat, we not only guide our teams through change but also empower them to rise because of it.

"To lead teams through change is to become a bridge between confusion and clarity, between fear and hope, between what was and what is next. It requires courage, humility, consistency, and compassion. It means showing up, not with all the answers, but with a willingness to listen, learn, and lead forward."

References:

- Bridges, W. Managing Transitions: Making the Most of Change. Da Capo Lifelong Books. 2009. PDF Summary
- Edmondson, A. C. The Fearless Organization: Creating Psychological Safety in the Workplace for Learning, Innovation, and Growth. Wiley. 2019. PDF Version
- Heifetz, R. A., Grashow, A., & Linsky, M. The Practice of Adaptive Leadership: Tools and Tactics for Changing Your Organization and the World. Harvard Business Press. 2009. PDF Version
- Kotter, J. P. Leading Change. Harvard Business Review Press. 2012. PDF Version
- McKinsey & Company. The State of Organizations 2023

Report. 2023. PDF Version

- Gallup. State of the Global Workplace Report. 2023. PDF Version
- Deloitte Insights. Workplace Resilience Study. 2021. PDF Version
- Sinek, S. Start with Why: How Great Leaders Inspire Everyone to Take Action. Portfolio. 2009 PDF Version

Disclosures: *The author has no disclosures*

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Rody Azar Bio:

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

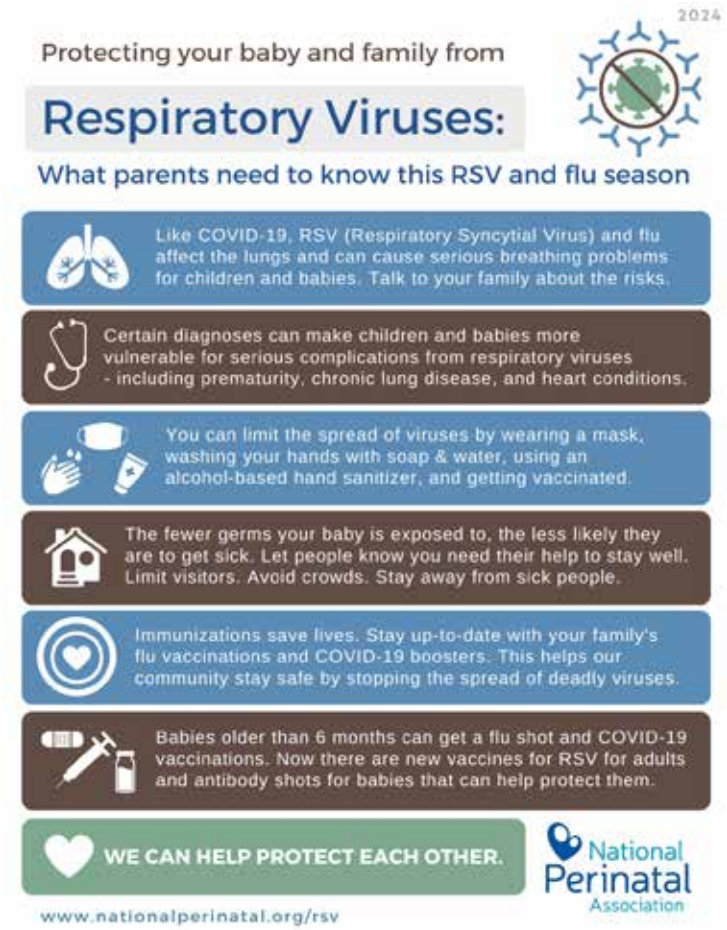
Currently, Rody serves as the Vice President of Sales and Clinical at a leading medical device manufacturing company in Orange County, CA. He is also an Organizational Leadership Coach and a faculty member in clinical education. As a proud member of the American College of Healthcare Executives (ACHE)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

Corresponding Author



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





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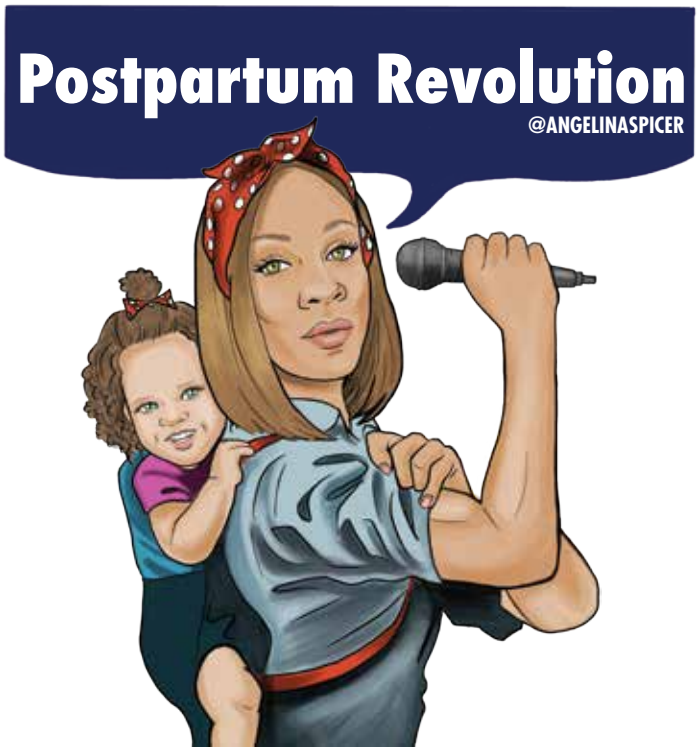
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Ethics and Wellness: Ethics and Wellness: Who Is Health and Wellness for, Anyway?

Mitchell Goldstein, MD, MBA, CML, Shaina Lodhi, MD

"Studies have long shown that when we attend to our physical and emotional needs, our satisfaction with our personal and professional lives improves. (4, 5) It should come as no surprise that attention to wellness has become embedded in medical education. (1)"

In the last decade, the vocabulary of medicine has expanded. Alongside words like "intubate," "diagnose," and "resuscitate," we now regularly hear "wellness," "work-life balance," and "burnout." This evolution has marked a seismic shift in the culture of medical training, particularly among the newest generation of pediatricians and neonatologists. (1-3)

We are told this is a good thing—and in many ways, it is. As physicians, we have notoriously neglected our own health while caring for others. Studies have long shown that when we attend to our physical and emotional needs, our satisfaction with our personal and professional lives improves. (4, 5) It should come as no surprise that attention to wellness has become embedded in medical education. (1)

"Residency and fellowship programs now promote self-care as a personal responsibility and an institutional imperative. Trainees are explicitly taught that taking a sick or even a personal day is not a sign of weakness but maturity. Some programs offer Uber vouchers to get home safely after long shifts."

Residency and fellowship programs now promote self-care as a personal responsibility and an institutional imperative. Trainees are explicitly taught that taking a sick or even a personal day is not a sign of weakness but maturity. Some programs offer Uber vouchers to get home safely after long shifts. Others provide call rooms equipped with noise machines and blackout curtains, weekly in-hospital massages, aromatherapy, or other creative wellness perks. Fellowship interviews increasingly focus on schedules and lifestyle: How much vacation time? How many calls per month? Will I be home by 5 p.m.? (1, 5, 6)

However, this cultural shift, however well-intentioned, raises an uncomfortable question: For whom is health and wellness directed?

While we celebrate the advances in trainee wellbeing, we face a looming neonatology crisis. As reported at this year's program directors' meeting at the Pediatric Academic Society meeting, up to 25% of Neonatal-Perinatal Medicine fellowship programs this past year went unfilled. (7) Read that again. In a field that cares for the most fragile, complex, and critically ill patients in all of pediatrics, one-quarter of training programs were not able to match a full class of trainees.

"Indeed, compensation and lifestyle concerns play a role. Neonatology remains one of the most demanding subspecialties in terms of hours and intensity, yet the financial incentives are increasingly mismatched with those demands. And today's trainees are asking sharper, more insistent questions about whether this level of sacrifice is worth it. (2, 6, 8)"

Why?

Indeed, compensation and lifestyle concerns play a role. Neonatology remains one of the most demanding subspecialties in terms of hours and intensity, yet the financial incentives are increasingly mismatched with those demands. And today's trainees are asking sharper, more insistent questions about whether this level of sacrifice is worth it. (2, 6, 8)

Nevertheless, the other part of the story we are not discussing is that as trainees' and junior faculty's expectations shift, the burdens do not disappear. They are redistributed—often silently—onto the shoulders of mid- and late-career neonatologists.

Many of these physicians were trained in a different era when stoicism was expected, and sleep deprivation was a badge of honor. No one offered us massages or mental health days. Nevertheless, we stayed. We worked nights, weekends, and holidays. We missed birthdays, school plays, and anniversaries. We did so not because we were masochists but because we felt deeply responsible for our patients, for our units, and for one another. (4-6)

Now, we are told that the rules have changed, but they have not changed for us. While new hires ask for fewer calls and more vacation, the seasoned physicians are often left covering the gaps. The system has not evolved to offer us more flexibility or gradual retirement pathways. (8) In fact, for many of us, the workload has

grown without commensurate recognition or compensation. (8)

What does wellness mean for the senior neonatologist who is now asked to do more night calls because their younger colleagues were trained to expect less? What does wellness mean for the senior faculty member who must teach, publish, attend, and cover clinical service while absorbing the shortfall created by an unfilled fellowship class?

The answer, it seems, is that wellness is not for them.

We must challenge this. If wellness is to be more than a buzzword, more than a recruiting tool, it must apply across the professional lifespan. It must be extended to those who built our programs, stayed during the lean years, taught generations of trainees, and held this field together with their constancy and care.

Yes, we should embrace the growing emphasis on wellbeing of our youngest physicians. But we must also grapple with what it means to create a sustainable and respectful professional culture that honors those who came before and ensures that no one is asked to quietly carry an unfair share, regardless of age or seniority.

The future of neonatology depends on recruiting new fellows and how we treat our existing workforce. (2, 5) Let us not build a culture of wellness on the backs of those who were never given that opportunity themselves.

"The future of neonatology depends on recruiting new fellows and how we treat our existing workforce. (2, 5) Let us not build a culture of wellness on the backs of those who were never given that opportunity themselves."

If we truly believe in wellness, we must ask: Wellness for whom? And at what cost?

Only then can we begin to answer that original question—who is health and wellness for, anyway?

References:

1. Fimland SK, Kjenas AS, Ro KI, Schaufel MA. Medical students' attitudes and expectations for future working conditions. Tidsskr Nor Laegeforen. 2019;139(17). Epub 20191118. doi: 10.4045/tidsskr.19.0185. PubMed PMID: 31746175.
2. Verulava T. Job Satisfaction and Associated Factors among Physicians. Hosp Top. 2024;102(1):26-34. Epub 20220623. doi: 10.1080/00185868.2022.2087576. PubMed PMID: 35735782.
3. Wainwright D, Harris M, Wainwright E. How does 'banter' influence trainee doctors' choice of career? A qualitative study. BMC Med Educ. 2019;19(1):104. Epub 20190411. doi: 10.1186/s12909-019-1531-0. PubMed PMID: 30975136; PubMed Central PMCID: PMC6460642.
4. Soleimani E, Tahmasebi R, Daneshmandi H, Salimi SH, Aliasghari F. Work-life balance and health among pharmacists: physical activity, sleep quality, and general health. BMC Health Serv Res. 2024;24(1):1217. Epub 20241011. doi: 10.1186/s12913-024-11701-w. PubMed PMID: 39394120; PubMed Central PMCID: PMC11468205.
5. Tawfik DS, Shanafelt TD, Dyrbye LN, Sinsky CA, West CP, Davis AS, et al. Personal and Professional Factors Associated With Work-Life Integration Among US Physicians. JAMA Netw Open. 2021;4(5):e2111575. Epub 20210503. doi: 10.1001/jamanetworkopen.2021.11575. PubMed PMID: 34042994; PubMed Central PMCID: PMC8160595.
6. Smith F, Goldacre MJ, Lambert TW. Adverse effects on health and wellbeing of working as a doctor: views of the UK medical graduates of 1974 and 1977 surveyed in 2014. J R Soc Med. 2017;110(5):198-207. Epub 20170101. doi: 10.1177/0141076817697489. PubMed PMID: 28504070; PubMed Central PMCID: PMC5438063.
7. https://www.nrmp.org/wp-content/uploads/2024/12/MPSM-MRS-Report-2024.pdf
8. LaFaver K, Miyasaki JM, Keran CM, Rheaume C, Gulya L, Levin KH, et al. Age and sex differences in burnout, career satisfaction, and wellbeing in US neurologists. Neurology. 2018;91(20):e1928-e41. Epub 20181010. doi: 10.1212/WNL.0000000000006497. PubMed PMID: 30305448.

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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



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

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INFANT AND FAMILY-CENTERED DEVELOPMENTAL CARE (IFCDC)

STANDARDS AND SAMPLE RECOMMENDATIONS FOR INFANTS IN THE INTENSIVE CARE UNIT

SYSTEMS THINKING IN COMPLEX ADAPTIVE SYSTEMS

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

POSITIONING & TOUCH FOR THE NEWBORN

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

SLEEP AND AROUSAL INTERVENTIONS FOR THE NEWBORN

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

SKIN-TO-SKIN CONTACT WITH INTIMATE FAMILY MEMBERS

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

REDUCING AND MANAGING PAIN AND STRESS IN NEWBORNS AND FAMILIES

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

MANAGEMENT OF FEEDING, EATING AND NUTRITION DELIVERY

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

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

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Rhizomelic Chondrodysplasia Punctata Type 1

Thanh Summerlin, MD, Joseph B. Philips, III, MD

"A skeletal survey at birth revealed bony abnormalities consistent with chondrodysplasia punctata. A screening echocardiogram showed a small PFO and PDA. Ophthalmology evaluation revealed bilateral cataracts. An MRI of the spine showed foramen magnum compression and cervical stenosis extending as far as the image captured (T4/T5). On day 2 of life, the skeletal dysplasia panel resulted positive for two different variants in the PEX7 gene."

This 39-week gestation male infant was born to a 25-year-old G1P1 mother who was diagnosed prenatally with skeletal dysplasia by fetal ultrasound. She was followed by genetics and maternal-fetal medicine prenatally. Maternal cell-free DNA and amniocentesis FISH showed a normal male. An achondroplasia panel and microarray were pending at delivery. Apgar scores were 3, 4, and 8 at 1, 5, and 10 minutes, respectively. The baby required bagging for 3 minutes and was then brought to the NICU on nasal cannula oxygen. The physical exam was significant for symmetrical smallness for gestational age and lower limb contractures.

A skeletal survey at birth revealed bony abnormalities consistent with chondrodysplasia punctata. A screening echocardiogram showed a small PFO and PDA. Ophthalmology evaluation revealed bilateral cataracts. An MRI of the spine showed foramen magnum compression and cervical stenosis extending as far as the image captured (T4/T5). On day 2 of life, the skeletal dysplasia panel resulted positive for two different variants in the PEX7 gene. Neurosurgery was consulted, and the patient was not considered a candidate for surgical intervention. At 5 weeks of age, the patient was transferred to a skeletal dysplasia center for a second opinion on neurosurgical intervention, g-tube placement, and cataract surgery and was then lost to follow-up.

"On day 2 of life, the skeletal dysplasia panel resulted positive for two different variants in the PEX7 gene. Neurosurgery was consulted, and the patient was not considered a candidate for surgical intervention. At 5 weeks of age, the patient was transferred to a skeletal dysplasia center for a second opinion on neurosurgical intervention, g-tube placement, and cataract surgery and was then lost to follow-up."

Rhizomelic chondrodysplasia punctata (RCDP) type 1 is an autosomal recessive peroxisome biogenesis disorder due to PEX7 mutations on chromosome 6. There are three types of RCDP: types 1, 2, and 3, each with a different causative gene. Findings include shortening of long bones, punctuate calcifications in epiphyseal cartilage, vertebral body clefts, cervical stenosis, facial

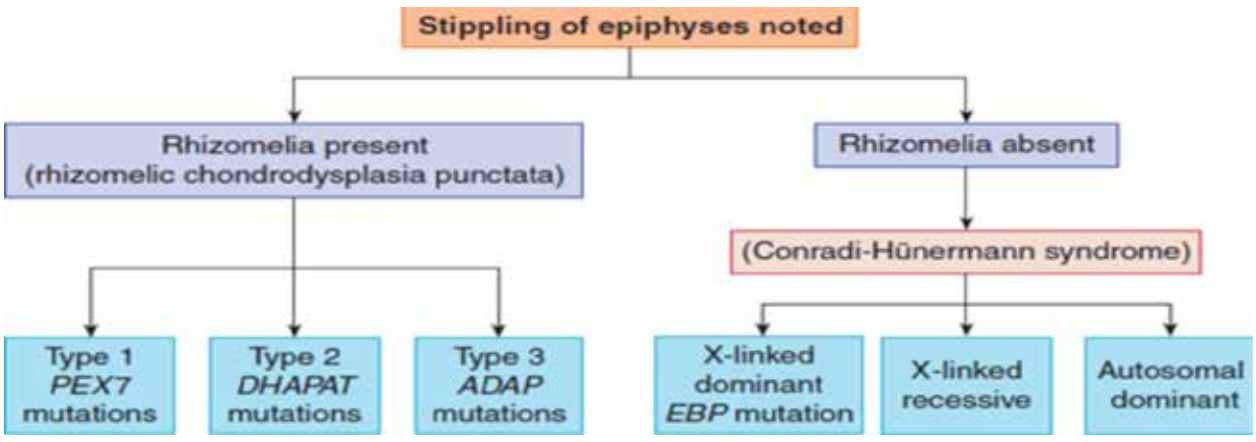


Figure 3. *Differential diagnosis of stippled epiphyses in a neonate. (1)*



Figure 1. *Chest radiograph showing punctate calcifications in epiphysial cartilage.*



Figure 2. *Pelvic radiograph again showing punctate calcifications in epiphysial cartilage.*

dysmorphism, intellectual disability, and cataracts. Incidence is approximately 1 in 100,000 live births. Life expectancy is limited, although children survive longer, with 50% survival at 6 years of age. The spectrum of disease is thought to be secondary to the degree of peroxisomal enzyme activity.

References:

1. Irving, MD, Chitty, LS, Mansour, S, Hall, CM. 2008. Chondrodysplasia punctata: a clinical diagnostic and radiological review. Clinical Dysmorphology (Vol. 17 (4), pp 229-241)

Suggested Readings:

1. Duker AL, Niiler T, Eldridge G, Brereton NH, Braverman NE, Bober MB. 2017. Growth charts for individuals with rhizomelic chondrodysplasia punctata. *Am J Med Genet Part A* 173A:108–113.

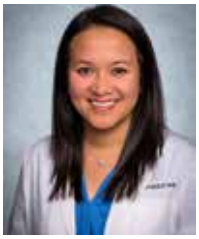
2. Bosworth, M. Q. (2010). Rhizomelic Chondrodysplasia Punctata. In L. J. Fundukian (Ed.), The Gale Encyclopedia of Genetic Disorders (3rd ed., Vol. 2, pp. 1332-1335). Detroit, MI: Gale.

3. Braverman NE, Steinberg SJ, Fallatah W, et al. Rhizomelic Chondrodysplasia Punctata Type 1. 2001 Nov 16 [Updated 2020 Jan 30]. In: Adam MP, Feldman J, Mirzaa GM, et al., editors. GeneReviews® [Internet]. Seattle (WA): University of Washington, Seattle; 1993-2025.

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Corresponding Author



Thanh L. Summerlin, MD
Assistant Professor of Pediatrics
Division of Neonatology
University of Alabama at Birmingham & Children's of Alabama
Email: tsummerlin@uabmc.edu

Corresponding Author



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



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A New Resource: A Diverse, Research-Based Book for Safe Sleep Education

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.

"At First Candle, our mission has always been to meet families where they are — with empathy, education, and support — especially in communities that experience the most significant risk of sleep-related infant deaths. We are thrilled to announce our new partnership promoting the children's book Bedtime Baby, Safe and Sound."

At First Candle, our mission has always been to meet families where they are — with empathy, education, and support — especially in communities that experience the most significant risk of sleep-related infant deaths. We are thrilled to announce our new partnership promoting the children's book *Bedtime Baby, Safe and Sound.*

Written by Dr. John Hutton and published by Blue Manatee Press, *Bedtime Baby* is the latest evolution in safe sleep education through storytelling. Building on the success of the widely distributed *Sleep Baby, Safe, and Snug*, this new title brings together updated American Academy of Pediatrics guidelines, recent research, and real-world feedback from parents, pediatricians, and infant health advocates.

More than just a bedtime story, *Bedtime Baby, Safe, and Sound* reflects the diversity of the families we serve. It includes a broader range of caregivers, cribs, and cultural contexts — all told through soothing, rhythmic text that helps lull babies to sleep while teaching parents how to keep them safe. With a bolder color palette and easy-to-follow icon-based "dos and don'ts" on the back cover, it is a beautiful and practical tool for new families.

"More than just a bedtime story, Bedtime Baby, Safe, and Sound reflects the diversity of the families we serve. It includes a broader range of caregivers, cribs, and cultural contexts — all told through soothing, rhythmic text that helps lull babies to sleep while teaching parents how to keep them safe."

This book perfectly fits our **Let's Talk Community Chat** program, which fosters honest, community-driven conversations about safe sleep, breastfeeding, and infant care. These chats are held in trusted community settings — churches, community centers, clinics — and led by people who reflect the cultural and racial identities of the families in attendance. It is a program built on trust, respect, and the understanding that **representation matters**.

"We know that Black and Brown families continue to experience disproportionately high rates of SIDS and other sleep-related infant deaths. Moreover, we know that closing this gap starts with culturally relevant education and resources that resonate — not alienate."

We know that Black and Brown families continue to experience **disproportionately high rates of SIDS and other sleep-related infant deaths**. Moreover, we know that closing this gap starts with culturally relevant education and resources that

About First Candle:

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

resonate — not alienate. *Bedtime Baby, Safe, and Sound* does just that, helping us reach even more parents with life-saving information.

"As part of this partnership, a portion of every book sale will directly support First Candle's work nationwide. Whether you are a parent, pediatrician, advocate, or supporter, when you purchase this book, you are helping us continue our mission to eliminate racial disparities in infant mortality and give every baby a chance to grow up safe and Sound."

As part of this partnership, a portion of every book sale will directly support First Candle's work nationwide. Whether you are a parent, pediatrician, advocate, or supporter, when you purchase this book, you are helping us continue our mission to **eliminate racial disparities in infant mortality** and give every baby a chance to grow up safe and Sound.

You can order Bedtime Baby, Safe and Sound in English, and Spanish, and a bilingual edition in bulk for your organization or individually here.

References:

1. https://bluemanateepress.bookstore.ipgbook.com/bedtime--baby--safe-and-sound-products-9798988638223.php
2. https://firstcandle.org/lets-talk-community-chats/
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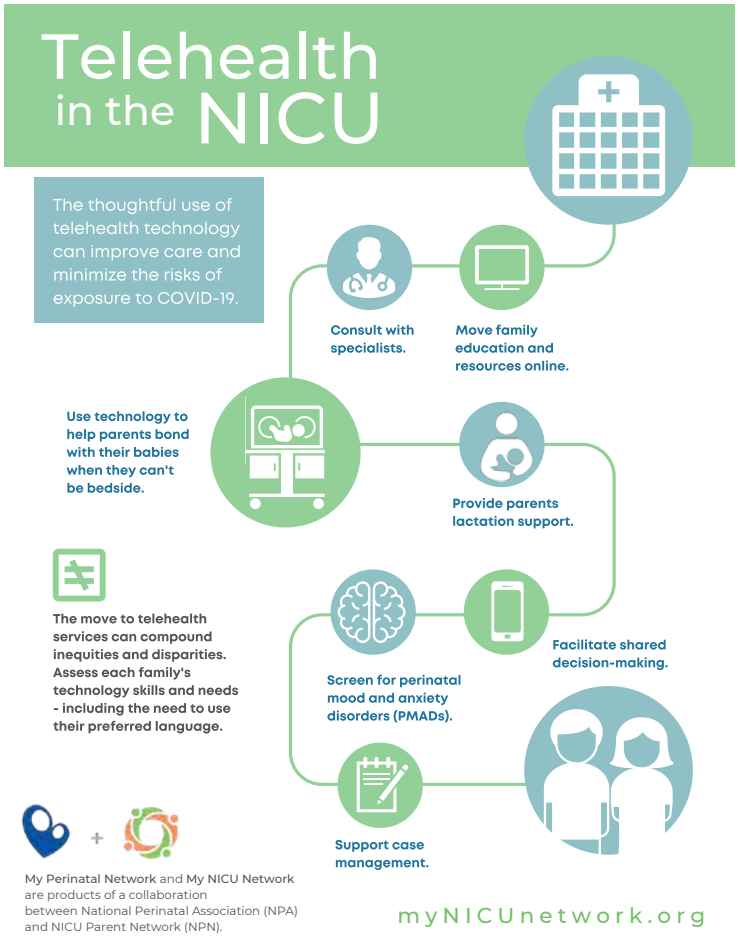
Disclosure:*The author is the Executive Director and Chief Executive Officer of First Candle, a Connecticut-based not-for-profit 501(c3) corporation.*

NT

Corresponding Author



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



Advancing Neonatal-Perinatal Care: May Update: Your More-Than-Monthly #SONPM Update — Keeping You in the Loop!

Clara H. Song, MD, FAAP

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



Happy May 📓🌸🌻

Here are your springtime SONPM updates and opportunities!

1. 2025 PAS Silverman Lectureship

Dr. Martha Sola-Visner's Take-Home Message: **"Platelets are immune cells."**

2. From the AAP – Call for QIEAG Chair Applications

The **Quality Improvement Education Advisory Group (QIEAG)** is seeking a Fellow of the Academy (FAAP) with prior involvement in AAP editorial boards, workgroups, or committees. This leader will guide initiatives, including EQIPP and QIDA.

🗓 **Chair term begins January 1, 2026,** for a renewable 2-year term.

📄 **Application Requirements**:

- Online QIEAG Chair application
- Current CV/resume
- AAP nomination disclosure form
  📌 **Deadline: May 28, 2025**
  📞 Questions? Contact Lisa Donato: ldonato@aap.org | 630-626-6723
  🔗 Chair roles and responsibilities

3. AAP & AMA – 2025 Jacobi Award Nominations Open

Nominations are accepted through **May 30, 2025.**

4. Join the SONPM Global Health Committee!
New members welcome!
🗓 **Applications due June 1**
🔗 Apply here

5. SONPM Recognition Committee Medal Design Contest
Design a medal to honor **newly retired neonatal intensivists**!
🎨 Submissions are accepted until **August 1**.

6. AAP Equity, Diversity, and Inclusion (EDI) Excellence Award Nominations
This award honors AAP Fellows who strongly commit to EDI in pediatrics.
🏆 Includes recognition at the AAP National Conference and full travel support.
🗓 **Deadline: June 4, 2025**
📨 Send nomination materials to sdiederich@aap.org

7. Sign Up for the AAP AI-SIG!
Are you **AI-curious, AI-concerned, or AI-enthusiastic**?
The **AAP AI-SIG** (Special Interest Group) will launch in the Summer of 2025, hosted on a new platform for networking and discussion around AI/ML in pediatrics.
🔗 Sign up here *(AAP ID and membership required)*
📧 Questions? Contact Lisa Krams: lkrams@aap.org

8. FDA Call for Comments – Infant Formula Nutrient Requirements

The FDA is accepting public comments on "Infant Formula Nutrient Requirements; Request for Information."
🗓 Deadline: **September 11**
🔗 Submit comments here

9. 2025 SONPM Awardees to be Honored at NCE in Denver!

🗓 **September 27, 2025** – Focus on **neonatal pain and brain development**
🏅 Awardees:

- **Virginia Apgar Award**: Dr. Satyan Lakshminrusimha (UC Davis)
- **Avroy Fanaroff Education Award**: Dr. Heather French (CHOP)
- **Landmark Award**: Dr. Rich Molteni (University of Washington, Joint Commission)
- **Pioneer Award**: Dr. Jeffrey Perlman (Cornell University)

Stay tuned for more in the upcoming SONPM Newsletter!

Meanwhile, your SONPM Executive Committee is hard at work:

- Reviewing AAP neonatal policies, budgets, and strategic

grants

- Setting the foundation for **NICU-specific payment advocacy**

💬 *I believe:*
Fair payment ➡️ better salary-to-FTE ratio ➡️ improved staffing ➡️ less burnout ➡️ healthier workforce ➡️ stronger profession

Until next time 🤍—we are here for you!

On behalf of your #SONPMexec committee:

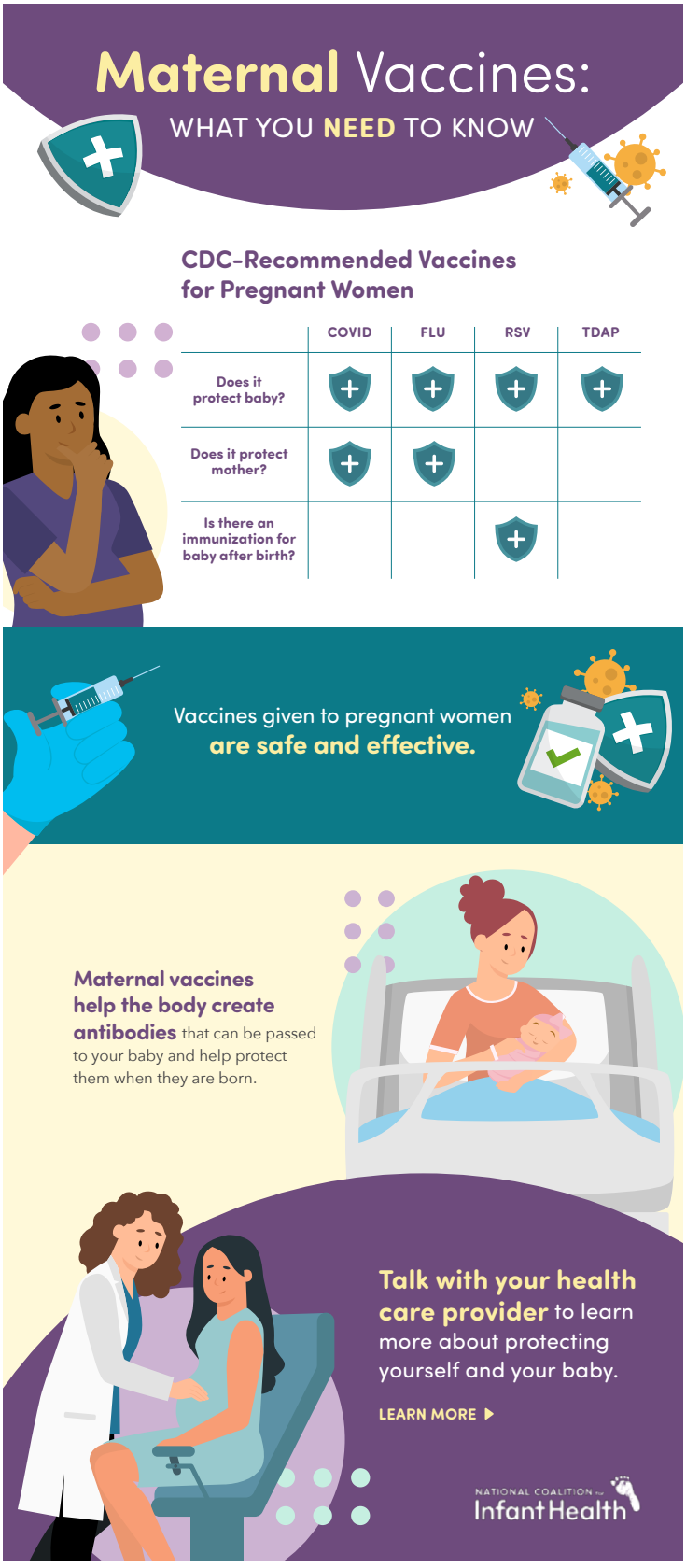
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- D4: Misty Good @mistygoodlab
- D5: Craig Nankervis
- D6: Josh Petrikin @jepetrikin
- D7: John Loyd
- D8: Jessica Davidson @JessDavMD
- D9 & Chair Elect: Alexis Davis @AlexisDNeoMD
- D10: Ravi Patel @ravimpatelmd
- Of Counsel: Marilyn Escobedo @Mokcita
- AAP Director: Jim Couto @jcouto2
- Chair: Clara Song @songMD

With warm regards,

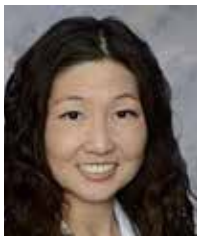
Clara H. Song, MD, FAAP

Disclosures: No conflicts noted

NT



Corresponding Author



Clara H. Song, MD, FAAP
Neonatal Intensivist, Southern California Permanente Medical Group
Chair Elect, Communication & Digital Media Chair; Women In Neonatology Steering Committee, All Pathways group Co-Chair: District IX California Chapter 4 Council Representative,
Chair, American Academy of Pediatrics, Section on Neonatal-Perinatal Medicine
Lean Six Sigma Black Belt
Email: E clara.h.song@kp.org

2025 AAP Equity, Diversity, and Inclusion Excellence Award Nomination Form and Checklist

Please type all information requested below on this form. Thank you!

Nominee Name: _____ **AAP ID #** _____

Title: _____

Mailing Address: _____

City: _____ **State:** _____ **Zip Code**: _____

Office Phone: _____ **Cell Phone**: _____ **Fax:** _____

Home Phone: _____ **Email:** _____

Nominator Name: _____ **AAP ID #** _____

Title: _____

Mailing Address: _____

City: _____ **State:** _____ **Zip Code**: _____

Office Phone: _____ **Cell Phone**: _____ **Fax:** _____

Home Phone: _____ **Email:** _____

CHECKLIST

The nominator should include the following items along with this form and submit by June 4, 2025

❒ **Nomination Letter (selection subcommittee will only accept one nomination letter)**

- Four (4) page maximum
- Respond directly to the award criteria listed on the Call for Nominations.
- Please include the nominee's EDI contributions that are particularly significant.

❒ **1 Letter of Support**

- Two (2) page maximum.
- The letter of support should be from an individual who can attest to the nominee's contributions to EDI.

❒ **Nominee's Curriculum Vitae**

Please send all materials via email to: sdiederich@aap.org
Questions? Email mjones@aap.org



HELP US HONOR A LIFETIME OF DEDICATION TO NEONATOLOGY

SONPM Design Contest

- We are starting a new program to recognize retiring neonatologists who have had career-long impacts
- Honorees will be recognized at the Workshop on Neonatal-Perinatal Practice Strategies, showcased in the Neonatology Hall of Honor (Itasca headquarters), honored at a reception and presented with a medal
- Your design can be featured on our career medal!
  - Submit designs in pdf format
  - Front and back designs can be submitted
  - Send to lilylou@mindspring.com, subject line: "Neonatology Career Medal"
  - Deadline: August 1, 2025

Section on Neonatal Perinatal Medicine
Committee on Global Health

Call for Applications: Seeking Three SoNPM Members

Description:
The mission of this committee is "To promote the health and well-being of women and their newborns in low-resource settings." Our committee sits within the Section on Neonatal Perinatal Medicine (SoNPM) of the AAP and aims to serve the needs of our section members and global partners.

The SoNPM Global Health Committee consists of: the Chair, Chair-Elect, six general members from the SoNPM, a liaison to the AAP Section on Global Health, a member of the AAP Global Health staff, and one Neonatal-Perinatal Medicine (NPM) Trainee.

Selection of General Members: Members of the Committee will be appointed for two years. Candidates will be chosen from the general membership of the Section and selected by a vote of the Committee after review of submitted applications. Members may serve up to two terms. Participation in the Committee may be extended up to eight years if subsequently serving as Chair-Elect, followed by Chair, with two-year terms for each position.

Roles and Responsibilities:
- Attend monthly committee conference calls
- Offer guidance on the planning and executing initiatives that support care of mothers and their newborns in low-resource settings.
- Maintain familiarity with global health resources and their application.

Time Commitment:
- Monthly conference calls (1 hour/month)
- Engagement on longitudinal projects (~ 3 hours/month)
- Live meetings at PAS and/or NCE (optional)

Application Requirements – Please submit the following as a single PDF:
- Completed application template (see subsequent page)
- Your current CV or biosketch (5 page maximum)
- A letter of support from someone familiar with your global health work and goals (optional, 1 page maximum)

Please submit all application materials to Sharla Rent at Sharla.Rent@duke.edu with the subject heading "Application - SoNPM GH Committee." **Applications are due June 1st**. Three general members will be selected by the end of July.

Application Template – SoNPM Global Health Committee

Please provide short answers (200-300 words) to the following questions/prompts.

1. Please describe your past or present experience in global health.

2. Which of your past global health projects or partnerships have you found the most meaningful? Why?

3. Please describe your past or present working with the AAP or similar national organizations.

4. What motivates you to apply for this committee? What will you add to the committee?

5. Is there a specific area of expertise in global health that you maintain a particular expertise or strong skillset (e.g. global education, global mentorship, global partnership, global health policy & advocacy, or global health research)?

6. What are the most significant "gaps" you see in the SoNPM's current global health work? How would you address those gaps?

Our committee is looking to designate leadership roles within the committee. Which, if any, of these leadership roles would you be interested in and why? You may list up to two roles and provide up to 300 words in your response to each role. Please rank your two selected roles.

[ ] Global health education and educational partnerships. The person in this role would lead or co-lead our work with organizations such as Partners in Health (our current initiative) in coordinating year-long educational global programs with international partner sites.

[ ] Global health advocacy. The person in this role would lead programming around information sharing and advocacy about global health needs and global health work.

[ ] Global health research and collaboration. The person in this role would facilitate project partnerships, organize webinars related to current global health research, plan journal clubs, etc., to build community amongst SoNPM members related to global health research.

[ ] Membership and partnership. The person in this role would work with other groups in the AAP, or partner organizations, to discuss shared missions, projects, etc. This person would serve as a contact to pediatric/neonatal groups in other countries.



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Please submit your manuscript to: LomaLindaPublishingCompany@gmail.com

Call for Nominations!

Section on Neonatal-Perinatal Medicine Executive Committee: District Representatives from Districts III, VI, and IX

One of the most significant opportunities to engage with the Section on Neonatal-Perinatal Medicine (SONPM) is to serve on the SONPM Executive Committee (EC). The EC consists of one representative from each of the 10 AAP Districts, in addition to chair, chair-elect, past-chair, of-counsel advisor, and AAP section manager (currently Jim Couto). District representatives serve 3-year terms, and are eligible to serve a second term.

District representatives to the EC are responsible for representing all neonatologists working in their AAP districts. The district representative is a liaison between district neonatologists and the SONPM, providing members direct input into SONPM and conveying section activities and opportunities back to the members. More specifically, responsibilities of EC members include the following:

Within executive committee and SONPM broadly:

1. Attend two **required** EC meetings annually, at Scottsdale spring workshop and at NCE;
2. Attend the full SONPM program at Scottsdale spring workshop and NCE meetings annually;
3. Participate in periodic virtual SONPM EC meetings (generally once or twice per month);
4. Review and score abstract submissions to NCE and review poster and oral presentations at NCE meeting, including scoring for SONPM Young Investigator Award;
5. Suggest and select annual SONPM honorary lecturers, including the Cone, Merenstein, Butterfield and Silverman speakers;
6. Solicit and review nominations for annual SONPM awards, including the Apgar, Education, Landmark and Pioneer awards, and select awardees;
7. Participate in planning and execution of national meetings, including section program at NCE, Scottsdale conference, and NeoPREP;
8. Review applications and determine awardees for the Section Strategic Grant Program, currently offered every two years;
9. Review and provide feedback on AAP policy statements, clinical reports, and guidelines as they pertain to newborn care;
10. Participate in and support AAP and SONPM advocacy efforts, including AAP Days of Action;
11. Participate in section committees, groups, and task forces based on interest and need;
12. Participate in SONPM strategic leadership, including implementation of goals of strategic plan; and
13. Participate in SONPM administration, including maintenance and updating of section manual of operations and section budget planning.

Within district:

1. Solicit updates from district members for inclusion in section newsletter twice annually;
2. Allocate annual SONPM district grants by soliciting and evaluating grant proposals;
3. Provide regular updates to district members on relevant aspects of section activities;
4. Provide regular updates to section on district activities and needs of district members;
5. Actively participate in district activities, including attendance at regional conferences; and
6. Encourage AAP and SONPM membership from representative's district, including trainees.

The core executive committee is a productive group! Participation on the executive committee does require a commitment of time and effort, but it is a highly rewarding experience.

Letters to the Editor

Letter to the Editor: "Inpatient Prenatal Consultation"

Dear Editor,

I am writing in response to the article "Inpatient Prenatal Consultation," authored by Dr. Scott D. Duncan and published in the December 2024 issue of Neonatology Today. I wanted to take a moment to express my appreciation for this well-written and instructive piece. As a third-year osteopathic medical student preparing for a future in neonatal-perinatal medicine, I found this article enlightening and immensely practical.

"I wanted to take a moment to express my appreciation for this well-written and instructive piece. As a third-year osteopathic medical student preparing for a future in neonatal-perinatal medicine, I found this article enlightening and immensely practical."

The clarity in explaining the appropriate use of CPT codes and real-world case examples provides valuable context often missing in traditional medical education. Understanding the nuances of coding, documentation, and billing is vital for reimbursement and accurate communication of clinical care. Yet, this area remains a significant gap in the training of future physicians. Articles such as this help bridge that gap in a meaningful way.

"Understanding the nuances of coding, documentation, and billing is vital for reimbursement and accurate communication of clinical care. Yet, this area remains a significant gap in the training of future physicians. Articles such as this help bridge that gap in a meaningful way."

In particular, the explanations surrounding when and how to use 99254 versus 99232 appropriately were incredibly helpful. The breakdown of ICD-10 code usage—especially the reminder that P-codes should not be used on maternal charts—was another point that stood out to me.

These are the details that, if not emphasized, can lead to errors with lasting administrative consequences.

I hope Neonatology Today continues to publish similar articles supporting trainee education in clinical care and healthcare operations. Learning to document and code our services properly is not just about billing but about being complete and conscientious professionals. I commend Dr. Duncan for this contribution and look forward to more features of this caliber in future issues.

Sincerely,

John Dawi OMS, III

Western University of Health Sciences, College of Osteopathic Medicine of the Pacific

Dear Mr. Dawi,

Thank you so much for your thoughtful and articulate letter in response to Dr. Scott D. Duncan's article, *"Inpatient Prenatal Consultation,"* published in the December 2024 issue of *Neonatology Today*. We sincerely appreciate the time and care you took to share your reflections and to express how the article supported your education as a third-year osteopathic medical student.

"One of our primary aims at Neonatology Today is to support the development of both current and future leaders in neonatal care—not only in their clinical decision-making but also in their understanding of the broader systems within which that care is delivered. Your letter speaks directly to the heart of this mission."

One of our primary aims at *Neonatology Today* is to support the development of both current and future leaders in neonatal care—not only in their clinical decision-making but also in their understanding of the broader systems within which that care is delivered. Your letter speaks directly to the heart of this mission. It is both encouraging and affirming to know that a topic often overlooked in traditional medical education—coding, billing, and documentation—was presented in a way that you found accessible, practical, and directly applicable to your training.

As you wisely point out, mastering the clinical knowledge and procedural skills required to care for high-risk newborns is only one part of becoming a competent and compassionate neonatologist. Developing fluency in the operational, financial, and regulatory frameworks that govern our care delivery systems is just as critical. These skills are rarely taught in medical school curricula, yet they are essential for communicating the full complexity of care, advocating for appropriate resource allocation, and upholding ethical standards.

Your recognition of the importance of accurate CPT and ICD-10 coding—as not just a billing necessity but a reflection of professionalism and conscientious care—is a mature insight that speaks volumes about your future potential in our field. Correct coding supports institutional integrity, informs health system planning, and ensures that neonatologists' labor-intensive, often invisible work is acknowledged and supported. As you noted, the distinction between codes such as 99254 and 99232 may seem technical, but this attention to detail safeguards the trust between

providers, payers, and patients.

Moreover, your appreciation for the clarification that P-codes are not to be used on maternal charts illustrates a strong foundation in systems-based practice. This may appear to be a minor point, but errors in this realm can have far-reaching consequences—not only in reimbursement but also in data quality, research accuracy, and continuity of care. These administrative "micro-decisions" are part of the daily practice of neonatology, and understanding their significance early in one's training is a mark of emerging leadership.

"These administrative 'micro-decisions' are part of the daily practice of neonatology, and understanding their significance early in one's training is a mark of emerging leadership."

We also want to acknowledge your point about publishing content supporting trainee education. You are not alone in identifying these gaps in traditional curricula. Many of your peers have voiced similar concerns, and we are actively working to build content that supports more comprehensive professional development. In addition to clinical and coding-related topics, we are exploring features on quality improvement, advocacy, ethics, interdisciplinary teamwork, and the evolving role of artificial intelligence and machine learning in neonatal care. We would be delighted to hear from you and other students and trainees about the areas most helpful as you navigate your career paths.

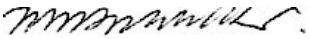
"Your letter is a compelling example of why we need to hear more from future physicians like yourself. Your thoughtful, humble, and practical approach to learning—combined with your desire to contribute meaningfully to the field—is precisely the kind of mindset we seek to nurture."

Your letter is a compelling example of why we need to hear more from future physicians like yourself. Your thoughtful, humble, and practical approach to learning—combined with your desire to contribute meaningfully to the field—is precisely the kind of mindset we seek to nurture. I would encourage you to consider writing for us in the future. Whether it be a reflection on a patient experience, a perspective on training, a case-based clinical insight, or a collaboration with a mentor, your voice would be a valuable addition to our publication.

Please be assured that we will share your letter with Dr. Duncan. As a clinician-educator with decades of experience, he values the opportunity to help prepare the next generation, and I think he will be pleased to know that his article had a tangible impact.

Again, Thank you for your engagement, kind and generous words, and commitment to excellence. The future of our profession is strengthened by the presence of students like you—those who approach this work with curiosity, humility, and a deep sense of responsibility. We look forward to following your journey and hope you will remain part of the *Neonatology Today* community in the years ahead.

Sincerely,



Mitchell Goldstein, MD, MBA, CML

Editor in Chief

NEONATOLOGY TODAY

Loma Linda Publishing Company

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c/o Mitchell Goldstein, MD

11175 Campus Street, Suite #11121

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Tel: +1 (302) 313-9984

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Erratum (Neonatology Today April, 2025)

Kara Wong Ramsey, MD was not listed as the author of "Coding: What Goes Up Must Come Down: Utilizing Appropriate Coding When Transferring Between the Nursery and the NICU," October 2024, Vol 19, Issue 10, pg 191. This has been corrected.

Corrections can be sent directly to LomaLindaPublishingCompany@gmail.com. The most recent edition of Neonatology Today including any previously identified erratum may be downloaded from www.neonatologytoday.net.

NT

Neonatology Today welcomes your editorial commentary on previously published manuscripts, news items, and other academic material relevant to the fields of Neonatology and Perinatology.

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

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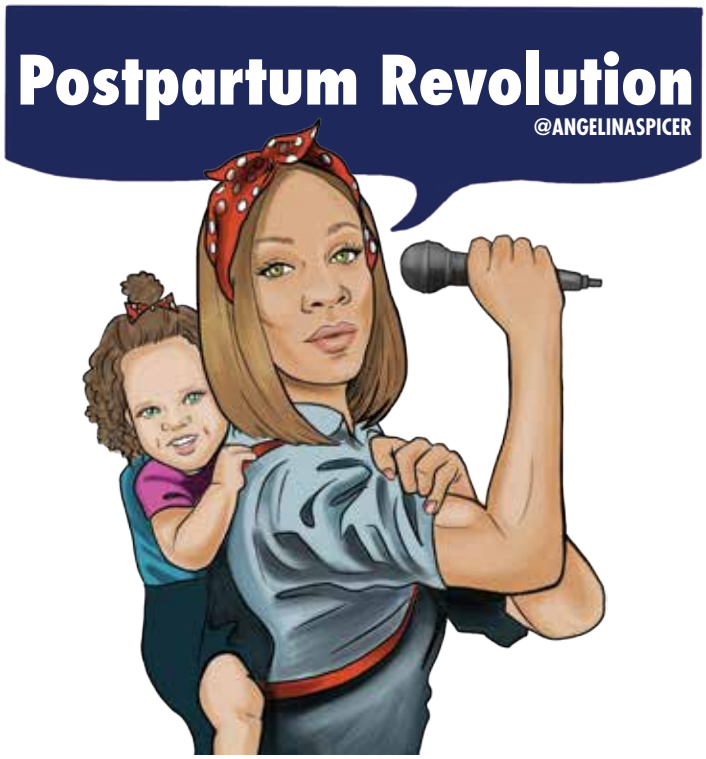
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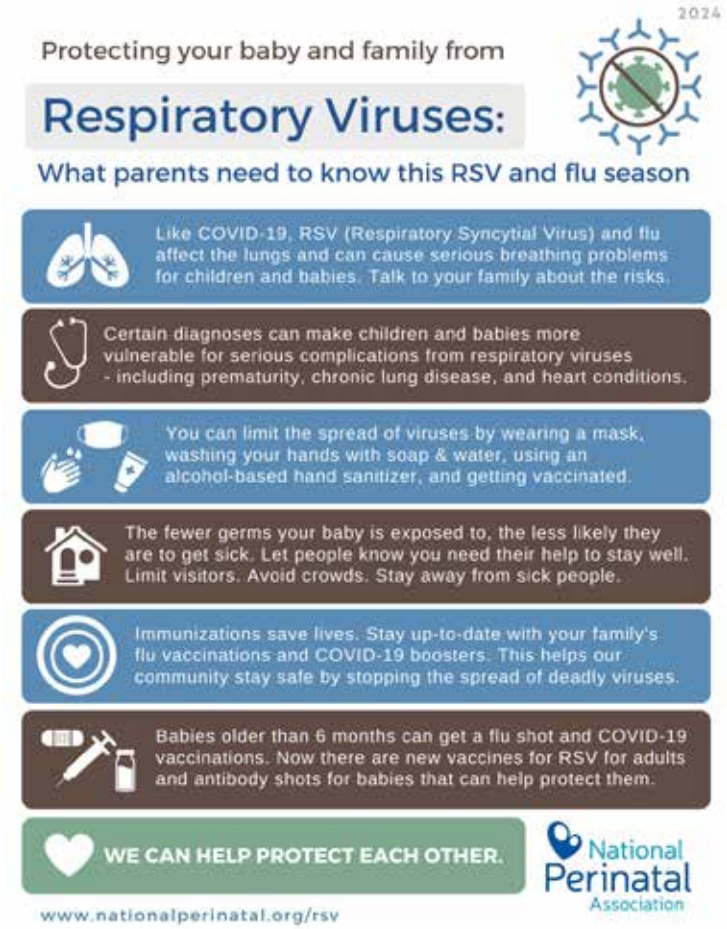
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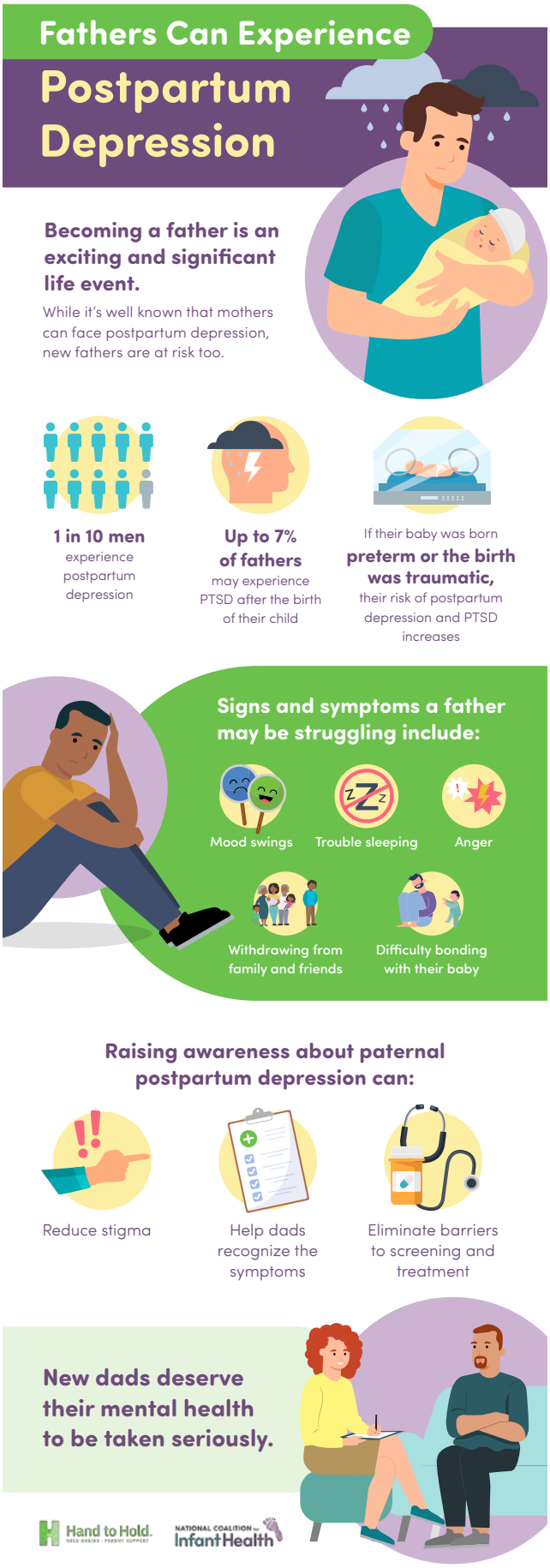
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Peer Reviewed

Urgent Action Needed: Stop Devastating Medicaid Cuts that Harm Babies and Families

Shetal Shah, MD, FAAP

Dear Fellow Neonatologists,

The federal government is poised to enact drastic, unprecedented, and historic cuts to the Medicaid program in the range of $715-$880 billion over the next decade. Such cuts would be disastrous to babies, their mothers, and their families. It will have downstream impacts on the finances of neonatologists, children's hospitals, and the programs on which our patients depend.

There is a REAL CHANCE TO PUSH BACK ON THESE CUTS!

TIMING IS CRITICAL! The budget reconciliation bills are being voted on RIGHT NOW in the House. The most recent vote was SUNDAY NIGHT, and the House of Representatives wants to pass this bill THIS WEEK BEFORE MEMORIAL DAY [the bill is now in the Senate]. Do not miss this opportunity to tell your representatives that this matters to you and your patients.

"The federal government is poised to enact drastic, unprecedented, and historic cuts to the Medicaid program in the range of $715-$880 billion over the next decade. Such cuts would be disastrous to babies, their mothers, and their families. It will have downstream impacts on the finances of neonatologists, children's hospitals, and the programs on which our patients depend."

There are two ways you can have an impact:

1. **GOOD** Send this generic neonatologist letter to your Representative. This will take about 2 minutes. Follow the first three steps below.
2. **BETTER** Customize the letter to include state-specific information tailored to your Congressman's constituency. This will take about 15 minutes and will be more effective. See all of the steps below (2 extra customization links).

Attached is an AAP-approved letter created by the NICU Section's Advocacy Committee opposing these cuts, which is designed to go to your member of the House of Representatives.

GOOD:

1. Step 1. Find your House Representative here: https://www.house.gov/representatives/find-your-representative
2. Go to your member's website and find their email/fax or contact information.
3. Populate the template letter with your House Member's office address and **YOUR HOME ADDRESS**. – Remember, you are writing as an AAP member and citizen, NOT as a representative of your hospital. **DO NOT PUT YOUR HOSPITAL AFFILIATION IN ANY PART OF THE LETTER.** Send off the letter.

BETTER:

1. Step 1. Find your House Representative here: https://www.house.gov/representatives/find-your-representative
2. Go to your member's website and find their email/fax or contact information.
3. Populate the template letter with your House Member's office address and **YOUR HOME ADDRESS**. – Remember, you are writing as an AAP member and citizen, NOT as a representative of your hospital. **DO NOT PUT YOUR HOSPITAL AFFILIATION IN ANY PART OF THE LETTER.**
4. In the letter, you must look up the **percentage of Medicaid-covered births in your state**. The link is embedded in the letter but is also here: https://ccf.georgetown.edu/2025/02/25/medicaid-aap-ccf-50-state-snapshots/
5. You will also need the **percentage of Medicaid payment as a fraction of Medicare**. The link is embedded in the letter, but it is also here: https://www.kff.org/medicaid/state-indicator/medicaid-to-medicare-fee-index/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D
6. You put those two data points in the letter and send it off.

BOTH:

7. Email me shahs2@wcmc.com with your name and that of your Congress-member so we can track how many letters go out.

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

*To incentivize you toward our goal of **100 letters** to members of the House of Representatives, if we reach our goal, I will hold a raffle for those who sent in letters and notified me. The winner receives a personally autographed 8x10 inch glossy photo of AAP NICU Section Chair Dr. Clara Song!*

Please take the time to get this done. This is a chance to transcend caring for babies one at a time to speak for all babies and their families!

As always, call/text/email with questions,

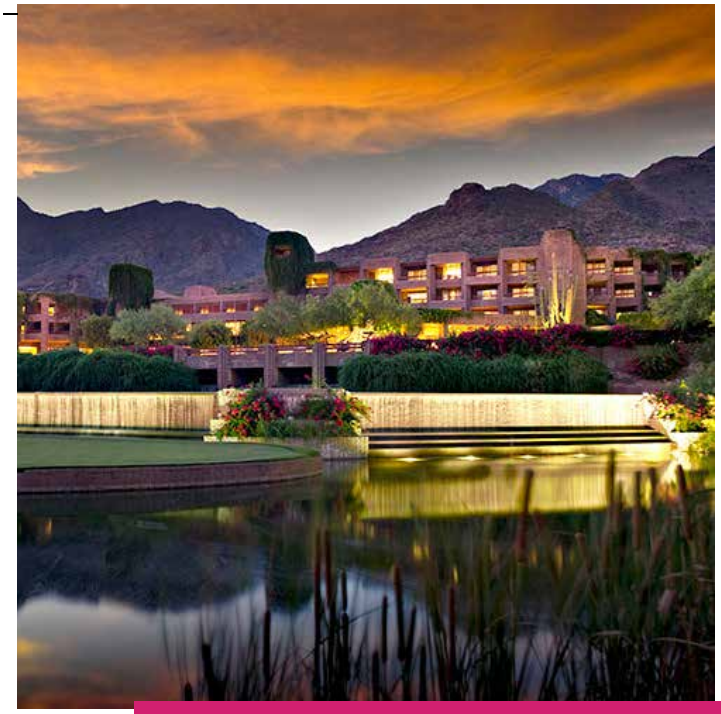
Disclosures: No conflicts noted

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Corresponding Author



Shetal Shah, MD, FAAP
Professor of Pediatrics/Neonatology
Division of Neonatology, Stem Cell Liaison
Maria Fareri Children's Hospital, New York Medical College
Division of Neonatology
https://bchp.childrenshospital.org/practices/neonatology
Boston Children's Health Physicians | New York & Connecticut
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The Honorable [INSERT MEMBER OF CONGRESS NAME]

[INSERT EITHER WASHINGTON DC OR DISTRICT OFFICE ADDRESS]

[INSERT YOUR NAME AND DEGREE WITH FAAP]
[INSERT HOME ADDRESS WHERE YOU VOTE]

[INSERT YOUR PHONE NUMBER]

[INSERT DATE]

RE: PROPOSED CUTS TO MEDICAID

Dear Representative [INSERT MEMBER OF CONGRESS NAME]

As a constituent, neonatologist, and member of the American Academy of Pediatrics' Section on Neonatal-Perinatal Medicine, I am writing to vigorously oppose budget cuts to the Medicaid program. Major reductions in funding for Medicaid would harm the patients I care for, their families, and create large disruptions in the financial health of the hospital where I care for critically ill newborns.

As you know, the House of Representatives recently passed a budget resolution directing the House Energy and Commerce Committee to enact $880 Billion in cost reductions over the next decade (1). Recently, the committee voted to approve their reconciliation bill and it included approximately $715 Billion in reductions from the Medicaid program and the Affordable Care Act. Data from the Congressional Budget Office shows that these reductions would cause 8.6 million people to become uninsured (2).

The proposed cuts to Medicaid are premised on concerns of rampant waste within the program. However, Medicaid in our state is streamlined and efficient, spending roughly 5% in overhead costs – four times less than private insurance. Further, there are no widespread reports of Medicaid fraud that justify the scope and depth of the proposed cuts. Compared to the private insurance market, there are multiple checks against fraud within the Medicaid program at the state and federal level.

My patients deserve a well-funded Medicaid program. In our state, Medicaid pays for **[INSERT NUMBER OF BIRTHS FROM YOUR STATE FROM THE AAP-GEORGETOWN MEDICAD COVERAGE FACT SHEETS,** AVAILABLE HERE. Drastic cuts to Medicaid at the levels proposed would undermine our ability to care for these infants and leave them ill-served

Neonatologists care for premature babies -- some born as early as at 22 weeks -- and full-term infants born with congenital heart, intestine or neurologic issues. These infants can spend months in the hospital under my care and incur hundreds of thousands of dollars in hospital expenses (3, 4). Further, upon leaving neonatal intensive care, many of my patients require

anywhere from 20-30 follow-up visits with pediatric subspecialists to continue their recovery, and many require several medications in the first year as well (5). For outpatient subspecialty care, Medicaid payments are already poor, averaging only **[INSERT PERCENT of costs in our state compared to Medicare (Available here)** Any further cuts to Medicaid will result in decreased access to care as pediatric subspecialists shift toward filling their patient rosters with an increased number of privately insured patients, leaving my patients disconnected from their pediatrician. Further, absence of primary and outpatient specialty access will lead to increased costs later, as these patients will ultimately seek care in the emergency room.

To reduce maternal mortality, improve access to care for mothers and provide a downstream benefit to their newborns, 49 states took advantage of federal incentives to increase the duration of post-partum Medicaid coverage to 1 year. Longer durations of post-partum coverage are associated with greater access to care and better health outcomes for mothers with depression, hypertension and gestational diabetes (6). From my perspective, the increase in post-partum coverage allows women to access family planning services, ensuring the timing between pregnancies does not increase the risk of prematurity or impart health risks to the next child. Given the recent addition of this coverage across states, my concern is the post-partum extension will be among the first to be removed as states endeavor to reduce costs in the face of hundreds of billions of dollars in federal Medicaid support.

Medicaid is fundamental to children's health and incredibly important for the babies in our state and district. I urge you to recognize the devastating impact any reductions to Medicaid funding will have on my patients, their families and my practice, and resist any cuts to the program. If you have any questions or would like to schedule a meeting to better discuss these issues, please do not hesitate to reach out to me.

Sincerely,

[INSERT YOUR NAME, DEGREE AND FAAP]
DO NOT PUT YOUR HOSPTIAL OR ANY OTHER AFFILIATION.

REFERENCES

1. H. Con Res. 14—Establishing the congressional budget for the United States Government for fiscal year 2025 and setting for the appropriate budgetary levels of fiscal years 2026 through 2034. Available at: https://www.congress.gov/bill/119th-congress/house-concurrent-resolution/14/text

2. Lukens G, Zhange E, Gonzalez S. House Republican Bill Would Cut Medicaid Funding to States Providing Own Health Coverage to People Who are Undocumented. Available at:

https://www.cbpp.org/research/health/house-republican-bill-would-cut-medicaid-funding-to-states-providing-own-health#:~:text=The%20House%20Republican%20reconciliation%20legislation,without%20a%20documented%20immigration%20status.

3. Lai KC, Lorch SA. Healthcare Costs of Major Morbidities Associated with Prematurity in US Children's Hospitals. J Pediatr. 2023 May;256:53-62.e4.

4. Beam, A.L., Fried, I., Palmer, N. *et al.* Estimates of healthcare spending for preterm and low-birthweight infants in a commercially insured population: 2008–2016. *J Perinatol* **40**, 1091–1099 (2020).

5. Wade KC, Lorch SA, Bakewell-Sachs S, Medoff-Cooper B, Silber JH, Escobar GJ. Pediatric care for preterm infants after NICU discharge: high number of office visits and prescription medications. J Perinatol. 2008 Oct;28(10):696-701.

6. Shah S, Friedman H. Medicaid and moms: the potential impact of extending medicaid coverage to mothers for 1 year after delivery. J Perinatol. 2022 Jun;42(6):819-824.

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Gravens by Design: Palliative Care During and After the NICU

Renee Boss, MD, MHS

About half of all pediatric deaths occur in infancy, with about half of those occurring in the neonatal period. (1) These experiences for families and staff include robust palliative care support opportunities. Since 2008, palliative care has been a medical subspecialty focused on ameliorating suffering and improving the quality of life for children with serious illness and their families via a holistic approach to illness's physical, psychological, spiritual, and practical burdens. (2) Most neonatal clinicians are trained to deliver 'primary' palliative care, including symptom management, family support, and compassionate communication. Increasingly, neonatal clinicians have access to subspecialty, interdisciplinary palliative care consultations tailored for three main scenarios: 1) prenatal diagnoses, 2) complex NICU stays, and 3) NICU discharge of infants with chronic conditions.

Sometimes, the indication for palliative care engagement is a specific diagnosis: serious cardiac anomalies, brain malformations, renal agenesis, severe inborn errors, or extreme prematurity. Other times, the trigger is concern that an infant will indefinitely need medical technology for vital functions like eating and breathing. Other common indications for palliative care are when family needs and perspectives warrant intensive conversations about decision-making and quality of life. Early palliative care referral can optimize the continuity and relationships foundational to intensive communication. Certainty about diagnosis or prognosis is not necessary; nearly twenty years ago, Davies et al. advised that "An uncertain prognosis should serve as a signal to initiate palliative care, rather than to avoid it…" (3)

"Sometimes, the indication for palliative care engagement is a specific diagnosis...Other times, the trigger is concern that an infant will indefinitely need medical technology for vital functions like eating and breathing. Other common indications for palliative care are when family needs and perspectives warrant intensive conversations about decision-making and quality of life. Early palliative care referral can optimize the continuity and relationships foundational to intensive communication."

Prenatal referral is certainly appropriate when an infant may only live hours to days, and the family is clear that they do not want any painful procedures but do want as much time with their infant as possible—at home if that can be arranged. Example diagnoses include severe pulmonary hypoplasia or multiple complex surgical anomalies. In these situations, palliative care focuses on decision-making, making a palliative birth plan, creating memories, supporting siblings, identifying the preferred location(s) of care, and preparing for uncertainty (such as the chance the infant will live longer than expected.)

"Palliative care for infants likely to live weeks to months in the hospital... often involves family goals to trial interventions. In these situations, the focus is on hoping for the best while helping both family and staff keep realistic expectations about prognosis and the potential for death before discharge."

Palliative care for infants likely to live weeks to months in the hospital, e.g., infants with extreme prematurity or complex anomalies with low odds of surgical success, often involves family goals to trial interventions. In these situations, the focus is on hoping for the best while helping both family and staff keep realistic expectations about prognosis and the potential for death before discharge. Priorities include complex pain/ symptom management (irritability, autonomic dysregulation, dystonia, and pain exacerbations in an opioid-dependent infant), evolving goals of care and decision-making, and family and team support. (4) Early palliative referral allows continuity to ameliorate some of the mistrust and conflict that accompany many protracted intensive care unit stays. (5)

Palliative care for infants who will have chronic medical needs

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and recurrent hospitalizations, i.e., infants with short gut or severe bronchopulmonary dysplasia, may involve family goals to continue any interventions that do not cause suffering and are doable at home. (6) These infants may develop chronic critical illness, and their post-NICU trajectory will predictably include additional medical technology, intensive home care, new family roles (e.g., care coordination), home health limitations, and rehospitalizations (a quarter of these infants are rehospitalized within 30 days of NICU discharge). (7) These infants and families often benefit from outpatient palliative care to help evolve goals that reflect the infant's quality of life and/ or neurodevelopmental status. Outpatient palliative care can collaborate with the child's general pediatrics medical home and home health to reduce readmissions, can help guide emergency department and inpatient clinicians during readmissions, can support family coping (e.g., through post-ICU traumatic stress [8]), and can lay the groundwork for future decisions and advance directives. (6)

"Outpatient palliative care can collaborate with the child's general pediatrics medical home and home health to reduce readmissions, can help guide emergency department and inpatient clinicians during readmissions, can support family coping (e.g., through post-ICU traumatic stress), and can lay the groundwork for future decisions and advance directives."

Communities vary in the available locations for delivering palliative care to infants. Many hospitals can accommodate palliative services outside the NICU, including obstetrical/ birthing rooms, the newborn nursery, or pediatric general wards. Where an infant is best served within a hospital is a decision made based on the logistics of medical care (e.g., type of respiratory support desired), family preferences, and the medical team's capacity to provide palliative support in different areas. Hospitals without subspecialty palliative services can often provide excellent palliative care with the guidance of a committed obstetrical and/ or pediatric leader who organizes team planning, communication, and volunteerism. All palliative care physicians are certified to provide adult and pediatric palliative care so that local adult palliative physicians may be a resource to community obstetrical and pediatric providers. For families of infants with very short lifespans who wish to leave the hospital setting, many communities have homes available for infants, and some have inpatient hospice and/ or pediatric rehabilitation facilities. (9) Some home hospices can accept direct transfers from NICUs, including plans for compassionate extubation in the home at the time of transfer. (10) When transferring to hospice, NICU clinicians should document care goals, clarify with families the expected roles and accessibility of hospice, pediatric, and specialist providers, write prescriptions for likely symptoms, and assess whether any follow-up should be arranged in case the infant survives longer than expected.

" Many hospitals can accommodate palliative services outside the NICU, including obstetrical/ birthing rooms, the newborn nursery, or pediatric general wards. Where an infant is best served within a hospital is a decision made based on the logistics of medical care (e.g., type of respiratory support desired), family preferences, and the medical team's capacity to provide palliative support in different areas. Hospitals without subspecialty palliative services can often provide excellent palliative care with the guidance of a committed obstetrical and/ or pediatric leader who organizes team planning, communication, and volunteerism. "

In summary, there are many opportunities for palliative care engagement beyond end-of-life care in the NICU. Understanding and engaging these opportunities early creates the best chance that families will benefit from holistic palliative support.

References:

1. Murphy SL, Kochanek KD, Xu J, Arias E. Deaths: Final Data for 2021. Natl Vital Stat Rep. 2024 Oct 4:(8):CS351103. doi: 10.15620/cdc/158787
2. https://www.capc.org/about/palliative-care/. About Palliative Care. Center to Advance Palliative Care. Accessed 2025 May 13.
3. Davies B, Sehring SA, Partridge JC, Cooper BA, Hughes A, Philp AC, Amidi-Nouri A, Kramer RF. Barriers to palliative care for children: perceptions of pediatric health care providers. Pediatrics. 2008 Feb;121(2):282–8. doi: 10.1542/peds.2006-3153.
4. Boss RD, Mercurio MR. Operationalizing neonatal palliative care. Semin Fetal Neonatal Med. 2023 Aug;28(4):101474. doi: 10.1016/j.siny.2023.101474.
5. Henderson CM, Williams EP, Shapiro MC, Hahn E, Wright-Sexton L, Hutton N, Boss RD. Stuck in the ICU: Caring for Children With Chronic Critical Illness. Pediatr Crit Care Med. Nov 2017;18(11):e561–e568. doi:10.1097/PCC.0000000000001332
6. Boss RD. Palliative care for NICU survivors with chronic critical illness. Semin Fetal Neonatal Med. 2023 Aug;28(4):101446.

doi: 10.1016/j.siny.2023.101446.

7. Deming RS, Mazzola E, MacDonald J, Manning S, Beight L, Currie E, Wojcik MH, Wolfe J. Care Intensity and Palliative Care in Chronically Critically Ill Infants. J Pain Symptom Manage. 2022 Nov;64(5):486–494. doi:10.1016/j.jpainsymman.2022.07.002

8. Di Chiara M, Laccetta G, Gangi S, de Santis B, Spiriti C, Attenni M, Bertolaso L, Boscarino G, Chiara De Nardo M, Ciambra G, Parisi P, Terrin G. Risk factors and preventive strategies for post-traumatic stress disorder in neonatal intensive care unit. Front Psychol. 2022;13:1003566. doi:10.3389/fpsyg.2022.1003566

9. Aglio T, Autrey AK, Shostrom VK, Weaver MS, Kaye EC, Lindley LC. Continued Challenges Accessing Pediatric Hospice Services. J Pain Symptom Manage. 2022 Dec;64(6):e383–e385. doi:10.1016/j.jpainsymman.2022.08.009

10. Zwerdling T, Hamann KC, Kon AA. Home pediatric compassionate extubation: bridging intensive and palliative care. Am J Hosp Palliat Care. 2006 Jun–Jul;23(3):224–8. doi: 10.1177/1049909106289085.

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NT

Corresponding Author



Renee Boss MD MHS
Rembrandt Foundation Professor of Pediatric Palliative Care
Professor, Division of Neonatology
Berman Institute of Bioethics
Johns Hopkins School of Medicine
200 N. Wolfe St., Rm. 2019
Baltimore, MD 21287
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To qualify to be nominated to the RC-Peds for this position, the candidate:

- must be a board-certified pediatrician or pediatric subspecialist with a background in education and expertise in graduate medical education.
- should have at least three years of experience as a program director of an ACGME-accredited pediatrics residency program or pediatric subspecialty fellowship or three years of experience as a designated institutional official. The nominee's program must be in good standing with a status of Continued Accreditation.
- must have a current or past association with graduate medical education.
- should participate in major specialty societies.
- must be skilled in the use of computers (communication with staff is primarily through email, and members will use electronic systems for receipt of agenda materials, program reviews, reimbursement of expenses, and peer evaluations).
- must demonstrate fairness, the ability to work collaboratively, and express views clearly and concisely.
- must be able to attend an observation meeting, April 10-11, 2025, prior to the start of the term.
- must devote sufficient time to prepare for and participate in three RC meetings per year (January, April, and September), two-three days per meeting, as well as contribute to RC-Peds subcommittee work as assigned.
- ideally, will not hold the same subspecialty certifications as the members of the RC-Peds at the time of appointment. The RC-Peds strives to maintain a balance of specialties; it is preferable that individuals from the following specialties are not nominated:
    - General Pediatrics
    - Internal-Medicine Pediatrics
    - Pediatric Hospital Medicine
    - Pediatric Emergency Medicine
    - Neonatal-Perinatal Medicine
    - Pediatric Critical Care Medicine
    - Pediatric Endocrinology
- must not be at the same institution as any member of the RC-Peds at the time of appointment.
    - *Same-Institution Disqualification: Although the RC-Peds may have multiple members from the same state, they may not be from the same institution. Accordingly, individuals must not be nominated from the following institutions:*
        - UC Davis (Davis, CA)
        - Stanford University (Stanford, CA)
        - University of Colorado (Aurora, CO)
        - Advocate Children's Hospital (Park Ridge, IL)
        - Mayo Clinic (Rochester, MN)
        - Columbia University College of Physicians & Surgeons (Yonkers, NY)
        - Goryeb Children's Hospital-Atlantic Health System (Morristown, NJ)
        - University of North Carolina School of Medicine (Chapel Hill, NC)
        - Cincinnati Children’s Hospital Medical Center (Cincinnati, OH)
        - University of Texas Health San Antonio (San Antonio, TX)
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The RC-Peds expects the AAP to consider diversity and inclusion when submitting its nominations.

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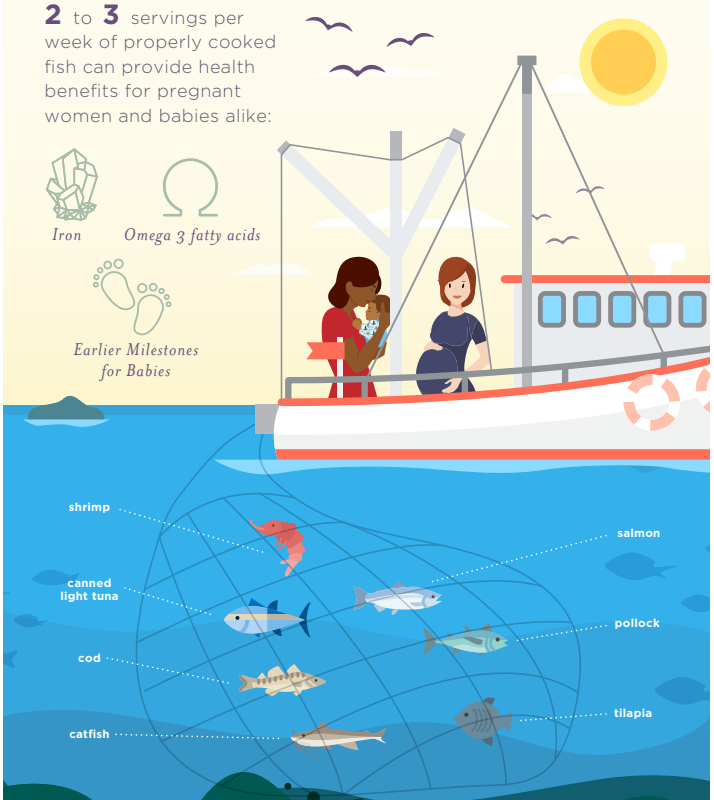
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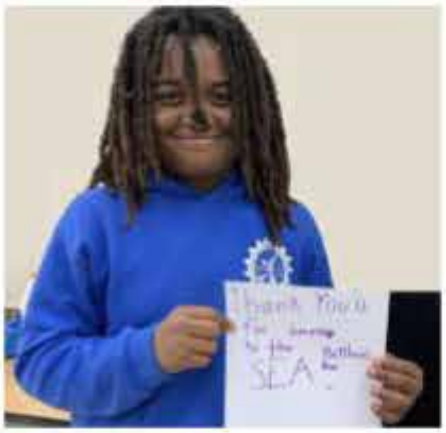


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Elevating Family Voice in Neonatal and Pediatric Care AngelEye Health's Parent and Family Voices Collaborative: A Transformative Approach to Family-Centered Innovation

Carolyn TenEyck, R.N., Jaylee Hilliard, MSN, RN, NEA-BC, CPXP

"AngelEye Health, a neonatal and pediatric family engagement technology leader, introduces the Parent and Family Voices Collaborative. This pioneering initiative integrates diverse family insights into the development of solutions that support families and care teams across the pediatric continuum. By formalizing family-centered care, AngelEye ensures that lived experiences inform its technology's design, usability, and advocacy efforts"

Executive Summary:

AngelEye Health, a neonatal and pediatric family engagement technology leader, introduces the Parent and Family Voices Collaborative. This pioneering initiative integrates diverse family insights into the development of solutions that support families and care teams across the pediatric continuum. By formalizing family-centered care, AngelEye ensures that lived experiences inform its technology's design, usability, and advocacy efforts.

"Families play an essential role in neonatal and pediatric care, particularly during emotionally and medically complex hospitalizations in neonatal intensive care units (NICUs), pediatric intensive care units (PICUs), and cardiovascular intensive care units (CVICUs)."

Background:

Families play an essential role in neonatal and pediatric care, particularly during emotionally and medically complex hospitalizations in neonatal intensive care units (NICUs), pediatric intensive care units (PICUs), and cardiovascular intensive care units (CVICUs). While clinical excellence is paramount, outcomes can be significantly influenced by families' support, inclusion, and empowerment during a child's hospital stay and beyond.

AngelEye Health has long recognized this reality. With more than 300 hospital partners globally, AngelEye delivers integrated technology solutions that enhance bonding, communication, feeding accuracy, discharge planning, and risk detection while keeping families at the center. The launch of the Parent and Family Voices Collaborative further deepens this commitment.

"AngelEye Health has long recognized this reality. With more than 300 hospital partners globally, AngelEye delivers integrated technology solutions that enhance bonding, communication, feeding accuracy, discharge planning, and risk detection while keeping families at the center. "

Purpose and Objectives:

The *Parent and Family Voices Collaborative* aims to:

- Integrate lived family experiences into product development and usability testing
- Empower families to shape solutions through storytelling and advocacy
- Ensure inclusivity by reflecting cultural, linguistic, and community diversity
- Enhance emotional, psychological, and informational support for families in acute care settings

By leveraging family insights, AngelEye Health ensures compassionate, practical solutions aligned with the real-world needs of both families and clinicians.

Composition of the Collaborative:

The inaugural group includes **20 parents** representing a broad range of acute pediatric experiences and outcomes. These families include:

- Parents of NICU, PICU, and CVICU patients
- Individuals with stays ranging from brief to complex and extended hospitalizations

- Nonprofit leaders and community advocates
- Representatives from diverse cultural and linguistic backgrounds

> ***"This initiative reflects AngelEye's intentional effort to build an inclusive advisory model that recognizes the nuanced and varied journeys families experience."***

This initiative reflects AngelEye's intentional effort to build an inclusive advisory model that recognizes the nuanced and varied journeys families experience.

Voices of the Collaborative:

"At AngelEye, we understand families are integral to a baby's care team, influencing NICU outcomes and the broader pediatric care experience. By formalizing the input of these invaluable family insights, we ensure that our technology solutions are deeply aligned with the authentic needs of families."

Jaylee Hilliard, Vice President of Clinical Strategy, AngelEye Health

"Authentic feedback from NICU families allows us to refine our solutions continuously, ensuring they provide compassionate, impactful support exactly when families need it most."

Carolyn TenEyck, Senior Director of Patient and Family Advocacy, AngelEye Health

"AngelEye is doing more than listening—they're giving parents a seat at the table. That changes everything for future families who want to feel seen, supported, and part of their baby's care."

Collaborative member **Michelle Ross**, preemie parent coach, whose daughter spent 127 days in the NICU

"This initiative redefines what's possible in NICU care by embracing the full spectrum of support families need during one of the most critical times in their lives."

Latoya Blueford, preemie mother and founder of *The Skylar Project*

Future Directions:

AngelEye Health is committed to scaling the impact of the Parent and Family Voices Collaborative. Planned initiatives include:

- **Expanded educational tools** tailored to NICU and pediatric families
- **Maintain culturally and linguistically responsive resources** for diverse populations
- **Enhance** hospital-to-home transitions
- **Advocacy partnerships** with nonprofit and community organizations

These initiatives will be guided by ongoing feedback from collaborative members and reflect a commitment to innovation grounded in empathy and shared purpose.

> ***"These initiatives will be guided by ongoing feedback from collaborative members and reflect a commitment to innovation grounded in empathy and shared purpose."***

About AngelEye Health

AngelEye Health is the leading provider of advanced technology solutions that transform neonatal and pediatric care. Its comprehensive suite includes:

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For media inquiries or more information about the Parent and Family Voices Collaborative, please contact:

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Disclosure: *The authors are employees of AngelEye Health.*

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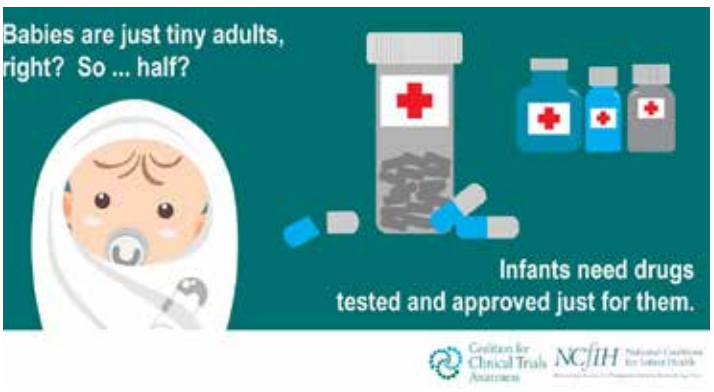
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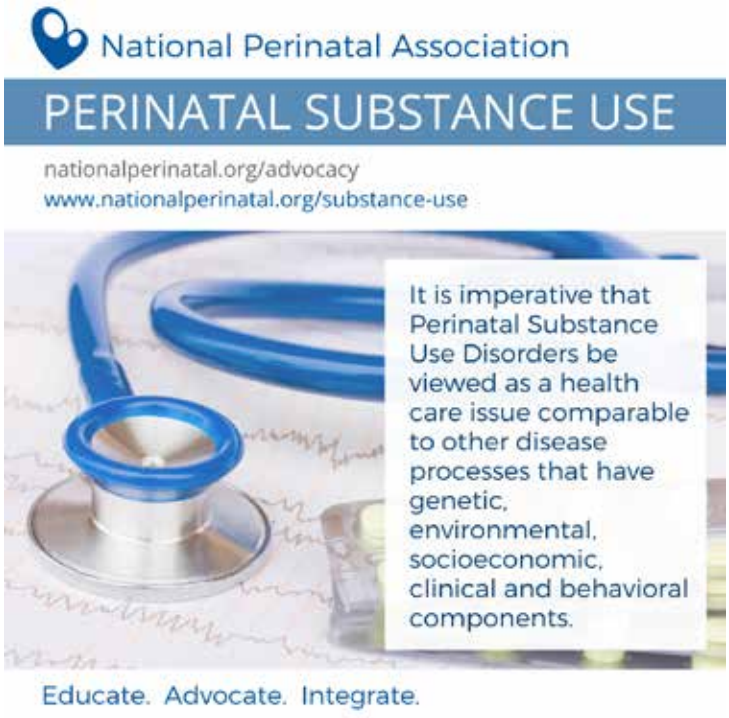
Carolyn TenEyck, RN
Senior Director, Patient & Family Advocacy
AngelEye Health
Email: cteneyck@angeleyehealth.com



Jaylee Hilliard, MSN, RN, NEA-BC, CPXP
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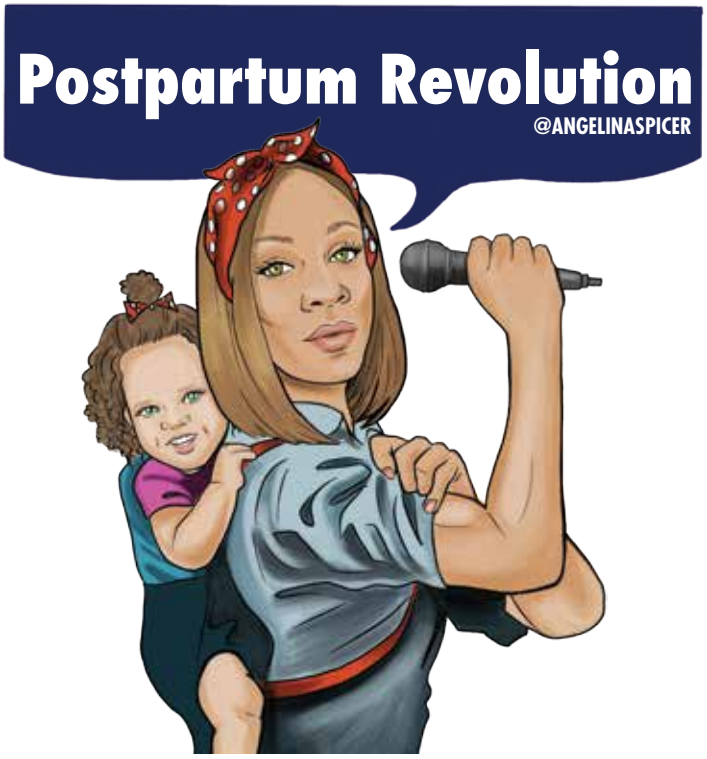
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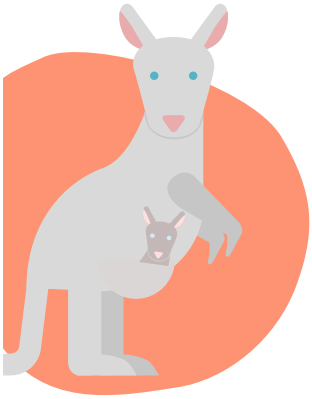
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GET INFORMED ABOUT THE RISKS + BENEFITS

work with your medical team to create a plan

GET CLEAN

WASH YOUR HANDS, ARMS, and CHEST

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





PUT ON FRESH CLOTHES

change into a clean gown or shirt.

IF COVID-19 + WEAR A MASK

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



National Perinatal Association

nicuparentnetwork.org

NPN NICU PARENT NETWORK

nationalperinatal.org/skin-to-skin

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



+ Dalia Feltman, MD, MA, FAAP
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Raising Global Awareness of RSV

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

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

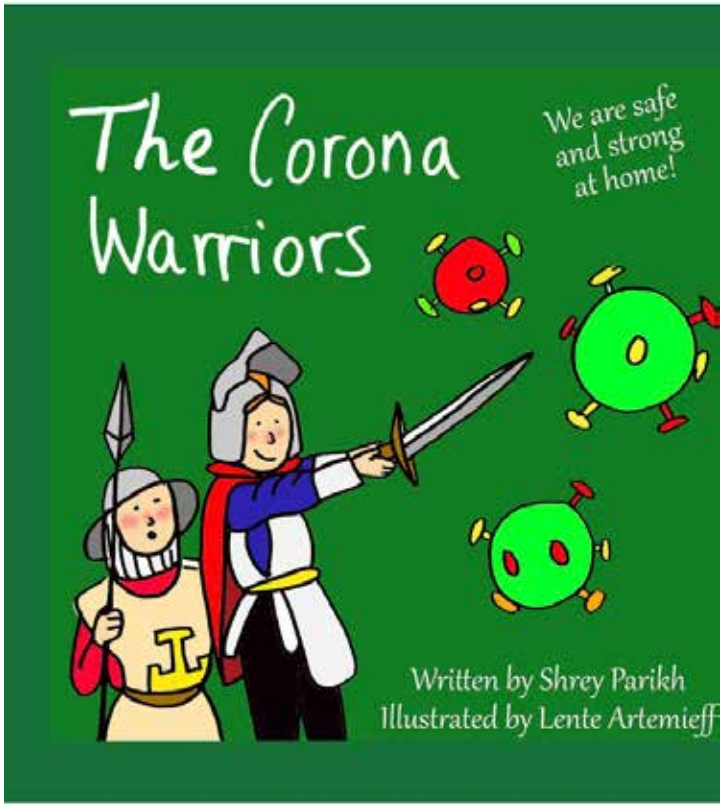
They have produced a personal video entitled "*Why we should all know about RSV*" about Simone van Wyck, a mother who lost her son due to RSV. The video is available at www.rsvgold.com/awareness and can also be watched using the QR code on this page. Please share the video with your colleagues, family,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

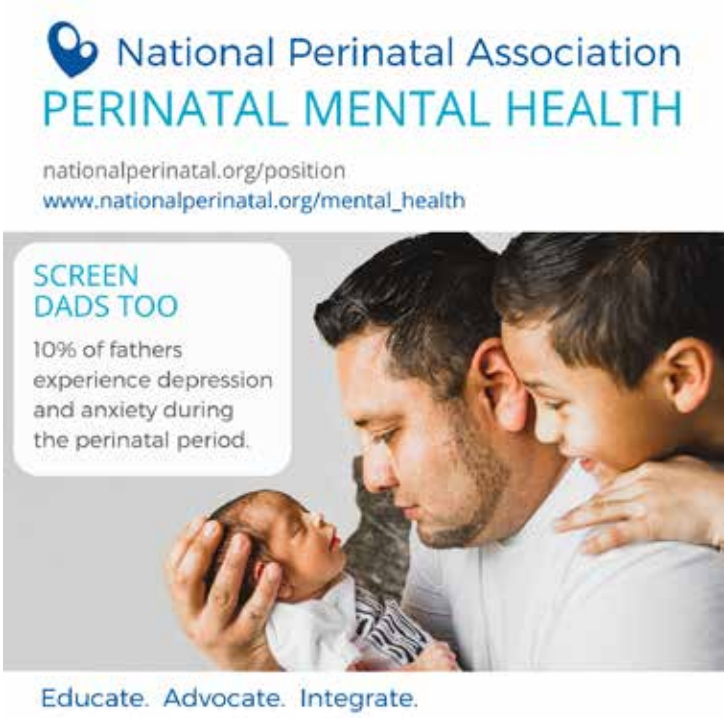


RSV GOLD

A Global Mortality Database for Children with RSV Infection

The RSV awareness video was produced in collaboration with the Bill & Melinda Gates Foundation



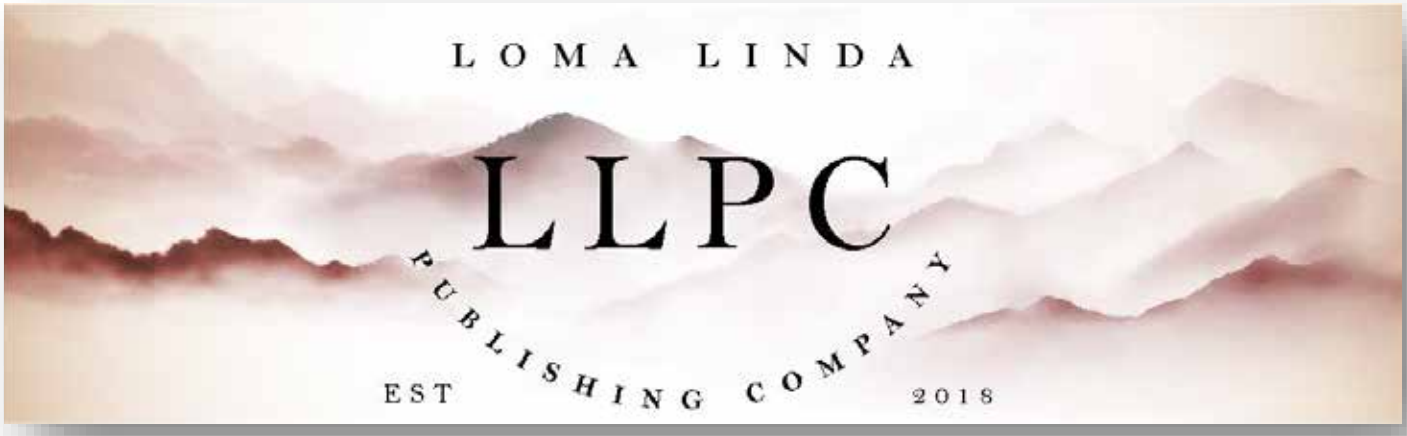


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Thirteen-year-old Emily Rose Shane was tragically murdered on April 3, 2010 on Pacific Coast Highway in Malibu, CA. Our foundation exists to honor her memory.

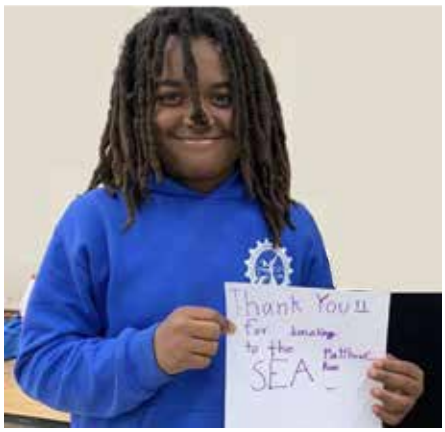


Each year, the Emily Shane Foundation SEA(Successful Educational Achievement) Program provides academic and mentoring support to over 100 disadvantaged middle school students who risk failure and have no other recourse. We have served over 700 children across Los Angeles since our inception in the spring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

Make a Difference in the Life of a Student in Need Today!
Please visit emilyshane.org

Sponsor a Child in the SEA Program

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



1 session	$15
1 week	$30
1 month	$120
1 semester	$540
1 year	$1,080
Middle School	$3,240

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

National Coalition for Infant Health: Lifelong Impacts of Prematurity

Michelle M. Kelly, PhD, CRNP, CNE, FAANP, FAAN

NATIONAL COALITION for Infant Health

The National Coalition for Infant Health is a collaborative of more than 200 professional, clinical, community health, and family support organizations focused on improving the lives of premature infants through age two and their families. NCfIH's mission is to promote lifelong clinical, health, education, and supportive services needed by premature infants and their families. NCfIH prioritizes safety of this vulnerable population and access to approved therapies.

"Over the last 20 to 30 years, the ability to care for and treat preterm infants has improved, and survival rates for all but the smallest and earliest of infants have increased to approximately 90 to 95%."

"Preterm birth interrupts the development of vital body systems such as the respiratory, gastrointestinal and endocrine systems, which can increase the risk of complications like lung disease, necrotizing enterocolitis and poor growth during the neonatal period. The earlier an infant is born, the less time these systems and organs have to develop. Some organs, such as the lungs, can continue to fully develop after birth. Others, such as the kidneys, will grow but not become more functional."



INFANT HEALTH **MATTERS**

Lifelong Impacts of **Prematurity**

Michelle M. Kelly
PhD, CRNP, CNE,
FAANP, FAAN



Q: What does it mean to be born preterm, and what complications can these infants face?

Any baby born before the end of 36 weeks of gestation is considered preterm. Preterm birth can occur as early as 22-23 weeks of gestation, which is currently considered the age of viability.

Preterm birth interrupts the development of vital body systems such as the respiratory, gastrointestinal and endocrine systems, which can increase the risk of complications like lung disease, necrotizing enterocolitis and poor growth during the neonatal period. The earlier an infant is born, the less time these systems and organs have to develop. Some organs, such as the lungs, can continue to fully develop after birth. Others, such as the kidneys, will grow but not become more functional.

Q: What health complications can impact adults who were born preterm?

Over the last 20 to 30 years, the ability to care for and treat preterm infants has improved, and survival rates for all but the smallest and earliest of infants have increased to approximately 90 to 95%.

Even still, being born preterm can affect various body systems throughout adulthood. All body systems that did not mature for a full 40 weeks are at risk for dysfunction.

People born prematurely have an increased risk for learning disabilities and behavioral concerns like anxiety or attention deficit disorder.

Adult onset health conditions like chronic obstructive pulmonary disease and cardiometabolic diseases like hypertension or diabetes are also experienced more often and earlier by people born preterm. Additionally, there is a growing body of research that suggests some degree of endocrine dysfunction.

Q: What should parents of premature infants know about their child's future?

Most people born preterm live healthy and active lives. Being born preterm does not set you up for a life of disease. It sets you up for a life of needing to know how to navigate your health.

While there is an increased risk for several health conditions, early intervention and avoidance of additional risks can help. For example, a child who was born early is at risk for mobility and speech delays, so it would be very common for that child to receive physical, occupational and speech therapy. A child who was born early should not be exposed to tobacco smoke.



Q: What should adult healthcare providers know about the impact of prematurity?

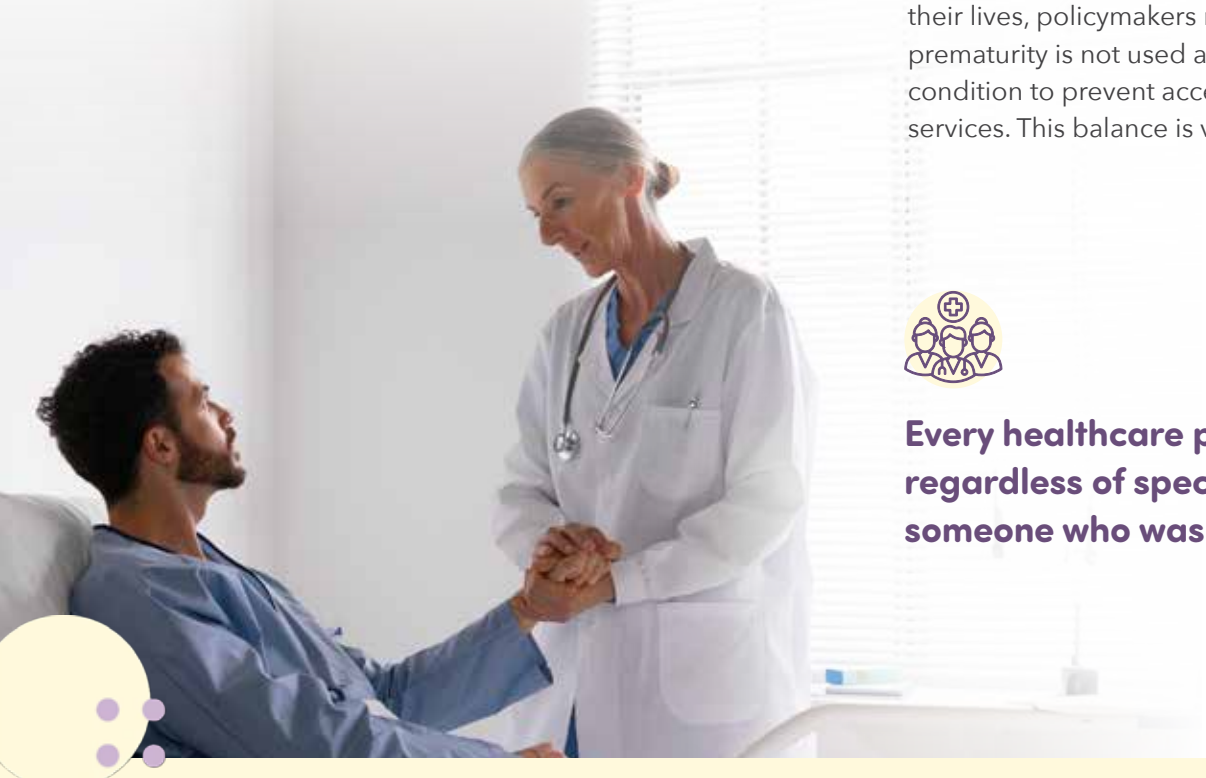
Every healthcare provider, regardless of specialty, is treating someone who was born preterm. Asking each patient if they were born preterm can help providers to better anticipate prematurity-related health conditions.

In 2016, the National Institutes of Health called for healthcare providers to incorporate preterm birth history into healthcare decisions. It is time for renewed emphasis on this recommendation. Recognizing and understanding the lifelong health implications of prematurity is essential for the best quality of life for adults born preterm.

Q: What can policymakers do to better support adults born prematurely?

First, a healthy childhood is a way to support a healthy adulthood. Expanding access to developmental support programs like head start and universal access to nutritional support in schools is important. As these children become adolescents and adults, mitigating risk from chronic disease is critical. For example, policies that support reductions in air pollution will ultimately reduce the implications of prematurity-associated adult lung disease.

While preterm birth should be a health diagnosis that follows patients throughout their lives, policymakers must also ensure prematurity is not used as a pre-existing condition to prevent access to healthcare services. This balance is very important.



Every healthcare provider, regardless of specialty, is treating someone who was born preterm.

NATIONAL COALITION for Infant Health

The National Coalition for Infant Health is a collaborative of professional, clinical, community and family support organizations.

The coalition focuses on education and advocacy promoting patient-centered care for all infants–whether born preterm or full term–and their families.

infanthealth.org

Disclosures: The author has no relevant disclosures.

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National Coalition for Infant Health Values (SANE)

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

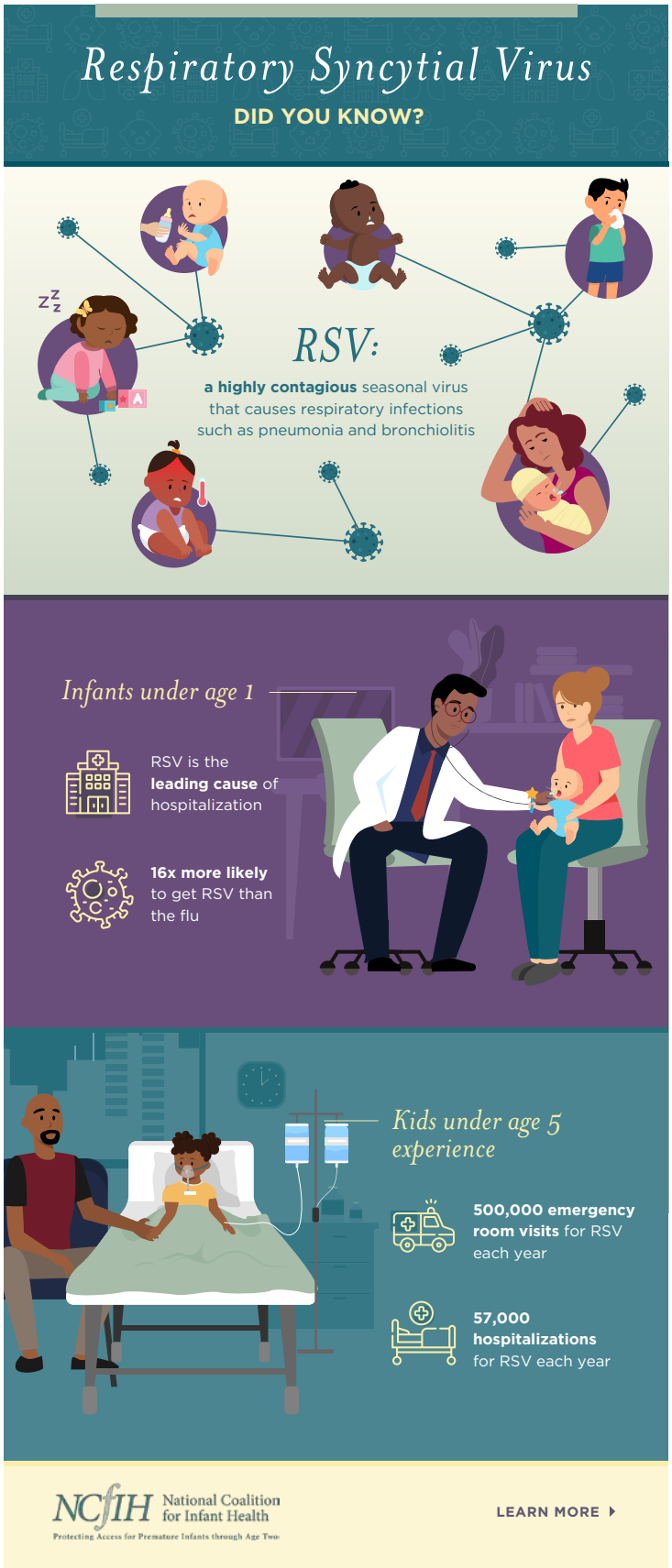
Access. Budget-driven health care policies should not preclude premature infants' access to preventative or necessary therapies.

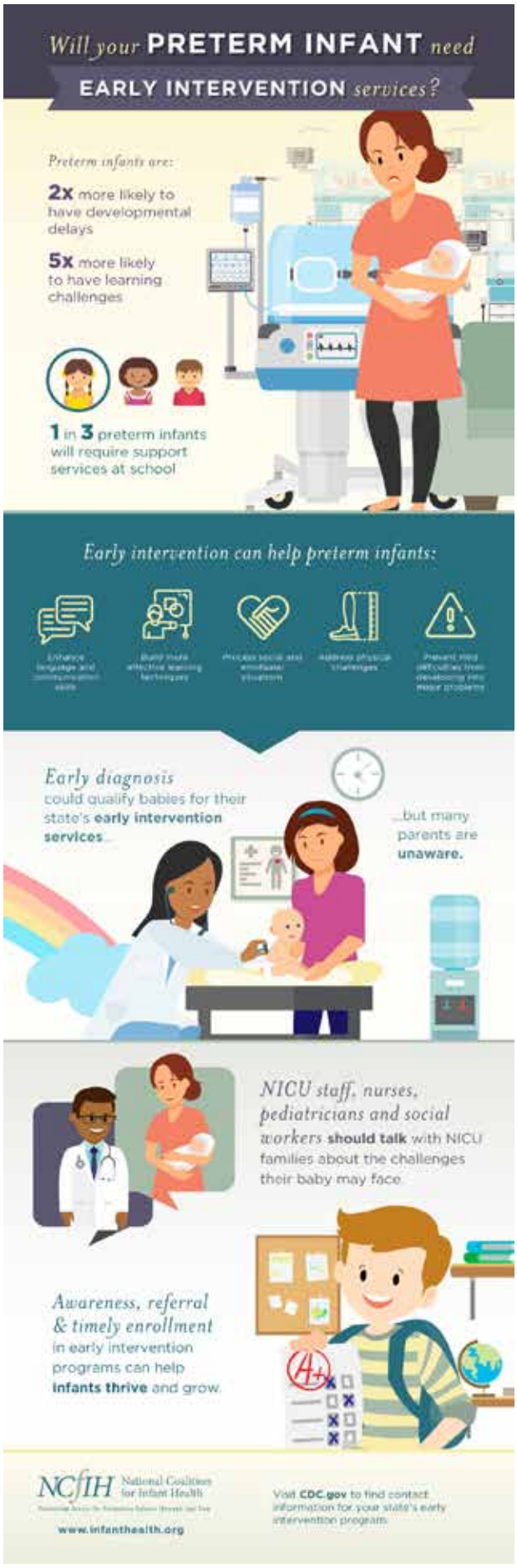
Nutrition. Proper nutrition and full access to health care keep premature infants healthy after discharge from the NICU.

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

The National Coalition for Infant Health is a collaborative of more than 200 professional, clinical, community health, and family support organizations focused on improving the lives of premature infants through age two and their families. NCfIH's mission is to promote lifelong clinical, health, education, and supportive services needed by premature infants and their families. NCfIH prioritizes safety of this vulnerable population and access to approved therapies.






Will your PRETERM INFANT need
EARLY INTERVENTION services?
Preterm infants are:
2x more likely to have developmental delays
5x more likely to have learning challenges
1 in 3 preterm infants will require support services at school
Early intervention can help preterm infants:
Early diagnosis could qualify babies for their state's early intervention services...but many parents are unaware.
NICU staff, nurses, pediatricians and social workers should talk with NICU families about the challenges their baby may face.
Awareness, referral & timely enrollment in early intervention programs can help infants thrive and grow.
NCFIH National Coalition for Infant Health
www.infanthealth.org
Visit CDC.gov to find contact information for your state's early intervention program.


WHY INFANTS NEED THE
Vitamin K Shot
Newborn babies need vitamin K to help with proper blood clotting and protect them from vitamin K deficiency bleeding.
This type of bleeding is dangerous and can lead to:
Internal bleeding, including in the brain and other organs
Brain damage
Death
One out of every five babies with vitamin K deficiency bleeding dies.
Babies don't get vitamin K from their moms before they are born.
But vitamin K deficiency bleeding is easily preventable with a shot at birth.
Newborns who do not get a vitamin K shot are 81 times more likely to develop severe bleeding.
The vitamin K shot is:
Safe and effective
Routinely given to newborns
Recommended by the American Academy of Pediatrics
Not a vaccine
Protect infants from life-threatening bleeding with a vitamin K shot at birth.
National Coalition for Infant Health

Your Pregnancy and Substance Use

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



Get Prenatal Care

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



Reduce Your Use

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

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

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



Use Medications for Opioid Use Disorder (MOUD) if you are opioid dependent

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

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



Take Good Care of Yourself

You deserve a healthy pregnancy & childbirth.

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

Your Health Matters

Academy of Perinatal Harm Reduction

National Perinatal Association

www.perinatalharmreduction.org | www.nationalperinatal.org

Why Pregnant and Nursing Women Need Clear Guidance on

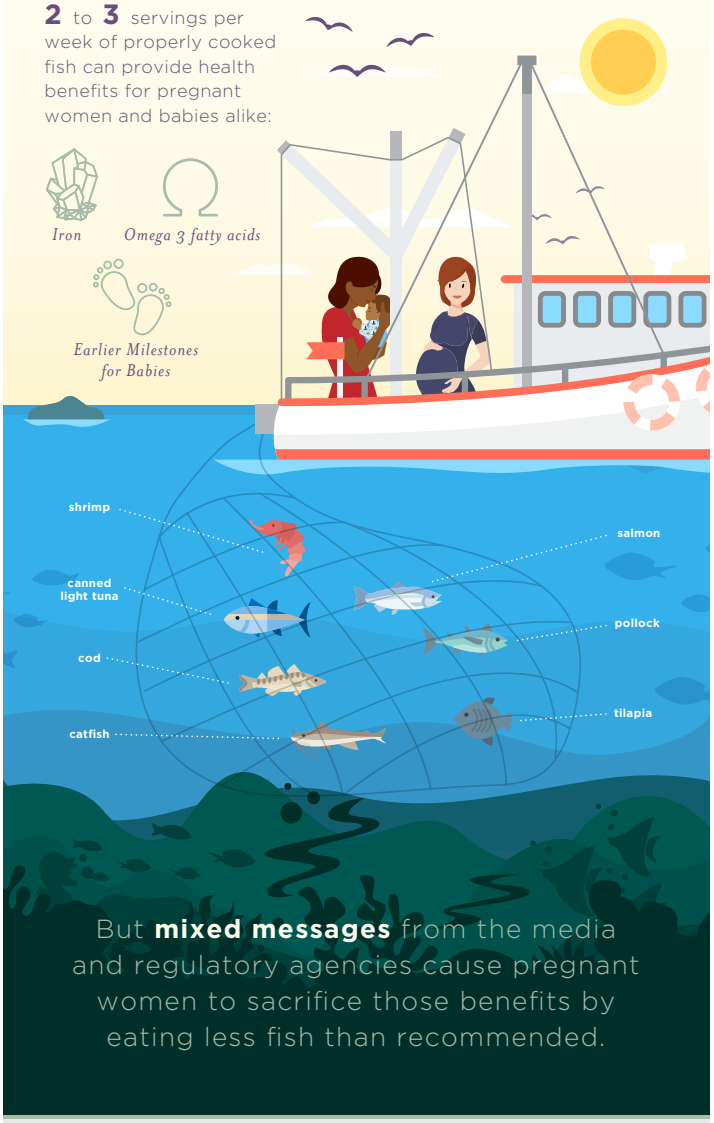
THE NET BENEFITS OF EATING FISH

2 to **3** servings per week of properly cooked fish can provide health benefits for pregnant women and babies alike:

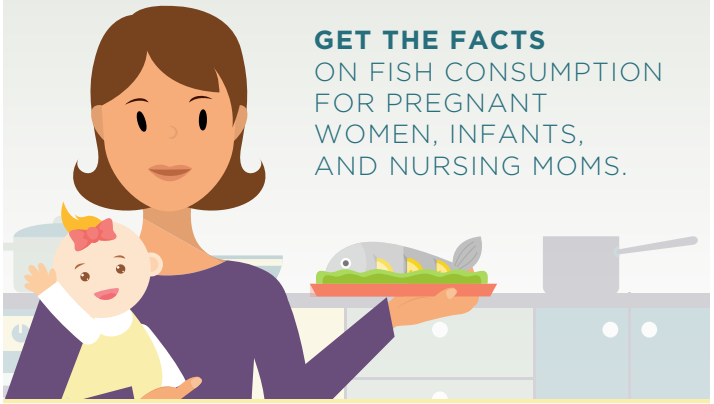
Iron

Omega 3 fatty acids

Earlier Milestones for Babies



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



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

NCfIH National Coalition for Infant Health

LEARN MORE

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.

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National Association of Neonatal Nurses

National Perinatal Association

Fragile Infant Forums for Implementation of IFCDC Standards: Continuity and Discontinuity: Birth to Intensive Care to Home

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



Fetal development prepares the baby for familiar, intimate parent relationships, and pregnancy prepares the parent for sensitive caregiving of their baby. When a significant change occurs, such as birth, it is referred to as a "punctated event" with a significant interruption in continuity between fetal and newborn development. Weiss et al. (1) recognize that

"...birth is best viewed as a punctate event that is associated with the biggest change in environment that an individual undergoes in its lifetime." p.1

Although birth creates discontinuity between fetal and newborn environments and experiences, adjustment to the punctated event of birth is typically managed by physical closeness between the baby and their parent. A necessary recalibration of physiology and behavior often includes regression of previously organized behavior before restoring developmental continuity. Recalibration in the new environment is facilitated by closeness with the parent to restore and return to physiologic and behavioral continuity. (1)

Most newborns and their parents thrive in predictable environments, situations, and relationships. The physiologic and behavioral development continuum for babies and their parents who experience intensive care appears to have at least two major unpredictable and discontinuous events. The first is when the fetus transitions to a vastly different environment. The early and unexpected punctate event interrupts the environment, continuity, and predictability and can result in the dyad's need to recalibrate, especially for babies admitted to intensive care. Many experiences in intensive care do not lend themselves to closeness between the baby and the parent. Medical concerns, intrusive environments, staff assignments, policies, and protocols, as well as restrictions on family participation in the care of their newborn, can hinder efforts for the dyad to recalibrate. (2-6)

Discharge from the more predictable hospital routines and environments to the home environment can be seen as another punctated event. The transition typically includes discontinuity in environments, routines, and relationships. Recalibration, regression of behavior, and physiologic instability that were thought to be resolved in intensive care prior to discharge may become apparent in disorganization of states, eating behavior, or other physiological instability. (7-9) In extreme situations, rehospitalization may be necessary to address the baby's medical or developmental recalibration needs. (10)

Significant challenges during punctated events include adjusting to vastly different environments, interactions, and caregiving, which the baby needs to recalibrate. Professionals can provide medical and developmental support during the initial birth recalibration period, and in many intensive care units, parents are encouraged to provide physical closeness, thus providing a sensory continuum for their baby. (11) When the baby and family transition to the home situation, it is another time of recalibration that often needs professional support. (12, 13)

Considerations for continuity in principles of IFCDC in intensive care and the transition to community support.

"However, aspects of the baby's and parent's neurophysiologic and social/emotional capacities and vulnerabilities merit extending the application of many of the IFCDC principles to care into the first few months after discharge."

The Infant and Family Centered Developmental Care (IFCDC) standards are designed for clinical application in intensive care (https://nicudesign.nd.edu/nicu-care-standards/). However, aspects of the baby's and parent's neurophysiologic and social/emotional capacities and vulnerabilities merit extending the application of many of the IFCDC principles to care into the first few months after discharge. Although babies may be deemed physiologically stable enough to transition to a home situation with appropriate medical follow-up, often their immaturity and medical condition continue to raise concerns for the family. Even with the best "discharge planning," families may encounter unexpected medical and/or developmental issues that must be addressed. The following discussion emphasizes the IFCDC key principles

(Figure 1) applicable in assuring continuity for babies and families who experience intensive care during the two major transitional events described above.

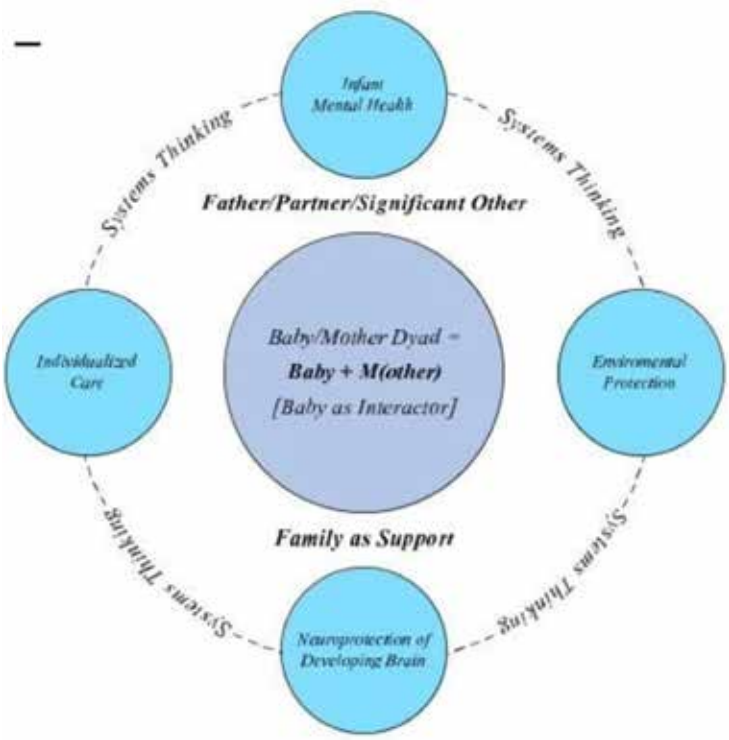


Figure1

Provision of continuity in nurturing environments (Environmental Protection)

"The intensive care sensory environment to which the baby and family are introduced is drastically different from what the baby is expecting and represents a significant need for recalibration of physiology and behavior to restore continuity. In addition to appropriately modified sound, light, and activity in intensive care, best practice assures that the mother's physical closeness provides opportunities for recalibration and continuity from fetal to newborn life. (16)"

The fetal environment includes physiologic, neurohormonal and thermoregulatory properties and the preparation of sensory and motor systems for adaptation to newborn life. Familiarity with the mother's voice, activities, and food preferences prepares the fetus for continuity in their attachment relationship and the cultural norms of their family. (14, 15) Often, the baby does not benefit from the last trimester, during which many behaviors for adaptation to a different environment are developed.

The intensive care sensory environment to which the baby and family are introduced is drastically different from what the baby is expecting and represents a significant need for recalibration of physiology and behavior to restore continuity. In addition to appropriately modified sound, light, and activity in intensive care, best practice assures that the mother's physical closeness provides opportunities for recalibration and continuity from fetal to newborn life. (16) It is important for the intensive care professional to provide anticipatory guidance to parents for the changes that the transition to home may bring up in the baby's behavior (such as the development of patterns of sleep and arousal and eating progression and physiologic stability) and medical changes when the baby experiences vastly different environments and routines.

With the punctated event of transition to home, significant changes in the environment and caregiving and relationships may create disorganization that requires recalibration in the new setting. Home environments vastly differ from intensive care in structure, sensory qualities (sound, lighting, activities), and schedules. Often, recalibration to the new environment includes a behavioral regression, which parents find challenging to understand and deal with. (17) Significant recalibration and continuity for the baby is provided by the familiar routines and caregiving that the parent has established before discharge in particular, skin to skin experiences. (18, 19) Providing the familiar multimodal sensory input of the parent's body provides the essential continuity for returning to a sense of continuity. (20)

"With the punctated event of transition to home, significant changes in the environment and caregiving and relationships may create disorganization that requires recalibration in the new setting."

The community professional would be well advised to have established a relationship with the family before discharge and to plan on having frequent early contact to provide ongoing supports and resources and to assist with adaptation of the family environment if appropriate. Additional training to understand common developmental and physiologic challenges is essential for community-based caregivers to provide appropriate support.

Sensitive periods of brain development for babies and parents. (Neuroprotection of the Developing Brain)

Sensitive periods are known as time periods in development that are particularly receptive to and influenced by environmental input. They occur during all phases of development, but for babies, in the first few months, when brain development is most rapid, sensory, social, and emotional input can make a significant impact. (21-24)

During the last trimester, the baby's brain is organized to provide autonomic stability and the foundation for emotional exchange. The central autonomic network (CAN) in the brainstem, associated with the limbic system, is known to become much more organized during this period, resulting in autonomic stability towards term. (25-28) Early born infants typically have delayed organization of their CAN, which may be reflected in the ongoing autonomic instability in intensive care that continues post-discharge. (29-32) Increasing physiologic stability in thermoregulation, apneic event decreases, and coordination of sucking, swallowing, and breathing are examples of how this system matures. Given the early discharge of many preterm-born babies who may still be developing autonomic regulation, it is not unexpected that they continue to have instability post-discharge. Stressful transitions such as those encountered as the baby and family transition home may contribute to instability and disorganization and require significant recalibration. Unfortunately, many babies continue to have medical issues necessitating rehospitalization after discharge home due to autonomic-related issues such as gastrointestinal, respiratory, and feeding concerns. (10, 12, 33, 34)

The CAN provides the rationale for sensitive care that assures autonomic regulation that is essential both in intensive care and in the home. There is increasing awareness of the importance of physiologic regulation (35) during these sensitive periods and for supporting the early emotional connection between the baby and their parent. (36-39) Examples initiated in intensive care and can be followed in the home include skin-to-skin care by parents and encouragement of the emotional connection between babies and their

parents, often challenging to establish with an unexpected birth and traumatic experiences. (40, 41)

Recent research reveals neurophysiologic as well as psychologically sensitive periods for parents that begin in pregnancy and continue as ongoing caregiving for the baby/child occurs, especially during the first few months after birth. Both mothers and fathers show brain and behavior changes that alter their cognitive and social/emotional interactions and their capacity to care for their babies. As the dyad is the primary focus of care in the IFCDC model, attending to the needs of the parent during their sensitive period both in intensive care and after discharge is essential. (42, 43)

Continuity for the baby parent dyad, hospital to home: (Infant mental health)

As noted above, at the center of the IFCDC model is the mother/baby dyad, which includes more than just physical closeness. It also infers an emotional connection that has been disturbed by early birth or medical necessity and sets the stage for later attachment and parental competence in supporting their baby's development. (16, 44-54) The complexity of intensive care procedures, painful experiences, different professional approaches, communication challenges, and other issues typical in an intensive care environment often do not offer opportunities for emotional connection and relationship building, foundational to a baby's social and emotional development.

Sensitive parenting refers to the parents' ability to perceive and interpret the infant's behavior and to respond appropriately. Parents sensitive to their baby's experiences can significantly enhance behavioral and developmental outcomes and the capacity for recalibration. In part, what enhances parental sensitivity is for both intensive care and community based professionals to understand the baby's behavior and interpret what the baby is experiencing. The other aspect is assisting the parent in being sensitive to the baby's behavior and helping them to support regulation appropriately. (55-57)

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Parents often need additional assistance to understand the importance of assisting their baby's regulatory efforts. In many intensive care units, the focus is on the baby's medical condition so that supporting the parent to understand the baby's emotional experience is not prioritized. Once the family has transitioned to the community, the focus may be on addressing medical issues or assisting the baby to meet developmental goals, such as motor, communication, and/or feeding issues, to the exclusion of addressing social and emotional development.

Other factors affecting the parent's ability to see and respond to the baby's behavior include parental cognitive and/or psychological reactions to having a baby with special health and/or developmental needs. Parental support to engage in ongoing reflection about the baby's experience includes nurturing to trust themselves and have their physical and emotional needs met. (55-61) In dyadic developmental care, the focus should not be as much on the baby as on the parents' well-being to best care for their baby. Intervention programs that focus on including parents in the parenting role and establishing and reinforcing the emotional connection between baby and parent have shown positive developmental outcomes after discharge. (62-64).

Continuity for the baby parent dyad, hospital to home: (Individualized care)

As identified earlier, parents often need assistance in intensive care to observe and interpret what their baby is communicating. Early efforts to determine the experience of each baby are reflect-

ed in several programs such as NIDCAP (65-68), where professionals are trained to observe, interpret, and make recommendations for support of the baby's inferred developmental goals. Many other recent efforts have also incorporated an understanding of the baby's behavior into their intervention programs. (69, 70)

"In dyadic developmental care, the focus should not be as much on the baby as on the parents' well-being to best care for their baby."

With the transition to home, the baby's behavior may differ from what was apparent in intensive care, leading to misinterpretation and/or missing what the baby is trying to communicate. Additionally, after discharge, the baby tends to be the focus of follow-up care without similar attention to the parent's needs, although parents may also be dealing with their own physiologic, developmental, and mental health adjustments to being parents. Follow-up after discharge, especially for developmental support, may be delayed beyond the immediate post-discharge transition, leaving the family to address questions they have and challenges they encounter. Additionally, community support professionals may not have the knowledge or experience to support this population's developmental needs best. (71, 72)

"The development continuum from fetal to newborn and newborn to home life represents two significant interruptions in continuity for the baby and family. These punctated events require physiologic and behavioral recalibration to return to continuity in their developmental trajectory."

Various evidence-based programs have targeted intervention strategies beginning in the newborn intensive care unit and continuing into the home. They found more regulated baby behavior, sensitive parenting, and better developmental outcomes. (73-79) These programs assure individualized care for the family as the baby becomes more medically stable and their behavior becomes more regulated.

"The IFCDC concept model represents principles that apply to intensive care and the transition to the home environment. If applied appropriately, the principles should support ongoing continuity and optimal development for babies and their parents."

Conclusion:

The development continuum from fetal to newborn and newborn to home life represents two significant interruptions in continuity for the baby and family. These punctated events require physiologic and behavioral recalibration to return to continuity in their developmental trajectory. The baby's and family's need for developmental recalibration from environmental and caregiving changes is particularly pronounced when they begin their lives in intensive care. The IFCDC concept model represents principles that apply to intensive care and the transition to the home environment. If applied appropriately, the principles should support ongoing continuity and optimal development for babies and their parents.

Selected References:

1. Meredith Weiss S, Aydin E, Lloyd-Fox S, Johnson MH. Trajectories of brain and behaviour development in the womb, at birth and through infancy. Nature Human Behaviour. 2024:1-12.

2. Chan G, Bergelson I, Smith ER, Skotnes T, Wall S. Barriers and enablers of kangaroo mother care implementation from a health systems perspective: a systematic review. Health Policy Plan. 2017;32(10):1466-75. Epub 2017/10/04. doi: 10.1093/heapol/czx098. PubMed PMID: 28973515; PubMed Central PMCID: PMCPMC5886293.

3. Chan GJ, Labar AS, Wall S, Atun R. Kangaroo mother care: a systematic review of barriers and enablers. Bull World Health Organ. 2016;94(2):130-41j. Epub 2016/02/26. doi: 10.2471/blt.15.157818. PubMed PMID: 26908962; PubMed Central PMCID: PMCPMC4750435.

4. Lewis TP, Andrews KG, Shenberger E, Betancourt TS, Fink G, Pereira S, et al. Caregiving can be costly: A qualitative study of barriers and facilitators to conducting kangaroo mother care in a US tertiary hospital neonatal intensive care unit. BMC Pregnancy Childbirth. 2019;19(1):227. Epub 2019/07/06. doi: 10.1186/s12884-019-2363-y. PubMed PMID: 31272398; PubMed Central PMCID: PMCPMC6610951.

5. Smith ER, Bergelson I, Constantian S, Valsangkar B, Chan GJ. Barriers and enablers of health system adoption of kangaroo mother care: a systematic review of caregiver perspectives. BMC Pediatr. 2017;17(1):35. Epub 2017/01/27. doi: 10.1186/s12887-016-0769-5. PubMed PMID: 28122592; PubMed Central PMCID: PMCPMC5267363.

6. Williams KG, Patel KT, Stausmire JM, Bridges C, Mathis MW, Barkin JL. The neonatal intensive care unit: Environmental stressors and supports. International journal of environmental research and public health. 2018;15(1):60.

7. Grabill M, Smith J, Ibrahim C, Pineda R. Prevalence of Early Feeding Alterations Among Preterm Infants and Their Relationship to Early Neurobehavior. Am J Occup Ther. 2023;77(3). doi: 10.5014/ajot.2023.050123. PubMed PMID: 37253183.

8. McLaurin KK, Hall CB, Jackson EA, Owens OV, Mahadevia PJ. Persistence of morbidity and cost differences between

late-preterm and term infants during the first year of life. Pediatrics. 2009;123(2):653-9. doi: 10.1542/peds.2008-1439. PubMed PMID: 19171634.

9. Guyon A, Ravet F, Champavert A, Thieux M, Patural H, Plancoulaine S, et al. Maturation of Arousals during Day and Night in Preterm Infants. Children (Basel). 2022;9(2). Epub 20220208. doi: 10.3390/children9020223. PubMed PMID: 35204943; PubMed Central PMCID: PMCPMC8870058.

10. Scheuchenegger A, Windisch B, Pansy J, Resch B. Morbidities and rehospitalizations during the first year of life in moderate and late preterm infants: more similarities than differences? Minerva Pediatr. 2020. Epub 20200605. doi: 10.23736/s0026-4946.20.05736-9. PubMed PMID: 32508074.

11. Conde-Agudelo A, Díaz-Rossello JL. Kangaroo mother care to reduce morbidity and mortality in low birthweight infants. Cochrane Database Syst Rev. 2016;2016(8):Cd002771. Epub 20160823. doi: 10.1002/14651858.CD002771.pub4. PubMed PMID: 27552521; PubMed Central PMCID: PMCPMC6464509.

12. Vohr B, McGowan E, Keszler L, Alksninis B, O'Donnell M, Hawes K, et al. Impact of a Transition Home Program on Rehospitalization Rates of Preterm Infants. J Pediatr. 2017;181:86-92 e1. Epub 2016/11/08. doi: 10.1016/j.jpeds.2016.10.025. PubMed PMID: 27817878.

13. Browne JV. Developmental care for high-risk newborns: emerging science, clinical application, and continuity from newborn intensive care unit to community. Clinics in perinatology. 2011;38(4):719-29. Epub 2011/11/24. doi: 10.1016/j.clp.2011.08.003. PubMed PMID: 22107900.

14. Hym C, Forma V, Anderson DI, Provasi J, Granjon L, Huet V, et al. Newborn crawling and rooting in response to maternal breast odor. Developmental science. 2021;24(3):e13061. Epub 20201205. doi: 10.1111/desc.13061. PubMed PMID: 33174352.

15. Schaal B, Saxton TK, Loos H, Soussignan R, Durand K. Olfaction scaffolds the developing human from neonate to adolescent and beyond. Philos Trans R Soc Lond B Biol Sci. 2020;375(1800):20190261. Epub 20200420. doi: 10.1098/rstb.2019.0261. PubMed PMID: 32306879; PubMed Central PMCID: PMCPMC7209940.

16. Swain JE, Kim P, Spicer J, Ho SS, Dayton CJ, Elmadih A, et al. Approaching the biology of human parental attachment: brain imaging, oxytocin and coordinated assessments of mothers and fathers. Brain Res. 2014;1580:78-101. doi: 10.1016/j.brainres.2014.03.007. PubMed PMID: 24637261; PubMed Central PMCID: PMCPMC4157077.

17. Aagaard H, Uhrenfeldt L, Spliid M, Fegran L. Parents' experiences of transition when their infants are discharged from the Neonatal Intensive Care Unit: a systematic review protocol. JBI Database System Rev Implement Rep. 2015;13(10):123-32. Epub 2015/11/17. doi: 10.11124/jbisrir-2015-2287. PubMed PMID: 26571288.

18. Feldman R, Eidelman AI. Skin-to-skin contact (Kangaroo Care) accelerates autonomic and neurobehavioural maturation in preterm infants. Developmental medicine and child neurology. 2003;45(4):274-81. PubMed PMID: 12647930.

19. Purdy IB, Craig JW, Zeanah P. NICU discharge planning and beyond: recommendations for parent psychosocial support. Journal of perinatology : official journal of the California Perinatal Association. 2015;35 Suppl 1(Suppl 1):S24-8. doi: 10.1038/jp.2015.146. PubMed PMID: 26597802; PubMed Central PMCID: PMCPMC4660049.

20. Feldman R, Rosenthal Z, Eidelman AI. Maternal-preterm skin-to-skin contact enhances child physiologic organization and cognitive control across the first 10 years of life. Biological psychiatry. 2014;75(1):56-64. doi: 10.1016/j.biopsych.2013.08.012. PubMed PMID: 24094511.

21. Holland D, Chang L, Ernst TM, Curran M, Buchthal SD, Alicata D, et al. Structural growth trajectories and rates of change in the first 3 months of infant brain development. JAMA neurology. 2014;71(10):1266-74. doi: 10.1001/jamaneurol.2014.1638. PubMed PMID: 25111045.

22. Knudsen EI. Sensitive periods in the development of the brain and behavior. J Cogn Neurosci. 2004;16(8):1412-25. doi: 10.1162/0898929042304796. PubMed PMID: 15509387.

23. Troller-Renfree S, Fox NA. Sensitive periods of development: Implications for risk and resilience. In: Luby JL, editor. Handbook of Preschool Mental Health: Development, Disorders and Treatment. New York: Guilford Publications; 2017. p. 3-26.

24. Hodel AS. Rapid Infant Prefrontal Cortex Development and Sensitivity to Early Environmental Experience. Dev Rev. 2018;48:113-44. Epub 20180311. doi: 10.1016/j.dr.2018.02.003. PubMed PMID: 30270962; PubMed Central PMCID: PMCPMC6157748.

25. Christoffel K, De Asis-Cruz J, Govindan RB, Kim JH, Cook KM, Kapse K, et al. Central Autonomic Network and Heart Rate Variability in Premature Neonates. Dev Neurosci. 2024;46(6):373-85. Epub 20240206. doi: 10.1159/000536513. PubMed PMID: 38320522; PubMed Central PMCID: PMCPMC11300706.

26. Mulkey SB. Contemporary Understanding of the Central Autonomic Nervous System in Fetal-Neonatal Transition. Semin Pediatr Neurol. 2023;47:101081. Epub 20230909. doi: 10.1016/j.spen.2023.101081. PubMed PMID: 37919029; PubMed Central PMCID: PMCPMC10910385.

27. Mulkey SB, Dú Plessis A, editors. The critical role of the central autonomic nervous system in fetal-neonatal transition. Seminars in Pediatric Neurology; 2018: Elsevier.

28. Mulkey SB, du Plessis AJ. Autonomic nervous system development and its impact on neuropsychiatric outcome. Pediatric Research. 2019;85(2):120-6.

29. Cook KM, De Asis-Cruz J, Basu SK, Andescavage N, Murnick J, Spoehr E, et al. Ex-utero third trimester developmental changes in functional brain network organization in infants born very and extremely preterm. Front Neurosci. 2023;17:1214080. Epub 20230901. doi: 10.3389/

fnins.2023.1214080. PubMed PMID: 37719160; PubMed Central PMCID: PMCPMC10502339.

30. Mulkey SB, Kota S, Swisher CB, Hitchings L, Metzler M, Wang Y, et al. Autonomic nervous system depression at term in neurologically normal premature infants. Early human development. 2018;123:11-6.

31. Schlatterer SD, du Plessis AJ. Exposures influencing the developing central autonomic nervous system. Birth Defects Research. 2021;113(11):845-63.

32. Schlatterer SD, Govindan RB, Barnett SD, Al-Shargabi T, Reich DA, Iyer S, et al. Autonomic development in preterm infants is associated with morbidity of prematurity. Pediatric research. 2022;91(1):171-7.

33. Finello KM, Litton KM, deLemos R, Chan LS. Very low birth weight infants and their families during the first year of life: comparisons of medical outcomes based on after care services. Journal of Perinatology. 1998;18(5):365-71.

34. Jain S, Cheng J. Emergency department visits and rehospitalizations in late preterm infants. Clinics in perinatology. 2006;33(4):935-45; abstract xi. Epub 2006/12/07. doi: 10.1016/j.clp.2006.09.007. PubMed PMID: 17148013.

35. Weatherston D, Browne JV. What is Infant Mental Health and why is it important for high-risk infants and their families? Newborn and Infant Nursing Reviews. 2016.

36. Porges SW, Davila MI, Lewis GF, Kolacz J, Okonmah-Obazee S, Hane AA, et al. Autonomic regulation of preterm infants is enhanced by Family Nurture Intervention. Developmental psychobiology. 2019;61(6):942-52. Epub 2019/03/15. doi: 10.1002/dev.21841. PubMed PMID: 30868570.

37. 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: PMCPMC7402490.

38. Talmi A, Browne JV. Regulation, Relationships and Reflection: Developmental care in the NICU. In: Dempsey AG, Cole JCM, Saxton SN, editors. Behavioral Health Services with High-Risk Infants and Families: Meeting the Needs of Patients, Families, and Providers in Fetal, Neonatol Intensive Care Unit and Neonatal Follow-up Settings. New York: New York: Oxford University Press; 2022. p. 359-74.

39. Shah PE, Browne J, Poehlmann-Tynan J, CZ P. Identifying risks and promoting resilience. Handbook of infant mental health. 2019;4:203-18.

40. Johnson AN. Kangaroo holding beyond the NICU. Pediatr Nurs. 2005;31(1):53-6. Epub 2005/03/30. PubMed PMID: 15794326.

41. Hane AA, LaCoursiere JN, Mitsuyama M, Wieman S, Ludwig RJ, Kwon KY, et al. The Welch Emotional Connection Screen: validation of a brief mother-infant relational health screen. Acta Paediatr. 2019;108(4):615-25. Epub 2018/07/01. doi: 10.1111/apa.14483. PubMed PMID: 29959878.

42. Grant AD, Erickson EN. Birth, love, and fear: Physiological networks from pregnancy to parenthood. Compr Psychoneuroendocrinol. 2022;11:100138. Epub 20220426. doi: 10.1016/j.cpnec.2022.100138. PubMed PMID: 35757173; PubMed Central PMCID: PMCPMC9227990.

43. Mielke EL, Neukel C, Bertsch K, Reck C, Möhler E, Herpertz SC. Maternal sensitivity and the empathic brain: Influences of early life maltreatment. J Psychiatr Res. 2016;77:59-66. Epub 2016/03/18. doi: 10.1016/j.jpsychires.2016.02.013. PubMed PMID: 26985733.

44. Feldman R. Sensitive periods in human social development: New insights from research on oxytocin, synchrony, and high-risk parenting. Development and psychopathology. 2015;27(2):369-95.

45. Feldman R. The Neurobiology of Human Attachments. Trends Cogn Sci. 2017;21(2):80-99. Epub 2017/01/04. doi: 10.1016/j.tics.2016.11.007. PubMed PMID: 28041836.

46. Feldman R. The adaptive human parental brain: implications for children's social development. Trends Neurosci. 2015;38(6):387-99. doi: 10.1016/j.tins.2015.04.004. PubMed PMID: 25956962.

47. Feldman R, Braun K, Champagne FA. The neural mechanisms and consequences of paternal caregiving. Nat Rev Neurosci. 2019;20(4):205-24. doi: 10.1038/s41583-019-0124-6. PubMed PMID: 30760881.

48. Kim P. Human maternal brain plasticity: adaptation to parenting. New directions for child and adolescent development. 2016;2016(153):47-58.

49. Kim P, Rigo P, Mayes LC, Feldman R, Leckman JF, Swain JE. Neural plasticity in fathers of human infants. Social neuroscience. 2014;9(5):522-35. doi: 10.1080/17470919.2014.933713. PubMed PMID: 24958358; PubMed Central PMCID: PMC4144350.

50. Kim P, Strathearn L, Swain JE. The maternal brain and its plasticity in humans. Horm Behav. 2016;77:113-23. Epub 2015/08/14. doi: 10.1016/j.yhbeh.2015.08.001. PubMed PMID: 26268151; PubMed Central PMCID: PMCPMC4724473.

51. Lévy F, Gheusi G, Keller M. Plasticity of the parental brain: a case for neurogenesis. J Neuroendocrinol. 2011;23(11):984-93. Epub 2011/08/10. doi: 10.1111/j.1365-2826.2011.02203.x. PubMed PMID: 21824205.

52. Shimon-Raz O, Salomon R, Bloch M, Aisenberg Romano G, Yeshurun Y, Ulmer Yaniv A, et al. Mother brain is wired for social moments. Elife. 2021;10. Epub 20210325. doi: 10.7554/eLife.59436. PubMed PMID: 33764299; PubMed Central PMCID: PMCPMC8026217.

53. Swain JE. Becoming a parent: biobehavioral and brain science perspectives. Curr Probl Pediatr Adolesc Health Care. 2011;41(7):192-6. Epub 2011/07/16. doi: 10.1016/j.cppeds.2011.02.004. PubMed PMID: 21757136; PubMed Central PMCID: PMCPMC4317258.

54. Swain JE, Lorberbaum JP, Kose S, Strathearn L. Brain basis of early parent-infant interactions: psychology, physiology, and in vivo functional neuroimaging studies. Journal of child psychology and psychiatry, and allied disciplines. 2007;48(3-4):262-87. Epub 2007/03/16. doi: 10.1111/j.1469-7610.2007.01731.x. PubMed PMID: 17355399; PubMed Central PMCID: PMCPMC4318551.

55. Lawhon g. Facilitation of parenting the premature infant within the newborn intensive care unit. J Perinat Neonatal Nurs. 2002;16(1):71-82. PubMed PMID: SAPTA NIDCAP Center and Pediatric Developmental Program, Toledo Children's Hospital, Ohio, USA.

56. Stacks AM, Muzik M, Wong K, Beeghly M, Huth-Bocks A, Irwin JL, et al. Maternal reflective functioning among mothers with childhood maltreatment histories: links to sensitive parenting and infant attachment security. Attach Hum Dev. 2014;16(5):515-33. Epub 2014/07/17. doi: 10.1080/14616734.2014.935452. PubMed PMID: 25028251; PubMed Central PMCID: PMCPMC4146668.

57. Swain JE, Ho SS. Neuroendocrine mechanisms for parental sensitivity: overview, recent advances and future directions. Curr Opin Psychol. 2017;15:105-10. Epub 2017/08/17. doi: 10.1016/j.copsyc.2017.02.027. PubMed PMID: 28813249; PubMed Central PMCID: PMCPMC7195810.

58. Rutherford HJV, Maupin AN, Landi N, Potenza MN, Mayes LC. Parental reflective functioning and the neural correlates of processing infant affective cues. Social neuroscience. 2017;12(5):519-29. Epub 2016/06/03. doi: 10.1080/17470919.2016.1193559. PubMed PMID: 27253222; PubMed Central PMCID: PMCPMC6141989.

59. Schultheis AM, Mayes LC, Rutherford HJ. Associations Between Emotion Regulation and Parental Reflective Functioning. J Child Fam Stud. 2019;28(4):1094-104. Epub 2019/06/04. doi: 10.1007/s10826-018-01326-z. PubMed PMID: 31156323; PubMed Central PMCID: PMCPMC6538273.

60. Slade A, Grienenberger J, Bernbach E, Levy D, Locker A. Maternal reflective functioning, attachment, and the transmission gap: a preliminary study. Attach Hum Dev. 2005;7(3):283-98. Epub 2005/10/08. doi: 10.1080/14616730500245880. PubMed PMID: 16210240.

61. Suchman NE, DeCoste C, Castiglioni N, McMahon TJ, Rounsaville B, Mayes L. The Mothers and Toddlers Program, an attachment-based parenting intervention for substance using women: post-treatment results from a randomized clinical pilot. Attach Hum Dev. 2010;12(5):483-504. Epub 2010/08/24. doi: 10.1080/14616734.2010.501983. PubMed PMID: 20730641; PubMed Central PMCID: PMCPMC2928150.

62. Zhang X, Kurtz M, Lee S-Y, Liu H. Early Intervention for Preterm Infants and Their Mothers: A Systematic Review. The Journal of Perinatal & Neonatal Nursing. 2021;35(4).

63. Woodward LJ, Ludwig RJ, Gong A, Myers MM, Welch MG. Family Nurture Intervention and mother-preterm infant autonomic emotional connection in the neonatal intensive care unit: A review. Acta Paediatr. 2024. Epub 20241103. doi: 10.1111/apa.17456. PubMed PMID: 39491338.

64. Toivonen M, Lehtonen L, Löyttyniemi E, Ahlqvist-Björkroth S, Axelin A. Close Collaboration with Parents intervention improves family-centered care in different neonatal unit contexts: a pre-post study. Pediatr Res. 2020;88(3):421-8. Epub 2020/05/08. doi: 10.1038/s41390-020-0934-2. PubMed PMID: 32380505; PubMed Central PMCID: PMCPMC7478938.

65. Als H. Toward a synactive theory of development: Promise for the assessment and support of infant individuality. Infant Mental Health Journal. 1982;3(4):229-43.

66. Als H. Neurobehavioral organization of the newborn: opportunity for assessment and intervention. NIDA Res Monogr. 1991;114:106-16. PubMed PMID: 1754009.

67. Als H. Neurobehavioral Development of the Preterm Infant. In: Fanaroff AA, Martin RJ, editors. Neonatal-Perinatal Medicine. 2. St. Louis: Mosby; 1997. p. 964-89.

68. Als H. Developmental care in the newborn intensive care unit. Curr Opin Pediatr. 1998;10(2):138-42. PubMed PMID: 9608890.

69. Pineda R, Raney M, Smith J. Supporting and enhancing NICU sensory experiences (SENSE): Defining developmentally-appropriate sensory exposures for high-risk infants. Early human development. 2019;133:29-35. Epub 2019/05/06. doi: 10.1016/j.earlhumdev.2019.04.012. PubMed PMID: 31054467.

70. Johnson LC, Bartlett JD, Nugent JK. Gravens By Design: The Newborn Behavioral Observations System to Support Early Parent-Infant Relationships in the NICU. TODAY Peer Reviewed Research, News and. 2023;18(9):77.

71. Joy V, Browne R, Langlois A, Arcata C, Smith-Sharp S. BEGINNINGS: An Interim Individual Family Service Plan for Use in the Intensive Care Nursery.

72. Browne JV, Talmi A. Training Needs for Evaluators and EI Service Providers for Infants Less Than Six Months of Age. Early Intervention Colorado; 2009, 2016.

73. Milgrom J, Martin PR, Newnham C, Holt CJ, Anderson PJ, Hunt RW, et al. Behavioural and cognitive outcomes following an early stress-reduction intervention for very preterm and extremely preterm infants. Pediatr Res. 2019;86(1):92-9. Epub 2019/04/10. doi: 10.1038/s41390-019-0385-9. PubMed PMID: 30965355.

74. Newnham CA, Milgrom J, Skouteris H. Effectiveness of a modified Mother-Infant Transaction Program on outcomes for preterm infants from 3 to 24 months of age. Infant behavior & development. 2009;32(1):17-26. Epub 2008/11/26. doi: 10.1016/j.infbeh.2008.09.004. PubMed PMID: 19026450.

75. Achenbach TM, Howell CT, Aoki MF, Rauh VA. Nine-year outcome of the Vermont intervention program for low birth weight infants. Pediatrics. 1993;91(1):45-55. Epub 1993/01/01. PubMed PMID: 7677972.

76. Milgrom J, Newnham C, Martin PR, Anderson PJ, Doyle LW, Hunt RW, et al. Early communication in preterm infants following intervention in the NICU. Early human development. 2013;89(9):755-62. Epub 2013/07/06. doi: 10.1016/j.earlhumdev.2013.06.001. PubMed PMID: 23827378.

77. Raugh VA, Achenbach TM, Nurcombe B, Howell CT, Teti DM. Minimizing adverse effects of low birthweight: Four-year results of an early intervention program. Child development. 1988;59:544-53.

78. Spittle A, Treyvaud K. The role of early developmental intervention to influence neurobehavioral outcomes of children born preterm. Semin Perinatol. 2016;40(8):542-8. Epub 2016/11/08. doi: 10.1053/j.semperi.2016.09.006. PubMed PMID: 27817913.

79. Spratt P. Transition of the Fragile Infant Home from the NICU Into Early Intervention: A Team Approach to Family Centered Developmental Care. [Capstone project]. In press 2014.

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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

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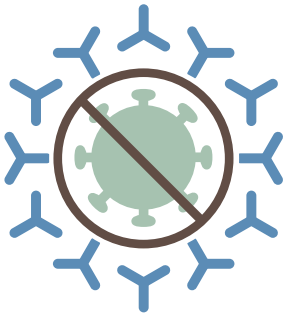
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Protecting your baby and family from

Respiratory Viruses:



What parents need to know this RSV and flu season

Like COVID-19, RSV (Respiratory Syncytial Virus) and flu affect the lungs and can cause serious breathing problems for children and babies. Talk to your family about the risks.

Certain diagnoses can make children and babies more vulnerable for serious complications from respiratory viruses - including prematurity, chronic lung disease, and heart conditions.

You can limit the spread of viruses by wearing a mask, washing your hands with soap & water, using an alcohol-based hand sanitizer, and getting vaccinated.

The fewer germs your baby is exposed to, the less likely they are to get sick. Let people know you need their help to stay well. Limit visitors. Avoid crowds. Stay away from sick people.

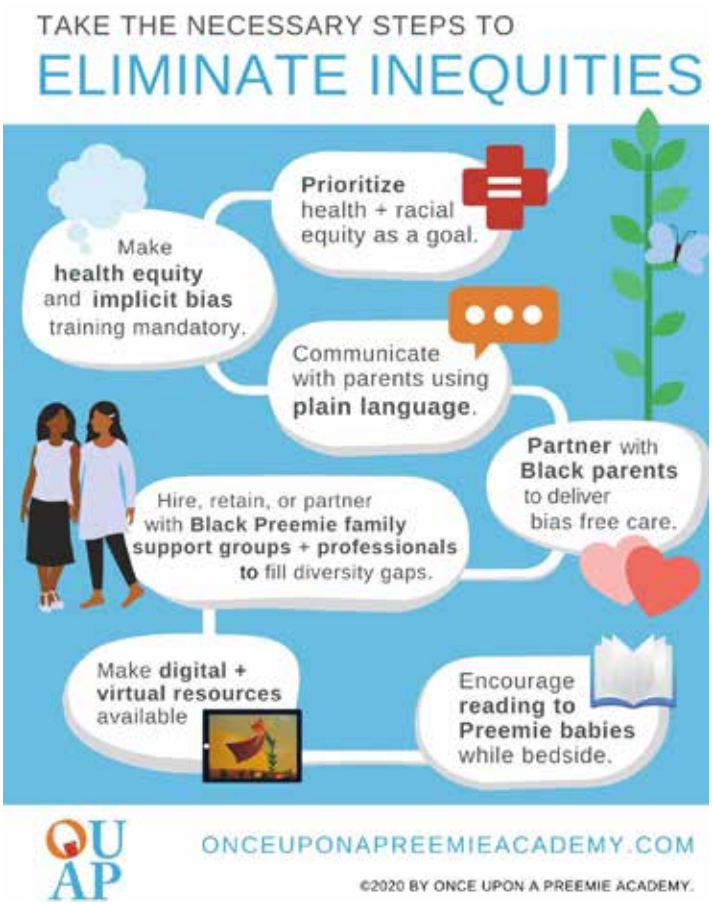
Immunizations save lives. Stay up-to-date with your family's flu vaccinations and COVID-19 boosters. This helps our community stay safe by stopping the spread of deadly viruses.

Babies older than 6 months can get a flu shot and COVID-19 vaccinations. There is no vaccine for RSV, but monthly antibody shots during RSV season can help protect them.

WE CAN HELP PROTECT EACH OTHER.

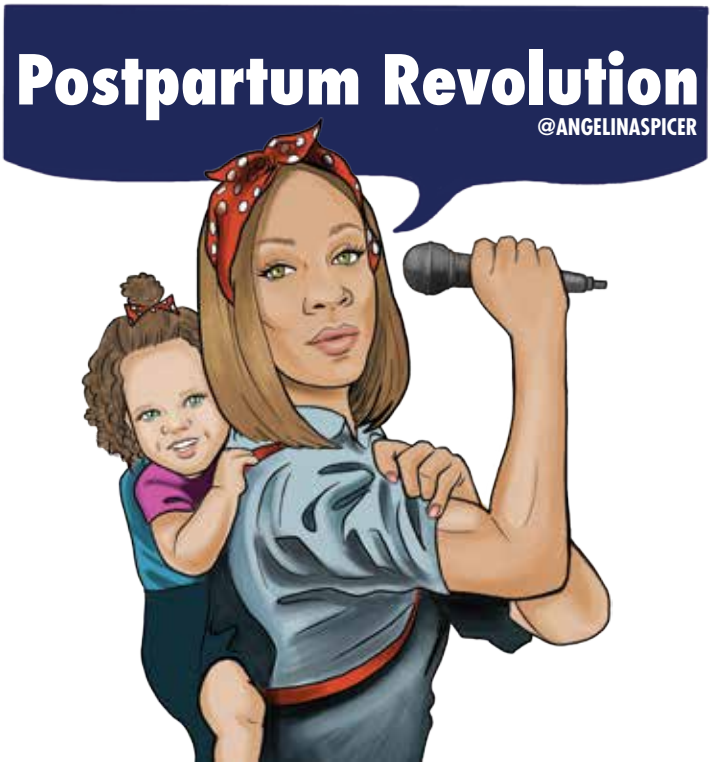
National Perinatal Association

www.nationalperinatal.org/rsv



The Gap Baby: An RSV Story





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- Bonding with Your Baby
- Caregivers Need Care Too



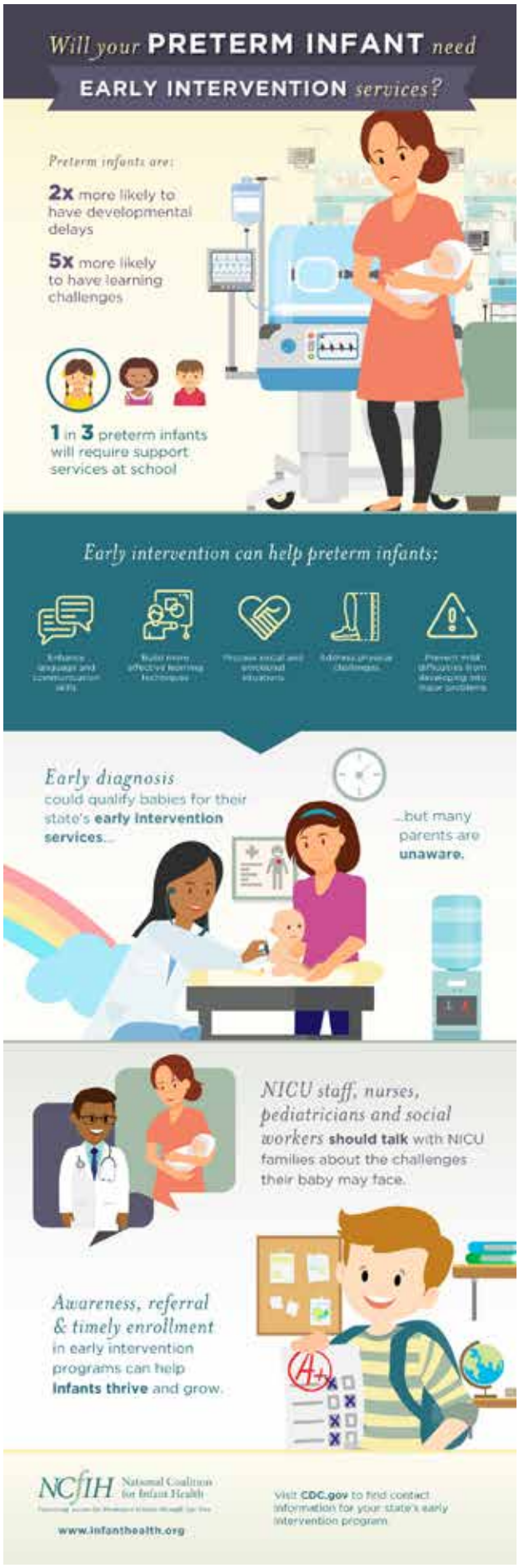
Download at www.nationalperinatal.org/psychologists

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



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 CrossRef 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

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Hemolytic Disease of the Fetus & Newborn

DID YOU KNOW?

Hemolytic disease of the fetus & newborn is a rare blood disorder.

When the mother's and infant's blood types are incompatible, the mother's antibodies attack the baby's red blood cells.





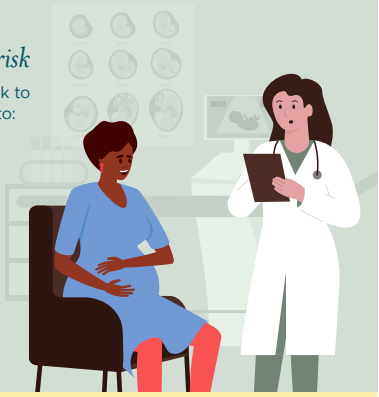
HDFN can lead to:

- **Severe anemia**
- **Jaundice**
- Fetal or infant **death**

To reduce their baby's risk

pregnant mothers should talk to their health care provider to:

- **Identify** potential blood incompatibilities
- **Monitor** the baby
- **Treat** the condition if it occurs



NCfIH National Coalition for Infant Health

Protecting Access for Premature Infants through Age Two

LEARN MORE ▸

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

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

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

*Source: Respirator Syncytial Virus and African Americans

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

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

AfPA Alliance for Patient Access

COVID-19

FREE for our NICU COMMUNITY

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



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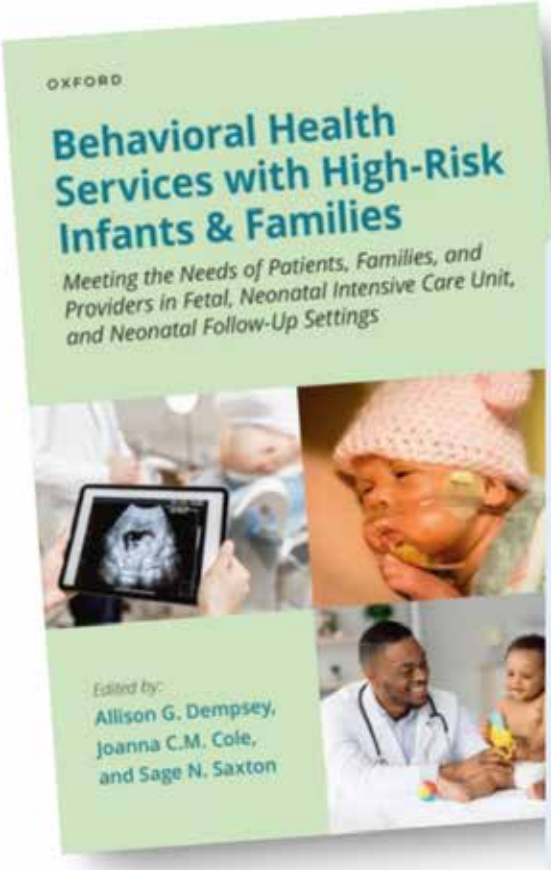
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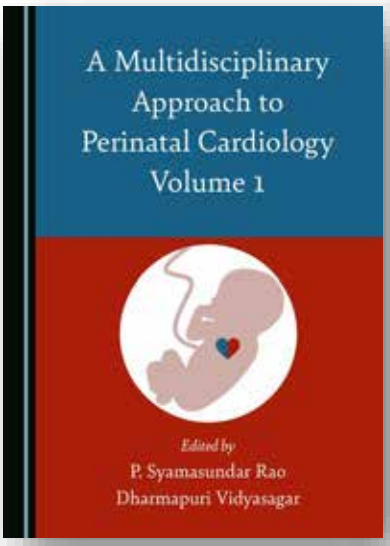
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A Multidisciplinary Approach to Perinatal Cardiology *Volume 1*

Edited by P. Syamasundar Rao and Dharmapuri Vidyasagar



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£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.

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My Perinatal Network

National Perinatal Association + NICU Parent Network

Online L&D Staff Education Program

Caring for Pregnant Patients & Their Families:

Providing Psychosocial Support During Pregnancy, Labor and Delivery

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Continuing education credits provided by

pac-lac

About the Program

- **WHO SHOULD TAKE THE PROGRAM?** This program is designed for both office and hospital staff in all disciplines that interact with pregnant patients and their families. A key focus is recognizing risk factors for perinatal mood and anxiety disorders, and mitigating their impact through provision of trauma-informed care.

- **WHY TAKE THE PROGRAM?** Families will benefit when staff have improved skills, through enhanced parental resilience and better mental health, and improved parent-baby bonding leading to better developmental outcomes for babies. Benefits to staff include improved skills in communicating with patients; improved teamwork, engagement and staff morale; reduced burnout, and reduced staff turnover.

- **HOW DOES THE PROGRAM ACHIEVE ITS GOALS?** Program content is representative of best practices, engaging and story-driven, resource-rich, and developed by a unique interprofessional collaboration of obstetric and neonatal professionals and patients. The program presents practical tips and an abundance of clinical information that together provide solutions to the emotional needs of expectant and new parents.

- **HOW WAS THE PROGRAM DEVELOPED?** This program was developed through collaboration among three organizations: a multidisciplinary group of professionals from the National Perinatal Association and Patient + Family Care, and parents from the NICU Parent Network. The six courses represent the different stages of pregnancy (antepartum, intrapartum, postpartum), as well as perinatal mood and anxiety disorders, communication techniques, and staff support.

Program Objectives

- Describe principles of trauma-informed care as standards underlying all communication during provision of maternity care in both inpatient and outpatient settings.
- Identify risk factors, signs, and symptoms of perinatal mood and anxiety disorders; describe treatment options.
- Define ways to support pregnant patients with high-risk conditions during the antepartum period.
- Describe obstetric violence, including ways that providers may contribute to a patient's experience of maternity care as being traumatic; equally describe ways providers can mitigate obstetric trauma.
- Describe the importance of providing psychosocial support to women and their families in times of pregnancy loss and fetal and infant death.
- Define the Fourth Trimester, and identify the key areas for providing psychosocial support to women during the postpartum period.
- Identify signs and symptoms of burnout as well as their ill effects, and describe both individual and systemic methods for reducing burnout in maternity care staff.

Continuing education credits will be provided for physicians, clinic and bedside nurses, social workers, psychologists, and licensed marriage and family therapists. CEUs will be provided by Perinatal Advisory Council: Leadership, Advocacy, and Consultation.

PROGRAM CONTENT



COMMUNICATION SKILLS CEUs offered: 1

Learn principles of trauma-informed care, use of universal precautions, how to support LGBTQ patients, obtaining informed consent, engaging in joint decision-making, delivering bad news, dealing with challenging patients.

Faculty: Amina White, MD, MA, Clinical Associate Professor, Department of OB/Gyn, University of North Carolina, Chapel Hill, NC; Sue Hall, MD, MSW, FAAP, St. John's Regional Medical Center, Oxnard, CA; Karen Saxer, CNM, MSN, University of North Carolina Maternal-Fetal Medicine, UNC Women's Hospital, Chapel Hill, NC; Tracy Pella, Co-Founder & President, Connected Forever, Tecumseh, NE.



PERINATAL MOOD AND ANXIETY DISORDERS CEUs offered: 1

Identify risk factors for and differential diagnosis of PMADs (perinatal mood and anxiety disorders), particularly perinatal depression and/or anxiety and posttraumatic stress syndrome. Learn the adverse effects of maternal depression on infant and child development, and the importance of screening for and treating PMADs.

Faculty: Linda Baker, PsyD, psychologist at Unstuck Therapy, LLC, Denver, CO; Sue Hall, MD, MSW, FAAP, neonatologist at St. John's Regional Medical Center, Oxnard, CA; Angela Davids, Founder of Keep 'Em Cookin', Baltimore, MD; Brittany Boet, Founder of Bryce's NICU Project, San Antonio, TX.



PROVIDING ANTEPARTUM SUPPORT CEUs offered: 1

Identify psychosocial challenges facing high risk OB patients, and define how to provide support for them, whether they are inpatient or outpatient. Recognize when palliative care is a reasonable option to present to pregnant patients and their families.

Faculty: Amina White, MD, MA, Clinical Associate Professor, Department of OB/Gyn, University of North Carolina, Chapel Hill, NC; Sue Hall, MD, MSW, FAAP, neonatologist at St. John's Regional Medical Center, Oxnard, CA; Angela Davids, Founder of Keep 'Em Cookin', Baltimore, MD; Erin Thatcher, BA, Founder and Executive Director of The PPROM Foundation, Denver, CO.



PROVIDING INTRAPARTUM SUPPORT CEUs offered: 1

Describe how to manage patient expectations for labor and delivery including pain management; identify examples of obstetric violence, including identification of provider factors that may increase patients' experience of trauma; learn how to mitigate patients' trauma, and how to provide support during the process of labor and delivery.

Faculty: Sara Detlefs, MD, Fellow in Maternal-Fetal Medicine, Baylor College of Medicine, Houston, TX; Jerry Ballas, MD, MPH, Associate Clinical Professor, UCSD Health System, Maternal-Fetal Medicine, Department of Obstetrics, Gynecology and Reproductive Sciences, University of California at San Diego, San Diego, CA; MaryLou Martin, MSN, RNC-NIC, CKC, Women's and Children's Services Nurse Educator, McLeod Regional Medical Center, McLeod, SC; Claire Hartman, RN, IBCLC, Labor & Delivery, University of North Carolina Hospital, Chapel Hill, NC; Crystal Duffy, Author of Twin To Twin (from High Risk Pregnancy to Happy Family), and NICU Parent Advisor, Houston, TX; Erin Thatcher, Founder and Executive Director of The PPROM Foundation, Denver, CO.



PROVIDING POSTPARTUM SUPPORT CEUs offered: 1

Define the 4th Trimester and the importance of follow-up especially for high risk and minority patients, learn to recognize risk factors for traumatic birth experience and how to discuss patients' experiences postpartum; describe the application of trauma-informed care during this period, including support for patients who are breastfeeding and those whose babies don't get to go home with them.

Faculty: Amanda Brown, CNM, University of North Carolina Hospital, Chapel Hill, NC; ; Sue Hall, MD, MSW, FAAP, neonatologist at St. John's Regional Medical Center, Oxnard, CA; Crystal Duffy, Author of Twin To Twin (from High Risk Pregnancy to Happy Family), and NICU Parent Advisor, Houston, TX.



SUPPORTING STAFF AS THEY SUPPORT FAMILIES CEUs offered: 1

Define burnout and compassion fatigue; identify the risks of secondary traumatic stress syndrome to obstetric staff; describe adverse impacts of bullying among staff; identify the importance of both work-life balance and staff support.

Faculty: Cheryl Milford, EdS, Consulting NICU and Developmental Psychologist, Director of Development, National Perinatal Association, Huntington Beach, CA; Sue Hall, MD, MSW, FAAP, neonatologist at St. John's Regional Medical Center, Oxnard, CA; Erin Thatcher, BA, Founder and Executive Director, The PPROM Foundation, Denver, CO

Cost

- RNs: $10/CEU; $60 for the full program
- Physicians, licensed clinical social workers (LCSWs), licensed marriage and family therapists (LMFTs): $35/CEU; $210 for the full program
- Although PACLAC cannot award CEs for certified nurse midwives, they can submit certificates to their own professional organization to request credit. $35/CEU; $210 for the full program

Contact help@myperinatalnetwork.org to learn more.

Faculty

Linda Baker, PsyD
Psychologist at Unstuck Therapy, LLC, Denver, CO.

Jerasimos (Jerry) Ballas, MD, MPH
Associate Clinical Professor, UCSD Health System, Maternal-Fetal Medicine, Department of Obstetrics, Gynecology and Reproductive Sciences, University of California at San Diego, San Diego, CA.

Amanda Brown, CNM, MSN, MPH
University of North Carolina-Chapel Hill Hospitals, Chapel Hill, NC.

Sara Detlefs, MD
Fellow in Maternal-Fetal Medicine, Baylor College of Medicine, Houston, TX.

Sue L. Hall, MD, MSW, FAAP
Neonatologist, Ventura, CA.

Claire Hartman, RN, IBCLC
Labor & Delivery, University of North Carolina Hospital, Chapel Hill, NC.

MaryLou Martin, MSN, RNC-NIC, CKC
Women's and Children's Services Nurse Educator, McLeod Regional Medical Center, McLeod, SC.

Cheryl Milford, EdS.
Former NICU and Developmental psychologist, in memoriam.

Karen Saxer, CNM, MSN
University of North Carolina Maternal-Fetal Medicine, UNC Women's Hospital, Chapel Hill, NC.

Amina White, MD, MA
Clinical Associate Professor, Department of Obstetrics and Gynecology, University of North Carolina, Chapel Hill, NC.

Parent/Patient Contributers:

Brittany Boet
Founder, Bryce's NICU Project, San Antonio, TX.

Angela Davids
Founder, Keep 'Em Cookin', Baltimore, MD.

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Tracy Pella, MA
Co-Founder and President, Connected Forever, Tecumseh, NE.

Erin Thatcher, BA
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CANCELLATIONS AND REFUNDS

- For Individual Subscribers:
  - If you elect to take only one course, there will be no cancellations or refunds after you have started the course.
  - If you elect to take more than one course and pay in advance, there will be no cancellations or refunds after payment has been made unless a written request is sent to help@myperinatalnetwork.com and individually approved.
- For Institutional Subscribers:
  - After we are in possession of a signed contract by an authorized agent of the hospital and the program fees have been paid, a 50% refund of the amount paid will be given if we are in receipt of a written request to cancel at least 14 (fourteen) days prior to the scheduled start date for your hospital's online program.
  - Refunds will not be given for staff members who neglect to start the program. Also, no refunds for those who start the program, but do not complete all 6 courses within the time frame allotted.

For Physicians: This activity has been planned and implemented in accordance with the Institute for Medical Quality and the California Medical Association's CME Accreditation Standards (IMQ/CMA) through the Joint Providership of the Perinatal Advisory Council: Leadership, Advocacy and Consultation (PAC/LAC) and the National Perinatal Association. PAC/LAC is accredited by the Institute for Medical Quality/California Medical Association (IMQ/CMA) to provide continuing education for physicians. PAC/LAC takes responsibility for the content, quality and scientific integrity of this CME activity. PAC/LAC designates this activity for a maximum of 6 *AMA PRA Category 1 Credit(s)TM*. Physicians should only claim credit commensurate with the extent of their participation in the activity. This credit may also be applied to the *CMA Certification in Continuing Medical Education*.

For Nurses: The Perinatal Advisory Council: Leadership, Advocacy and Consultation (PAC/LAC) is an approved provider by the California Board of Registered Nursing Provider CEP 5862. When taken as a whole, this program is approved for 7 contact hours of continuing education credit.

For CAMFT: Perinatal Advisory Council: Leadership, Advocacy, and Consultation (PAC/LAC) is approved by the California Association of Marriage and Family Therapists to sponsor continuing education for LMFTs and LCSWs. CE Provider #128542. PAC/LAC maintains responsibility for the program and its content. Program meets the qualifications for 6 hours of continuing education credit for LMFTs and LCSWs as required by the California Board of Behavioral Sciences. You can reach us at help@myperinatalnetwork.org.

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

KEEPING MOTHERS + INFANTS TOGETHER

Means balancing the risks of...

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





EVIDENCE

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

PARTNERSHIP

What is the best for this unique dyad?

SHARED DECISION-MAKING

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





TRAUMA-INFORMED

Both parents and providers are confronting significant...

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

LONGITUDINAL DATA

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

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



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

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Will mental illness be the next inevitable pandemic?

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are products of a collaboration between NPA and NPN.
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Alliance for Patient Access: Preterm Births on the Rise, Again

Josie Cooper

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

AfPA | Alliance for Patient Access

IfPA | Institute for Patient Access

"After a decade of progress, preterm birth rates are once again headed in the wrong direction. From 2013 to 2023, the national rate rose from 9.8 to 10.4 percent, at least partly attributable to increased reporting from rural hospitals and local health departments. (1)"

After a decade of progress, preterm birth rates are once again headed in the wrong direction. From 2013 to 2023, the national rate rose from 9.8 to 10.4 percent, at least partly attributable to increased reporting from rural hospitals and local health departments. (1)

Now, bipartisan support is rallying around the PREEMIE Act. (2) The pending legislation has united policymakers, researchers, healthcare providers, and families around advocating for policies and systems that can reduce the risk of preterm birth.

A Growing Crisis in Infant Health:

More than 10% of live births — over a quarter of a million babies — were delivered preterm in 2023, the most recent data available. The rates were highest in the southern and midwestern states and among mothers without access to advanced prenatal screenings and care.

"Reauthorizing data collection at the Centers for Disease Control and Prevention and the Department of Health and Human Services would be another beneficial outcome of passing the PREEMIE Reauthorization. (4)"

Recent funding and staffing disruptions impacting a team that monitors infant mortality will present extra challenges for data continuity. (3) Reauthorizing data collection at the Centers for Disease Control and Prevention and the Department of Health and Human Services would be another beneficial outcome of passing the PREEMIE Reauthorization. (4)

Many Causes, One Urgent Problem:

A wide range of factors contribute to premature birth, including maternal age, access to health insurance, cigarette smoking, and the mother's socioeconomic resources. The burden falls especially hard on Black and Indigenous mothers, who continue to have disproportionately high rates of early births and related complications. Obesity, hypertension, and substance use can also put mothers and babies at risk. (5)

"The burden falls especially hard on Black and Indigenous mothers, who continue to have disproportionately high rates of early births and related complications. Obesity, hypertension, and substance use can also put mothers and babies at risk. (5)"

Maternal complications like high blood pressure and preeclampsia also contribute to preterm births, and the resurgence of flu and RSV after the end of COVID-19 precautions likely contributed to infant mortality. (6) However, the evidence supports prenatal interventions, including screening and vaccination during pregnancy, to reduce these risks.

Babies born along with their siblings as twins or triplets, as well

as those born within 18 months of a previous pregnancy, are at higher risk of being born early. The increased use of reproductive technology and in vitro fertilization has raised the rate of multiple births in recent decades. (7)

Access to care and socioeconomic indicators of health, such as income, education, and occupation, are complex, interrelated issues, but they are not insurmountable. With the right tools and targeted support, many preterm births can be prevented.

How the PREEMIE Act Can Help:

The PREEMIE Act, if renewed, will continue critical federal work that has already made a difference in protecting the nation's youngest residents. The Act supports research, public education, and community interventions designed to reduce the incidence of preterm birth.

By reauthorizing and updating this framework, Congress can help healthcare providers have access to cutting-edge research and evidence-based strategies to aid expectant mothers with healthy, full-term pregnancies.

"Congress would be wise to act swiftly and pass this reauthorization so more infants have the support they need to thrive."

Every baby deserves a healthy start, and every mother deserves the care and resources to support her child's best chance to thrive. The PREEMIE Act provides both. Congress would be wise to act swiftly and pass this reauthorization so more infants have the support they need to thrive.

References:

1. https://apnews.com/article/infant-deaths-us-cdc-mortality-c808796da0415b6ecc0629938421e1b5
2. https://www.congress.gov/bill/118th-congress/house-bill/3226
3. https://archive.is/Sdww8
4. https://www.marchofdimes.org/sites/default/files/2023-09/OGA23-054-MOD-PREEMIE-v12.pdf
5. https://www.marchofdimes.org/peristats/reports/united-states/prematurity-profile
6. https://www.mayoclinic.org/diseases-conditions/preeclampsia/symptoms-causes/syc-20355745
7. https://www.statista.com/statistics/276022/us-multiple-birth-rate/

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Disclosure: *Josie Cooper is the Executive Director of the Alliance for Patient Access. This article was also published at healthpolicytoday.org.*

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Corresponding Author



Josie Cooper
Executive Director
Institute for Patient Access
2020 K Street NW, Suite 505
Washington, DC 20006
Telephone: (202) 951-7095
Email: jcooper@woodberryassociates.com



Immunizing Yourself Against **COVID-19**

COVID-19 vaccines have been shown to:

- Lessen the severity of symptoms[1]
- Reduce disease transmission[3]
- Reduce risk of mortality[2]
- Make communities healthier and safer[4]

Understanding the Options

COVID-19 vaccines are available for children, adolescents and adults. There are 3 types to choose from.

mRNA VACCINES

New to market, but research has been ongoing since the 1990s.

HOW THEY WORK: **Instruct cells to make COVID-like proteins that trigger the immune system to fight the virus.**

PROTEIN SUBUNIT VACCINES

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

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

VECTOR VACCINES

Used for decades against chickenpox, malaria and tuberculosis.

Use a modified virus, such as a common cold, to teach the body to fight off COVID.

COVID vaccines are recommended for everyone ages 6 months and older, and boosters for everyone ages 5 years and older, if eligible.[5]

Safe and Sound

COVID vaccines have been:

- **Thoroughly tested** through multi-phase trials with tens of thousands of participants[6]
- **Proven safe and effective** for adults as well as children[7]
- **Vetted and approved** by the US FDA and EMA and endorsed by the WHO[8-10]

Get Your Jab

Vaccines are available at your:

- **Doctor's office**
- **Neighborhood pharmacy**
- **Community health center**



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

1. https://www.mayoclinic.org/diseases-conditions/coronavirus/symptoms-causes/syc-20479963
2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8782520/
3. https://www.nejm.org/doi/full/10.1056/nejmc2107717
4. https://royalsocietypublishing.org/doi/full/10.1098/rsif.2020.0683
5. https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html
6. https://doh.wa.gov/emergencies/covid-19/vaccine-information/safety-and-effectiveness
7. https://doh.wa.gov/emergencies/covid-19/vaccine-information/safety-and-effectiveness
8. https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/covid-19-vaccines
9. https://www.ema.europa.eu/en/human-regulatory/overview/public-health-threats/coronavirus-disease-covid-19/treatments-vaccines/vaccines-covid-19/covid-19-vaccines-authorised
10. http://www.bccdc.ca/Health-Info-Site/Documents/COVID-19_vaccine/WHO-EUA-qualified-covid-vaccines.pdf

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Still a **Preemie?**

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

But that's not every preemie's story.

Born between 34 and 36 weeks' gestation?

STILL A PREEMIE

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

Jaundice | Feeding issues | Respiratory problems

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



Born preterm at a "normal" weight?

STILL A PREEMIE

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

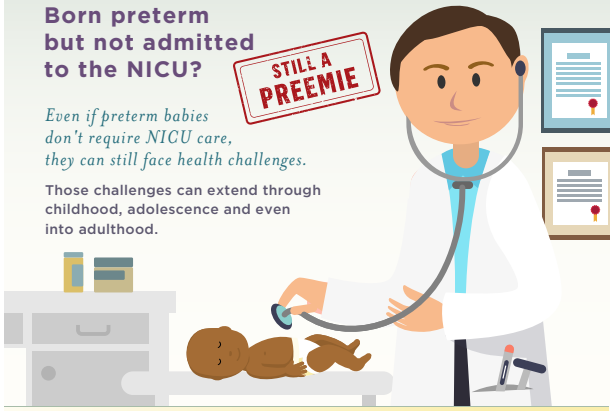
But because some health plans determine coverage based on a preemie's weight, **families of babies that weigh more may face access barriers and unmanageable medical bills.**

Born preterm but not admitted to the NICU?

STILL A PREEMIE

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

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



Some Preemies

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

All Preemies

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

NCfIH National Coalition for Infant Health

Protecting Access for Premature Infants through Age Two

www.infanthealth.org

The Gap Baby: An RSV Story



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



The National Coalition for Infant Health advocates for:

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

www.infanthealth.org

Rise of the Young Force: Empowering Pediatric Voices This May (A Star Wars-inspired tribute in honor of "May the Fourth")

Sabina Schmidt Goldstein-Becerra

iCAN
International Children's Advisory Network

Get involved today and Join the iCAN Parent Council!

"iCAN, the International Children's Advisory Network, is the premier global pediatric platform empowering the patient voice in healthcare, driven by youth for youth. As a worldwide consortium of 40 KIDS' (Kids Impacting Disease through Science) advisory groups spanning four continents, including one virtual chapter, iCAN's dedicated youth member groups work in unison around the world to provide a voice for children and families in medicine, research, science, and innovation, to foster greater global understanding about the importance of the pediatric patient and caregiver voice in healthcare, clinical trials, and research."

iCAN, the International Children's Advisory Network, is the premier global pediatric platform empowering the patient voice in healthcare, driven by youth for youth. As a worldwide consortium of 40 KIDS' (Kids Impacting Disease through Science) advisory groups spanning four continents, including one virtual chapter, iCAN's dedicated youth member groups work in unison around the world to provide a voice for children and families in medicine, research, science, and innovation, to foster greater global understanding about the importance of the pediatric patient and caregiver voice in healthcare, clinical trials, and research. On average, our youth are ages 8-18 years old, most of whom are living with chronic, rare, and complicated diagnoses, though a few of our youth have no medical diagnoses or medical conditions. iCAN values and understands that all patients, even the youngest, often have ideas that can help improve their healthcare experiences.

"To foster diversity, all children from anywhere may freely join iCAN. iCAN also supports young adults' and parents' voices, many of whom have young people who cannot share their voices."

To foster diversity, all children from anywhere may freely join iCAN. iCAN also supports young adults' and parents' voices, many of whom have young people who cannot share their voices. We continue to be a collaboration between the American Academy of Pediatrics (AAP) Section on Advances in Therapeutics and Technology (SOATT), Georgia Institute of Technology (the GT Pediatric Innovation Network), local AAP Chapters, children's hospitals, local academia, and other non-profits. We aim to get our youth where they need to be to have their voices heard. Our outstanding youth make a difference in pediatric healthcare through interactions with industry, by presenting original research at conferences, by innovating new solutions, by empowering the pediatric patient voice in healthcare worldwide, and by telling their stories at conferences and to organizations like the FDA, iACT, NIH, NORD, CDC, and AAP. Whether you are a patient, family member, healthcare professional, or supporter of the cause, we welcome you to visit our website at icanresearch.org to learn more about our mission, various programs, and initiatives. Join us 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.

Number of Projects with Kids and Parents Sharing Their Voices from January 2025 to May 2025: 14

Welcoming two new chapters to the iCAN Family this Month: KIDS Research & KIDS Virginia

From Isolation to Inspiration: Katy's Mission to Build CP Strong

Click Here to Watch the Full Episode



On May 3, we welcomed Katy, founder and executive director of CP Strong, as our featured speaker. Her story is one of resilience and leadership- a journey that began with a feeling of isolation and grew into a thriving community for people with cerebral palsy.

"Until her twenties, Katy had not met another person with CP. Instead of letting that isolation define her, she took action. She started CP Strong as a simple online space where people with CP could connect and support one another. Since then, it has become a welcoming organization offering resources, events, and a sense of belonging to many people living with CP."

Until her twenties, Katy had not met another person with CP. Instead of letting that isolation define her, she took action. She started CP Strong as a simple online space where people with CP could connect and support one another. Since then, it has become a welcoming organization offering resources, events, and a sense of belonging to many people living with CP.

CP Strong is more than just a community- it is a place where people find strength, encouragement, and a voice. Under Katy's thoughtful leadership, the organization has become a vital resource for many who might otherwise feel overlooked.

During her talk, Katy encouraged everyone to listen to their passions and find the people who believe in their vision. Her message was clear and honest: building a community and working together is key to making a real difference.

Thank you, Katy, for sharing your story and your work with CP Strong. Your commitment reminds us how much can be achieved when people come together.

Stay tuned for more updates and chances to connect with leaders like Katy.

Want to be part of our next *Ask the Experts* session?

Please reach out to sabina@icanresearch.org.

Mark your calendars- iCAN invites you to another installment of *Ask the Experts* on June 21!

Empowering the Next Generation: KIDS Walter Payton at the Forefront of Pediatric Health

Register Here



This June, we are honored to welcome KIDS Walter Payton.

Session Details:
Date: Saturday, June 21, 2025
Time: 8:00 AM PST / 11:00 AM EST

About KIDS Walter Payton:

KIDS Walter Payton is a school-based chapter of iCAN. As high school students passionate about making a difference, they work to bridge the gap between young people and the medical community by engaging in discussions, hosting guest speakers, and contributing to pediatric research initiatives.

"Their chapter is unique because many members do not personally experience chronic illnesses—yet they are deeply committed to the cause. They demonstrate that anyone can play a role in improving healthcare for children."

Their chapter is unique because many members do not personally experience chronic illnesses—yet they are deeply committed to the cause. They demonstrate that anyone can play a role in improving healthcare for children. Their meetings, projects, and collaborations aim to educate, raise awareness, and inspire other

young people to get involved in pediatric healthcare.

By balancing their iCAN responsibilities with high school's many extracurricular opportunities, they bring a fresh perspective to youth engagement in medicine, innovation, and research. Whether connecting with healthcare professionals, sharing insights on clinical trials, or leading discussions on patient-centered care, KIDS Walter Payton is dedicated to amplifying youth voices in pediatric healthcare.

iCAN KIDS Spotlight

Anvita – iCAN Youth Member and Emerging Leader in Pediatric Health



We are excited to highlight Anvita, a dedicated youth member of iCAN who has been a founding member of KIDS CHOC for the past two years. Throughout her involvement, Anvita has become a powerful voice in pediatric healthcare, ensuring that children's perspectives are central to medical research and treatment conversations.

Anvita's commitment to advancing pediatric medical research is evident through her collaboration with the Multi-Regional Clinical Trials Center (MRCT) at Brigham and Women's Hospital and Harvard. She was featured in a video that shares her journey and sheds light on a critical issue in pediatric healthcare: the urgent need for medical tests and treatments designed specifically for children, teens, and young adults. Her message is clear—simply adapting adult medications is insufficient to meet the unique needs of younger patients.

"In the video, Anvita openly discusses the challenges she faced swallowing pills, a difficulty shared by many children undergoing medical treatment. She was surprised and concerned to learn that even younger children than herself are expected to manage the same challenge, an issue many healthcare systems have yet to address fully."

In the video, Anvita openly discusses the challenges she faced swallowing pills, a difficulty shared by many children undergoing medical treatment. She was surprised and concerned to learn that even younger children than herself are expected to manage the same challenge, an issue many healthcare systems have yet to address fully. This story highlights a significant gap in pediatric medicine development that often fails to consider the physical and developmental differences between children and adults.

By sharing her experience, Anvita emphasizes the importance of creating age-appropriate medication formulations and delivery methods that are easier for young patients to take. Such improvements enhance treatment adherence and alleviate stress and discomfort for children and their families. Through this video, she encourages researchers, clinicians, and pharmaceutical companies to prioritize pediatric needs and actively engage with young patients to understand their challenges better.

Beyond telling her story, Anvita actively fosters collaboration and dialogue among healthcare professionals, researchers, and fellow youth members. She champions a patient-centered approach to pediatric care, including children's voices at every stage. Her participation in the Take Steps OC event, hosted by the Crohn's and Colitis Foundation alongside fellow iCAN Youth Members Fiona and Sofia, exemplifies her dedication to raising awareness and building a supportive community around pediatric health issues.

Anvita's thoughtful leadership and passion for pediatric healthcare embody iCAN's mission to empower youth voices and foster meaningful collaboration between young people and the medical community. Her ongoing efforts inspire her peers, healthcare professionals, and researchers, demonstrating the profound impact that genuine youth engagement can have. Through her work, Anvita is helping to shape a future where pediatric medicine truly meets the needs of the children it serves.

KIDS South Africa Visits Cryo Storage Facility







KIDS South Africa visited a cryo-storage facility to learn about the important role of cryopreservation in scientific research. During the visit, a scientist at the facility explained how biological samples such as blood and tissue are stored at extremely low temperatures using liquid nitrogen. She shared how this process helps preserve samples for long periods, supporting future research and medical advancements.

"KIDS South Africa visited a cryo-storage facility to learn about the important role of cryopreservation in scientific research. During the visit, a scientist at the facility explained how biological samples such as blood and tissue are stored at extremely low temperatures using liquid nitrogen."

The kids could see the cryo storage tanks and understand how careful handling and advanced technology ensure these materials remain viable for scientific study. This educational experience showed the kids firsthand how science and technology work together to support innovation and discovery. Thank you to their chapter leader, Kelvin, for facilitating such a fantastic experience!

iCAN Youth Lead the Way: A Milestone Event in Athens





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Please submit your manuscript to: LomaLindaPublishingCompany@gmail.com



Earlier this month, iCAN youth members participated in the first Young Persons' Advisory Group (YPAG) Training Meeting in Athens, held on May 2–3. This powerful event was made possible through the collaboration of ERDERA and the TEDDY Network and marked a significant advancement in youth engagement within global healthcare and research initiatives.

Representing iCAN, our young took center stage, actively participating in workshops, discussions, and knowledge-sharing sessions with researchers, clinicians, and healthcare professionals across Europe. The training was designed to prepare and empower youth to take on more meaningful roles within clinical research and share their stories.

With a shared goal to elevate the voices of young patients, our iCAN members demonstrated the power of youth leadership—bringing lived experiences, insightful questions, and bold ideas to the forefront of conversations that shape the future of medicine, research, and rare disease innovation.

What made the experience especially impactful was the sense of community that emerged. Youth from across the continent connected deeply over their shared commitment to making healthcare more patient-centered.

As we reflect on this event, iCAN is proud of our youth leaders who continue to shape the future of pediatric care. Their presence in Athens is just one example of the global movement iCAN is building- where youth are not only invited to the table but are helping to lead the way.

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iCAN Mentor Spotlight



This month, we are proud to highlight Gwyneth Mogg-Hall —a dedicated mentor, connector, and champion for youth voices in healthcare. As a passionate leader at Pfizer, Gwyn goes above and beyond to build bridges across teams, ensuring that young patients' insights and experiences are heard and valued.

"Gwyn is a true ambassador for iCAN, regularly sharing our mission and work with her colleagues and expanding our reach across the pharmaceutical and research community. Her ability to make meaningful connections and create collaboration opportunities helps amplify our members' voices on a global scale."

Gwyn is a true ambassador for iCAN, regularly sharing our mission and work with her colleagues and expanding our reach across the pharmaceutical and research community. Her ability to make meaningful connections and create collaboration opportunities helps amplify our members' voices on a global scale.

In addition to her role at Pfizer, Gwyn serves on the iCAN Advisory Board, offering strategic guidance and unwavering support. Her perspective, leadership, and heart have impacted our organization, and we are so grateful for her commitment to empowering young



people and promoting patient-centered care.

Thank you, Gwyn, for being a mentor, a connector, and a true champion of the iCAN mission!

Upcoming Virtual Event: iCAN's Executive Director, Sabina Goldstein-Becerra, and Biomotum's CEO, Ray Browning, to Share How Patient Engagement Informs MedTech

We are excited to share that Sabina Goldstein-Becerra, Executive Director of iCAN, will speak alongside Ray Browning, CEO of Biomotum, at an upcoming virtual event titled "Defining the Value and ROI of Patient Engagement in Medtech Product Development." Co-hosted by FasterCures at the Milken Institute and the FDA's Center for Devices and Radiological Health (CDRH), this important session will occur on Wednesday, June 11, from 10:00 AM to 12:30 PM PST.

"During the session, 'Case Examples of Impactful Patient Engagement,' Sabina and Ray will discuss how Biomotum engaged with the iCAN community through a three-phase feedback cycle to gather input and shape the development of the SPARK device, which is specifically designed to support individuals with mobility issues."

During the session, "Case Examples of Impactful Patient Engagement," Sabina and Ray will discuss how Biomotum engaged with the iCAN community through a three-phase feedback cycle to gather input and shape the development of the SPARK device, which is specifically designed to support individuals with mobility issues. They will highlight how involving patients in the design process helped Biomotum create a product that better meets the needs of children and families with mobility challenges.

This is a fantastic opportunity to hear firsthand how patient engagement drives innovation in medtech and learn more about the collaborative journey behind the SPARK device.

Register here: Event Registration

Spring Into Auction: A Wonderful Success-and Another One Is Coming!

We are excited to share that our recent Spring Into Auction was a fantastic success! Thanks to our amazing donors and your incredible support and participation, we raised the necessary funds to continue empowering children and families through our community programs and scientific outreach.

The generosity and enthusiasm of everyone made this event truly special, and we are so grateful for each bid that helped make a difference.

But the excitement does not stop here; we are already planning another auction to kick off the summer! Stay tuned for details on how you can join us again to support this important cause and bid on even more amazing items and experiences.

Thank you for being part of our community and helping us make an impact!



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Presented by Jumo Health

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July 14-17

Register Here



Get ready for an unforgettable experience at the 2025 iCAN Summit in the vibrant city of Montreal! From July 14-17, join us at the incredible Delta Hotel (Marriott) in the heart of Montreal's entertainment district. This is your chance to be part of a movement shaping the future of pediatric healthcare- providing kids and their families the opportunity to collaborate with researchers, innovators, clinicians, and industry leaders to drive change in the field from the ground up.

Can You Guess? How Many Countries Will Be Represented at the 2025 iCAN Summit?

The 2025 iCAN Summit is just around the corner, bringing together amazing kids, families, and healthcare champions worldwide!

Here is a fun challenge for you:

How many countries will be represented at this year's Summit?

Share your answer on social media and tag @icanresearch.

We will reveal the official number during the Summit — and give a special shout-out to those who guess closest!

Our annual Summit is a transformative platform for innovation, compassion, and collaboration in pediatric healthcare. We invite you to be part of this life-changing event by contributing in two meaningful ways:

1. Sponsor the 2025 Summit: Your sponsorship will ensure an impactful experience for all attendees.
2. Sponsor a Child to Attend: Your sponsorship directly impacts a child's life by granting them the opportunity to attend the Summit in Canada. Your support will cover travel, accommodation, and participation, offering them a world of learning and empowerment.

Together, we are shaping a brighter future for pediatric healthcare. Your contribution—big or small—significantly impacts prioritizing the patient voice and driving positive change. Your generosity and dedication are deeply valued. Let us unite in Canada to create a summit experience that will empower the pediatric community for years.

"Your contribution—big or small—significantly impacts prioritizing the patient voice and driving positive change. Your generosity and dedication are deeply valued. Let us unite in Canada to create a summit experience that will empower the pediatric community for years."

Let us work together to make our 2025 Summit even bigger by bringing more kids to share their voices! To contribute to the funding for next year's Summit, please click here to sponsor or donate.

Disclosures: *There are no reported disclosures*

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Corresponding Author



Sabina Schmidt Goldstein-Becerra
Executive Director
Website: www.icanresearch.org
Phone: (+1) 818-256-7120
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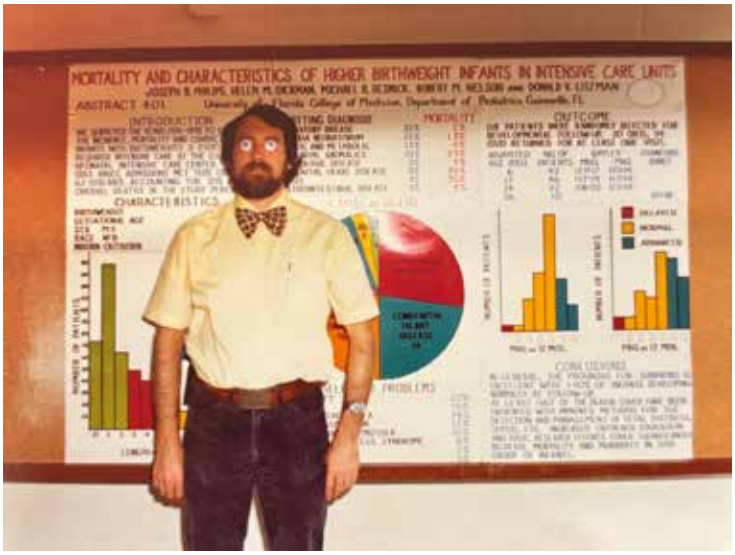


The 1980 SPR/APS Meeting, Oral Pediatric Boards, and Newborn Dinner

Joseph B. Philips, III, MD, FAAP, Marilyn Escobedo, MD, FAAP

JBP – This was my first national meeting before it became the Pediatric Academic Societies meeting. It was held in San Antonio, Texas. I had a poster presentation, "Mortality and Characteristics of Higher Birthweight Infants in Intensive Care Units" (1). There were no personal computers back then, and professional illustrators were very expensive, so, with the help of several lab folks, we prepared the poster using white poster board, magic markers, and colored transparent plastic sheets, which we pasted onto the poster boards (Figure 1).

Figure 1. A young Dr. Philips with his poster and plastic bug-out eyeballs.



The morning of my presentation I went to the restaurant in the Hilton Palacio del Rio where I was staying for breakfast. Being in the southwest, I ordered a southwestern omelet. I was not prepared for what happened with the first bite – a fiery thermonuclear explosion in my mouth. I was raised in the South and not accustomed to such hot food. I drank a lot of milk and ate some fruit but did not take another bite of the omelet. Then, off I went to present my poster, my mouth still burning.

The poster presentation went well, and I do not remember what I did for lunch, but I vividly recall the afternoon and evening of the day. Oral American Board of Pediatrics examinations were scheduled for that afternoon. They were being held in a building near the hotel in the UT San Antonio downtown campus. My wife had convinced me to buy new shoes for the meeting as every pair I had was in pretty bad shape. I had not had time to break them in, so I acquired several blisters over the course of the morning, which subsequently ruptured and made walking quite painful.

About 40 of us assembled in a large waiting area in the UT building early in the afternoon. And we waited, waited, and waited, and waited some more. With each passing moment, the tension increased. Several people had brought their copies of Nelson's Textbook of Pediatrics and were busily trying to cram in last-minute knowledge. Finally, we were sent to our first assigned rooms, and the examinations began. However, about 5 minutes in, there was a loud ruckus in the hallway, and everything stopped. One unfortunate fellow was greeted by his first examiner, an elderly gentleman in a three-piece suit who extended his hand and introduced himself as Waldo Nelson, who was the editor of his eponymous textbook. The poor guy fainted. The examinations resumed once he was revived with rebreathing in a paper sack. I had Dr. Nelson later on, and he was quite nice and down-to-earth despite his enormous stature.

I limped back to my hotel after the examinations, which mercifully are no longer held, and acquired some Band-Aids in the gift shop before going to my room to bandage my sores. I could see the preparations for the Newborn Dinner from my room. It looked cool, but I could see an ominous black cloud in the distance.

"Oral American Board of Pediatrics examinations were scheduled for that afternoon... And we waited, waited, and waited, and waited some more. With each passing moment, the tension increased. Several people had brought their copies of Nelson's Textbook of Pediatrics and were busily trying to cram in last-minute knowledge. Finally, we were sent to our first assigned rooms, and the examinations began. However, about 5 minutes in, there was a loud ruckus in the hallway, and everything stopped. One unfortunate fellow was greeted by his first examiner, an elderly gentleman in a three-piece suit who extended his hand and introduced himself as Waldo Nelson, who was the editor of his eponymous textbook. The poor guy fainted."

MBE – In the early days, the Newborn Dinner was organized each year for the SPR (now PAS) meeting by the AAP Neonatal Section for all the neonatologists who attended the meeting. As the newly minted Chief of Neonatology at the University of Texas Health Science Center at San Antonio, I was telephoned by Section leadership and told that I was expected to host the event. The local Ross (now Abbott) representative would help as the company sponsor. I was just a couple years out of fellowship with a 2-year-old, one on the way, and a hefty clinical load in an old downtown hospital with 6000 deliveries and a 26-bed NICU

for our faculty of 3. I had hardly ever hosted even a dinner party. Nevertheless, I was determined to make a good showing for San Antonio.

La Villita, the 300-year-old historic original Spanish settlement plaza on the banks of the San Antonio River, was chosen as the site. The best caterer in San Antonio, Rosemary, would set up booths around the plaza with different offerings at each: guacamole, tacos, tamales, chalupas, tortilla chips and salsa, churros, and even a station where tortillas were being handmade. Of course, a full bar would offer margaritas and anything else one could want. All of the servers would be in Mexican costume. I arranged for a children's folkloric dance group to perform and then break a traditional piñata. A mariachi group would provide musical entertainment. Riverboats were arranged to take neonatologists on a river ride. I bought sombreros for my two faculty neonatologists (and one fellow) to wear as they collected tickets at the entrances. I bought a special Mexican dress for myself.

"As the newly minted Chief of Neonatology at the University of Texas Health Science Center at San Antonio, I was telephoned by Section leadership and told that I was expected to host the event. The local Ross (now Abbott) representative would help as the company sponsor. I was just a couple years out of fellowship with a 2-year-old, one on the way, and a hefty clinical load in an old downtown hospital with 6000 deliveries and a 26-bed NICU for our faculty of 3. I had hardly ever hosted even a dinner party."

Of course, on the night of the Newborn Dinner, I arrived at the site well beforehand to see if everything was ready. It was a warm and lovely early evening in the first week of May. Everything looked perfectly in order. I looked up, and beyond the blue sky, I saw a great gray thundercloud on the horizon. It had not rained in months. However, at 6 pm, just as the crowd was arriving, the rain started and quickly became a deluge. All the servers in the booths grabbed their bowls and trays and accouterments and ran for cover. The only place to go was Bolivar Hall, the second floor, in one of the 300-year-old historic buildings on one side of the plaza. Needless to say, the space was inadequate. Instead of being able to move from one booth to another, everyone started to line up in a single serving line that took forever. Everyone was hungry. Many went to the bar. It was crowded. The mariachis played. The children danced. Then, the children took their bats to the piñata. Of course, my mentor, Millie Stahlman, was right in front of the crowd around the kids. I was sure she was going to be struck by a bat, and it would be my fault that this famous neonatologist would end up unconscious on the floor. Fortunately, the piñata broke before anything worse happened.

Meanwhile, the rain stopped, but the river rose so fast that it flooded the first floor of the Hilton Hotel, which was a short distance away. The riverboats were still operating. At least one neonatologist, Jack Kenny, fell overboard but was thankfully pulled back in quickly. At closing, Dewey Sehring, the top national Ross pro, told me that the bar had handed him the largest bill Ross had ever paid. (I was guilty of drinking two margaritas myself.). Needless to say, by the end of the evening, I was convinced that the party had been such a disaster that nobody would think that I was capable of anything ever again.

"I was convinced that the party had been such a disaster that nobody would think that I was capable of anything ever again. The next morning, I was hesitant to return to the meeting. Nevertheless, I got my courage up. When I got to the convention center, at the bottom of the up escalator, who would be standing there chatting but George Little and Al Brann, the leaders of the Section Executive Committee. I had not spotted them in time to avoid an encounter that would surely exacerbate my feelings of total failure. However, they greeted me with great smiles and genuine warmth, saying, "Marilyn, that was the BEST Newborn Dinner ever." I have never asked if they were just being very kind or telling the truth. Maybe it was the margaritas."

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JBP – I carefully avoided anything that would cause a repeat of my breakfast experience and thoroughly enjoyed the Perinatal Dinner despite the disruption and relocation. I took a ride on one of the river boats that evening. The boat I was in collided with the one in front, causing me to spill my beverage onto my crotch, making it seem like I had wet myself. Fortunately, it was dark, and I wore dark pants, so it was not too obvious.

Finally, after a very adventurous and eventful day, I returned to the hotel, only to find that the deluge had flooded the elevator

control rooms and knocked them out of commission. So, I climbed the 17 flights of stairs to my room and went to bed.

"As a footnote to my poster, I submitted a manuscript to one of the major pediatric journals and got back a very negative review stating that it was just a single-center study and, therefore, not very interesting. That summer, I moved to UAB, where the manuscript languished in a file for a couple of years while I got my lab up and running and settled in. One day, when I had time, I dusted it off and sent it to another journal. I got a review that said just shorten the abstract, and we'll publish it. This is a lesson to fellows and junior faculty reading this—if you go to all the trouble to write something, keep trying until you get it published somewhere."

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Authors note: Dr. Escobedo holds the American Board of Pediatrics Sub-Board of Neonatal-Perinatal Medicine certificate number 95, while Dr. Philips is far behind at 1005.

References:

1. Philips JB, Nelson RH, Resnick MB, and Eitzman DV. Mortality and Characteristics of Higher Birthweight Infants in Intensive Care Units. Pediatr. Res. 1980;14:492.

2. Philips JB, Dickman HM, Resnick MB, Nelson RM, and Eitzman DV. Characteristics, Mortality and Outcome of Higher Birthweight Infants Who Require Intensive Care. Am. J. Obstet. Gynecol. 1984;149:875–879.

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Corresponding Author

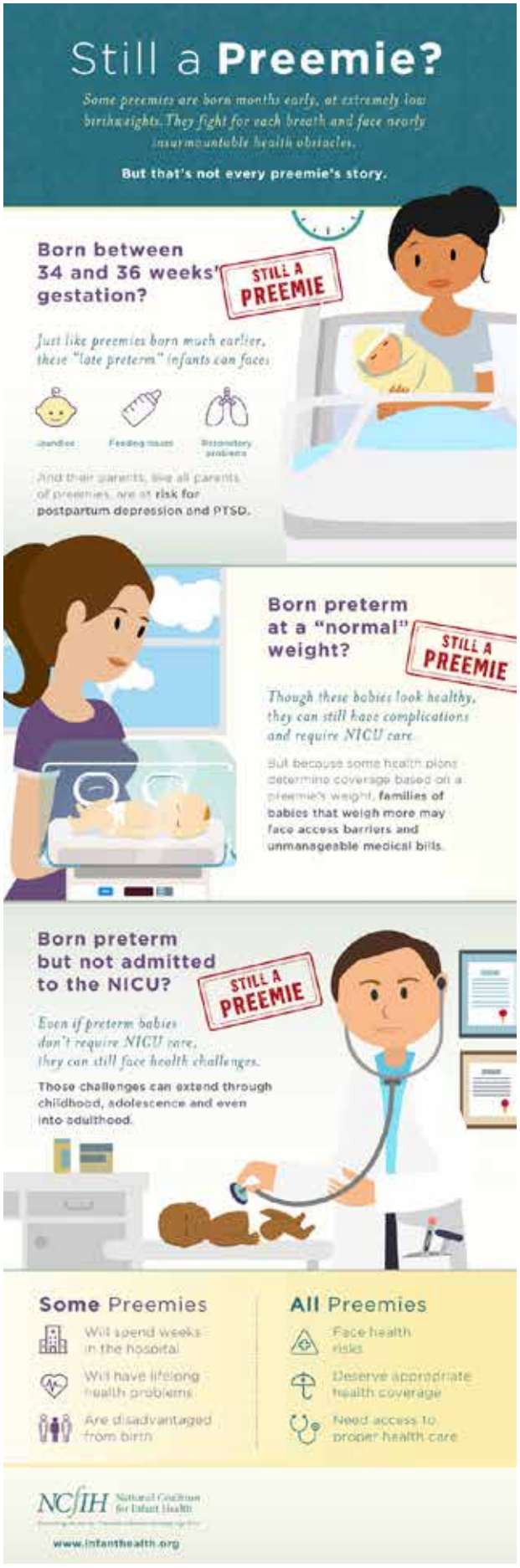


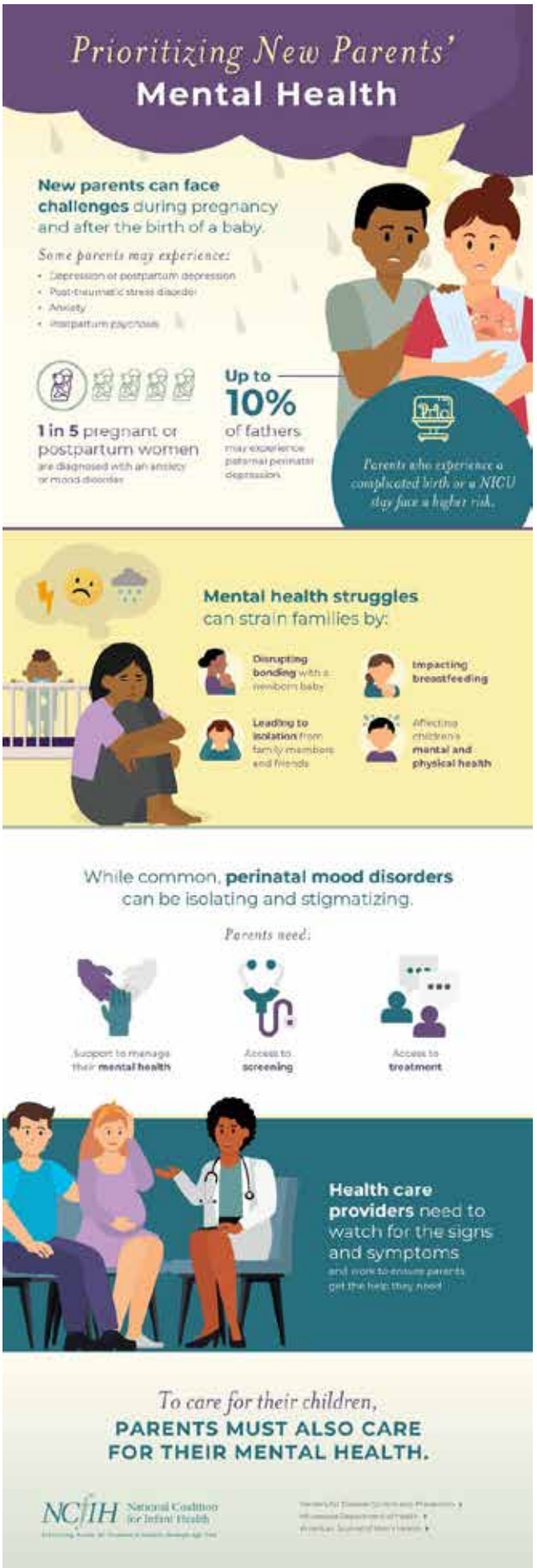
Joseph B. Philips, III, MD
Professor of Pediatrics
University of Alabama at Birmingham
Email: jphilips@uabmc.edu



Marilyn B. Escobedo, MD, FAAP
Professor and Reba McEntire Chair Emeritus
Neonatal Perinatal Medicine, Pediatrics
University of Oklahoma
Email marilyn-escobedo@ouhsc.edu




Still a Preemie?
Some preemies are born months early, at extremely low birthweights. They fight for each breath and face nearly insurmountable health obstacles.
But that's not every preemie's story.
Born between 34 and 36 weeks' gestation?
STILL A PREEMIE
Just like preemies born much earlier, these "late preterm" infants can face:
Jaundice
Feeding issues
Respiratory problems
And their parents, like all parents of preemies, are at risk for postpartum depression and PTSD.
Born preterm at a "normal" weight?
STILL A PREEMIE
Though these babies look healthy, they can still have complications and require NICU care.
But because some health plans determine coverage based on a preemie's weight, families of babies that weigh more may face access barriers and unmanageable medical bills.
Born preterm but not admitted to the NICU?
STILL A PREEMIE
Even if preterm babies don't require NICU care, they can still face health challenges.
Those challenges can extend through childhood, adolescence and even into adulthood.
Some Preemies
Will spend weeks in the hospital
Will have lifelong health problems
Are disadvantaged from birth
All Preemies
Face health risks
Deserve appropriate health coverage
Need access to proper health care
NCIIH National Coalition for Infant Health
www.infanthealth.org


Prioritizing New Parents' Mental Health
New parents can face challenges during pregnancy and after the birth of a baby.
Some parents may experience:
Depression or postpartum depression
Post-traumatic stress disorder
Anxiety
Postpartum psychosis
1 in 5 pregnant or postpartum women are diagnosed with an anxiety or mood disorder
Up to 10% of fathers may experience paternal perinatal depression
Parents who experience a complicated birth or a NICU stay face a higher risk.
Mental health struggles can strain families by:
Disrupting bonding with a newborn baby
Impacting breastfeeding
Leading to isolation from family members and friends
Affecting children's mental and physical health
While common, perinatal mood disorders can be isolating and stigmatizing.
Parents need:
Support to manage their mental health
Access to screening
Access to treatment
Health care providers need to watch for the signs and symptoms and work to ensure parents get the help they need
To care for their children,
PARENTS MUST ALSO CARE FOR THEIR MENTAL HEALTH.
NCIIH National Coalition for Infant Health

Join iCAN's Virtual Focus Group!



We warmly welcome all individuals within the age ranges of 8-10 and 12-18, including those with:

- Learning disabilities (example: dyslexia)
- Speech or language disabilities (examples: stuttering, understanding others, hearing)
- Physical disabilities (examples: epilepsy, cystic fibrosis)
- Autism Spectrum Disorder (ASD) or Attention-Deficit/Hyperactivity Disorder (ADHD)

Every voice counts!

It's a one-minute survey to see if you qualify for a one-hour focus group to be scheduled at a later date.

Survey Link: bit.ly/icanxkismet

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

iCAN
International Children's Advisory Network

Education.
Anytime, Anywhere.

Academy of Neonatal Care



The Academy of Neonatal Care serves to educate Respiratory Therapists, Nurses, and Doctors in current and best practices in Neonatal ICU care. We prepare RT's new to NICU to fully function as a bedside NICU RT. Our goal is to enrich NICU care at all levels. Beginner to Advanced Practice, there is something for you at:

www.AcademyofNeonatalCare.org.

Keeping Your Baby Safe
from respiratory infections

RSV
COVID-19
colds
flu

How to protect your little ones from germs and viruses

This year is an especially dangerous cold and flu season - especially for vulnerable infants and children. Fortunately, there are proven protective measures that we can take to stay healthy.

Here's what you can do...

Wash Your Hands

- This is the single, most important thing you can do to stop the spread of viruses.
- Use soap.
- Wash for more than 20 seconds.
- Use alcohol-based sanitizers.



Limit Contact with Others



- Stay home when you can.
- Stay 6 feet apart when out.
- Wear a face mask when out.
- Change your clothes when you get home.
- Tell others what you're doing to stay safe.

Provide Protective Immunity

- Hold your baby skin-to-skin.
- Give them your breast milk.
- Stay current with your family's immunizations.



Take Care of Yourself

- Stay connected with your family and friends.
- Drink more water and eat healthy foods.
- Seek mental health support.
- Sleep when you can.



Get Immunized

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



WARNING

Never Put a Mask on Your Baby

- Because babies have smaller airways, a mask makes it hard for them to breathe.
- Masks pose a risk of strangulation and suffocation.
- A baby can't remove their mask if they're suffocating.



If you feel sick or are positive for COVID-19

- Wash with soap and water and put on fresh clothes before holding or feeding your baby.
- Wear a mask to help stop the virus from spreading.
- Watch out for symptoms like fever, confusion, or trouble breathing.
- Ask for help caring for your baby and yourself while you recover.



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

National Perinatal Association

PROTECT YOUR FAMILY FROM
RESPIRATORY VIRUSES

flu | coronavirus | pertussis | RSV



WASH YOUR HANDS
often with soap and warm water.

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





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

USE AN ALCOHOL-BASED HAND SANITIZER.





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

National Perinatal Association

www.nationalperinatal.org

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





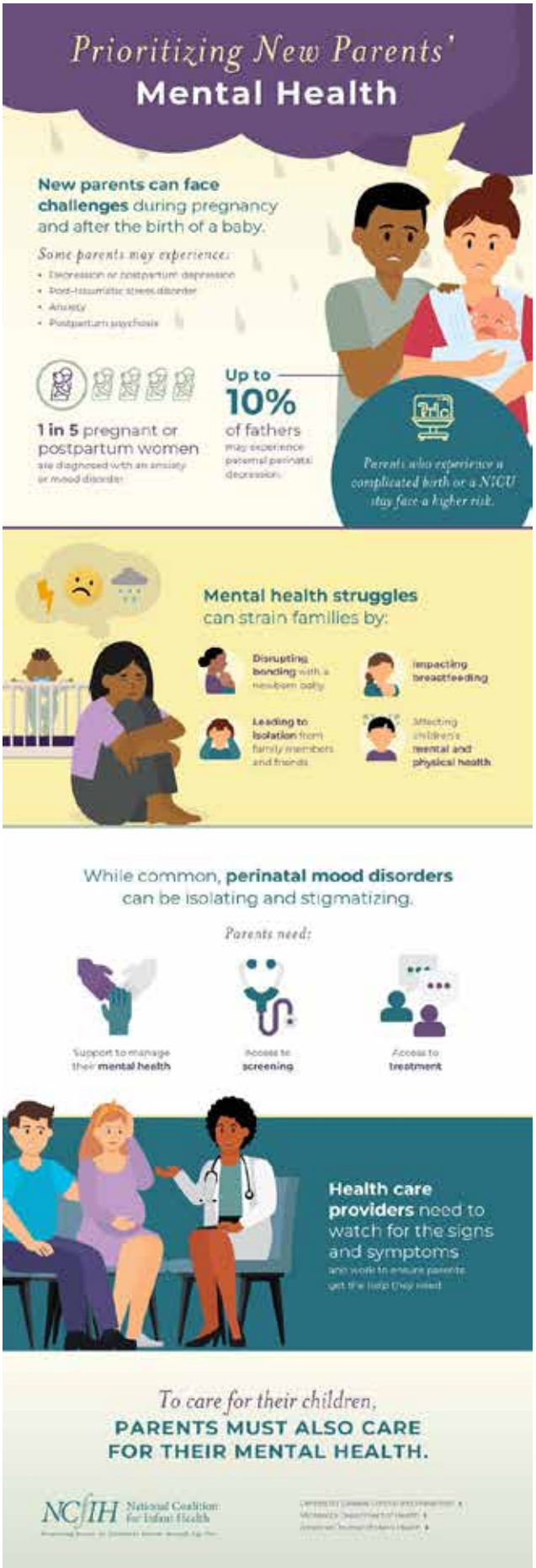
HELPING CHILDREN AND FAMILIES COPE

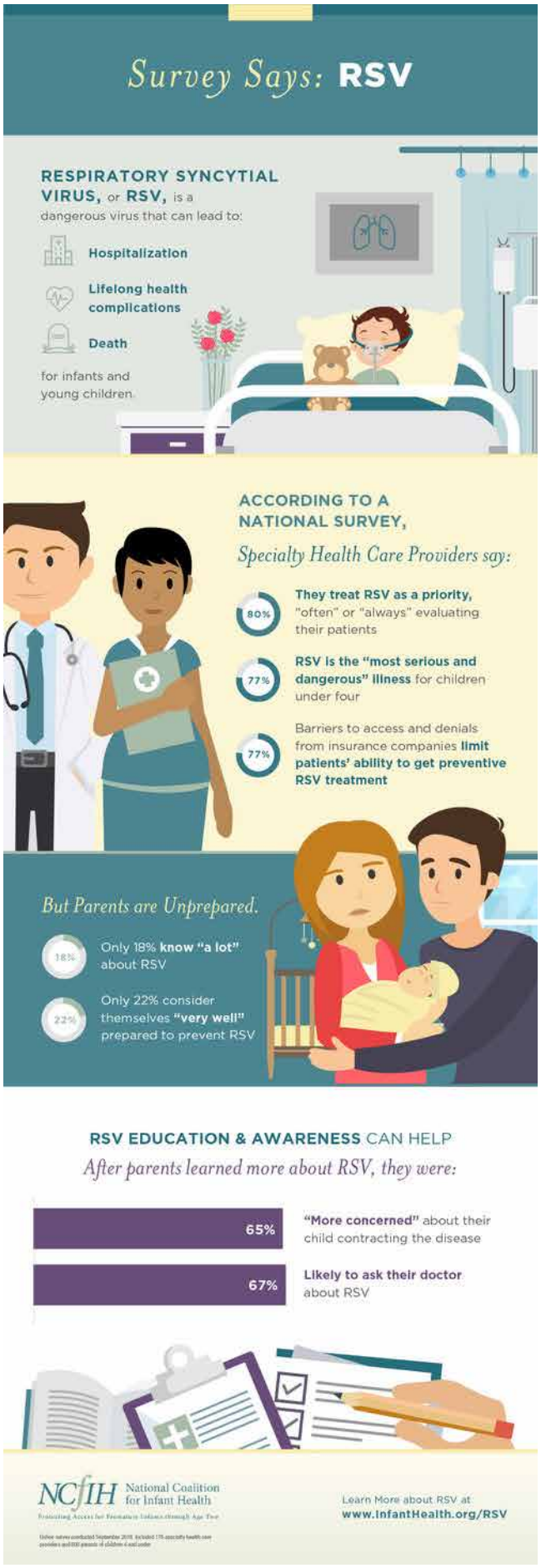
CAREGIVERS NEED CARE TOO



National Network of NICU Psychologists

nationalperinatal.org/psychologists


Prioritizing New Parents' Mental Health
New parents can face challenges during pregnancy and after the birth of a baby.
Some parents may experience:
Depression or postpartum depression
Post-traumatic stress disorder
Anxiety
Postpartum psychosis
1 in 5 pregnant or postpartum women are diagnosed with an anxiety or mood disorder
Up to 10% of fathers may experience paternal perinatal depression
Parents who experience a complicated birth or a NICU stay face a higher risk.
Mental health struggles can strain families by:
Disrupting bonding with a newborn baby
Impacting breastfeeding
Leading to isolation from family members and friends
Affecting children's mental and physical health
While common, perinatal mood disorders can be isolating and stigmatizing.
Parents need:
Support to manage their mental health
Access to screening
Access to treatment
Health care providers need to watch for the signs and symptoms and work to ensure parents get the help they need
To care for their children,
PARENTS MUST ALSO CARE FOR THEIR MENTAL HEALTH.
NCIH National Coalition for Infant Health


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
NCIH National Coalition for Infant Health
Learn More about RSV at www.InfantHealth.org/RSV

Peer Reviewed

Briefly Legal: Issues Surrounding Fetal Macrosomia and Brachial Plexus Injury

Barry Schifrin, MD, Maureen Sims, MD

At the time of her pregnancy, the patient was a 23-y/o Gravida 1 Para 0. She is 5' 7" tall and gained about 70 pounds over the course of the pregnancy to a BMI of 40. A glucose tolerance test was normal. During her prenatal care, there was concern about her weight gain and the size of the fetus. Multiple ultrasound examinations estimated the fetal weight at or above the 95th percentile with a projected weight at term of about 4400 grams. She was advised that there would be a discussion of options for the route of delivery at the time of labor.

"During her prenatal care, there was concern about her weight gain and the size of the fetus. Multiple ultrasound examinations estimated the fetal weight at or above the 95th percentile with a projected weight at term of about 4400 grams."

At 40 weeks' gestation, she presented to the hospital complaining of contractions. Pelvic examination revealed the cervix to be 4 cm dilated, 80% effaced, station of -2 with bulging membranes. The fetal heart rate pattern was reassuring. The attending physician estimated the fetal weight at 4200 grams and performed an ultrasound examination to confirm the presentation of the fetus (vertex) but did not estimate fetal weight (EFW). Nor was there any discussion with the patient of the EFW of the baby, the range of error of the estimate, or the risks of shoulder dystocia, brachial plexus injury (BPI), or risks of injury to the mother herself. Nor were there any anticipatory preparations to be taken at delivery should shoulder dystocia develop. She was admitted for elective induction of labor "in anticipation of a normal spontaneous vaginal delivery (SVD)."

The patient made slow progress in the active phase of labor and descent—risk factors for shoulder dystocia in the face of a large fetus. The 2nd stage, with relentless maternal pushing with very frequent contractions, took almost 3 hours. With the delivery of the fetal head, it became immediately apparent that there was a shoulder dystocia with the anterior (right) shoulder impacted behind the pubic symphysis. A shoulder dystocia was announced. According to the medical records, the McRoberts maneuver (flexion of the knees on the abdomen) and suprapubic pressure were applied initially, with no success. The obstetrician then attempted to deliver the posterior (left) arm—also without success. He then repeated the attempt with McRoberts and suprapubic pressure, which were successful. The total time from delivery of the fetal head until the remainder of the body was recorded as 42 seconds. No episiotomy was performed.

Following delivery, an examination of the mother's perineum revealed a complete avulsion of the external anal sphincter, which was repaired. The patient's course was further complicated by postpartum hemorrhage due to uterine atony and retained products of conception. These required evacuations of the uterus and uterine balloon (Bakri) tamponade to control the hemorrhage.

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Newborn:

The female infant weighed 5330 grams (11 pounds, 11 ounces). The Apgar scores were 8 and 8 at 1 and 5 minutes, respectively. Vital signs were considered normal. On examination, she appeared well and in no acute distress. She had a full range of motion in her left upper and lower extremities. Her right arm, however, was internally rotated, in an adducted position, flexed at the elbow, and bent wrist but could not abduct the shoulder joint on the right side (an Erb's palsy—a brachial plexus injury). A PC glucometer reading was 46, with no signs of hypoglycemia. X-rays revealed no clavicular or humeral fracture.

"The female infant weighed 5330 grams (11 pounds, 11 ounces)...She had a full range of motion in her left upper and lower extremities. Her right arm, however, was internally rotated, in an adducted position, flexed at the elbow, and bent wrist but could not abduct the shoulder joint on the right side (an Erb's palsy—a brachial plexus injury)."

In the delivery room and subsequently, the Parents were counseled extensively on the nature, clinical findings, and prognosis of brachial plexus injuries, and it was planned to engage in Physical Therapy (PT) and Occupational Therapy (OT). After an uncomplicated nursery stay, the baby was discharged home in

stable condition.

Over several months, there was no purposeful movement of the right arm. She was referred for further evaluation and surveillance to a pediatric orthopedics clinic specializing in reconstruction. At 4 months of age, an MRI of the baby's cervical spine revealed mild enlargement of R C5–7 nerve roots and superior trunk of brachial plexus, compatible with neuropraxia injury from birth. On October 20, 2021, she underwent spinal accessory to suprascapular nerve transfer and double fascicular nerve transfer with branches of the median to the brachialis and the ulnar to the biceps under general endotracheal anesthesia. She tolerated the procedure well. Her right arm was placed in a sling. The median nerve appeared to be functioning well. She was tolerating the sling and showed evidence of median nerve function. She was discharged home in the care of her parents.

"At 4 months of age, an MRI of the baby's cervical spine revealed mild enlargement of R C5–7 nerve roots and superior trunk of brachial plexus, compatible with neuropraxia injury from birth."

The Lawsuit:

A lawsuit was filed alleging negligence in the conduct of labor, the management of the delivery, and in the informed consent resulting in significant functional impairment of the child from brachial plexus injury (BPI).

Plaintiff Allegations:

The plaintiff argued that there was a failure to take reasonable advantage of the earlier estimates or the fetal weight or to perform another estimate at the time of presentation for labor. But even using the estimate of 4200 grams, it was important to be aware of the potential error in such assessments. Assuming an estimated error of 10–15%, this gives a range of EFW of 3600–4800 grams. Given the potential of the very large baby based on the estimates of the prenatal scans, the standard of care required a discussion of the potential difficulties that might be encountered in the delivery, including shoulder dystocia and other fetal and maternal trauma, including brachial plexus and pelvic floor injuries.

While there is no perfect method of estimating the fetal weight, the choice of management (vaginal vs. cesarean section) may be more critical than the accuracy of the estimate. If the estimate is missed by 10 grams, but the patient has been placed in the wrong management scheme, then adverse results may occur despite the accuracy of the EFW. As a practical matter, however, there is more to the decision than simply the EFW. Other considerations include maternal habitus, weight gain, and delayed progress in labor, especially in the 2nd stage. The patient was significantly overweight, had gained 70 pounds during pregnancy, and had an elevated fundal height for gestational age. Ultimately, once labor has been decided upon, there has to be an ongoing, informed consent process where the prospects of safe vaginal delivery are continually updated based on the findings about progress in labor, the effects of pushing, etc. Pertinently, the hospital guidelines in effect at the institution required discussion of cesarean section with an EFW > 4000 grams with the arrest of descent of the fetal head.

Plaintiffs further argued that given the potential of shoulder dystocia, additional personnel should be present in the delivery room at the time of delivery. These include the immediate availability of assistance from other healthcare providers, including anesthesiologists, neonatologists, and extra L&D nurses. Testimony in this case affirmed that it was only after shoulder dystocia was declared that additional nurses were mobilized to assist.

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With regard to the technique of managing shoulder dystocia, the first maneuver is to stop the mother from pushing. Continued pushing or fundal pressure only serves to further impact the shoulder behind the symphysis and to confound efforts to obtain vaginal delivery of the remaining body. One of the disputed facts of the case is whether the patient was encouraged to push immediately after the discovery of the shoulder dystocia. The patient and her husband both maintained that the obstetrician kept telling her to push harder after the discovery of the shoulder dystocia. Their contention was seemingly reenforced by the presence of contractions and pushing on the tracing that continued after the delivery of the fetal head. The parents also alleged that fundal pressure had been applied.

"With regard to the technique of managing shoulder dystocia, the first maneuver is to stop the mother from pushing. Continued pushing or fundal pressure only serves to further impact the shoulder behind the symphysis and to confound efforts to obtain vaginal delivery of the remaining body."

Accepting 42 seconds as an accurate estimate of the interval in this case, the plaintiff pointed out that this is less than the normal interval between two contractions and, if anything, suggests aggressive management of the shoulder dystocia (haste), potentially contributing to the presence of and the difficulties in relieving the impaction of the fetal shoulder. Also, rushing to effect

delivery may foreclose the natural progression of delivery and create shoulder dystocia.

Given the multiple attempts to effect delivery, and given the avulsion of the nerve roots of C5–C6, the plaintiff reasonably inferred that excessive pressure had been applied in a downward direction causing lateral flexion of the neck and stretch on the brachial nerves and their roots.

Defense:

The defense alleged that the management of labor and delivery and the informed consent were all properly conducted and that shoulder dystocia is an unpredictable, unpreventable complication occasionally resulting in brachial plexus injury without negligence. Specifically, they argued that the error in the estimate of the fetal weight of greater than 20% was within the margin of error and that the EFW of 4200 grams did not require any discussion with the patient about shoulder dystocia or elective cesarean section. They averred that ACOG guidelines did not warrant such a discussion unless the EFW was 5000 grams without maternal diabetes. Nor did the standard of care require a discussion of the error of the estimate, although their acceptable range of error included 5000 grams. Similarly, they argued that the maneuvers used to relieve the shoulder dystocia were well accepted and achieved promptly. In the deposition, the obstetrician maintained that it was his practice to have the patient desist from pushing when shoulder dystocia was determined. He also admitted that this was the first case of (unsupervised) shoulder dystocia he had encountered since his residency.

The Trial:

The case went to trial, and the respective experts presented many of the above arguments for both sides. There was one surprise. When the defendant's obstetrician took the stand, he was asked when he first found out about the baby's brachial plexus injury, something known within 5 minutes of delivery while all participants were still in the delivery room. He answered, "When the lawsuit was filed."

These questions followed:

"Were you not aware of the problem in the delivery room?" "No, I was attending to the mother."

"Did you speak to the mother after the delivery?" "Yes."

"Did you ask her about the baby?" "No."

"Did you go to the nursery to look at the baby?" "No."

"Did you look at the baby's medical record?" "No, it would have been a HIPPA violation."

The court reached a verdict for the plaintiff.

Comment:

Shoulder dystocia is defined in one of two ways. A head to body interval of greater than 1 minute or the use of additional maneuvers to relieve the impacted shoulder. The incidence of shoulder dystocia is estimated to be 0.2 to 3%, with the risk increasing with maternal diabetes, fetal macrosomia, and operative vaginal delivery. The risk may exceed 25% with a very large fetus (>5000 grams). The relationship of shoulder dystocia and subsequent BPI is somewhat elusive, and clearly most macrosomic infants deliver without shoulder dystocia, and some newborns with BPI did not suffer a shoulder dystocia. About half the cases of shoulder dystocia occur with babies weighing less than 4000 grams. The risk of BPI is about 4–15% with the majority being transient, especially upper neuron injury. The risk of permanent injury or one requiring operation varies between 10 and 20%, with some higher estimates. It should be emphasized that statistics on the relationship between shoulder dystocia and subsequent BPI are elusive in that there seems to be a significant amount of under-reporting, especially with milder degrees of shoulder dystocia. (10)

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Informed consent with regard to a large baby involves some pertinent discussions involving the potential risks of a large fetus. The discussion will compare the benefits of a trial of labor under careful supervision versus the alternatives of an elective C-section if there's a high concern for complications during a vaginal delivery. The patient would need to understand that while there are risks, having a large baby doesn't always result in complications, and there can be a lot of variability in outcomes. It's important that the patient understands the pros and cons of each approach, and the decision is made voluntarily and with full knowledge. There was no allegation in this case that a cesarean section was required, only that it be meaningfully discussed and precautions taken should the patient desire to pursue vaginal delivery.

"Informed consent with regard to a large baby involves some pertinent discussions involving the potential risks of a large fetus. The discussion will compare the benefits of a trial of labor under careful supervision versus the alternatives of an elective C-section if there's a high concern for complications during a vaginal delivery."

It seems relevant to consider the recommendation by the ACOG that the health care provider offer the patient a discussion about

elective cesarean section when the EFW reaches 5000 grams—at that weight, the risk of shoulder dystocia in a non-diabetic is about 20%. The risk at 4500 grams is about 10%. And despite numerous publication on the limitations of assessing fetal weight, especially with macrosomia, it becomes difficult to understand why the ACOG recommendation fails to recommend a discussion of the error of the estimate and why their recommendation based on a risk of 20% should prevail over the patient's need to decide what risk of shoulder dystocia is acceptable for her. (8, 9)

"It seems relevant to consider the recommendation by the ACOG that the health care provider offer the patient a discussion about elective cesarean section when the EFW reaches 5000 grams—at that weight, the risk of shoulder dystocia in a non-diabetic is about 20%. The risk at 4500 grams is about 10%."

Numerous guidelines and mnemonics emphasize the importance of calm in the face of shoulder dystocia and avoidance of rushing in the initial response. Both a prolonged head-to-body delivery interval, as well as very short intervals endanger the fetus from hypoxia on the one hand and trauma on the other. A model of delivery in these cases appears to profit from a "2-step solution" with a pause once the fetal head is delivered (during a contraction), awaiting the next contraction in the expectation of delivering the fetus using the McRoberts maneuver. This "two-step" delivery, reinforcing restraint, does not appear to increase the risk of fetal harm and may even lower the incidence of shoulder dystocia. (6, 7)

While textbooks suggest that the body be delivered with "gentle downward pressure" on the fetal head, there should be NO unopposed downward traction on the head during any delivery. The direction of pull must be both downward and outward (axial traction) so that the spine is maintained erect (aligned). Lacking a videotape of the delivery itself, there is no objective way to determine either the direction of pull or the amount of effort applied. In this case, especially, given the size of the baby, the inexperience of the operator, the rapidity (haste) of the execution of the maneuvers and the severity of the neurological lesion, the allegation of excessive force / misdirected pull in performing the delivery seemed a coherent and compelling inference. Further, physicians tend to underestimate the amount of force being used under these circumstances. (1–5)

Finally, let us deal briefly with the physician's lack of interest in the baby's outcome despite the apparent difficulties with the delivery. Based on our experience, we believe it may be difficult to defend the erring physician; however, we find it impossible to defend the uncaring physician. Such indifference squanders whatever advantages compassion, empathy, and attention to the patient brings to both the patient's interactions and the defense of a lawsuit.

Recommended reading:

1. Allen RH, Bankoski BR, Butzin CA, and Nagey DA. Comparing clinician-applied loads for routine, difficult, and shoulder dystocia deliverie. Am J Obstet Gynecol. 1994;171:1621–7.
2. Allen R., and Edelberg SC. Brachial plexus palsy causation. Birth. 2003.;30:141–3; author reply 43–5.
3. Allen RH, Rosenbaum TC, Ghidini A, Poggi SH, and Spong CY. Correlating head-to-body delivery intervals with neonatal depression in vaginal births that result in permanent brachial plexus injury. Am J Obstet Gynecol. 2002;187:839–42.
4. Gurewitsch Allen ED, Will SEB, Allen RH, and Satin AJ. Improving Shoulder Dystocia Management and Outcomes with a Targeted Quality Assurance Program. Am J Perinatol. 2017;34:1088–96.
5. Gurewitsch ED, and Allen RH. Reducing the risk of shoulder dystocia and associated brachial plexus injury. Obstet Gynecol Clin North Am. 2011;38:247–69, x.
6. Kotaska A, and Campbell K. Two-step delivery may avoid shoulder dystocia: head-to-body delivery interval is less important than we think. J Obstet Gynaecol Can. 2014;36:716–20.
7. Menticoglou S. Letter to the Editor: two-step delivery may avoid shoulder dystocia: head-to-body delivery interval is less important than we think. J Obstet Gynaecol Can. 2014;36:1053–54.
8. Nesbitt TS, Gilbert WM, and Herrchen B. Shoulder dystocia and associated risk factors with macrosomic infants born in California. Am J Obstet Gynecol. 1998;179:476–80.
9. Obstetric care consensus no. 1: safe prevention of the primary cesarean delivery. Obstet Gynecol. 2014; 123:693–711.
10. Wagner SM, Bell CS, Gupta M, Mendez-Figueroa H, Ouellette L, Blackwell SC, and Chauhan SP. Interventions to decrease complications after shoulder dystocia: a systematic review and Bayesian meta-analysis. Am J Obstet Gynecol. 2021;225:484.e1–84.e33.

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Corresponding Author



Barry Schifrin, M.D.
Western University of Health Sciences
Pomona, California
formerly, Professor of Obstetrics and Gynecology
Keck School of Medicine
University of Southern California
Los Angeles, California
email: bpminc@gmail.com

Corresponding Author



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

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

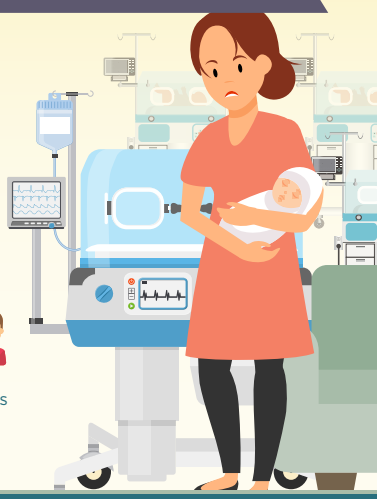
Preterm infants are:

2x more likely to have developmental delays

5x more likely to have learning challenges



1 in **3** preterm infants will require support services at school

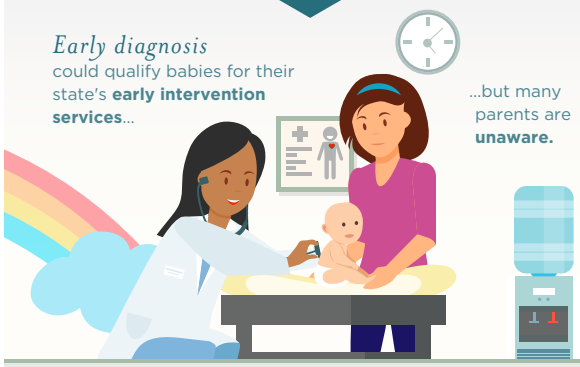


Early intervention can help preterm infants:

- Enhance language and communication skills
- Build more effective learning techniques
- Process social and emotional situations
- Address physical challenges
- Prevent mild difficulties from developing into major problems

Early diagnosis could qualify babies for their state's **early intervention services**...

...but many parents are **unaware.**





NICU staff, nurses, pediatricians and social workers **should talk** with NICU families about the challenges their baby may face.

Awareness, referral & timely enrollment in early intervention programs can help **infants thrive** and grow.



NCFIH National Coalition for Infant Health

Protecting Access for Premature Infants through Age Two

www.infanthealth.org

Visit **CDC.gov** to find contact information for your state's early intervention program.

Las nuevas mamás necesitan acceso a la detección y tratamiento para **LA DEPRESIÓN POSPARTO**



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

- Llanto incontrolable
- Sueño interrumpido
- Ansiedad
- Desplazamientos en los patrones de alimentación
- Ideas de hacerse daño a sí mismas o al bebé
- Distanciamiento de amigos y familiares





Sin embargo, sólo el 15% recibe tratamiento[1]

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



La salud de la madre

El sueño, la alimentación y el comportamiento del bebé a medida que crece[2]

La capacidad para cuidar de un bebé y sus hermanos

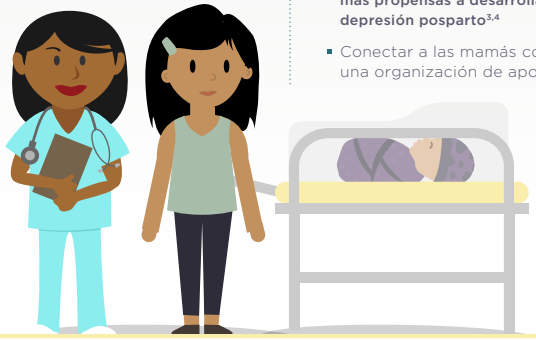
PARA AYUDAR **A LAS MADRES A ENFRENTAR LA DEPRESIÓN POSPARTO**

LOS ENCARGADOS DE FORMULAR POLÍTICAS PUEDEN:

- Financiar los esfuerzos de despistaje y diagnostico
- Proteger el acceso al tratamiento

LOS HOSPITALES PUEDEN:

- Capacitar a los profesionales de la salud para proporcionar apoyo psicosocial a las familias... **Especialmente aquellas con bebés prematuros, que son 40% más propensas a desarrollar depresión posparto**[3,4]
- Conectar a las mamás con una organización de apoyo



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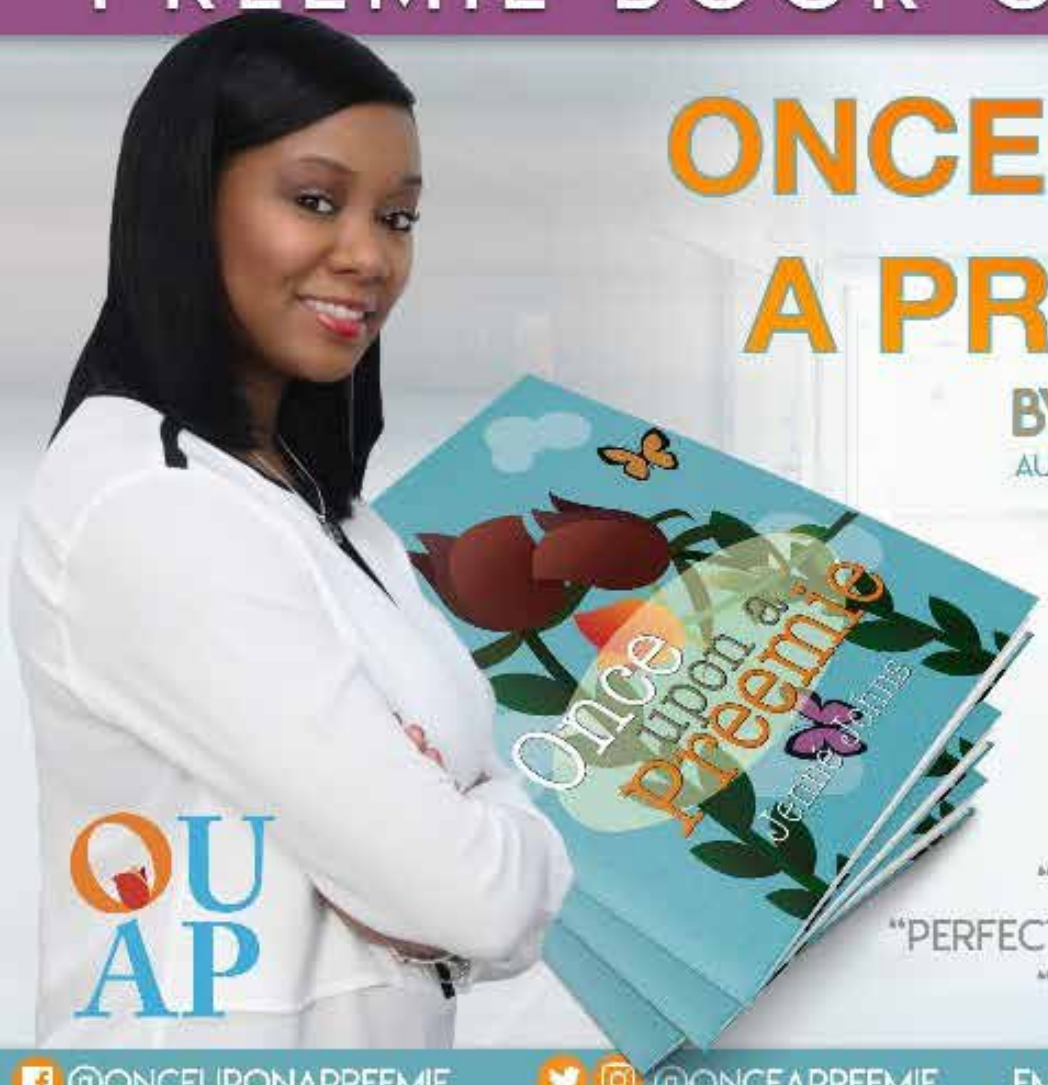
[1] American Psychological Association. Accessible on: http://www.apa.org/pi/women/resources/reports/postpartum-depression.aspx

[2] National Institute of Mental Health. Accessible on: https://www.nimh.nih.gov/health/publications/postpartum-depression-facts/index.shtml

[3] Journal of Perinatology (2015) 35, 529–536; doi:10.1038/jp.2015.147.

[4] Prevalence and risk factors for postpartum depression among women with preterm and low-birth-weight infants: a systematic review. Vigod SN, Villegas L, Dennis CL, Ross LE BJOG. 2010 Apr; 117(5):540-50.

PREEMIE BOOK ON SALE



ONCE UPON A PREEMIE

BY JENNÉ JOHNS

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Federal cuts to Safe to Sleep campaign 'devastating,' AAP leader says

NEWS PROVIDED BY

American Academy of Pediatrics

By Steve Schering

Study: **Federal cuts to Safe to Sleep campaign 'devastating,' AAP leader says**

Current as of May 6, 2025

A lead author of the AAP policy on safe sleep is decrying federal government cuts to the Safe to Sleep campaign, especially in light of recent increases in sudden unexpected infant deaths (SUID).

The Trump administration's recent federal government cuts include the National Institute of Child Health and Human Development (NICHD) office responsible for the Safe to Sleep campaign, which launched in 1994 to address sleep-related infant deaths.

"This was out of the blue," said Rachel Y. Moon, M.D., FAAP, a lead author of the AAP policy statement *Sleep-Related Infant Deaths: Updated 2022 Recommendations for Reducing Infant Deaths in the Sleep Environment*. "I received an email from NICHD staff on April 1 that the office of communications had been shut down, and thus the Safe to Sleep campaign terminated. It's devastating that this happened so suddenly and only a few months after we learned that these deaths are increasing."

Dr. Moon, the Harrison Distinguished Professor of Pediatrics at the University of Virginia Health Children's Hospital, studies factors affecting sudden infant death syndrome (SIDS) and other sleep-related deaths.

The Safe to Sleep program's origins can be traced back to the 1992 AAP Task Force on SIDS, which recommended that babies be placed on their back for sleep.

"It was clear that there needed to be a national public health campaign to be sure that parents and health care professionals were aware of this new recommendation, and the AAP worked with NICHD and several nonprofit organizations to launch the Back to Sleep campaign in 1994," Dr. Moon said. "In the first few years after the campaign was launched, the rate of SIDS dropped by 50%."

The Back to Sleep campaign was expanded and renamed Safe to Sleep in 2012 to address not only SIDS, but other sleep-related infant deaths.

While sharp declines in SUID have been seen since the campaign launched, the SUID rate has been increasing since the beginning of 2020, according to the Centers for Disease Control and Prevention.

A recent study showed that from 2020-'22, the SUID mortality rate rose 12% in children younger than 1 year — from 89.9 to 100.5 deaths per 100,000 live births.

"This was during the pandemic, and we believe that it was likely due to the fact that parents had fewer opportunities to learn about safe sleep from health care providers, federal programs, etc.," Dr. Moon said. "If we do not continue to publicize the importance of safe sleep and people do not hear it from multiple places, they will more likely think that it is not important, they won't do it and more babies will die."

Safe to Sleep program materials remain available on the NICHD website, though it is unknown how long they may be posted. Several partner organizations, including the AAP, are continuing to promote the campaign, though the loss of federal backing likely will have consequences.

"The AAP is taking the lead role in Safe to Sleep, but they certainly don't have the resources that NICHD had to continue this robust campaign," Dr. Moon said. "I suspect that other organizations dedicated to SUID prevention will have to do more."

Dr. Moon also expressed concerns over the recently proposed federal budget, which calls for the elimination of CDC registries that monitor infant deaths.

"That too will be devastating if we have no sense of whether these deaths are increasing or not," Dr. Moon said.

The 2022 AAP policy statement recommends that infants always sleep on their back on a separate, flat and firm sleep surface without any bumpers or loose bedding. It also recommends room-sharing without bed-sharing and emphasizes that devices such as car seats, strollers, swings, infant carriers and infant slings should not be used for routine sleeping.

The AAP supported the Safe Sleep for Babies Act, which bans manufacturing and distributing crib bumpers and inclined sleepers.

RSV hospitalizations for youngest babies cut in half after immunizations become available

NEWS PROVIDED BY

American Academy of Pediatrics

By Melissa Jenco

Study: **RSV hospitalizations for youngest babies cut in half after immunizations become available**

Current as of May 8, 2025

Hospitalization rates for respiratory syncytial virus (RSV) fell by half among babies under 3 months this season, the first in which two new immunizations were widely available, a new study showed.

"Thousands of our youngest children are hospitalized with RSV each year, and I'm thrilled to finally have effective ways to protect them," said Sean T. O'Leary, M.D., M.P.H., FAAP, chair of the AAP Committee on Infectious Diseases. "We have the opportunity to bring hospitalization rates down even further if we increase the number of mothers and babies getting immunized."

RSV is the leading cause of hospitalization among U.S. infants. The virus causes about 50,000 to 80,000 hospitalizations and 100 to 300 deaths per year in children under 5 years, according to the Centers for Disease Control and Prevention (CDC).

In the fall of 2023, health officials approved two new products to help prevent RSV — a maternal vaccine RSVpreF (Abrysvo from Pfizer) given during pregnancy and monoclonal antibody nirsevimab (Beyfortus from Sanofi and AstraZeneca) given to infants under 8 months as well as some high-risk children ages 8-19 months.

A new study published today in the CDC's *Morbidity and Mortality Weekly Report* aimed to look at the impact of these products by comparing hospitalization rates in the 2024-'25 season to those in 2018-'20 using two surveillance networks.

For infants under 3 months, about 22 of every 1,000 children were hospitalized in the earlier years, which fell to about 11 or 12 children per 1,000 (45%-52% reduction).

For children under 8 months, about 15 of every 1,000 children were hospitalized in 2018-'20, which dropped to about 9-11 children per 1,000 (28%-43% reduction). Rates dropped even more if excluding Houston where the RSV season started before products were widely administered.

Declining hospitalizations came despite data suggesting a more severe RSV season in 2024-'25. Rates for older children who mostly were ineligible for immunization were higher than they were in 2018-'20, according to the study.

"The findings suggest the importance of protecting infants born during the RSV season through either maternal vaccination during pregnancy or nirsevimab administration in the first week of life, ideally during the birth hospitalization," authors wrote.

As of February 2025, about two-thirds of infants under 8 months had protection from one of the two products, according to the study.

Another new immunization product for infants may be on the horizon. Merck's clesrovimab is a long-acting monoclonal antibody and is proposed for use in infants under 8 months of age born during or entering their first RSV season, similar to nirsevimab. It is awaiting approval from the Food and Drug Administration.

U.S. measles cases 250 short of high mark in 2019

NEWS PROVIDED BY

American Academy of Pediatrics

By Sean Stangland

Study: **U.S. measles cases 250 short of high mark in 2019**

Current as of May 16, 2025

The number of measles cases in the U.S. this year grew to 1,024 as of Thursday, up from 1,001 cases the previous week.

The 2.3% increase puts the total 250 shy of the century's high mark of 1,274 in 2019.

The total confirmed Friday by the Centers for Disease Control and Prevention (CDC) includes cases in 30 states and 14 outbreaks of three or more related cases; 92% (947) of confirmed cases are associated with those outbreaks.

Children and teens account for roughly 68% (691) of cases; 14.8% (102) of those patients have been hospitalized.

Three people have died of measles in the U.S. this year, including two unvaccinated school-age children in Texas who had no underlying conditions.

Cases are likely undercounted, and the CDC does not include probable measles cases as reported by some jurisdictions.

The New Jersey Department of Health on Thursday alerted the public that a nonresident had visited the state while infectious. They warned that anyone who visited Terminal B of Newark Liberty International Airport between 12:30 and 4 p.m. on May 12 may have been exposed.

"Potentially exposed individuals, if infected, could develop symptoms as late as June 2, 2025," the alert said.

New Jersey has reported just three cases this year, all from a single household.

The CDC did not confirm cases in any new jurisdictions or states this week. The 31 jurisdictions with cases are Alaska, Arkansas, California, Colorado, Florida, Georgia, Hawaii, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Missouri, Montana, New Jersey, New Mexico, New York City, New York State, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, Tennessee, Texas, Vermont, Virginia and Washington.

The largest outbreak in the country is in west Texas, where nine more confirmed cases bring the region's total to 718, according to the Texas Department of State Health Services. Gaines County has reported 56.5% (406) of the state's cases. Just over the state border, the New Mexico Department of Health reports 65 of that state's 74 cases in Lea County.

The AAP and CDC recommend ensuring patients are covered with a two-dose measles-mumps-rubella (MMR) vaccination series. Under routine recommendations, the doses are given at ages 12-15 months and 4-6 years. One dose of MMR is 93% effective against measles, and two doses are 97% effective.

Across the U.S., about 96% of measles cases this year have been among people who were unvaccinated or had an unknown vaccination status, according to the CDC.

The outbreaks come as studies show declining rates of MMR vaccination among kindergartners and the rampant spread of misinformation about the safety of vaccines.

AAP clinical report: Cord blood sampling should be first choice for infants who need phlebotomy at, shortly after delivery

NEWS PROVIDED BY

American Academy of Pediatrics

By David A. Kaufman, M.D., FAAP

Study: **AAP clinical report: Cord blood sampling should be first choice for infants who need phlebotomy at, shortly after delivery**

Current as of April 1, 2025

For decades, postnatal cord blood has been used for blood gases, blood typing and antibody testing of newborns. So, why can't it be used for other tests?

This question was first studied in 1981. Researchers looked at whether umbilical cord blood could be used to detect neonatal bacteremia. They found that meticulously collected cord blood was as good a source for blood culture as blood from any site (Polin JI, et al. *Obstet Gynecol*. 1981;57:233-237).

More recently, studies have shown that cord blood can be used for many other laboratory studies after birth. Postnatal cord blood sampling (PCBS) can be performed for all neonatal intensive care unit admissions, early-onset sepsis evaluations, initial and follow-up genetic testing, and studies for infants with congenital anomalies and deaths that occur prior to or after delivery.

A new AAP clinical report describes the evidence for and benefits of collecting cord blood after delivery as well as the laboratory studies that can be obtained. The report, from the Committee on Fetus and Newborn, also includes figures and tables with photos and graphics that outline key steps for performing PCBS.

The clinical report *Postnatal Cord Blood Sampling* is available at https://doi.org/10.1542/peds.2025-071811 and will be published in the June issue of *Pediatrics.*

Benefits of PCBS

PCBS is a painless and simple procedure that can be used for any infant of any gestational age. It should be the first choice when the need for phlebotomy is known at or shortly after delivery.

PCBS can be used for complete blood cell counts, blood cultures, blood typing and crossmatching, newborn screening and metabolic tests, genetic testing, blood chemistries and coagulation studies. It can help obtain better volumes for blood cultures than other sites, improving their yield. Similarly, for blood typing and crossmatch as well as when genetic testing is indicated, PCBS can obtain these larger volume studies more easily without infant blood loss.

Depending on what laboratory studies are needed, the benefits can be substantial, especially for newborns whose birth weight is less than 1,500 grams. Admission blood test volume for very low birth weight (VLBW) infants may be as high as 10% of their blood volume, which may contribute to hypotension.

One of the key studies found that on average, 7.5 mL/kg of phlebotomy blood loss occurs in the first 24 hours after birth for VLBW infants (Baer VL, et al. *J Perinatol.* 2013;33:363-365). In conjunction with delayed cord clamping (DCC), PCBS is associated with less vasopressors use, higher hemoglobin concentrations and fewer erythrocyte transfusions in VLBW infants.

Richard A. Polin, M.D., FAAP, one of the first to study PCBS for blood cultures, points out that blood cultures are most likely to identify a pathogen when infants have signs and symptoms of infection. If that is at or shortly after delivery, PCBS is a great source. If new signs and symptoms occur later, obtaining a blood culture from the infant at that time would be indicated.

Instituting PCBS

The report outlines what clinicians need to implement PCBS:

- A dedicated team (or provider) that facilitates successful rates of blood collection, sterility for blood cultures and quality of all blood samples.
- A procedural guideline.
- A process to discuss before and after every delivery if any blood tests can be obtained by PCBS.
- A kit, cart or box with supplies organized, stocked and easily available for deliveries.
- Appropriate antisepsis of the phlebotomy site to ensure a "meticulous and fastidious" blood culture collection, similar to any blood culture collection procedure.
- Childbirth personnel who can ensure that the cord remains clamped (or replaced by a disposable clamp) after delivery and delayed cord clamping (or cord milking).

Summary points

- PCBS is a painless, simple procedure to obtain infant blood.
- PCBS should be the first choice for any infant needing phlebotomy at or shortly after delivery.
- Blood obtained through PCBS is commonly used for admission studies, early-onset sepsis evaluations and genetic testing.
- In VLBW infants, PCBS facilitates a stable blood pressure, less need for vasopressors and fewer erythrocyte transfusions in the first week.
- Establishing a dedicated team facilitates optimal blood volume and specimen quality and without contamination when blood cultures are obtained.

Infant with rare, incurable disease is first to successfully receive personalized gene therapy treatment

NEWS PROVIDED BY

National Institute of Health

By NIH Office of Communications

Study: **Infant with rare, incurable disease is first to successfully receive personalized gene therapy treatment**

Current as of May 15, 2025

NIH-supported gene-editing platform lays groundwork to rapidly develop treatments for other rare genetic diseases.

A research team supported by the National Institutes of Health (NIH) has developed and safely delivered a personalized gene editing therapy to treat an infant with a life-threatening, incurable genetic disease. The infant, who was diagnosed with the rare condition carbamoyl phosphate synthetase 1 (CPS1) deficiency shortly after birth, has responded positively to the treatment. The process, from diagnosis to treatment, took only six months and marks the first time the technology has been successfully deployed to treat a human patient. The technology used in this study was developed using a platform that could be tweaked to treat a wide range of genetic disorders and opens the possibility of creating personalized treatments in other parts of the body.

A team of researchers at the Children's Hospital of Philadelphia (CHOP) and the Perelman School of Medicine at the University of Pennsylvania (Penn) developed the customized therapy using the gene-editing platform CRISPR. They corrected a specific gene mutation in the baby's liver cells that led to the disorder. CRISPR is an advanced gene editing technology that enables precise changes to DNA inside living cells. This is the first known case of a personalized CRISPR-based medicine administered to a single patient and was carefully designed to target non-reproductive cells so changes would only affect the patient.

"As a platform, gene editing -- built on reusable components and rapid customization -- promises a new era of precision medicine for hundreds of rare diseases, bringing life-changing therapies to patients when timing matters most: Early, fast, and tailored to the individual," said Joni L. Rutter, Ph.D., director of NIH's National Center for Advancing Translational Sciences (NCATS).

CPS1 deficiency is characterized by an inability to fully break down byproducts from protein metabolism in the liver, causing ammonia to build up to toxic levels in the body. It can cause severe damage to the brain and liver. Treatment includes a low protein diet until the child is old enough for a liver transplant. However, in this waiting period there is a risk of rapid organ failure due to stressors such as infection, trauma, or dehydration. High levels of ammonia can cause coma, brain swelling, and may be fatal or cause permanent brain damage.

The child initially received a very low dose of the therapy at six months of age, then a higher dose later. The research team saw signs that the therapy was effective almost from the start. The six-month old began taking in more protein in the diet, and the care team could reduce the medicine needed to keep ammonia levels low in the body. Another telling sign of the child's improvement to date came after the child caught a cold, and later, had to deal with a gastrointestinal illness. Normally, such infections for a child in this condition could be extremely dangerous, especially with the possibility of ammonia reaching dangerous levels in the brain.

"We knew the method used to deliver the gene-editing machinery to the baby's liver cells allowed us to give the treatment repeatedly. That meant we could start with a low dose that we were sure was safe," said CHOP pediatrician Rebecca Ahrens-Nicklas, M.D., Ph.D.

"We were very concerned when the baby got sick, but the baby just shrugged the illness off," said Penn geneticist and first author Kiran Musunuru, M.D., Ph.D. For now, much work remains, but the researchers are cautiously optimistic about the baby's progress.

The scientists announced their work at the American Society of Gene & Cell Therapy Meeting on May 15th and described the study in *The New England Journal of Medicine*.

HHS, FDA Initiate Comprehensive Review of Nutrients in Infant Formula

NEWS PROVIDED BY

Food and Drug Administration

By FDA News Release

Study: **HHS, FDA Initiate Comprehensive Review of Nutrients in Infant Formula**

Current as of May 13, 2025

The U.S. Department of Health and Human Services (HHS) and U.S. Food and Drug Administration (FDA) today announced the next steps in Operation Stork Speed--a groundbreaking initiative to ensure the safety, reliability, and nutritional adequacy of infant formula for American families. The FDA issued a Request for Information (RFI) to begin the nutrient review process required by law for infant formula. Currently, infant formula must meet minimum and maximum levels of certain nutrients. While the FDA regularly reviews individual nutrient requirements for infant formula, this will be the first comprehensive review since 1998.

"Operation Stork Speed brings radical transparency to ingredients in infant formula and puts science front and center," said HHS Secretary Robert F. Kennedy, Jr. "Every child has a fundamental right to a healthy start. We're giving parents the truth and the tools to make that happen. You can't Make America Healthy Again if we don't fix what nourishes our youngest and most vulnerable Americans."

Through the RFI, the FDA is seeking public input to help determine whether existing nutrient requirements should be revised based on the latest scientific data, including international. The agency also welcomes data on potential adjustments to existing minimum or maximum levels, recommendations for additional nutrients to consider, and how such changes may improve health outcomes.

Commenters will have 120 days to submit responses. Further information on how to submit a comment can be found here.

The FDA, under HHS leadership, launched Operation Stork Speed in March 2025, reaffirming the agency's commitment to infant formula safety and nutritional quality. In addition to today's RFI, the FDA is increasing testing for heavy metals and other contaminants in infant formula and other food consumed by children. The agency is also encouraging companies to work with the FDA on enhancing transparency and improving labeling clarity.

"Protecting our most vulnerable is not just a moral duty—it is our responsibility, said FDA Commissioner Martin A. Makary,

M.D., M.P.H. “For many children, infant formula is their only source of nutrition. That’s why it’s absolutely crucial to continually assess the nutrition standards and incorporate gold standard science to ensure we are providing the safest, most effective nutrition possible.”

As part of the initiative, the FDA will convene a publicly accessible expert panel in June.

HHS, FDA Announce Operation Stork Speed to Expand Options for Safe, Reliable, and Nutritious Infant Formula for American Families

NEWS PROVIDED BY

Food and Drug Administration

By FDA News Release

Study: **HHS, FDA Announce Operation Stork Speed to Expand Options for Safe, Reliable, and Nutritious Infant Formula for American Families**

Current as of March 18, 2025

Today, under the leadership of U.S. Department of Health and Human Services Secretary Robert F. Kennedy, Jr., the U.S. Food and Drug Administration is taking steps to enhance its efforts to ensure the ongoing quality, safety, nutritional adequacy, and resilience of the domestic infant formula supply.

“The FDA will use all resources and authorities at its disposal to make sure infant formula products are safe and wholesome for the families and children who rely on them,” said HHS Secretary Kennedy. “Helping each family and child get off to the right start from birth is critical to our pursuit to Make America Healthy Again.”

The FDA is announcing a set of actions and initiatives focused on infant formula, such as beginning the nutrient review process and increasing testing for heavy metals and other contaminants. The agency is also encouraging companies to develop new infant formulas and clarify opportunities to help inform consumers about formula ingredients. These enhanced FDA commitments are focused on making sure a strong supply of the sole source of nutrition for formula-fed babies and children remains available for one of our nation’s most vulnerable populations.

“The FDA is deeply committed to ensuring that moms and other caregivers of infants and young children and other individuals who rely on infant formula for their nutritional needs have confidence that these products are safe, consistently available, and contain the nutrients essential to promote health and wellbeing during critical stages of development and life,” said Acting FDA Commissioner Sara Brenner, M.D., M.P.H. “Whether breastfed, bottle fed or both, the rising generation must be nourished in a way that promotes health and longevity over the course of their lives.”

The FDA uses its authorities, both longstanding and newly granted, to uphold the safety, nutritional adequacy and resilience of infant formula and the infant formula supply. The FDA is:

- Starting the nutrient review required by law by issuing a Request for Information in the coming months to start the first comprehensive update and review of infant formula nutrients by the FDA since 1998
- Increasing testing for heavy metals and other contaminants in infant formula and other foods children consume
- Extending the personal importation policy
- Encouraging companies to work with the FDA on any questions regarding increased transparency and clearer labeling
- Communicating regularly with consumers and industry stakeholders as significant developments occur to ensure transparency, including information regarding nutrients and health outcomes
- Collaborating with the National Institutes of Health and other scientific bodies to address priority scientific research gaps regarding short- and long-term health outcomes associated with formula feeding in infancy and childhood across the lifespan

The FDA remains committed to infant formula safety and nutritional quality and is taking all actions to ensure the U.S. infant formula supply ranks best in the world.

NT

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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...

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- This is the single, most important thing you can do to stop the spread of viruses.
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- Wash for more than 20 seconds.
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Limit Contact with Others



- Stay home when you can.
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- Tell others what you're doing to stay safe.

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- Ask for help caring for your baby and yourself while you recover.



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Translating Logic: Rethinking Culture, Conflict, and Communication in Complex Organizations

Daved van Stralen, MD, FAAP, Sean D. McKay, Element Rescue, LLC, Thomas A. Mercer, RAdm, USN (Retired)

"This paper explores how institutional logic shapes organizational culture, influences safety and reliability perceptions, and affects intra- and inter-organizational dynamics. Drawing from the High-Reliability Organization (HRO) framework and broader sociological theory, the authors argue that institutional, operational, or informal logics form the epistemic structures through which individuals derive meaning and action."

Abstract:

Organizations often struggle not because of poor culture but because of unrecognized or incompatible institutional logic—the underlying reasoning frameworks that guide interpretation, decision-making, and behavior. This paper explores how institutional logic shapes organizational culture, influences safety and reliability perceptions, and affects intra- and inter-organizational dynamics. Drawing from the High-Reliability Organization (HRO) framework and broader sociological theory, the authors argue that institutional, operational, or informal logics form the epistemic structures through which individuals derive meaning and action.

The paper explains how logic is not static; it evolves through observation, reasoning, and epistemic actions that reduce uncertainty and shape communication. Misalignment between institutional logic—such as science vs. care in medicine or corporate vs. entrepreneurial in business—can result in conflict, paralysis, or transformation. Conversely, organizations that understand and skillfully navigate plural logic may develop hybrid structures, adaptability, and innovation. The authors illustrate the tension and creative potential of competing logic through case studies in healthcare, microfinance, and medical education. Ultimately, they suggest that translation—not replacement—of logic may be the key to effective organizational evolution and communication.

Introduction:

Perhaps it is not the culture we want to change – safety culture, service culture, and all the cultures with some noun or adjective attached. We would succeed if we could guide organizing principles, help members interpret organizational reality, identify what is important, frame problems more effectively, and know when we have an answer. We would be well served if employees could think and reason like this outside the presence of managers and supervisors.

We need only look at people's organizational and personal logic to accomplish this. Every organization has them, and every group shares them. They are the source of intra-organizational conflict and unhealthy competition. They also stimulate creativity without competitiveness.

We have discussed institutional logic in our recent HRO series for Neonatology Today. This paper will present how differences in institutional logic can help or hurt the organization. Viewing safety, reliability, and HRO as types of logic shows how HRO is mistranslated, washing out its strength.

Spectators have translated HRO from reliability logic to the business logic they were acculturated into through their mentors, consultants, and business education. Professionals have mistranslated reliability logic into academic or science culture, facilitating understanding and implementation.

"Reliability and safety logic need not impair institutional or organizational logic. Perhaps their function will become clear if we call them operational logic, operational as they are not static; time is a dimension. Moreover, they are logical as we manipulate our knowledge, context, and environment to develop information we can use to infer new information."

Reliability and safety logic need not impair institutional or organizational logic. Perhaps their function will become clear if we call them *operational logic,* operational as they are not static; time is a dimension. Moreover, they are logical as we manipulate our knowledge, context, and environment to develop information we can use to infer new information.

Logic and Information:

We develop information through observation, action, and logical reasoning. Commonly, we view logic as a formal system of deduction, rigorous syntax, semantics, and precisely defined proof procedures. Logic is the "art and science of reasoning," John Stuart

Mill, *A System of Logic* (1843) (1). He further posited, "Logic is not the theory of thought as thought, but of valid thought; not of thinking, but of correct thinking." With logic, we develop inferences to inform real-life instances of argument and to advance knowledge.

For everyday discourse, we use "informal" logic with our natural language, using different norms for different contexts and having diverse ways to make or give meaning (2). We make inferences through informal, formal, cultural, or institutional logic.

"Through inductive logical reasoning, we develop information. When we engage in uncertainty, our observation will reduce the range of uncertainty while our actions convert uncertainties to certainties, thus generating facts such as Shannon's information (3)."

Through inductive logical reasoning, we develop information. When we engage in uncertainty, our observation will reduce the range of uncertainty while our actions convert uncertainties to certainties, thus generating facts such as Shannon's information (3). Our actions create an "epistemic information update." Such epistemic actions facilitate the flow of information through various correlations within structured systems (4).

Claude Shannon (5) studied communication as a system formed by a source and a receiver connected via a noisy channel. His concern was purely *quantitative*, maximizing communication effectiveness while minimizing the errors caused by channel noise. The logical approach to *information as correlation* concerns the qualitative aspects of communication as information flows through structured systems supporting correlations. Through communication, remote information (at the transmitter site) can then be derived from information that is directly available at a proximal site (the receiver site) (4).

With logic as the inference of information, it becomes the study of the consequence of that information, and the information becomes the commodity. That is, there are informational consequences of logical actions (4).

Structured systems that support correlations, consequences of logical inferences, and information as a commodity that flows are part of a culture, the institution's culture. Institutional logic, then, is part of the institutional culture.

Logic is consequential and pervasive in how we work with information. It becomes a part of our practices, assumptions, values, and beliefs to shape our cognition and behavior. These characteristics form the concept of institutional logic, how members of an organization come to think as a group. Institutional logic influences our attention to what is important, how we define problems, and our recognition of solutions (6).

Institutional Logics:

As social structures, institutions have a collective logic – a central logic, an institutional logic. This gives a normative dimension to the institution and guides its organizing principles, helping members interpret organizational reality, what represents appropriate behavior, and what constitutes success. From institutional logic come the practices, assumptions, values, beliefs, and rules that give meaning to its members. Institutional logic provides actors with vocabularies, motive, identity, and a sense of self (7, 8).

Such logics provide context-specific practices, guide actors' behavior, and make their actions "comprehensible and predictable" (9). Institutional logic shapes rational, mindful behavior and provides formal and informal rules of actions, interactions, and interpretation that guide and constrain decision-makers (6).

Logics guide engagement for ambiguity and during episodes that may limit cognition. They draw attention to issues and problems and help evaluate which are most salient and which need managerial attention. They also frame the problem for possible solutions (8). Institutional logics connect meaning with action, linking individual agency and cognition (6).

"It would be easy to think that organizations operating in similar environments in similar fields with similar market influences would have similar institutional logic and cultures. The idea that the institutional logic of organizations will resemble the logic of organizations in similar environments is an organizational isomorphism. Environments, however, do not have the reliability and stability for this to occur."

It would be easy to think that organizations operating in similar environments in similar fields with similar market influences would have similar institutional logic and cultures. The idea that the institutional logic of organizations will resemble the logic of organizations in similar environments is an *organizational isomorphism*. Environments, however, do not have the reliability and stability for this to occur. Any similarity is more likely from mimetic isomorphism; leaders in organizations mimic those organizations they view as successful or the influx of junior administrators educated in similar programs to already extant executives and administrators (10, 11).

Cultures are influenced by national and regional cultures, as well as cultures from family and religion. When there appears to be similarity, it is more likely that executives and managers are hired based on their similarity to existing executive staff. It is that similarity that influences isomorphism rather than the ecosystem where the organization operates.

The partial autonomy of individuals develops when institutions have various levels of constraint and opportunity for individual action. The individual actor has the locus of agency, is locally situated, and is engaged in self-interest. Individual-level decisions by individual and organizational actors can, thus, shape and change institutional logic (12).

Multiple Logics:

Different institutional logics also develop at different levels of analysis within the organization. This arises from vertical

differentiation or groups within the organization working in disparate but interconnected programs. A dominant institutional logic can emerge from dominating leaders of one logic or when entry-level managers and professionals come from academic backgrounds like those already present and higher in the organization's hierarchy. Operating in a stable, dependable environment supports this dynamic.

We operate from numerous cultures: national, regional, family, professional, and employment. Generally, an organization has a dominant institutional logic that influences corporate culture. While different logics tend to operate in localized corporate areas, they can have a larger presence. These different institutional logics may cause competition or conflict, but different logics sometimes become compatible.

"Industries in a relatively stable environment conform to the traditional bureaucratic model, with mechanistic systems. Centralized decision making, specialization, sharply defined duties, formal rules, and hierarchical control for efficiency to create organized routines and repetitive activity in a predictable environment" (10). Business, or market, logic pursues efficiency, minimizes costs, maximizes profit, engages in competition, seeks financial return to serve the stakeholders, and is risk averse (13).

Conflict between differing internal institutional logics can occur, leading to organizational failure. Different sectors may have distinct logic within the organization, or newly hired employees may bring the logic from previous employment. The combination of the two organizations also brings differing institutional logic together.

"Multiple logics within an organization can produce internal conflict or blend seamlessly with others. Some organizations become paralyzed and fail while others are surviving and growing. It appears that those organizations that maintain consistent action toward their goals tend to succeed. Consistency toward the means to reach those goals impairs operations."

Competing and Conflicting Logics:

Multiple logics within an organization can produce internal conflict or blend seamlessly with others. Some organizations become paralyzed and fail while others are surviving and growing. It appears that those organizations that maintain consistent action toward their goals tend to succeed. Consistency toward the *means* to reach those goals impairs operations. Goals reflect core values and beliefs, and reaching goals follows the logic of appropriateness. Actions toward goals are complex to challenge or modify. We evaluate the means to reach goals from a logic of consequence, and the means are malleable (14).

Venture or entrepreneurial organizations seek success by creating new products or technical breakthroughs. Their success, if not survival, hinges on their ability to turn them into commercial products. The venture, or entrepreneurial, logic focuses on innovation, creating new markets or technologies, pursuing opportunities, taking risks, if not having a preference for risk to create value, tolerates uncertainty, and accepting failure without giving it stigma (15, 16). Safety and reliability logic in the HRO develops by turning error and failure into vital information (17), a mechanism that drives allostatic strength and generates institutional knowledge (17, 18).

"Corporations have included venture or entrepreneurship logic to enhance corporate innovation or merged with a venture company. This creates a significant divergence between the corporation's institutional logic and the entrepreneurial logic of the venture companies (19). Ann-Kathrin Leiting, Bart Clarysse, and Jana Thiel (19) found significant tensions between the 'corporate culture' and the 'entrepreneurial logic' of the venture capitalists, primarily in more unfocused achievement goals and time lags in the developing revenue stream. "

Corporations have included venture or entrepreneurship logic to enhance corporate innovation or merged with a venture company. This creates a significant divergence between the corporation's institutional logic and the entrepreneurial logic of the venture companies (19). Ann-Kathrin Leiting, Bart Clarysse, and Jana Thiel (19) found significant tensions between the 'corporate culture' and the 'entrepreneurial logic' of the venture capitalists, primarily in more unfocused achievement goals and time lags in the developing revenue stream.

In creating a new venture, entrepreneurs may combine aspects of established institutional logic and practices, such as hybrid logic. The difficulty is fusing key elements of the different logic, which may naturally conflict. For example, the logic of for-profit retail and the logic of nonprofit homelessness support to address homelessness across the United Kingdom. While the new business failed, the institutional project was later successful (20).

Commercial microfinance organizations were formed to improve development in third-world countries. To do this, nongovernment organizations (NGOs) combined two institutional logic: a development logic to help people experiencing poverty and a banking logic that required profits to sustain the program (21). One program hired people without experience in banking or development, using socialization to develop the organization. They successfully developed organizational identity in the employees. The shared identity produced significantly less employee attrition.

The other program hired people with backgrounds related to social work who have the capabilities for development work and people with backgrounds in finance or law who have the capabilities suited for lending. These differences developed into an intractable identity conflict between those with development logic and those

with banking logic, using their respective logics as the source of the schism. The schism lasted until a new leader who completely revamped the program arrived.

Compatibility

Much of the institutional theory literature highlights the dominant role of institutional logic in promoting conformity within fields. Researchers have shown that competing logic can also provide the impetus for institutional change and transformation. For example, Trish Reay and C. Robert Hinings (22, 23) studied the transformation of the Alberta healthcare system when it changed from the logic of medical professionalism to the logic of business-like healthcare—the conflict from co-existing, competing logic led to institutional change and healthcare system transformation.

The Alberta (Canada) provincial government introduced business-like logic for health care to increase efficiency and 'do more with less.' Cost-effective treatment, lowest-cost provider, and customer satisfaction became the goal. The government considers physicians significant cost drivers and a primary source of current problems. The government excluded physicians from positions of responsibility for the program.

"The government had discarded the previously dominant logic of medical professionalism. The logic of medical professionalism and business-like health care competed. The physician-patient relationship would not guide healthcare, nor would physicians determine appropriate care for their patients."

The government had discarded the previously dominant logic of medical professionalism. The logic of medical professionalism and business-like health care competed. The physician-patient relationship would not guide healthcare, nor would physicians determine appropriate care for their patients.

Medical professionals had non-dominant logic and did not have the authority or status to challenge dominant logic openly. They worked in local contexts with incremental steps toward their targets. This individual moral agency, working covertly, resulted in new field-level logic. Success came because change occurred before more powerful actors could recognize the logic shift. Over time, physicians continued the logic of medical professionalism in an 'uneasy truce' with the government. Physicians carry out their practice; the two logics co-exist, and neither has become dominant.

Medical Education:

Plural, competing logic can maintain balance within a profession. This occurs in medical education, the institutional logic of care versus the institutional logic of science. A science logic focuses on knowledge of diseases from scientific research. Care logic focuses on clinical skills to treat patients and improve the community's health. This dichotomy began with the Flexner report of 1910 (24), which recommended that medical education be affiliated with universities for two years of scientific training and clinical clerkships.

Mary B. Dunn and Candace Jones (25) use the dichotomy between science and care as different logics to describe how they influenced medical education.

> "For a *science logic,* quality health care involves innovative diagnostic and therapeutic procedures to ameliorate human suffering and help eradicate disease." "A science logic focuses on knowledge of diseases built through research and innovative treatments (25)."
>
> "A *care logic* highlights physicians' clinical skills used to treat patients and improve the community's health (25)."

The tension between logic and medical education has changed while contributing to the development of public health science. The authors studied "science words," "care words," and "historical events that highlight the logic of science and care in medical education."

The authors' initial source for care words was the Willard Report of 1966 (26) concerning the challenge of family practice and a shift in medicine to community and patient-physician focus care. The Flexner Report of 1910 (24) was the initial source for science words since it was the first advocacy for a scientific approach to medicine. The emphasis and support for science and technical aspects and care and public health aspects have moved back and forth since the Flexner report.

They found that words supporting scientific logic dropped in 1969 and this support became stable in 1977, remaining consistent through 2005. Care logic became more frequent and variable in the 1990s, emphasized over science through 2005. The high point of the imbalance was in 1996 (25).

Conclusion:

Perhaps our difficulty communicating with each other derives from the diverse logic we use. Some have not been adequately translated, such as reliability, safety, operational, or HRO logic. When someone uses reliability logic to perform differently, the person is not criticizing the physician using institutional or market logic. It is simply a different way to think.

References:

1. Godden D. Mill's System of Logic. In: Mander WJ, editor. Oxford handbook of British philosophy in the nineteenth century. Oxford, UK: Oxford University Press; 2014. p. 44-70.
2. Groarke L. Informal Logic. In: Zalta EN, Nodelman U, editors. The Stanford Encyclopedia of Philosophy Spring, 2024 ed. Palo Alto, CA: Metaphysics Research Lab, Stanford University; 2024.
3. Shannon CE, Weaver W. The mathematical theory of communication. Urbana, IL: University of Illinois Press; 1949. 117 p.
4. Martinez M, Sequoiah-Grayson S. Logic and Information. In: Zalta EN, Nodelman U, editors. The Stanford Encyclopedia of Philosophy. Fall 2023 ed. Palo Alto, CA: Metaphysics Research Lab, Stanford University; 2023.
5. Shannon CE. A Mathematical Theory of Communication. Bell System Technical Journal. 1948;27(3):379-423. doi: 10.1002/j.1538-7305.1948.tb01338.x.
6. Thornton P, Ocasio W, Lounsbury M. The Institutional Logics Perspective: A New Approach to Culture, Structure, and Process. Oxford, UK: Oxford University Press.; 2012.

7. Friedland R, Alford RR. Bringing society back in: Symbols, practices, and institutional contradictions. In: Powell WW, DiMaggio PJ, editors. The new institutionalism in organizational analysis. Chicago, IL: University of Chicago Press; 1991. p. 232–63.

8. Thornton PH, Ocasio W. Institutional logics. In: Greenwood R, Oliver C, Sahlin K, Suddaby R, editors. The Sage handbook of organizational institutionalism. First ed. London, UK: Sage Publications 2008. p. 99-128.

9. Lounsbury M. Institutional transformation and status mobility: The professionalization of the field of finance. Academy of Management Journal 2002;45(1):255-66.

10. DiMaggio PJ, Powell WW. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. American Sociological Review. 1983;48:147-60.

11. Srikantia P, Bilimoria D. Isomorphism in organization and management theory: The case of research on sustainability. Organization & Environment. 1997;10(4):384-406.

12. Thornton PH. Markets from culture: Institutional logics and organizational decisions in higher education publishing. Palo Alto, CA: Stanford University Press; 2004.

13. J M, Mayer J, Lutz E. Navigating institutional plurality: Organizational governance in hybrid organizations. Organization Studies. 2015;36:713-39.

14. Besharov ML, Smith WK. Multiple institutional logics in organizations: Explaining their varied nature and implications. Academy of Management Review. 2014;39(3):364-81.

15. Graves W. The southern culture of risk capital: The path dependence of entrepreneurial finance. Southeastern Geographer. 2011;51:49-69.

16. JB C, Gerrard P, Schoch H, Hong CL. An entrepreneurial logic for the new economy. Management Decision. 2002;40:734-44.

17. van Stralen D, Gambino W. Error as a Faulty Failure Signal. Neonatology Today. 2020;15(9):114-7. doi: 10.51362/neonatology.today/20209159114117.

18. van Stralen D, McKay SD, Mercer TA. Allostasis, Threat, and Compressed Time: The Function of High Reliability Organizing (HRO). Neonatology Today. 2024;19(7):150-63.

19. Leiting A-K, Clarysse B, Thiel J, editors. Successful corporate entrepreneurship: A process of acculturation into corporate logics2020; Briarcliff Manor, NY: Academy of Management Proceedings.

20. Tracey P, Phillips N, Jarvis O. Bridging institutional entrepreneurship and the creation of new organizational forms: A multilevel model. Organization science. 2011;22(1):60-80.

21. Julie B, Silvia D. Building sustainable hybrid organizations: The case of commercial microfinance organizations. Academy of Management Journal. 2010;53(6):1419-40.

22. Reay T, Hinings CR. Managing the rivalry of competing institutional logics. Organization studies. 2009;30(6):629-52.

23. Reay T, Hinings CR. The recomposition of an organizational field: Health care in Alberta. Organization studies. 2005;26:351–84.

24. Flexner A. Medical education in the United States and Canada. New York, NY: The Carnegie Foundation 1910.

25. Dunn MB, Jones C. Institutional logics and institutional pluralism: The contestation of care and science logics in medical education, 1967–2005. Administrative science quarterly. 2010;55(1):114-49.

26. Willard WR. Meeting the Challenge of Family Practice: Report. Chicago, IL: Ad Hoc Committee on Education for Family Practice, Council on Medical Education, 1966.

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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



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



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

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William J. Corr, Capt. II, Los Angeles City Fire Department (retired)

Errol van Stralen, Ancora Education

Adrian Wolfberg, Ph.D., Senior Program Officer at the National Academy of Sciences National Academy of Sciences

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



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

AfPA

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/5523fcf7e4b0fef011e688e6/t/62445afd0134140ff354f3f6/1648646910485/NCIH_Monoclonal+Antibodies+Inclusion+in+the+VFC+Program_Position+Paper_Mar+2022.pdf

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.	How does it work?	Instead of teaching the body to create antibodies and defenses, they provide antibodies that are readily available.
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 a 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.		
Yes	Is it safe?	Yes
Both vaccines and preventive monoclonal antibodies undergo extensive testing for safety and efficacy.		

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.



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WARNING

Never Put a Mask on Your Baby

- Because babies have smaller airways, a mask can make it harder for them to breathe.
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- 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.



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Try Non-Pharmacological Care

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The Lost Skill of Neonatal Intubation

Jonathan Muraskas, MD, Jay P. Goldsmith, MD

"Endotracheal intubation is a frequent cause of considerable anxiety at some point in the careers of most neonatal health care providers."

Endotracheal intubation is a frequent cause of considerable anxiety at some point in the careers of most neonatal health care providers. The inability to establish an effective airway is one of the most common reasons for allegations of medical malpractice in the care of the newborn. It is well-known that most pediatric residents and junior fellows do not have enough exposure and experience in managing newborn airways. Additionally, many hospitals with low-volume deliveries where the need for intubation is infrequent do not have immediate access to a pediatrician or neonatologist for emergency newborn airway management. Unless we adapt to this reality, the resuscitation of newborns may be compromised. The potential for increased medical malpractice claims due to claims of inadequate resuscitation must also be considered.

Ventilation of the newborn's lungs is the single most important and effective step in neonatal resuscitation. (1,2) The successful completion of the American Academy of Pediatrics /American Heart Association (AAP/AHA) NRP training program does not necessarily imply competence. Tracheal intubation is technically challenging because of the unique airway anatomy in newborns. Term and preterm newborns seldom require chest compressions and/or epinephrine, reported as less than 2/1000 live births. (3) In our experience,> 95% of neonatal decompensation at birth is related to ventilation. There is often a knee-jerk reaction to start chest compressions with a heart rate of less than 60 bpm despite an inadequate airway. In the A, B, C, and D's of resuscitation, the A and B's of airway and breathing are the first and most important steps. Approximately 10% of all newborns require some form of resuscitation. Approximately 5% of newborns require positive pressure ventilation or other stabilization at birth, even in low-risk vaginal and cesarean deliveries. (3) Although NRP training is required every 2 years as proposed by the AAP/AHA, multiple studies have shown that resuscitation skills diminish between 3 and 8 months after completing NRP training. (4) Studies have demonstrated that the intubation success rate for pediatric residents with one attempt is about 25%, and the neonatal fellow success rate is about 57%. Over one-third of resident intubation procedures are still unsuccessful even after four attempts. (5)

With correct ventilation, one should see the heart rate rise, hear equal breath sounds, visualize chest movement, see improving vital signs, hear no air over the stomach, and confirm correct intratracheal placement with a CO_2 detector (screen turns from purple to yellow). "When in doubt take it out" is a useful teaching point. Often our ego assures us that the endotracheal tube went between the vocal cords despite a persistently bradycardic and cyanotic newborn. The longer you rationalize you are in the trachea, the harder it is to get a satisfactory response once you reintubate. Physiologic changes associated with intubation procedures include hypoxia, vagal-induced bradycardia, hypotension and/or hypertension, increased intracranial blood pressure, hemodynamic instability, cardiopulmonary decompensation, and death. Prolonged intubation attempts are associated with significant adverse clinical events (6). However, in most cases, one does not have to intubate the neonatal trachea to provide adequate short-term ventilation successfully. Other alternatives to endotracheal intubation include a laryngeal mask airway, properly performed bag and mask or mask to T-piece ventilation, and nasal ventilation. High and low-flow nasal cannulas, bubble CPAP, and a RAM cannula often negate the need for endotracheal intubation.

"However, in most cases, one does not have to intubate the neonatal trachea to provide adequate short-term ventilation successfully. Other alternatives to endotracheal intubation include a laryngeal mask airway, properly performed bag and mask or mask to T-piece ventilation, and nasal ventilation. High and low-flow nasal cannulas, bubble CPAP, and a RAM cannula often negate the need for endotracheal intubation."

A laryngeal mask airway (LMA) is a small mask attached to an airway tube inserted into the mouth and advanced until the mask covers the glottis. An endotracheal tube is advanced through the glottis, but an LMA remains above the glottis, which is why the LMA is called a supraglottic airway device. Placement of an LMA does not require visualization of the larynx or the use of an instrument (i.e., laryngoscope) for insertion. Studies have shown that the LMA requires less time and fewer attempts than endotracheal tube intubation. However, a recent survey demonstrated that neonatal healthcare professionals lack experience, confidence, skill, and training with the LMA, rarely use the device, and do not consider the LMA as an alternative to endotracheal intubation. The LMA was first applied in neonatal resuscitation in 1997. There is limited data on using LMAs in preterm newborns; however, LMAs are part of NRP training and are now available in smaller sizes to accommodate infants < 1000 g. Compared with potentially significant complications with repeated endotracheal intubation attempts, the LMA is associated with minor complications that include soft tissue trauma, stridor, gastric insufflation, aspiration, or partial airway obstruction related to incorrect placement. (7,8)

Properly performed bag and mask ventilation may give adequate short-term ventilation, but it must be done correctly. The wrong size mask or a poor seal between the mask and the face will result

in small tidal volumes, which will not result in adequate ventilation. The NRP provides an algorithm for corrective steps when bag and mask ventilation does not have the desired result (i.e., improvement in heart rate and chest rise with each breath). The adjustments in the MR SOPA acronym include: M=mask adjustment; R=reposition head and neck; S=suction mouth and nose; O=open mouth; P=pressure increase; and A=-alternative airway. (1) Moreover, the resuscitation team can interpose a colorimetric CO_2 detector between the phalange attached to the mask and bag (similar to what is recommended to confirm endotracheal tube placement in the trachea) to determine if adequate CO_2 is being exhaled from the ventilatory efforts.

A T-piece resuscitator is a mechanical device that uses valves to regulate the flow of compressed gas directly toward the patient (delivered by using a finger or thumb to alternately occlude and release a gas escape opening on the top of the T-piece cap). The T-piece is part of NRP recommendations for ventilation and can be continued to be used with an endotracheal tube or facemask. In certain circumstances, a very sick newborn might require significant pressure to open noncompliant lungs. With the T-piece, we determine the inspiratory pressure without any compliance knowledge. If the newborn does not respond to T-piece ventilation, one should be prepared to manually bag and mask ventilate the infant with significant transient high peak inspiratory pressures (up to 40 cm of H_2O pressure) to open up noncompliant lungs. Once initial lung aeration and functional residual capacity are accomplished, one can revert to T-piece resuscitation at lower peak inflating pressures.

"Neonatal-perinatal medicine is the largest pediatric subspecialty in the United States, with 8375 physicians certified and 5802 actively enrolled in maintenance of certification. In recent years, a significantly lower percentage of United States medical graduates have entered Neonatal-Perinatal medicine fellowships than most other pediatric medical specialties."

Neonatal-perinatal medicine is the largest pediatric subspecialty in the United States, with 8375 physicians certified and 5802 actively enrolled in maintenance of certification. In recent years, a significantly lower percentage of United States medical graduates have entered Neonatal-Perinatal medicine fellowships than most other pediatric medical specialties. In the last decade, pediatric residency changes relevant to neonatology include reducing critical care experience to a minimum of 4 weeks of neonatal intensive care during a 36-month pediatric residency. Guideline changes in duty hours have reduced the opportunity to obtain basic resuscitation skills in the current generation of residents. Medically, newborns do not require intubation as frequently as in past decades. The use of antenatal steroids, surfactants, noninvasive ventilation, and modern management of meconium-stained newborns have diminished the number of endotracheal intubation opportunities. (5,9)

Various solutions have been proposed to address this potential crisis in emergent airway management in neonatal care today. The proper use of an LMA, as well as premedication for elective endotracheal intubations, can contribute to more successful management of the airway. Some studies have demonstrated improved success in intubation using video laryngoscopy. Video laryngoscopy is expensive, and it takes considerable practice to perfect hand-eye coordination since the operator is not looking directly through the laryngoscope. One study demonstrated a 74% success rate with video laryngoscopy versus a 45% success in the direct laryngoscopy group. (10) Other authors have proposed to have specialized teams trained in intubation available 24/7 in hospitals and concentrate training on these selected individuals to improve airway skills. Another potential solution is increasing simulation training. (11) Some proposals recommend creating a residency in the Neonatal-Perinatal Medicine program similar to pediatric neurology with an initial 1 to 2 years of pediatric residency followed by 3 years of neonatal-perinatal medicine training. This would shorten training by approximately 1 year and perhaps increase the number of trained neonatologists in the country.

The potential medical and legal concerns are real. The removal of competency standards in 13 procedures by the Accreditation Council for Graduate Medical Education (ACGME) for pediatric residency, including bag and mask ventilation and neonatal endotracheal tube intubation, has been implemented. Decreased exposure to critically ill newborns will make it more difficult for the general pediatrician to notice the often subtle signs of impending critical illness or cardiopulmonary collapse, endangering the safety of newborns and infants in the community hospital. Diminished skills in delivery room resuscitation have the potential to create and worsen disparities and access to effective neonatal resuscitation and the ability of general pediatricians to provide initial stabilization of acutely ill newborns prior to transfer. (12) How should one define competency? What is the benchmark that defines competency? How would you evaluate clinicians using the benchmark definition?

"Decreased exposure to critically ill newborns will make it more difficult for the general pediatrician to notice the often subtle signs of impending critical illness or cardiopulmonary collapse, endangering the safety of newborns and infants in the community hospital."

The first 10 minutes after a baby is born is probably the most important time of his/her entire life. Significantly low Apgar scores at 10 and 15 minutes of age are associated with significant morbidity and mortality. A dedicated team that could include general pediatricians, respiratory therapists, RNs, NNPs, and neonatologists should undergo intense training to ensure adequate intubation skills. Especially in the delivery room, asking an anesthesiologist to look at the airway is very appropriate if a couple of intubation attempts are unsuccessful. We are failing to adequately teach intubation and initial resuscitation skills in our pediatric residency training programs and maintain teams capable of performing full CPR when needed. We need a new paradigm for neonatal resuscitation.

References:

1. American Academy of Pediatrics; Textbook of Neonatal Resuscitation, 8th Edition

2. Aziz K, Lee HC, Escobedo MB, et al. Part 5: neonatal resuscitation: 2020 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. Circulation. 2020;142(suppl 2):S524-S550. doi:10.1161/CIR.0000000000000902.

3. Perlman JM, Risser R. Cardiopulmonary Resuscitation in the Delivery Room. Arch Pediatr Adolesc Med 1995;149:20-5.

4. Patel J, Posencheng M, Ades A. Proficiency and Retention of Neonatal Resuscitation Skills by Pediatric Residents. Pediatrics Volume 130, Number 3, September 2012.

5. Downes KJ, Narendran V, Meinzen-Derr J, et al. The Lost Art of Intubation: Assessing Opportunities for Residents to Perform Neonatal Intubation. Journal of Perinatology (2012) 32, 927-932.

6. Sing N, Sawyer T, Johnson LC, et al. Impact of Multiple Intubation Attempts on Adverse Tracheal Intubation Associated Events in Neonates: A Report from the NEAR4NEOS. Journal of Perinatology (2022) 42:1221-1227

7. Robin B, Soghier LM, et al. Laryngeal Mask Airway Clinical Use and Training: A Survey of North American Neonatal Health Care Professionals. Am J Perinatol 2024;41:1476-1483.

8. Mani S, Rawat M. Proficiency of Laryngeal Mask Airway Insertion in NRP Certified Providers. Am J Perinatol 2022;39:1008-1014.

9. Lakshminrusimha, S., Steinhorn, R.H. Is it time for a separate residency and department in "Neonatal Critical Care Medicine"?. J Perinatol (2025). https://doi.org/10.1038/s41372-025-02219-y

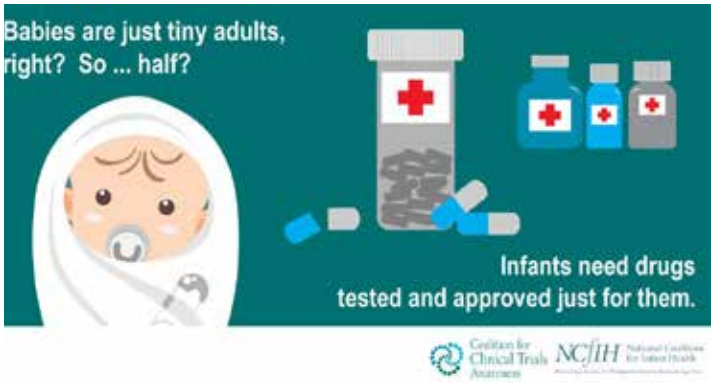
10. Geraghty LE, Dunne EA, et al. Video Versus Direct Laryngoscopy for Urgent Intubation of Newborn Infants. N Engl J Med 390;20.

11. Bender J, Kennally K, Shields R, Overly F. Does Simulation Booster Impact Retention of Resuscitation Procedural Skill and Teamwork. Journal of Perinatology (2014) 34, 664-668.

12. Shah S, Fernandez Dyess, N, Myers P. Devaluing Babies: Neonatal Implications of Proposed Changes in Pediatric Residency Training. Journal of Perinatology (2023) 43:1455-1458.

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Corresponding Author



Jonathan K. Muraskas, M.D.
Professor of Pediatrics
Co-director, Neonatal ICU
Director, Neonatal-Perinatal Research
Loyola University Medical Center
2160 S First Ave
Maywood, Illinois 60153
email: JMURASK@lumc.edu



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

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Respiratory Viruses:

What parents need to know this RSV and flu season

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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.

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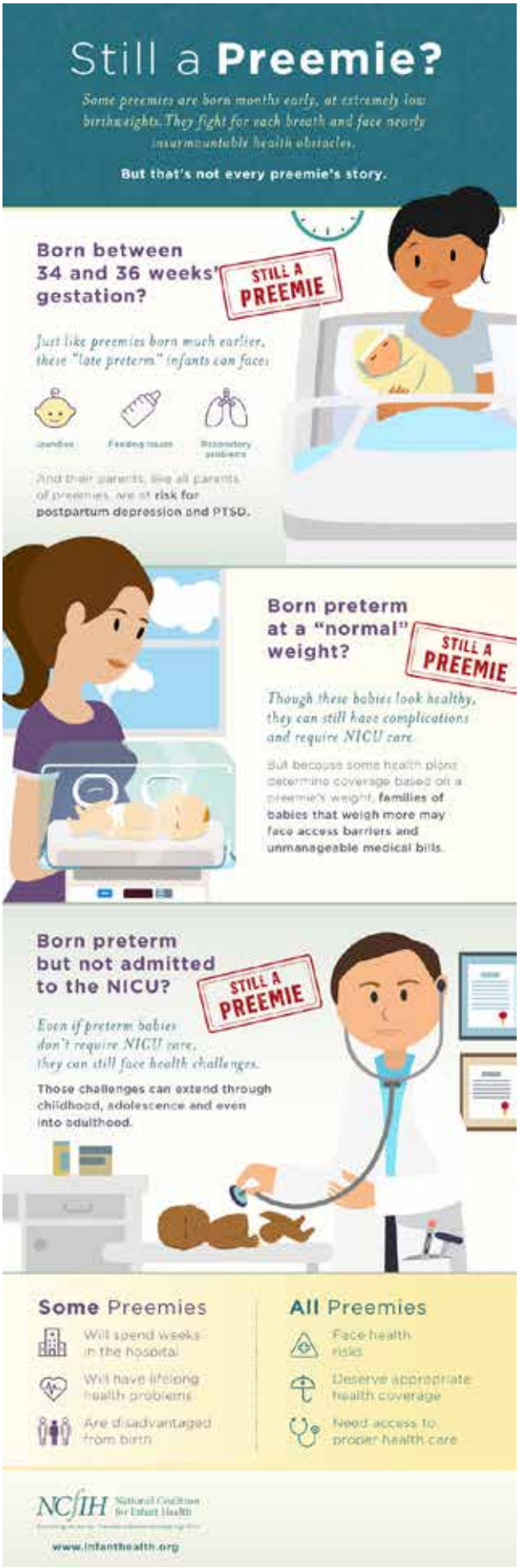
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Genetics Corner: Minireview: Fractures in the Extremely Premature infant: Distinguishing Metabolic Bone Disease of Prematurity versus Osteogenesis Imperfecta

Hua Wang M.D., Ph.D, FACMG

Abstract:

Extremely premature infants are at elevated risk for fractures due to disrupted bone mineralization and developmental immaturity. Two major etiologies—Metabolic Bone Disease of Prematurity (MBDP) and Osteogenesis Imperfecta (OI)—present with overlapping clinical features, including osteopenia and fractures, yet differ fundamentally in pathophysiology, diagnosis, and management. MBDP arises from nutritional and metabolic deficiencies and is reversible with appropriate mineral and vitamin supplementation. In contrast, OI is a genetic disorder of collagen synthesis requiring lifelong multidisciplinary care. This review outlines the distinguishing clinical, radiologic, and laboratory features of MBDP and OI in neonates, emphasizing a structured diagnostic approach and evidence-based management strategies to improve outcomes in this vulnerable population.

"Metabolic Bone Disease of Prematurity (MBDP) and Osteogenesis Imperfecta (OI) present with overlapping clinical features, including osteopenia and fractures, yet differ fundamentally in pathophysiology, diagnosis, and management."

1. Introduction:

Extremely premature infants, defined as those born before 28 weeks of gestation, are at a significantly increased risk of fractures due to immature bone development and metabolic disturbances (1). During the third trimester of pregnancy, the fetus undergoes rapid bone mineralization, accruing approximately 80% of its skeletal calcium and phosphorus stores (2). This process is interrupted when born prematurely, leading to inadequate bone mineralization and increased fracture susceptibility.

Two major etiologies of fractures in this population are Metabolic Bone Disease of Prematurity (MBDP) and Osteogenesis Imperfecta (OI). MBDP, also known as neonatal rickets, results from inadequate calcium, phosphorus, and vitamin D intake, compounded by the immaturity of the infant's renal and gastrointestinal systems (3) In contrast, OI is a genetic disorder caused by mutations in collagen type I genes (*COL1A1*, *COL1A2*) or other genes involved in bone formation, leading to defective collagen synthesis and brittle bones (4, 5). While MBDP is an acquired condition often associated with nutritional deficiencies, OI is an inherited disorder with a broad phenotypic spectrum.

Accurate differentiation between MBDP and OI is critical for appropriate management and prognosis. Misdiagnosis can lead to inappropriate treatment, unnecessary interventions, or delayed care. For example, MBDP is managed primarily through nutritional optimization and physical therapy, whereas OI often requires pharmacological interventions (e.g., bisphosphonates) and multidisciplinary care (6). Furthermore, the long-term outcomes for these conditions differ significantly. MBDP typically resolves with appropriate treatment, while OI is a lifelong condition requiring ongoing management (7).

"Accurate differentiation between MBDP and OI is critical for appropriate management and prognosis. Misdiagnosis can lead to inappropriate treatment, unnecessary interventions, or delayed care. For example, MBDP is managed primarily through nutritional optimization and physical therapy, whereas OI often requires pharmacological interventions (e.g., bisphosphonates) and multidisciplinary care."

The objective of this review is to provide a concise comparison of MBDP and OI in extremely premature infants, focusing on their pathophysiology, clinical features, diagnostic approaches, and management strategies. This review aims to guide clinicians in accurately diagnosing and managing fractures in this vulnerable population by highlighting key differences and similarities.

2. Pathophysiology:

Metabolic Bone Disease of Prematurity (MBDP):

Metabolic Bone Disease of Prematurity (MBDP), also known as neonatal rickets or osteopenia of prematurity, is a disorder that arises due to an inadequate supply of essential minerals such as calcium, phosphorus, and vitamin D during a critical period of fetal bone development (1). The fetal skeleton undergoes rapid mineral accretion during the third trimester of pregnancy, accumulating nearly 80% of total skeletal calcium and phosphorus stores in preparation for postnatal growth (2). However, when infants are born prematurely, this mineral deposition process

is abruptly interrupted, leaving them vulnerable to insufficient bone mineralization, predisposing them to fractures and skeletal deformities.

"The fetal skeleton undergoes rapid mineral accretion during the third trimester of pregnancy, accumulating nearly 80% of total skeletal calcium and phosphorus stores in preparation for postnatal growth. However, when infants are born prematurely, this mineral deposition process is abruptly interrupted, leaving them vulnerable to insufficient bone mineralization, predisposing them to fractures and skeletal deformities."

The pathophysiology of MBDP is multifactorial, influenced by nutritional deficiencies, immobility, and medication use:

1). Nutritional Deficiencies:

Preterm infants frequently rely on parenteral nutrition, which, despite its life-sustaining benefits, is often inadequate in providing calcium and phosphorus due to solubility limitations (3). Additionally, while human milk is the optimal source of nutrition for newborns, it lacks sufficient calcium and phosphorus to support the accelerated skeletal growth required for premature infants (1, 8).

2). Immobility:

The mechanical loading of bones through physical activity and movement plays a critical role in normal bone development. Critically ill neonates, especially those in intensive care settings, experience limited mobility, which further reduces mechanical stress on bones and contributes to poor bone mineralization (9).

3). Medication Effects:

Certain medications used in neonatal care can exacerbate bone mineral deficits. Diuretics such as furosemide promote calcium excretion, further depleting essential minerals from the developing skeleton (10). Additionally, corticosteroids, commonly prescribed for chronic lung disease in preterm infants, impair osteoblast function and reduce calcium absorption, thereby inhibiting bone formation (6).

These factors contribute to low bone mineral density and increased fracture risk in preterm infants. Early detection and intervention, including nutritional supplementation, physical therapy, and careful medication management, are essential to mitigating long-term skeletal complications associated with MBDP.

Osteogenesis Imperfecta (OI):

Osteogenesis Imperfecta (OI) is a genetic connective tissue disorder that primarily affects bone strength and integrity. It is caused by mutations in the COL1A1 and COL1A2 genes, which encode type I collagen, the primary structural protein of bone (4). This defective collagen formation results in skeletal fragility, recurrent fractures, and progressive deformities, varying severity degrees based on the specific genetic mutation.

"Osteogenesis Imperfecta (OI) is a genetic connective tissue disorder that primarily affects bone strength and integrity. It is caused by mutations in the COL1A1 and COL1A2 genes, which encode type I collagen, the primary structural protein of bone. This defective collagen formation results in skeletal fragility, recurrent fractures, and progressive deformities, varying severity degrees based on the specific genetic mutation."

The pathophysiology of OI is multifaceted, involving collagen defects, impaired bone mineralization, altered bone remodeling, and secondary musculoskeletal effects:

1). Defective Collagen Synthesis and Structure:

The most fundamental defect in OI lies in the abnormal synthesis of type I collagen. Mutations in COL1A1 or COL1A2 lead to either:

- Quantitative defects (haploinsufficiency), where the body produces less collagen (as seen in mild Type I OI) or
- Qualitative defects, where the collagen produced is structurally abnormal and incapable of forming a proper bone matrix (seen in more severe Types II-IV) (7).

2). Impaired Bone Mineralization:

Due to the defective collagen matrix, the bone's scaffolding is weak, resulting in poor mineralization. Histological studies reveal thin trabeculae, reduced cortical thickness, and increased porosity, all contributing to brittle bones prone to fracture (7). Additionally, abnormal osteoid formation disrupts calcium-phosphate deposition, weakening the bone structure.

3). Altered Bone Remodeling and Increased Bone Turnover:

Bone remodeling is a dynamic process involving osteoclast-mediated bone resorption and osteoblast-driven bone formation. In OI, there is an imbalance between these processes, leading to increased osteoclast activity and accelerated bone turnover. Emerging research suggests

dysregulated Wnt signaling in OI contributes to osteoblast apoptosis and defective bone repair, exacerbating skeletal fragility (11).

4). Secondary Musculoskeletal Effects:

- Muscle Hypotonia and Joint Laxity: The poor structural integrity of collagen extends beyond bones, affecting ligaments and tendons, leading to joint instability and hypermobility.
- Growth Retardation: In severe forms, multiple fractures, spinal deformities, and vertebral compression impair linear growth, leading to short stature.

The clinical severity of OI varies widely, with classifications ranging from mild (Type I) to perinatal lethal (Type II), progressively deforming (Type III), and moderate (Type IV). While no cure exists for OI, bisphosphonate therapy has been shown to increase bone mineral density and reduce fracture rates by inhibiting osteoclast-mediated bone resorption (12). Advances in gene therapy and stem cell-based treatments offer hope for future therapeutic approaches in managing OI.

"The clinical severity of OI varies widely, with classifications ranging from mild (Type I) to perinatal lethal (Type II), progressively deforming (Type III), and moderate (Type IV). While no cure exists for OI, bisphosphonate therapy has been shown to increase bone mineral density and reduce fracture rates by inhibiting osteoclast-mediated bone resorption."

3. Clinical Features:

Metabolic Bone Disease of Prematurity (MBDP):

Metabolic Bone Disease of Prematurity (MBDP) typically becomes clinically evident between 6 and 12 weeks of life, coinciding with the period of rapid postnatal growth and progressive depletion of fetal mineral stores (13). Although the condition is often subtle and underdiagnosed, several hallmark features aid in its identification.

One of the most characteristic features of MBDP is the presence of fractures, particularly involving the ribs and long bones such as the femur and humerus. Rib fractures indicate the disease and may present with respiratory distress or be detected incidentally on chest radiographs. Radiographic findings often reveal osteopenia, widened growth plates, and fraying or cupping of the metaphyses, closely resembling rickets. Additionally, infants with MBDP frequently exhibit poor linear growth and failure to thrive, largely due to impaired bone mineralization and disrupted skeletal development (3).

MBDP is also associated with systemic complications, which can exacerbate the disease process. Respiratory distress may arise as a result of rib fractures and thoracic deformities, significantly affecting pulmonary function. Prolonged parenteral nutrition, often required in preterm infants, further increases the risk of MBDP, as it fails to provide adequate mineral intake for normal bone development. Moreover, cholestasis, a common complication in preterm infants, impairs vitamin D metabolism, further worsening mineral deficiencies and exacerbating skeletal fragility (3, 14, 15).

"One of the most characteristic features of MBDP is the presence of fractures, particularly involving the ribs and long bones such as the femur and humerus. Rib fractures indicate the disease and may present with respiratory distress or be detected incidentally on chest radiographs. Radiographic findings often reveal osteopenia, widened growth plates, and fraying or cupping of the metaphyses, closely resembling rickets. Additionally, infants with MBDP frequently exhibit poor linear growth and failure to thrive, largely due to impaired bone mineralization and disrupted skeletal development."

Osteogenesis Imperfecta (OI):

Osteogenesis Imperfecta (OI) is a genetic connective tissue disorder caused by mutations in COL1A1 and COL1A2, leading to defective type I collagen synthesis. The clinical presentation varies widely depending on the specific OI type, ranging from mild bone fragility to perinatal lethality.

A key hallmark of OI is bone fragility and recurrent fractures, which may occur in utero, at birth, or shortly after birth, particularly in severe forms of the disease (5). Fractures often result from minimal or no trauma and may involve multiple bones, including long bones, ribs, and vertebrae, leading to progressive skeletal deformities (7).

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Other classic features of OI include blue sclerae, a bluish discoloration of the sclera due to thin collagen layers, and

dentinogenesis imperfecta (DI), which results in discolored, brittle teeth prone to decay (5, 16). Additional radiographic findings include Wormian bones, which are extra sutural bones in the skull, frequently detected on cranial radiographs (17). Bowing of the long bones, particularly the femur and tibia, is commonly observed due to recurrent fractures and abnormal bone remodeling (7). Growth failure and short stature are prominent in severe cases, particularly in Types III and IV OI.

"Other classic features of OI include blue sclerae, a bluish discoloration of the sclera due to thin collagen layers, and dentinogenesis imperfecta (DI), which results in discolored, brittle teeth prone to decay. Additional radiographic findings include Wormian bones, which are extra sutural bones in the skull, frequently detected on cranial radiographs."

Phenotypic Variability and OI Types:

OI presents with a broad clinical spectrum, categorized into different subtypes based on severity:

1). Mild Forms

- Type I (Classic Non-Deforming OI with Blue Sclerae):
  - The most common and mildest form of OI.
  - Characterized by few fractures, minimal skeletal deformities, normal stature, and blue sclerae.
  - Hearing loss frequently develops in adulthood.

2). Perinatal Lethal and Severe Forms

- Type II (Perinatal Lethal OI):
  - The most severe and often lethal form, leading to perinatal or neonatal death due to respiratory failure from severe rib fractures and pulmonary hypoplasia.
  - Infants present with multiple in-utero fractures, extreme skeletal deformities, and beaded ribs.
- Type III (Severe Progressive Deforming OI):
  - Characterized by severe bone fragility, multiple fractures at birth, progressive skeletal deformities, and extreme short stature.
  - Often associated with severe kyphoscoliosis, respiratory complications, and dentinogenesis imperfecta.
- Type IV (Moderate OI with Normal Sclerae):
  - Variable severity, ranging from mild to severe forms.
  - Patients may have moderate bone deformities, short stature, and dentinogenesis imperfecta.
  - Unlike Type I, sclerae are white or near normal.

3). Rare and Atypical Forms

- Type V (OI with Hyperplastic Callus Formation):
  - Characterized by calcified interosseous membranes, causing restricted forearm rotation.
  - Hyperplastic callus formation following fractures is a distinguishing feature.
- Type VI (OI with Mineralization Defect):
  - Defined by distinct histological findings, with a "fish-scale" pattern on bone biopsies.
  - Caused by defects in bone mineralization rather than collagen synthesis.
- Types VII and VIII (Severe Recessive OI Forms):
  - Result from mutations in non-collagenous proteins involved in collagen processing.
  - Severe phenotypes resembling Type II or III OI.

"Beyond skeletal fragility, OI can present with additional complications:
- Hearing Loss: Progressive conductive and sensorineural hearing loss may develop in adolescence or adulthood, particularly in Type I OI.
- Ligamentous Laxity and Muscle Weakness: Hyperextensible joints, muscle hypotonia, and easy bruising are common and may increase fall risk.
- Cardiopulmonary Complications: Severe forms (Types III and IV) may develop restrictive lung disease due to rib cage deformities and scoliosis."

Other Features of OI

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deformities and scoliosis.

4. DIAGNOSTIC APPROACH

Metabolic Bone Disease of Prematurity (MBDP)

Metabolic Bone Disease of Prematurity (MBDP) diagnosis is based on a combination of laboratory findings, radiographic imaging, and bone density studies. Early identification is crucial for preventing complications and optimizing postnatal bone mineralization in preterm infants.

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1). Laboratory Findings

Biochemical markers are essential in detecting mineral deficiencies and altered bone metabolism.

- Low Serum Phosphorus: A hallmark finding of MBDP, low phosphorus levels indicate inadequate phosphorus intake or retention, often due to immature renal handling of minerals.
- Elevated Alkaline Phosphatase (ALP): Increased ALP levels reflect heightened osteoblastic activity and bone turnover, commonly observed in mineral deficiency states.
- Normal or Low Serum Calcium: While calcium levels may remain within normal limits, they can be low in severe cases, further exacerbating skeletal fragility.

2). Radiographic Findings

Imaging studies are instrumental in detecting early bone changes before clinical symptoms become apparent.

- Osteopenia: Reduced bone density is visible on X-rays, particularly affecting long bones and ribs.
- Fractures: Metaphyseal fractures and rib fractures are frequently observed. These fractures may be multiple and symmetric, distinguishing MBDP from non-accidental trauma.
- Rachitic Changes: Features resembling rickets—including widened growth plates, fraying, and cupping of metaphyses—are indicative of severe mineral deficiency.

3). Bone Density Studies

Bone density assessments provide a quantitative evaluation of skeletal mineralization.

- Dual-Energy X-ray Absorptiometry (DEXA): DEXA scans demonstrate reduced bone mineral density (BMD) compared to age-matched norms, confirming osteopenia in preterm infants.
- Quantitative Ultrasound (QUS): QUS is an alternative to DEXA, particularly in neonates, though it is less standardized and less commonly used in clinical practice.

"The Osteogenesis Imperfecta (OI) diagnosis is established through clinical evaluation, radiographic findings, and genetic testing. Unlike MBDP, an acquired condition, OI is a genetic disorder affecting collagen production and bone strength."

Osteogenesis Imperfecta (OI)

The Osteogenesis Imperfecta (OI) diagnosis is established through clinical evaluation, radiographic findings, and genetic testing. Unlike MBDP, an acquired condition, OI is a genetic disorder affecting collagen production and bone strength.

1). Laboratory Findings

Unlike other metabolic bone diseases, OI does not typically alter routine biochemical markers of bone metabolism.

- Normal Calcium, Phosphorus, and Alkaline Phosphatase: OI patients typically exhibit normal levels of serum calcium, phosphorus, and ALP, distinguishing them from nutritional and metabolic bone disorders.

2). Radiographic Findings

Characteristic skeletal findings aid in distinguishing OI from other causes of bone fragility.

- Thin Cortices: Reduced cortical thickness in long bones is a hallmark of impaired bone formation and remodeling.
- Wormian Bones: These extra sutural bones in the skull are a classic finding on cranial radiographs and are more frequently seen in OI than in the general population.
- Multiple Fractures of Varying Ages: Radiographs often reveal acute and healed fractures, commonly involving the long bones, ribs, and vertebrae, reflecting chronic bone fragility.

3). Genetic Testing

Genetic testing provides definitive confirmation of OI and helps distinguish different OI subtypes.

- Mutation Analysis: Identification of pathogenic COL1A1 and COL1A2 mutations confirms dominant forms of OI, while mutations in CRTAP, P3H1, and FKBP10 are associated with recessive OI subtypes (5).
- Next-Generation Sequencing (NGS): Comprehensive

Table. Key Distinguishing Features

Feature	Osteogenesis Imperfecta (OI)	Metabolic Bone Disease of Prematurity (MBDP)
Timing of Fractures	Fractures may occur in utero, at birth, or shortly after birth, especially in severe forms.	Fractures typically present after 6–12 weeks of life, coinciding with the depletion of fetal mineral stores.
Associated Clinical Findings	Classic features include blue sclerae, dentinogenesis imperfecta, and ligamentous laxity.	Associated features include respiratory distress, prolonged parenteral nutrition, and cholestasis.
Radiographic Findings	Thin cortical bones, Wormian bones, and multiple fractures of varying ages.	Osteopenia, rachitic changes (widened growth plates, fraying, and cupping), and metaphyseal fractures.
Biochemical Markers	Typically, normal mineral levels and bone turnover markers.	Low phosphorus, elevated alkaline phosphatase (ALP), and evidence of impaired bone mineralization.

genetic panels or whole exome sequencing (WES) can detect dominant and recessive mutations, making it a highly sensitive tool for OI diagnosis.

5. Differential Diagnosis:

Distinguishing between Metabolic Bone Disease of Prematurity (MBDP) and Osteogenesis Imperfecta (OI) is critical, as both conditions can present with bone fragility, fractures, and osteopenia.

Key Distinguishing Features (see **Table** above)

Overlap and Challenges in Extremely Premature Infants:

In extremely premature infants, differentiation between OI and MBDP can be challenging, as both conditions may present with fractures and osteopenia. Several factors complicate the diagnosis:

1). Clinical Features:

- In early infancy, the absence of classic OI features (e.g., blue sclerae) may lead to delayed diagnosis (5).

2). Radiographic Interpretation:

- Differentiating rachitic changes (MBDP) from Wormian bones (OI) requires expertise in pediatric radiology, as both findings can be seen in metabolic and genetic disorders affecting bone formation (17).

3). Genetic Testing:

- Genetic testing is definitive for OI but may not be immediately available or accessible in all healthcare settings, potentially delaying an accurate diagnosis (7).

6. MANAGEMENT STRATEGIES

Metabolic Bone Disease of Prematurity (MBDP)

Metabolic Bone Disease of Prematurity (MBDP) management focuses on optimizing nutrition, promoting bone health, and monitoring for complications. Early intervention can significantly reduce the risk of fractures, skeletal deformities, and long-term disability in preterm infants.

1). Optimize Nutrition

"Metabolic Bone Disease of Prematurity (MBDP) management focuses on optimizing nutrition, promoting bone health, and monitoring for complications. Early intervention can significantly reduce the risk of fractures, skeletal deformities, and long-term disability in preterm infants."

Adequate mineral intake is the cornerstone of MBDP management, as preterm infants are at high risk for mineral deficiencies due to interrupted fetal mineral accretion.

- Calcium and Phosphorus Supplementation: To support bone mineralization, adequate calcium and phosphorus intake is ensured through fortified human milk, preterm formulas, or parenteral nutrition.
- Vitamin D Supplementation: Vitamin D is supplemented to enhance calcium absorption and improve bone health, preventing rickets-like complications.
- Enteral Feeding: Early transition to enteral feeding facilitates mineral absorption and reduces reliance on parenteral nutrition, which is associated with bone demineralization.

2). Encourage Weight-Bearing Activities

Mechanical loading is essential for bone strength, and interventions to promote weight-bearing activities can help stimulate bone formation and reduce fracture risk.

- Physical Therapy: Gentle weight-bearing exercises are encouraged to stimulate osteogenesis and increase bone mineralization.
- Positioning and Handling: Gentle handling and proper positioning are crucial to minimize mechanical stress on fragile bones and prevent iatrogenic fractures.

3). Monitor Bone Health

Regular biochemical and imaging evaluations help assess the effectiveness of interventions and detect early signs of bone fragility.

- Serial Laboratory Testing: Routine monitoring of serum calcium, phosphorus, and alkaline phosphatase (ALP) is recommended to assess response to nutritional and therapeutic interventions.
- Imaging Studies: Periodic radiographs and bone density scans (DEXA) help evaluate bone mineralization and detect early-stage fractures.

"Managing Osteogenesis Imperfecta (OI) requires a multidisciplinary approach, integrating genetic counseling, medical therapy, orthopedic care, and rehabilitation to address diverse clinical manifestations."

Osteogenesis Imperfecta (OI)

Managing Osteogenesis Imperfecta (OI) requires a multidisciplinary approach, integrating genetic counseling, medical therapy, orthopedic care, and rehabilitation to address diverse clinical manifestations.

1). Multidisciplinary Care

A team-based approach ensures comprehensive management of OI-related bone fragility and functional limitations.

- Genetics: Genetic confirmation of OI allows for accurate diagnosis, prognosis assessment, and genetic counseling for families regarding inheritance patterns and recurrence risks.
- Orthopedics: Fractures and skeletal deformities are managed using casting, bracing, and surgical interventions to promote stability and mobility.
- Endocrinology: Bone health is monitored, and bisphosphonate therapy is overseen to optimize bone mineral density.
- Physical Therapy: Functional rehabilitation focuses on improving mobility, strength, and independence in activities of daily living.

2). Bisphosphonates

Bisphosphonates are key in reducing fracture risk and increasing bone density in children with OI.

- Fracture Prevention: Intravenous bisphosphonates (e.g., pamidronate, zoledronic acid) are used to increase bone mass and reduce fracture frequency (7).
- Long-term Bone Health: Treatment cycles are tailored to patient age and disease severity, with periodic reassessments to optimize therapeutic benefits while minimizing side effects.

3). Surgical Interventions

Surgical management is often required in moderate to severe OI to prevent deformities and improve mobility.

- Intramedullary Rodding: Surgical placement of intramedullary rods stabilizes long bones, preventing progressive deformities and recurrent fractures.
- Spinal Fusion: Severe scoliosis and vertebral compression fractures may require spinal fusion surgery to preserve postural stability and respiratory function.

4). Genetic Counseling

Families affected by OI benefit from comprehensive genetic counseling to understand inheritance patterns, reproductive options, and disease progression. Counseling ensures informed decision-making regarding future pregnancies and risk assessment (5).

"The prognosis of Metabolic Bone Disease of Prematurity (MBDP) is generally favorable, provided that appropriate nutritional and medical management is implemented early. Most infants with MBDP achieve normal bone mineralization and growth with no long-term skeletal complications."

7. Prognosis:

Metabolic Bone Disease of Prematurity (MBDP)

The prognosis of Metabolic Bone Disease of Prematurity (MBDP) is generally favorable, provided that appropriate nutritional and medical management is implemented early. Most infants with MBDP achieve normal bone mineralization and growth with no long-term skeletal complications (1).

However, long-term outcomes depend on the severity and duration of mineral deficiencies. If left untreated or inadequately managed, MBDP can lead to growth impairment, short stature, and recurrent fractures. Early intervention, including calcium and phosphorus supplementation, vitamin D therapy, and physical activity, plays a crucial role in minimizing long-term complications (2).

Osteogenesis Imperfecta (OI)

The prognosis of OI is highly variable, depending on the specific type and severity of the condition.

- Mild Forms (Type I): Patients with Type I OI typically have a normal lifespan with few fractures and minimal disability. These individuals may experience mild skeletal fragility but can often maintain good mobility and function with appropriate management (16).
- Severe Forms (Types II, III, IV): More severe forms of OI are associated with significant morbidity, including recurrent fractures, skeletal deformities, and progressive disability. In Type II OI, perinatal mortality is common due to respiratory insufficiency caused by severe rib fractures and pulmonary hypoplasia. Type III and Type IV OI are linked to progressive

skeletal deformities, reduced mobility, and shortened life expectancy, depending on the severity of the bone fragility (5).

For severe OI cases, lifelong management is required, involving multidisciplinary medical, surgical, and rehabilitative care. Bisphosphonate therapy, orthopedic surgeries (e.g., rodding procedures), and physical therapy improve bone strength, mobility, and overall quality of life (7).

"For severe OI cases, lifelong management is required, involving multidisciplinary medical, surgical, and rehabilitative care. Bisphosphonate therapy, orthopedic surgeries (e.g., rodding procedures), and physical therapy improve bone strength, mobility, and overall quality of life."

8. Conclusion:

Fractures in extremely premature infants require careful clinical evaluation to distinguish between Metabolic Bone Disease of Prematurity (MBDP) and Osteogenesis Imperfecta (OI). Since both conditions present with osteopenia and bone fragility, differentiating them based on clinical, radiographic, and biochemical findings is essential for accurate diagnosis and effective management. The management approach varies significantly between the two conditions. MBDP is primarily treated through nutritional optimization, including adequate calcium, phosphorus, and vitamin D supplementation, alongside physical therapy to stimulate bone formation. In contrast, OI requires a multidisciplinary approach, incorporating bisphosphonate therapy, orthopedic surgical interventions (e.g., rodding procedures), and genetic counseling to address the underlying collagen defect and long-term skeletal complications.

Future Directions

Despite advancements in the diagnosis and treatment of MBDP and OI, several areas warrant further research and clinical improvement:

1. **Standardized Diagnostic Criteria**
   - The development of standardized guidelines for diagnosing and managing fractures in preterm infants is crucial to improving early detection and intervention.
2. **Long-Term Follow-Up Studies**
   - Further research is needed to better understand the long-term skeletal outcomes of MBDP and OI, particularly in extremely premature infants who remain at higher risk of growth impairment and recurrent fractures.
3. **Advances in Genetic Testing**
   - Genetic testing for OI continues to improve, but increased accessibility and affordability would facilitate earlier diagnosis and more precise risk assessment for affected families.
4. **Targeted Therapies**
   - Emerging research on novel therapies, including gene editing and anti-TGF-β agents, offers promising potential for disease-modifying treatment options in OI by directly addressing the underlying molecular defect.

Continued advancements in diagnostics, therapeutics, and clinical guidelines will enhance early intervention strategies, ultimately improving outcomes and quality of life for infants affected by MBDP and OI.

References:

1. Abrams SA. Vitamin D and bone minerals in neonates. Early Human Development. 2021;162:105461. doi: https://doi.org/10.1016/j.earlhumdev.2021.105461.
2. Fewtrell MS, Williams JE, Singhal A, Murgatroyd PR, Fuller N, Lucas A. Early diet and peak bone mass: 20 year follow-up of a randomized trial of early diet in infants born preterm. Bone. 2009;45(1):142-9. Epub 2009/03/25. doi: 10.1016/j.bone.2009.03.657. PubMed PMID: 19306955.
3. Chinoy A, Mughal MZ, Padidela R. Metabolic bone disease of prematurity: causes, recognition, prevention, treatment and long-term consequences. Arch Dis Child Fetal Neonatal Ed. 2019;104(5):F560-f6. Epub 2019/05/13. doi: 10.1136/archdischild-2018-316330. PubMed PMID: 31079069.
4. Forlino A, Marini JC. Osteogenesis imperfecta. Lancet. 2016;387(10028):1657-71. Epub 2015/11/07. doi: 10.1016/s0140-6736(15)00728-x. PubMed PMID: 26542481; PubMed Central PMCID: PMC7384887.
5. Marini JC, Forlino A, Bächinger HP, Bishop NJ, Byers PH, Paepe A, et al. Osteogenesis imperfecta. Nat Rev Dis Primers. 2017;3:17052. Epub 2017/08/19. doi: 10.1038/nrdp.2017.52. PubMed PMID: 28820180.
6. Ward LM. Glucocorticoid-Induced Osteoporosis: Why Kids Are Different. Front Endocrinol (Lausanne). 2020;11:576. Epub 2021/01/05. doi: 10.3389/fendo.2020.00576. PubMed PMID: 33391179; PubMed Central PMCID: PMC7772619.
7. Rauch F, Glorieux FH. Osteogenesis imperfecta. Lancet. 2004;363(9418):1377-85. Epub 2004/04/28. doi: 10.1016/s0140-6736(04)16051-0. PubMed PMID: 15110498.
8. Mohamed M, Kamleh M, Muzzy J, Groh-Wargo S, Abu-Shaweesh J. Association of Protein and Vitamin D Intake With Biochemical Markers in Premature Osteopenic Infants: A Case-Control Study. Front Pediatr. 2020;8:546544. Epub 2020/12/18. doi: 10.3389/fped.2020.546544. PubMed PMID: 33330265; PubMed Central PMCID: PMC7732600.
9. Rigo J, Pieltain C, Salle B, Senterre J. Enteral calcium, phosphate and vitamin D requirements and bone mineralization in preterm infants. Acta Paediatr. 2007;96(7):969-74. Epub 2007/06/20. doi: 10.1111/j.1651-2227.2007.00336.x. PubMed PMID: 17577338.
10. Faienza MF, D'Amato E, Natale MP, Grano M, Chiarito M, Brunetti G, et al. Metabolic Bone Disease of Prematurity: Diagnosis and Management. Front Pediatr. 2019;7:143. Epub 2019/04/30. doi: 10.3389/fped.2019.00143. PubMed

PMID: 31032241; PubMed Central PMCID: PMC6474071.

11. Grafe I, Yang T, Alexander S, Homan EP, Lietman C, Jiang MM, et al. Excessive transforming growth factor-β signaling is a common mechanism in osteogenesis imperfecta. Nat Med. 2014;20(6):670-5. Epub 2014/05/06. doi: 10.1038/nm.3544. PubMed PMID: 24793237; PubMed Central PMCID: PMC4048326.

12. Glorieux FH, Bishop NJ, Plotkin H, Chabot G, Lanoue G, Travers R. Cyclic administration of pamidronate in children with severe osteogenesis imperfecta. N Engl J Med. 1998;339(14):947-52. Epub 1998/10/01. doi: 10.1056/nejm199810013391402. PubMed PMID: 9753709.

13. Czech-Kowalska J. Mineral and nutritional requirements of preterm infant. Semin Fetal Neonatal Med. 2020;25(1):101071. Epub 2019/12/18. doi: 10.1016/j.siny.2019.101071. PubMed PMID: 31843379.

14. Backström MC, Kuusela AL, Mäki R. Metabolic bone disease of prematurity. Ann Med. 1996;28(4):275-82. Epub 1996/08/01. doi: 10.3109/07853899608999080. PubMed PMID: 8862679.

15. Arghir A, Popescu R, Resmerita I, Budisteanu M, Butnariu LI, Gorduza EV, et al. Pallister-Killian Syndrome versus Trisomy 12p-A Clinical Study of 5 New Cases and a Literature Review. Genes (Basel). 2021;12(6). Epub 2021/06/03. doi: 10.3390/genes12060811. PubMed PMID: 34073526; PubMed Central PMCID: PMC8226674.

16. Byers PH, Steiner RD. Osteogenesis imperfecta. Annu Rev Med. 1992;43:269-82. Epub 1992/01/01. doi: 10.1146/annurev.me.43.020192.001413. PubMed PMID: 1580589.

17. Morello R. Osteogenesis imperfecta and therapeutics. Matrix Biol. 2018;71-72:294-312. Epub 2018/03/16. doi: 10.1016/j.matbio.2018.03.010. PubMed PMID: 29540309; PubMed Central PMCID: PMC6133774.

18. Van Dijk FS, Byers PH, Dalgleish R, Malfait F, Maugeri A, Rohrbach M, Symoens S, Sistermans EA, Pals G. EMQN best practice guidelines for the laboratory diagnosis of osteogenesis imperfecta. Eur J Hum Genet. 2012 Jan;20(1):11-9. doi: 10.1038/ejhg.2011.141. Epub 2011 Aug 10. PMID: 21829228; PMCID: PMC3234509.

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Corresponding Author:



Hua Wang, MD, PhD
Loma Linda University School of Medicine
Division of Genetics
Department of Pediatrics
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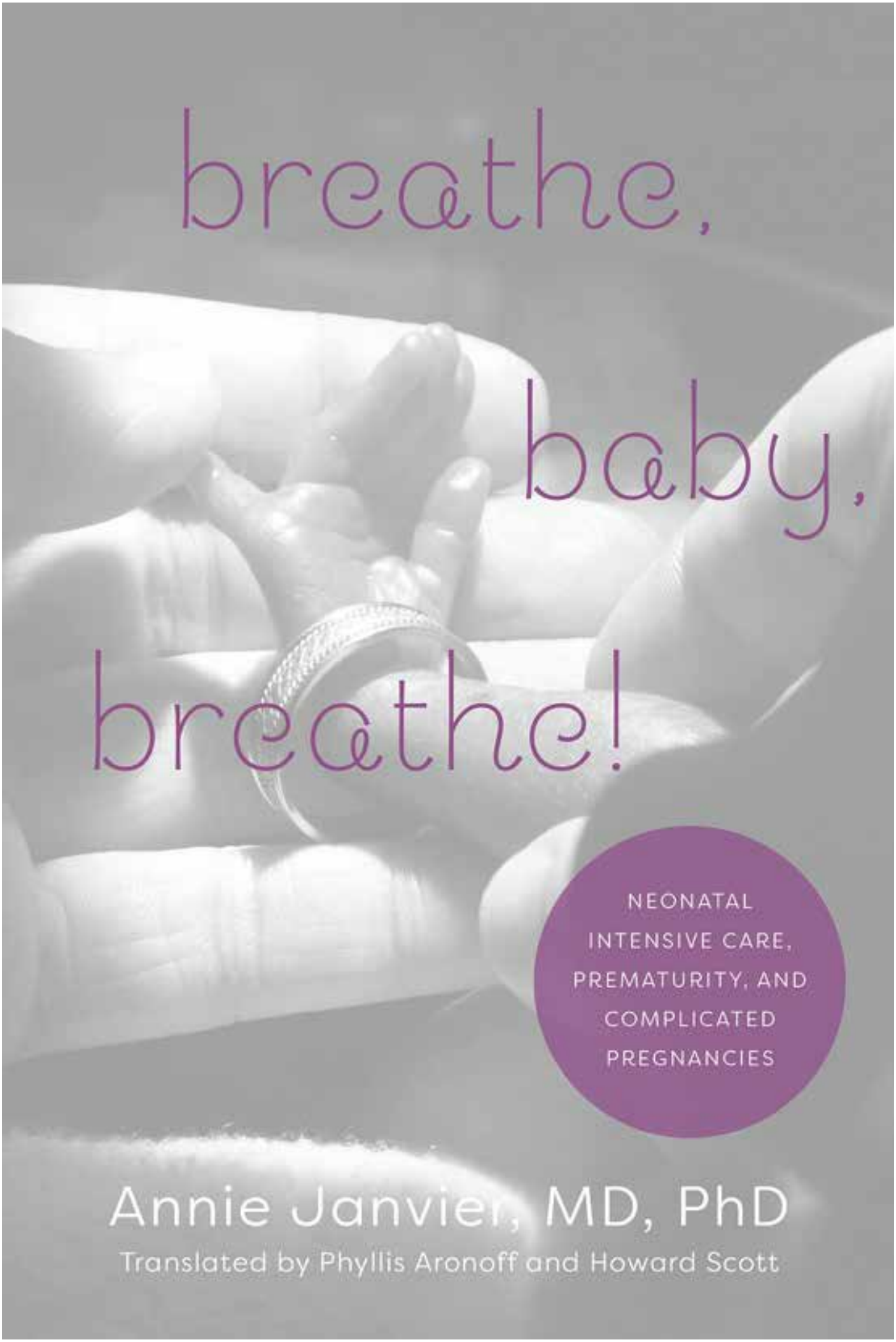
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*Source: Respirator Syncytial Virus and African Americans

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58.1%	Breastfeeding	50.2%
7.3%	Low Birth Weight	11.8%
60.1%	Siblings	71.6%
1%	Crowded Living Conditions	3%

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Family Centered Care: Opinion Piece: "I'm Not Your Mom: Empowering Parental Engagement by Using First or Preferred Names"

Morgan Kowalski, Mia Malcolm, Jessi Barnes

"The data shows that many parents prefer being called by their first names over being referred to as 'mom' or 'dad' by healthcare professionals. (1, 2) Learning and using first and preferred names goes hand-in-hand with core tenets of patient- and family-centered care: respect, dignity, and collaboration. (3)"

"Hi, Mom, how are you today?" "Mom, what do you think?" "Do you have any milk, Mom?" This language is typical between mothers and their children and can also be typical between NICU mothers and the healthcare professionals caring for their infants. While the intent behind this moniker might be ease of communication, the impact of calling parents' mom' or 'dad' is often that they feel they are being placated or dehumanized and that the power dynamics and hierarchy in medicine are being reinforced. The data shows that many parents prefer being called by their first names over being referred to as 'mom' or 'dad' by healthcare professionals. (1, 2) Learning and using first and preferred names goes hand-in-hand with core tenets of patient- and family-centered care: respect, dignity, and collaboration. (3)

NICU parents are utterly unprepared for their NICU stay (even if they were warned of one during their pregnancy) and are navigating active and acute trauma. They are recovering from childbirth and balancing presence at their baby's bedside and other responsibilities we may not be aware of, including caring for older children and pets, maintaining their homes, and managing job commitments, among other tasks. They may be navigating social complexities and anxieties stemming from the hierarchical system that exists in healthcare, along with worries around bias and being unheard, which adds a layer of difficulty to the NICU experience. They also learn new terminology, measurement

systems, and NICU staff names. If a NICU parent can do all this on the heels of a traumatic birth and sleep and food deprivation, cannot their first or preferred name be remembered and used?

"I would argue that you can commit the names of the families you are caring for to memory. You can remember the names of the pediatric residents doing their four-week NICU rotations because they are part of the care team and doctors nonetheless. For many families, the NICU journey is much longer than four weeks, and are we not part of our child's care team? Regardless, you do not have to remember families' first or preferred names. You just have to use them."

"But I can't be expected to remember the first or preferred names of every family who walks in the door, Morgan." – I would argue that you *can* commit the names of the families you are caring for to memory. You can remember the names of the pediatric residents doing their four-week NICU rotations because they are part of the care team and doctors nonetheless. For many families, the NICU journey is much longer than four weeks, and are we not part of our child's care team? Regardless, you do not have to *remember* families' first or preferred names. You just have to use them. Many hospital systems require parents to wear a name tag. Names can be pinned to the top of EHR or EPIC for easy reference, the parents' preferred names can be a part of the handoff report given by nursing staff, and names can be posted at the infant's bedside.

"It is easy to feel intimidated by unfamiliar names. As many of us serve families from around the world, our names may also look unfamiliar to them, yet they learn. Asking parents how they pronounce their name is not offensive or insensitive if asked with a neutral tone and humble inquiry."

"But I don't know how to pronounce a parent's first or preferred name." – It is easy to feel intimidated by unfamiliar names. As many of us serve families from around the world, our names may also look unfamiliar to them, yet they learn. Asking parents how they pronounce their name is not offensive or insensitive if asked with a neutral tone and humble inquiry. Avoid prefacing a question about name pronunciation with statements like "Your name looks complicated" or "Your name is very long." Instead, say, "Hi, I'm Morgan. I'm going to be caring for your family today. What is your name?" The same goes for using the first names of the infants you care for. "How do you prefer I pronounce your baby's first name?" Repeat the parent's or baby's name and ask, "Did I get that right?". If it helps, note the phonetic spelling in the family's chart or at the bedside.

When you learn and use my name, it shows you care. It shows you value me as a member of my infant's care team. It feels like a connection. It feels like an invitation to participate in decision-making. It makes me feel seen. If family-centered care (FCC) is a key factor in improving infant health and family mental health outcomes, (4) using my first or preferred name seems like a free, easy way to embody the core principles of FCC: information-sharing, dignity, respect, collaboration, and participation. FCC ensures caregivers are active, engaged team members throughout their NICU journey, and we always use our team members' first or preferred names.

"When you learn and use my name, it shows you care. It shows you value me as a member of my infant's care team. It feels like a connection. It feels like an invitation to participate in decision-making. It makes me feel seen."

Quick Review - Barriers & Solutions to Using Parents' First or Preferred Names

Barrier: "I can't remember my parents' first or preferred names."

Solutions:

- Take advantage of the nametags that parents are required to wear by most hospital systems. Some NICUs use NICU parent badges similar to employee badges, allowing parents to walk directly to the NICU without going through the long front desk security line multiple times daily.
- Pin first or preferred names at the top of the patient chart in EHR/EPIC
    - In the demographics section of a patient's chart, you can update the parents' preferred name and other relevant information
    - You can create and apply tags or categories with parents' first or preferred names to a patient's chart, which will then appear alongside their name and date of birth
    - If your system does not have a field for preferred name, providers can use quotation marks, i.e., Jeffrey "Jeff" Kowalski
- Include first or preferred names in the handoff report

- Post first or preferred names at the infant's bedside for easy reference

Barrier: "I don't know how to pronounce a parent's first or preferred name."

Solution: Ask! This is not an offensive or insensitive question. Asking can sound like, "How do you prefer I pronounce your first/preferred name?" or "Can you help me learn how to say your name properly?" Then, note the phonetic spelling for easy reference, i.e., Jeff Kowalski/jeff co-wall-ski

Barrier: "I have a large, 100-bed NICU."

Solution: A larger unit should not equate to less personal care. The ask is to try to use the names of families you care for. In the same way, if you use the first or preferred names of other healthcare team members (i.e., nurses, ST, OT, RT, doctors, PCTs, secretaries, etc.), you can use the first or preferred names of parents.

NICU parents must be seen and valued for who they are as individuals and integral members of their baby's care team. Communicating with them using their first or preferred name is an easy, free first step to including them in your family-centered care model.

References:

1. (PDF) "Don't Call Me 'Mom'": How Parents Want to Be Greeted by Their Pediatrician (https://www.researchgate.net/publication/24248603_Don%27t_Call_Me_%27Mom%27_How_Parents_Want_to_Be_Greeted_by_Their_Pediatrician)
2. Dear strangers: Don't call me mom (https://nypost.com/2015/05/10/dear-strangers-dont-call-me-mom/)
3. What is PFCC? https://www.ipfcc.org/about/pfcc.html
4. Guidelines for Family-Centered Care in the Neonatal, Pediatric, and Adult ICU – PubMed (https://pubmed.ncbi.nlm.nih.gov/27984278/)

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Corresponding Author



Morgan Kowalski
Program Manager
Family Partner
Family Centered Care
Division of Neonatology
Department of Pediatrics
Stanford University
Palo Alta, CA
Email: morgankw@stanford.edu



Jessi Barnes, MSN, RN, RNC-NIC, NPD-BC, C-ELBW
Neonatal Outreach Coordinator,
Atlanta Perinatal Region
Emory University School of Medicine, Department of Pediatrics
NICU Clinical Nurse Educator
Grady Memorial Hospital
NICU Parent



Mia Malcolm, BS, CDFT
Community Outreach & Programs Care Manager,
Ollie Hinkle Heart Foundation
Senior Research Coordinator,
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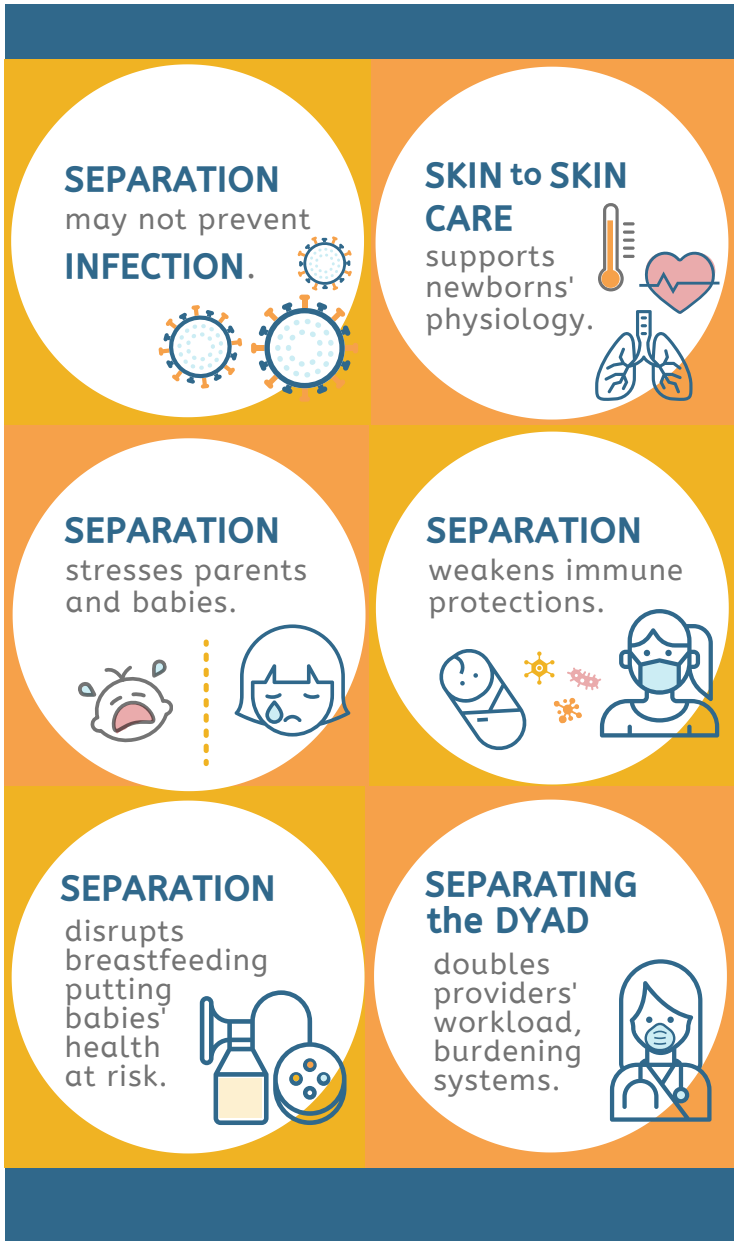
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From Risk to Reform: Removing the Barriers to Safer Kangaroo Care



Ashley Weber, PhD, RN, RNC-NIC (she/her)
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Department of Population Health,
College of Nursing, University of Cincinnati

Yamile Jackson, PhD, PE, PMP
NICU Parent of Zachary
CEO & Founder, Nurtured by Design
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Founder, International Kangaroo Care Awareness Day: May 15th



Engagement of Families in a State-Wide Quality Improvement Initiative on Skin-to-Skin Care in the NICU



Lelis Bauzá Vernon, S.Q.I.L.
NICU Parent of Bobby & Charlie
State Family Leader - Florida Perinatal Quality Collaborative
Family Laison - AAP, ACLC
Faculty Family, Vermont Oxford Network

Susan M. Bowles, DNP, APRN-CNS, RNC-NIC (she/her)
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The Signs & Symptoms of RSV

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Know the Signs & Symptoms of RSV

- Cough
- Runny Nose
- Struggling to Breathe *(breastbone sinks inward when breathing)*
- Difficulty Eating
- Lethargy
- Wheezing

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is a highly contagious seasonal virus that can lead to hospitalization for some babies and young children.

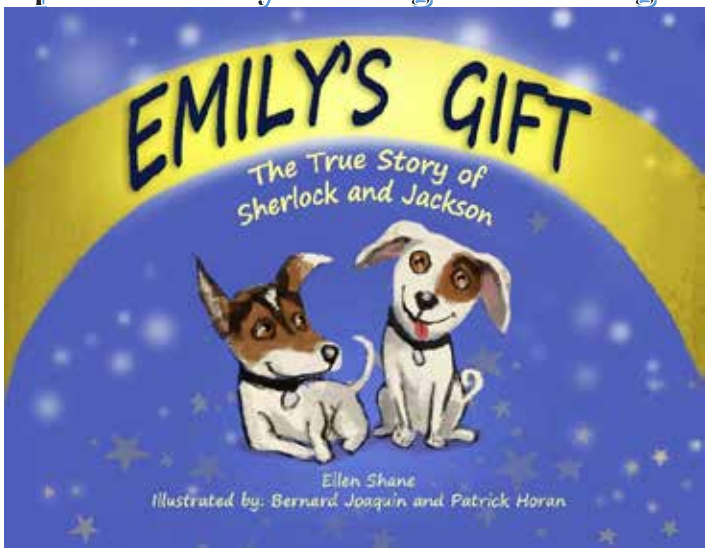
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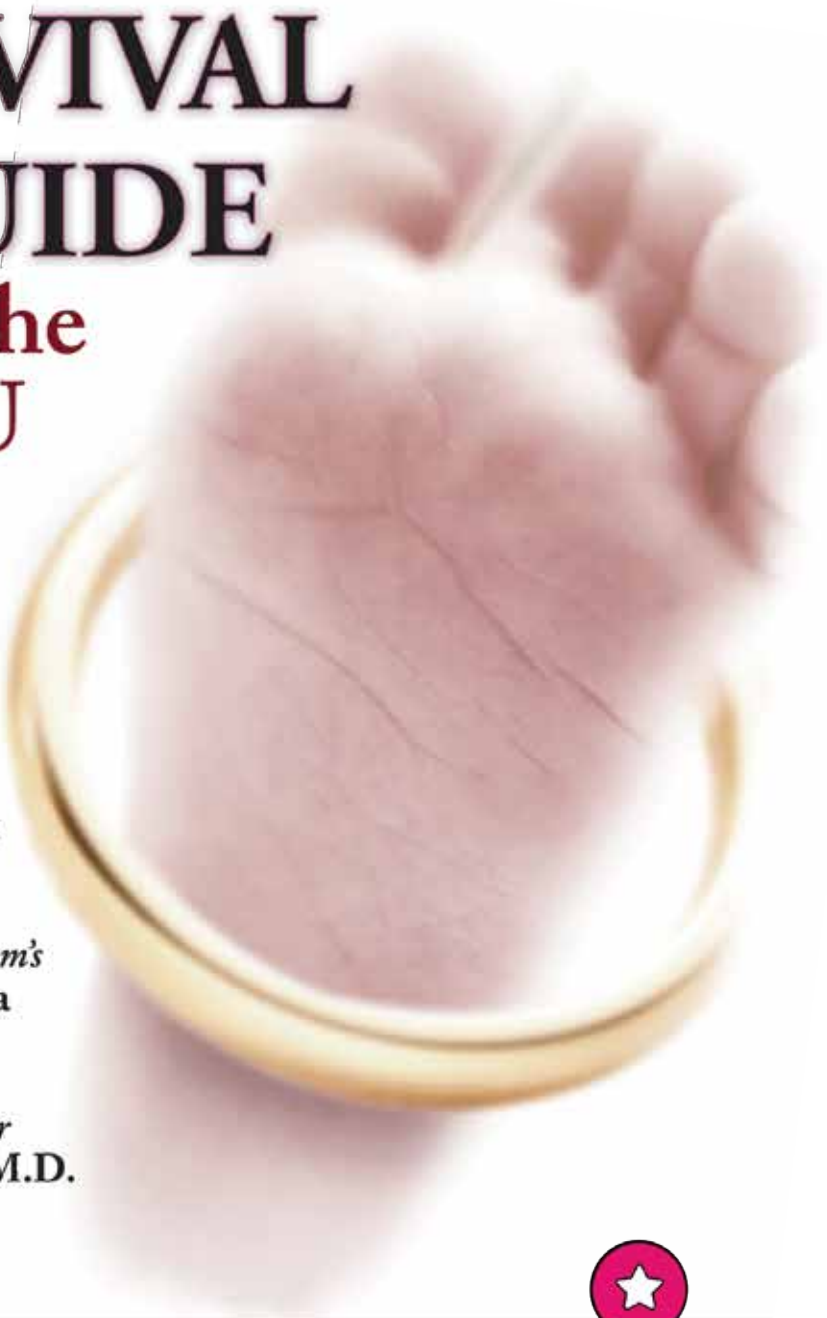




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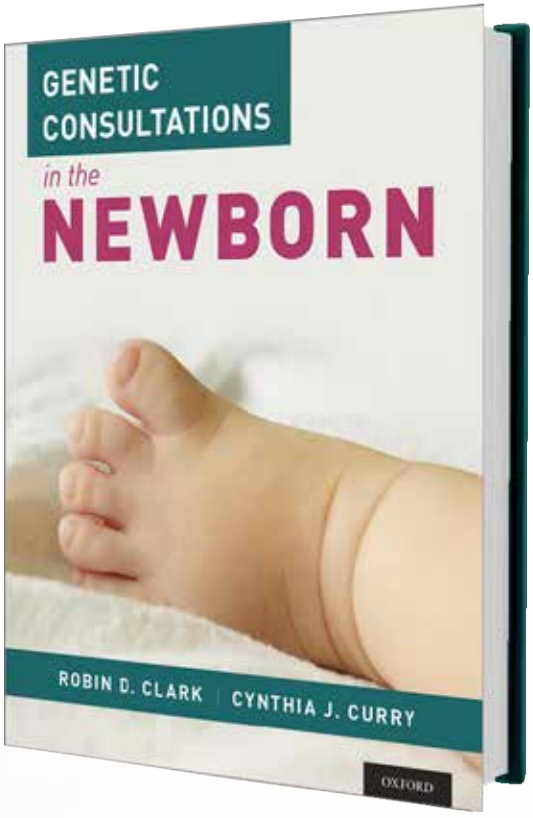
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Clinical Pearl: Linear Growth Failure

Gustave Falciglia, MD, MSCI, MSHQPS, Mitchell Goldstein, MD, MBA, CML, Joseph Hageman, MD

"Maintaining adequate growth in preterm infants is challenging for neonatal intensive care unit (NICU) clinicians. Studies have demonstrated that infants are at risk of growth failure. A 2015 analysis of over 300,000 very low birth weight (VLBW, <1500g) infants demonstrated that half of the infants leave the NICU at less than the 10th percentile. (1) Less attention has been devoted to growth failure in length."

Maintaining adequate growth in preterm infants is challenging for neonatal intensive care unit (NICU) clinicians. Studies have demonstrated that infants are at risk of growth failure. A 2015 analysis of over 300,000 very low birth weight (VLBW, <1500g) infants demonstrated that half of the infants leave the NICU at less than the 10th percentile. (1) Less attention has been devoted to growth failure in length.

A 2012 retrospective observational analysis of 62 averages for gestational age VLBW infants demonstrated that Z-scores in weight, length, and head circumference, which averaged 0 at birth, all decreased by discharge. (2) Length, however, decreased more than weight. Length at discharge was about -1.8 z-scores on average, while weight was -1.3 z-scores. Furthermore, catchup growth took longer for length than weight. Weight Z-scores were back to baseline (i.e., not different than 0) at 24 months, whereas length Z-scores remained depressed at 24 months.

To the neonatologist trying to avoid weight gain in excess of length, the finding that length decreased more than weight may not come as a surprise. Nevertheless, a 2014 review by Pfister et al. argues that this pattern is surprising and differs from typical growth patterns in malnutrition. (3) Malnutrition typically presents with preserved head circumference and length while weight decreases first. For preterm infants, length appears to be affected by a greater degree than weight. Furthermore, suppression in length is lasting. Though nutrient deficits are common during the first several weeks,(4) they usually decrease over time. (5) Length remains suppressed for years. (2) These patterns suggest other contributing factors.

"Though nutrient deficits are common during the first several weeks,(4) they usually decrease over time. (5) Length remains suppressed for years. (2) These patterns suggest other contributing factors."

Inflammatory Etiology

The other contributing factor may be inflammation. In the aforementioned retrospective analysis, the length Z-score at discharge and 24 months were all associated with days of oxygen, steroids, and antibiotics. (2) These therapies target inflammation-related illnesses (e.g., infection, bronchopulmonary dysplasia). The associations persisted despite adjusting for time to full feeds and total caloric deficit.

A larger study of 850 preterm infants in the Extremely Low Gestational Age Newborn (ELGAN) prospective cohort evaluated specific inflammatory markers, including C-reactive protein (CRP) and interleukin 6 (IL-6). (6) The authors determined that elevated CRP was associated with decreased weight, length, and head circumference. Elevated IL-6 was also associated with suppressed weight and length. Infants with elevated inflammatory markers did receive less energy than those without elevated markers; however, these associations persisted after adjusting for energy and protein intake. The authors speculated that inflammatory states may suppress growth through growth hormone (GH) resistance and suppress insulin-like growth factor 1 (IGF-1).

Importance of Lean Growth

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Growth failure, by any definition, is undesirable, but linear growth failure may be of additional concern because of its association with poor neurodevelopmental outcomes. In the same retrospective analysis, length Z-scores at 4 and 12 months were associated with 24-month cognitive scores after adjusting for weight and head circumference Z-scores. (2) Conversely, there was no association between weight Z-scores and cognitive outcomes after adjusting for length and head circumference Z-scores. This suggests

"Additional studies have demonstrated that fat-free mass is associated with neurodevelopmental outcomes. In VLBW infants, gains in fat-free mass measured weekly during hospitalization for prematurity were associated with cognitive outcomes at one year. (7) The importance of fat-free mass gains continued beyond term corrected age."

that linear growth may be more important than weight increase for neurodevelopmental outcomes. This makes sense since the brain is an organ that requires adequate protein to develop. (3)

Additional studies have demonstrated that fat-free mass is associated with neurodevelopmental outcomes. In VLBW infants, gains in fat-free mass measured weekly during hospitalization for prematurity were associated with cognitive outcomes at one year. (7) The importance of fat-free mass gains continued beyond

"Ideally, clinicians would follow changes in infant fat-free mass; however, measuring body composition is generally limited to the research setting. Thus, clinicians are left following growth parameters. Unfortunately, using growth parameters as a proxy for fat-free mass is unclear. In 218 preterm infants, the weight alone best correlated with fat-free mass was measured shortly after birth. (9)"

term corrected age. Gains in fat-free mass between term and 4 months were associated with faster processing speeds measured in 4-month infants. (8)

Tracking Growth

Ideally, clinicians would follow changes in infant fat-free mass; however, measuring body composition is generally limited to the research setting. Thus, clinicians are left following growth parameters. Unfortunately, using growth parameters as a proxy for fat-free mass is unclear. In 218 preterm infants, the weight alone best correlated with fat-free mass was measured shortly after birth. (9) Weight had a correlation coefficient of 0.97, followed by weight/length with a coefficient of 0.94, length with a coefficient of 0.85, and body mass index (weight/length^2) with a coefficient of 0.83. Nevertheless, the authors note that preterm infants do not have significant amounts of fat mass; therefore, the correlation may be less accurate at different stages of the preterm infant.

Until body composition measurements become more ubiquitous, it is probably worth continuing to follow closely changes in length and head circumferences. One suggestion might be to measure length and head circumference more frequently. NICUs typically measure weight daily, whereas they measure length and head circumference weekly. (5) Is weekly too infrequent? We do not expect the length to change significantly over a few days; however, wouldn't the length assessment and linear growth be improved if we had more samples? Rather than waiting an additional week to determine if the declining length Z-score is real or just a measurement error, perhaps an additional measurement or two might elucidate the picture sooner.

References:

1. Horbar, J. D. *et al.* Weight Growth Velocity and Postnatal Growth Failure in Infants 501 to 1500 Grams: 2000-2013. *Pediatrics* **136**, e84-92 (2015).
2. Ramel, S. E. *et al.* The Relationship of Poor Linear Growth Velocity with Neonatal Illness and Two-Year Neurodevelopment in Preterm Infants. *Neonatology* **102**, 19–24 (2012).
3. Pfister, K. M. & Ramel, S. E. Linear Growth and Neurodevelopmental Outcomes. *Clin. Perinatol.* **41**, 309–321 (2014).
4. Embleton, N. E., Pang, N. & Cooke, R. J. Postnatal malnutrition and growth retardation: an inevitable consequence of current recommendations in preterm infants? *Pediatrics* **107**, 270–3 (2001).
5. Falciglia, G. H. *et al.* Association Between the 7-Day Moving Average for Nutrition and Growth in Very Low Birth Weight Infants. *J. Parenter. Enter. Nutr.* **42**, 805–812 (2017).
6. Belfort, M. B. *et al.* Systemic Inflammation in the First 2 Weeks after Birth as a Determinant of Physical Growth Outcomes in Hospitalized Infants with Extremely Low Gestational Age. *J. Pediatr.* **240**, 37-43.e1 (2022).
7. Ramel, S. E. *et al.* Greater Early Gains in Fat-Free Mass, but Not Fat Mass, Are Associated with Improved Neurodevelopment at 1 Year Corrected Age for Prematurity in Very Low Birth Weight Preterm Infants. *J. Pediatr.* **173**, 108–115 (2016).
8. Pfister, K. M. *et al.* Early body composition changes are associated with neurodevelopmental and metabolic outcomes at 4 years of age in very preterm infants. *Pediatr. Res.* **84**, 713–718 (2018).
9. Ramel, S. E., Zhang, L., Misra, S., Anderson, C. G. & Demerath, E. W. Do anthropometric measures accurately reflect body composition in preterm infants? *Pediatr. Obes.* **12**, 72–77 (2017).

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Corresponding Author



Gustave Falciglia, MD, MSCI, MSHQPS
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



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



Joseph R. Hageman, MD
Senior Clinician Educator
Pritzker School of Medicine
University of Chicago
5841 S. Maryland Ave.
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*Source: Respirator Syncytial Virus and African Americans

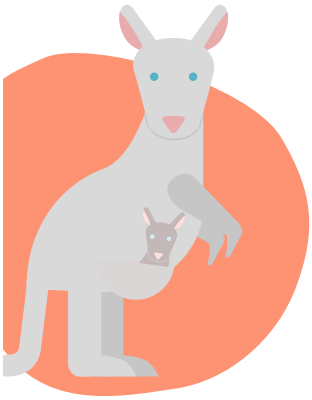
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58.1%	Breastfeeding	50.2%
7.3%	Low Birth Weight	11.8%
60.1%	Siblings	71.6%
1%	Crowded Living Conditions	3%

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

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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



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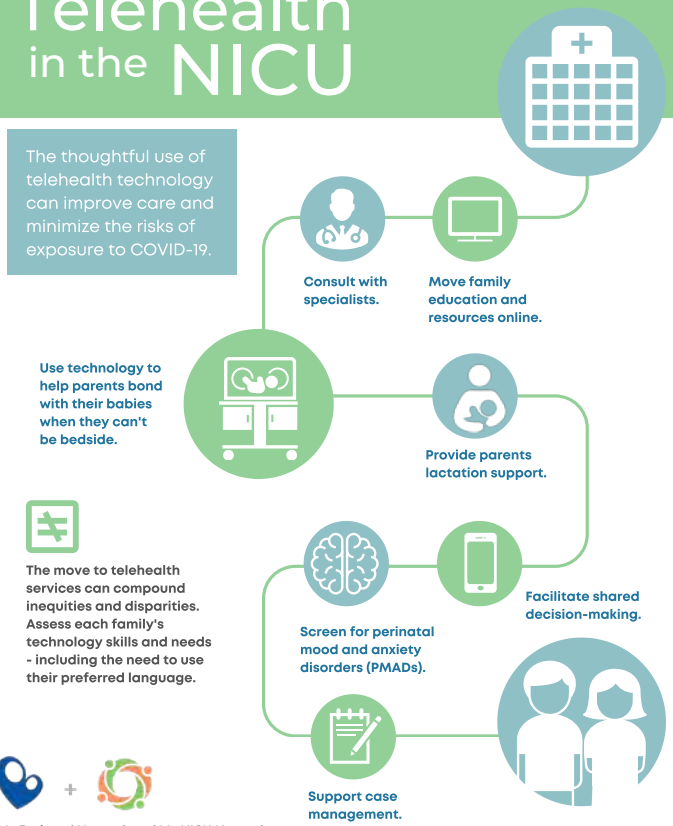
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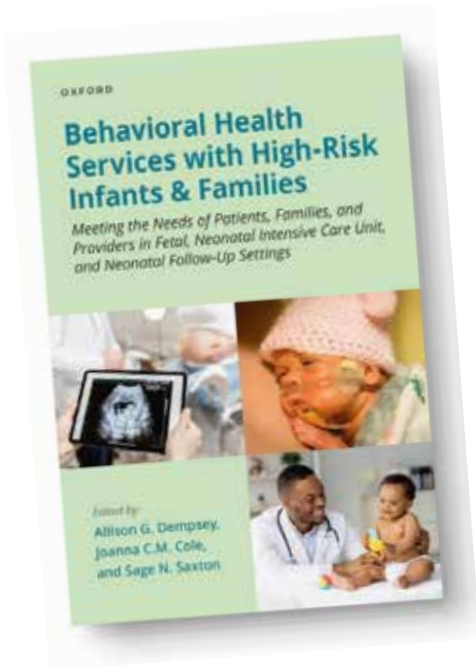
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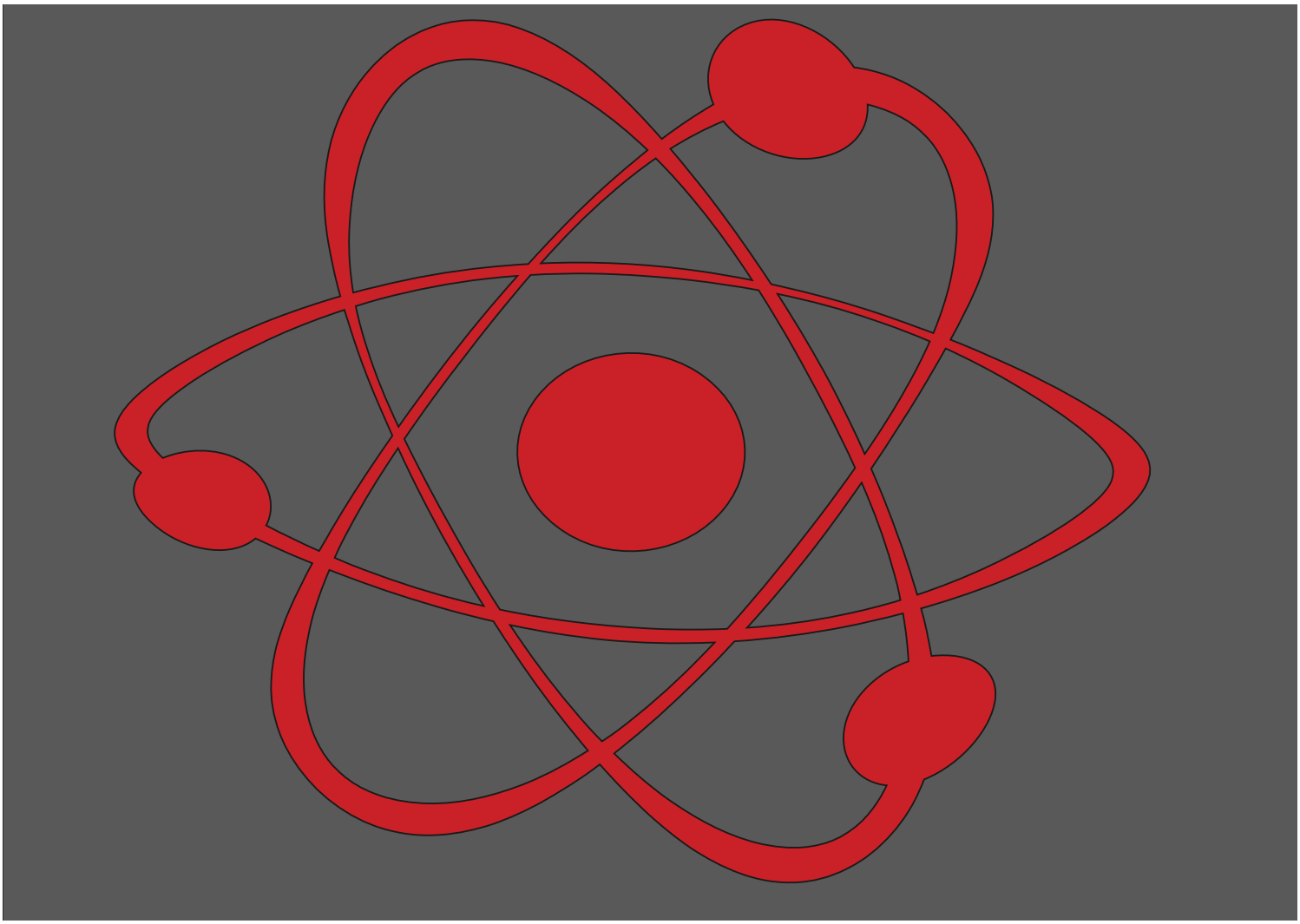
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Publication
Mitchell Goldstein, MD
Loma Linda Publishing Company
11175 Campus Street
Suite #11121
Loma Linda, CA 92354
www.NeonatologyToday.net
Tel: +1 (302) 313-9984
LomaLindaPublishingCompany@gmail.com

Editorial and Subscription
Mitchell Goldstein, MD
Neonatology Today
11175 Campus Street
Suite #11121
Loma Linda, CA 92354

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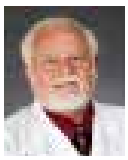
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Mitchell Goldstein, MD - Editor-in-Chief
LomaLindaPublishingCompany@gmail.com
MGoldstein@llu.edu `
Professor of Pediatrics
Loma Linda University School of Medicine
Division of Neonatology, Department of Pediatrics
Loma Linda University Children's Hospital



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 Co-Fellowship Editor
Efayard@llu.edu
Professor of Pediatrics
Division Chair Emeritus
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



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



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 Martez
Senior Editorial Project Director
Melissa.LaMarca@NeonatologyToday.net
Loma Linda, CA



Lily Martorell, MD - Arts Editor
lmartorell@llu.edu
Associate Professor of Pediatrics
Division Chair
Division of Neonatology-Perinatal Medicine
Loma Linda University Children's Hospital



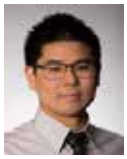
Giang Truong, MD - QI/QA Editor
GTruong@llu.edu
Associate Professor of Pediatrics
Division of Neonatology-Perinatal Medicine
Loma Linda University Children's Hospital



Jerasimos 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



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>
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



Benjamin Hopkins, DO - Co-Fellowship Editor
Pediatric Resident
University California San Francisco - Fresno
Community Regional Medical Center
Valley Children's Hospital
Email: BHopkins.med@gmail.com

Barry D. Chandler, MD
Anthony C. Chang, MD - Children's Hospital of Orange County
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Neonatology and the Arts

This section focuses on artistic work which is by those with an interest in Neonatology and Perinatology. The topics may be varied, but preference will be given to those works that focus on topics that are related to the fields of Neonatology, Pediatrics, and Perinatology. Contributions may include drawings, paintings, sketches, and other digital renderings. Photographs and video shorts may also be submitted. In order for the work to be considered, you must have the consent of any person whose photograph appears in the submission.

Works that have been published in another format are eligible for consideration as long as the contributor either owns the copyright or has secured copyright release prior to submission.

Logos and trademarks will usually not qualify for publication.

This month we continue to landscapes, feature artistic works created by our readers on the next to last page as well as photographs of birds on rear cover. Dr. Zahera Etter provides "More Views of Mount Fuji" a For this edition, our art was graciously provided by Colleen Kraft, MD. It is a work called " Rodin's Redux" done by her son Tim. Our bird is from Dr. Shah, "The Cardinal that Returned"



Lily Martorell, MD

Arts Editor
Associate Professor
Loma Linda University Children's Hospital
Loma Linda, CA

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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.

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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. EndNote X9 is suggested.

X9 9. Figures should be submitted separately as individual separate electronic files. Numbered figure captions should be included in the main file after the references. Captions should be brief.

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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:

NPN
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.**

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Invitation to Apply:

Seeking content development experts for an AAP Project Advisory Committee (PAC)

The White Zone – Developing A Perinatal Loss Toolkit for LMICs

The Need: Over 2.4 million neonatal deaths and 2.6 million stillbirths occur each year; 98% occur in Low- and Middle-Income Countries (LMICs). While programs such as Helping Babies Breathe (HBB) and Essential Newborn Care (ENC 1 and 2) have revolutionized how providers in LMICs train in and provide neonatal resuscitation and post-delivery care for small and sick newborns, gaps remain in how to best offer end-of-life care and post-loss psychosocial care in these settings.

The Babies: HBB and ENC 1 begin with assessing if a baby is crying and conclude with the "Red Zone" where a baby who is unable to sustain an appropriate heart rate and/or respirations is provided with PPV support as someone attempts to get help. Within the HBB/ENC framework, we could imagine several babies for whom an extension of this framework to include palliative/perinatal loss guidelines could be helpful:

1. A stillbirth for whom no resuscitation is attempted. (Stillbirth)
2. A baby who proceeds through the red zone but never has a heartbeat or breathing despite the best resuscitative efforts of the team. (Stillbirth)
3. A baby who proceeds through the red zone who, after 20 or so minutes still has a very low heartbeat and/or gasping breathing. (Anticipated neonatal death)
4. A preterm baby who is too small for ongoing support, based on local resource constraints or resuscitation guidelines, despite a sustained heart rate and breathing. (Anticipated neonatal death)

The Approach: Create a suite of resources that could accompany ENC 1 and 2, focused on end-of-life care and perinatal loss. These resources would be less algorithmic than ENC, as local practices around death vary significantly – meaning there is not one "right" way to approach this care. Rather, the "White Zone Toolkit" would combine structured guidance about symptom management as well as reflective tools for implementing contextually and culturally appropriate post-loss care. This could consist of, but is not limited to, the following:

1. Structured guidance on what physiologic changes may happen at the end of life (ex: gasping) as well as pharmacologic and non-pharmacologic options for symptom management.
2. Reflective questions about if/when to offer seeing or holding of the baby.
    - Data shows that many women want to see and/or hold their infant following stillbirth or neonatal death but are often not offered that opportunity based on historic cultural norms.
3. Reflective questions about cultural traditions around loss and if/how these practices can be supported by those attending the delivery.
4. Anticipatory guidance guides on how mothers may still produce milk and how to manage those symptoms.
5. Anticipatory guidance on potential maternal mental health needs. Reflective questions on how to approach mental health and psychosocial support after loss.
6. Access to a set of adaptable practice scenarios that could help providers gain experience in handling perinatal loss and communicating with families surrounding perinatal loss.





