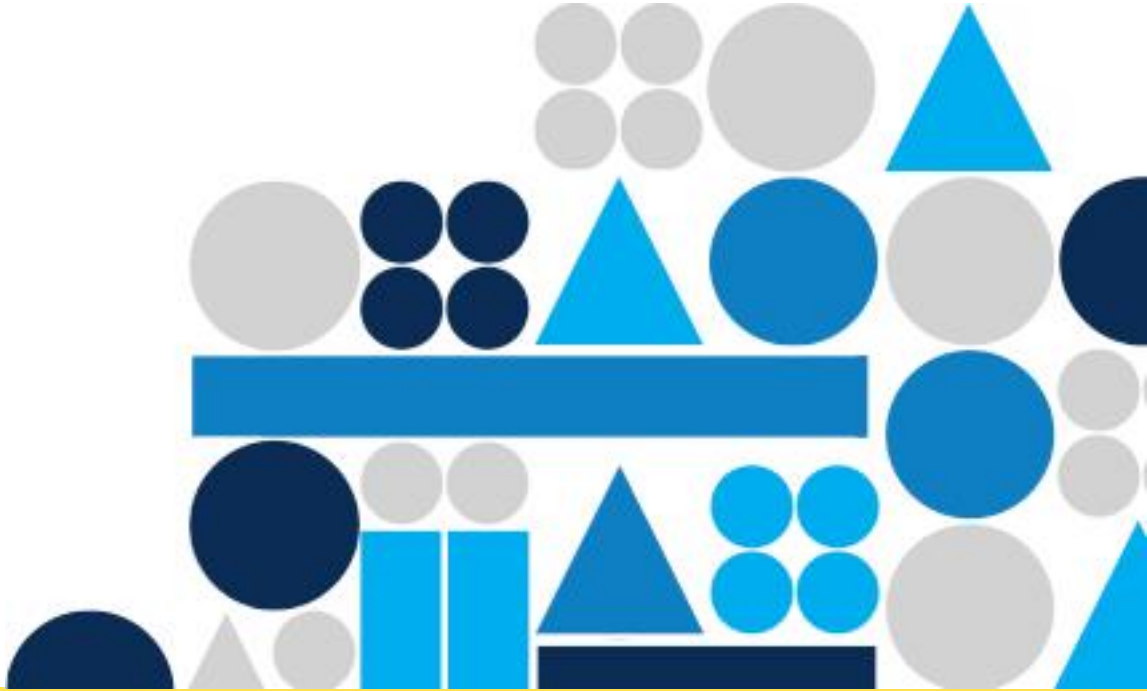
OCTOBER 26,2022

Neonatal Hot Topics

Dr. Laura Marrs
Dr. Erica Wymore



No Disclosures

Laura Marrs, MD
Erica Wymore, MD

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1. Explore the changing landscape of extremely preterm infant viability and implications for pediatric care

2. Summarize the most important NRP 8th Edition Updates, reinforce the necessity of golden hour fundamentals in neonatal care, and discuss new approaches to neonatal pain

3. Strategize harm reduction for breastfeeding and cannabis use with Dr. Erica Wymore, MD

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Viability

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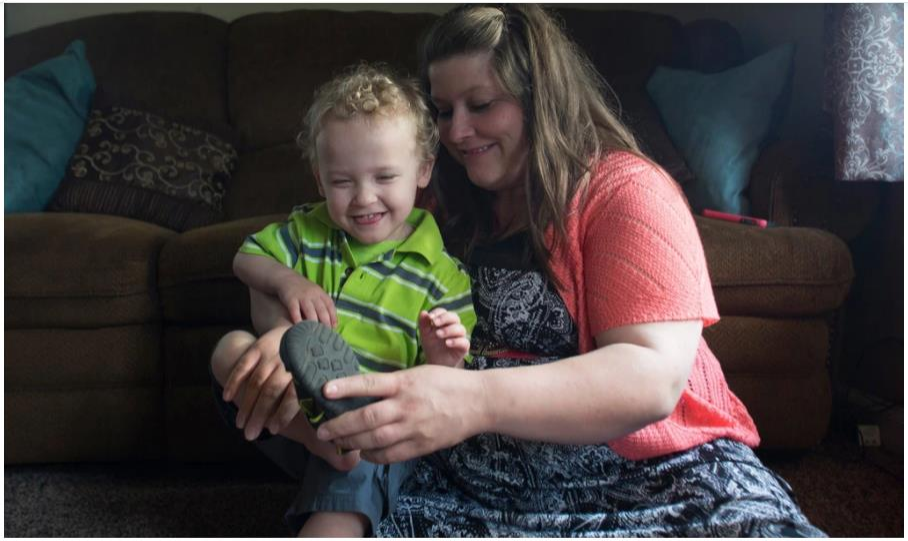
Premature Babies May Survive at 22 Weeks if Treated, Study Finds



Micah Pickering, now 2, on Tuesday with his mother, Danielle Pickering, who is expecting. Micah was born at 22 weeks in July 2012. Brenna Norman for The New York Times

(New York Times, 2015)

Survival Rates by GA

Table 3. Survival to Discharge for Infants Born at Gestational Ages 22 Through 28 Weeks in NRN Centers[a]

	Study Year, No. of Infants/Total No. (%)					
	1993	2012	1993-1997	1998-2002	2003-2007	2008-2012
All infants (N = 34 636)	1433	1922	7027	9132	9600	8877
Died	426/1433 (30)	409/1922 (21)	1992/7027 (28)	2489/9132 (27)	2725/9600 (28)	2131/8877 (24)
Died within 12 h	193/1433 (13)	166/1922 (9)	909/7027 (13)	1025/9132 (11)	1054/9600 (11)	843/8877 (9)
Survived to Discharge Among All Infants						
All infants	1007/1433 (70)	1513/1922 (79)	5035/7027 (72)	6643/9132 (73)	6875/9600 (72)	6746/8877 (76)
By gestational age, wk						
22	5/79 (6)	7/75 (9)	25/358 (7)	27/437 (6)	25/421 (6)	22/334 (7)
23	34/122 (28)	50/150 (33)	184/660 (28)	215/821 (26)	226/873 (26)	252/779 (32)
24	85/163 (52)	174/269 (65)	465/871 (53)	715/1273 (56)	752/1377 (55)	774/1241 (62)
25	153/225 (68)	249/308 (81)	784/1070 (73)	1065/1397 (76)	1081/1503 (72)	1077/1391 (77)
26	208/250 (83)	291/333 (87)	980/1194 (82)	1317/1542 (85)	1322/1580 (84)	1281/1513 (85)
27	238/283 (84)	337/357 (94)	1183/1337 (88)	1536/1720 (89)	1615/1837 (88)	1568/1733 (90)
28	284/311 (91)	405/430 (94)	1414/1537 (92)	1768/1942 (91)	1854/2009 (92)	1772/1886 (94)

(Stoll, Nellie, Hansen, et al. JAMA 2015)

Challenges to Data Interpretation

-Define live births
-GA Accuracy
-Initial Management Discrepancy

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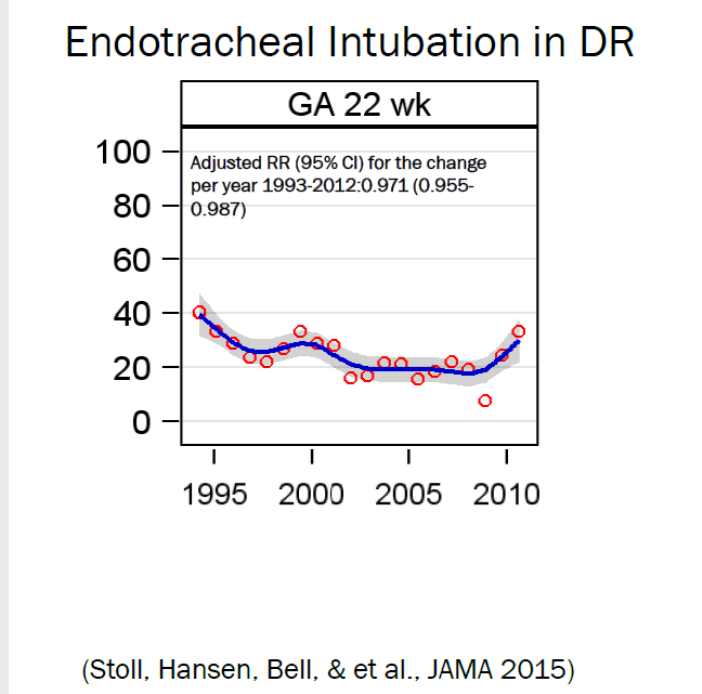
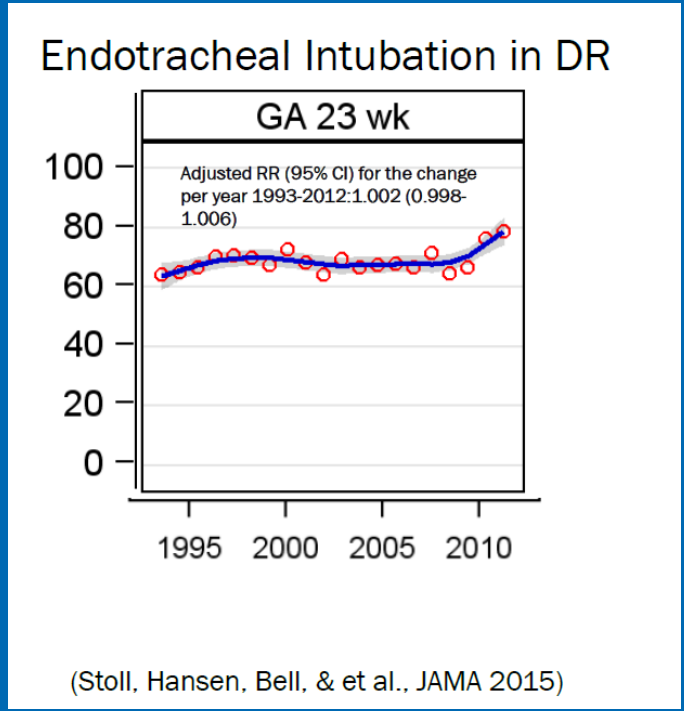
Example of Initial Management Discrepancy



(Itabashi, et al. Pediatrics 2009)



(Perlbarg et al. 2016)

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Survival Rates with Active Treatment

(Rysavy, et.al. NEJM 2015)

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Table 2. Crude Outcomes by Gestational Age at Birth.*

Outcome	All Infants		Infants Who Received Active Treatment	
	Overall Rate†	Hospital Rate‡	Overall Rate†	Hospital Rate‡
	mean (95% CI)	*median (interquartile range)*	*mean (95% CI)*	*median (interquartile range)*
22 Wk of gestation				
Survival	5.1 (3.2–7.9)	3.4 (0.0–10.6)	23.1 (14.9–34.0)	21.1 (0.0–50.0)§
Survival without severe impairment	3.4 (1.9–5.9)	0.0 (0.0–6.9)	15.4 (8.8–25.4)	5.0 (0.0–33.3)§
Survival without moderate or severe impairment	2.0 (0.9–4.1)	0.0 (0.0–0.7)	9.0 (4.3–17.9)	0.0 (0.0–14.6)§
23 Wk of gestation				
Survival	23.6 (20.7–26.9)	24.8 (10.3–32.1)	33.3 (29.4–37.5)	30.8 (23.8–37.1)
Survival without severe impairment	17.9 (15.3–20.9)	16.8 (7.3–25.2)	25.2 (21.7–29.2)	25.0 (15.1–28.0)
Survival without moderate or severe impairment	11.3 (9.2–13.9)	8.7 (3.6–13.4)	16.0 (13.1–19.4)	14.2 (6.7–18.9)
24 Wk of gestation				
Survival	54.9 (51.9–57.8)	53.7 (45.4–65.9)	56.6 (53.6–59.5)	58.0 (47.2–66.8)
Survival without severe impairment	44.7 (41.7–47.7)	44.3 (37.1–54.5)	46.1 (43.1–49.1)	44.3 (38.2–56.2)
Survival without moderate or severe impairment	30.0 (27.3–32.8)	30.0 (18.4–33.3)	30.9 (28.2–33.8)	30.5 (18.7–33.6)

Medical Morbidity

- 24 vs 22 weeks:
- IVH
- BPD

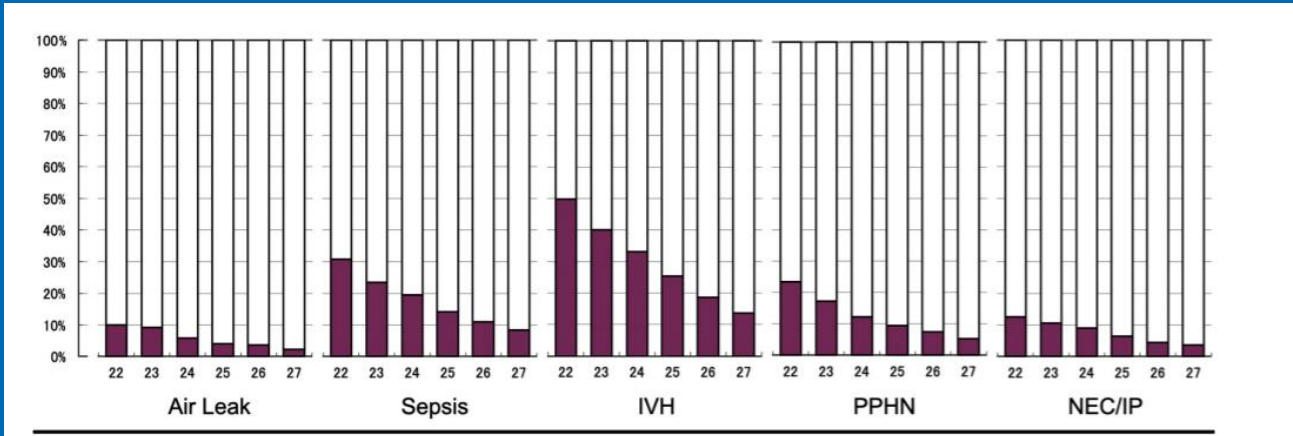

Figure 2. Morbidities of infants born extremely preterm in the Japanese Neonatal Research Network. In-hospital morbidities for liveborn infants with extreme prematurity in the Japanese Neonatal Research Network 2003-2017 by gestational age at birth.[64]

(Rysavy et. al. Jpeds 2021)

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Meta-analysis of NDOs

22–25 weeks gestation, rates of neurodevelopmental disability in survivors at age 4–10 years

- Rates of moderate-to-severe neurodevelopmental disability were as follows:
- 42% at 22
- 41% at 23
- 32% at 24
- 23% at 25 weeks

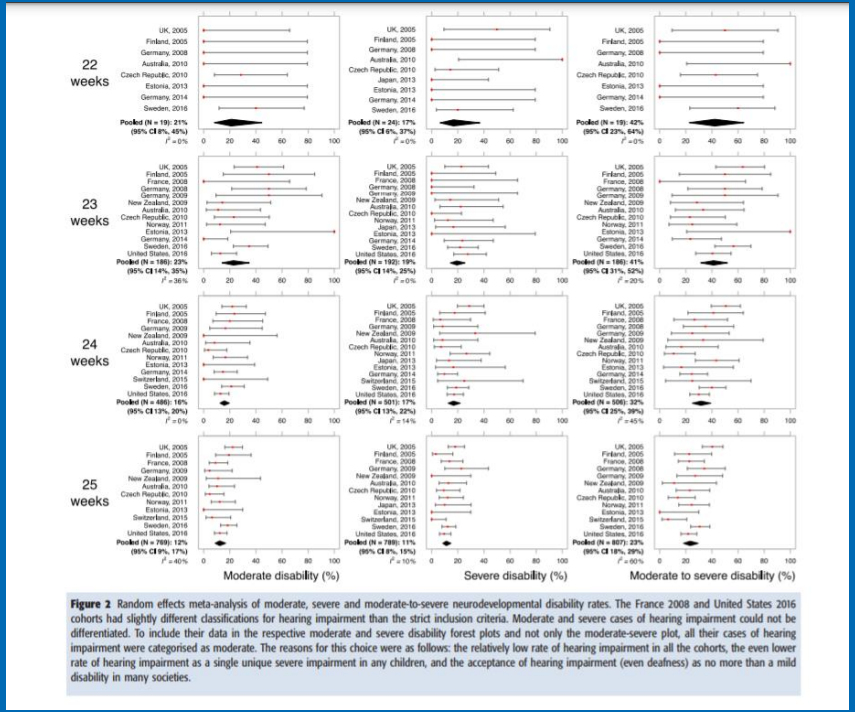

Figure 2 Random effects meta-analysis of moderate, severe and moderate-to-severe neurodevelopmental disability rates. The France 2008 and United States 2016 cohorts had slightly different classifications for hearing impairment than the strict inclusion criteria. Moderate and severe cases of hearing impairment could not be differentiated. To include their data in the respective moderate and severe disability forest plots and not only the moderate-severe plot, all their cases of hearing impairment were categorised as moderate. The reasons for this choice were as follows: the relatively low rate of hearing impairment in all the cohorts, the even lower rate of hearing impairment as a single unique severe impairment in any children, and the acceptance of hearing impairment (even deafness) as no more than a mild disability in many societies.

(Ding et al. Acta Pædiatrica 2021)

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NDO at 10 Years

- Social intelligence and executive function are more impactful for functional outcomes
- 1/3 of children classified as profound NDI are none/mild at 10
- 2/3 of those classified as having moderate to severe are none/mild at 10

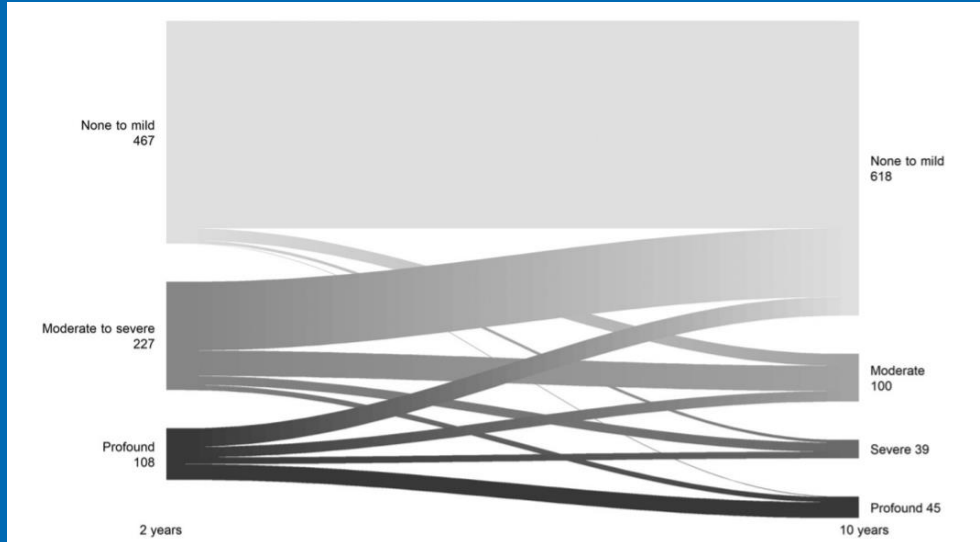

FIGURE 2
Comparison of 2- and 10-year NDI. In the Sankey plot, individual movement between NDI classification levels at 2 and 10 years old is shown. Two-year definitions are as follows: moderate to severe = MDI 50 to 70, PDI 50 to 70, GMFCS 3 to 4, bilateral legal blindness, or bilateral hearing loss requiring amplification; profound = MDI <50, PDI <50, or GMFCS 5. Ten-year definitions are as follows: moderate = IQ 55 to 70, GMFCS 3, bilateral hearing loss requiring amplification, bilateral legal blindness, ASD level 2, or epilepsy; severe = IQ 35 to 54, GMFCS 4, or ASD level 3; profound = IQ <35, GMFCS 5, or ASD level 3 combined with IQ 35 to 54.

(Taylor et al. Pediatrics 2021)

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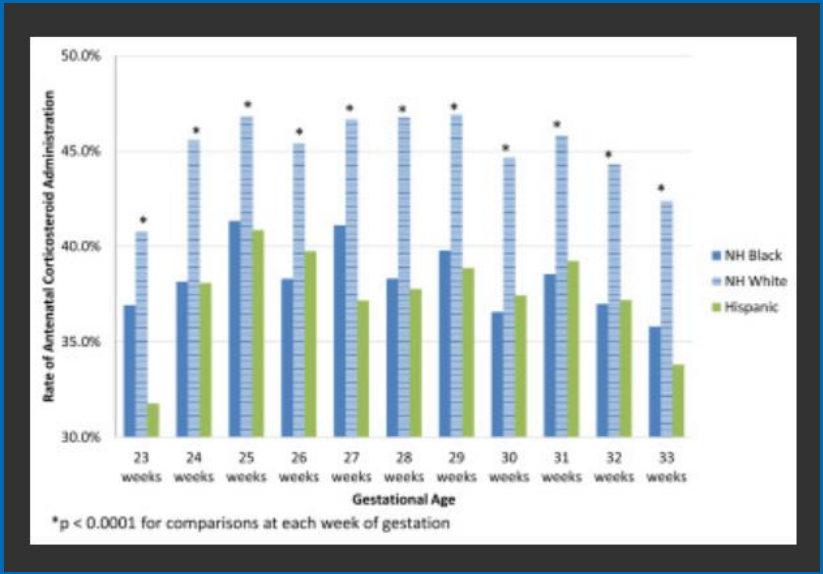
Value of Consensus?

- AAP COFN recommended each center to have consensus guidelines in 2011
- Agreement between OBs and Neos increased neonatal survival 2.39x
- Consistency increases health equity



(Gullerson, AJOG 2020) (Guinsberg , J Peri 2012)

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Moving beyond GA

- GA- not the only factor!
- BW
- Gender
- Plurality
- Antenatal Corticosteroids
- Inborn vs Outborn

Infants Receiving Active Treatment
Average Survival: 42%
Hospital Range: 28 - 56%

All Infants, Including Infants Not Actively Treated
Average Survival: 18%
Hospital Range: 10 - 29%

Outcomes At 18-26 Months' Corrected Age Among Infants Who Survive: (About the Data)

Profound Neurodevelopmental Impairment	Moderate-Severe Neurodevelopmental Impairment	Blindness	Deafness	Moderate-Severe Cerebral Palsy	Cognitive Developmental Delay
5 - 6%	37 - 52%	< 1%	2 - 5%	9 - 15%	35 - 46%

Infants Receiving Active Treatment
Average Survival: 22%
Hospital Range: 13 - 34%

All Infants, Including Infants Not Actively Treated
Average Survival: 14%
Hospital Range: 8 - 24%

Outcomes At 18-26 Months' Corrected Age Among Infants Who Survive: (About the Data)

Profound Neurodevelopmental Impairment	Moderate-Severe Neurodevelopmental Impairment	Blindness	Deafness	Moderate-Severe Cerebral Palsy	Cognitive Developmental Delay
6 - 11%	52 - 78%	< 1%	5 - 11%	15 - 22%	46 - 67%

(Mercurio, Carter J. Perinatology 2020)

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VON 22 week resuscitation and survival

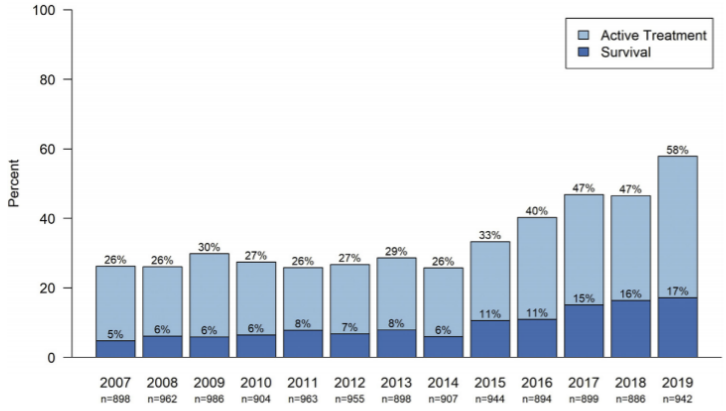

Figure 1. Active treatment and survival for liveborn infants at 22 weeks in the US. Active treatment is defined as respiratory support (including face mask ventilation, nasal continuous positive airway pressure, endotracheal intubation, surfactant therapy, or mechanical ventilation), chest compressions, or epinephrine. Survival is to hospital discharge or 1 year. The denominator includes all live births, including deaths that occurred in the delivery room. Data are from hospitals participating in the Vermont-Oxford Network.

(Rysavy et. al. Jpeds 2021)

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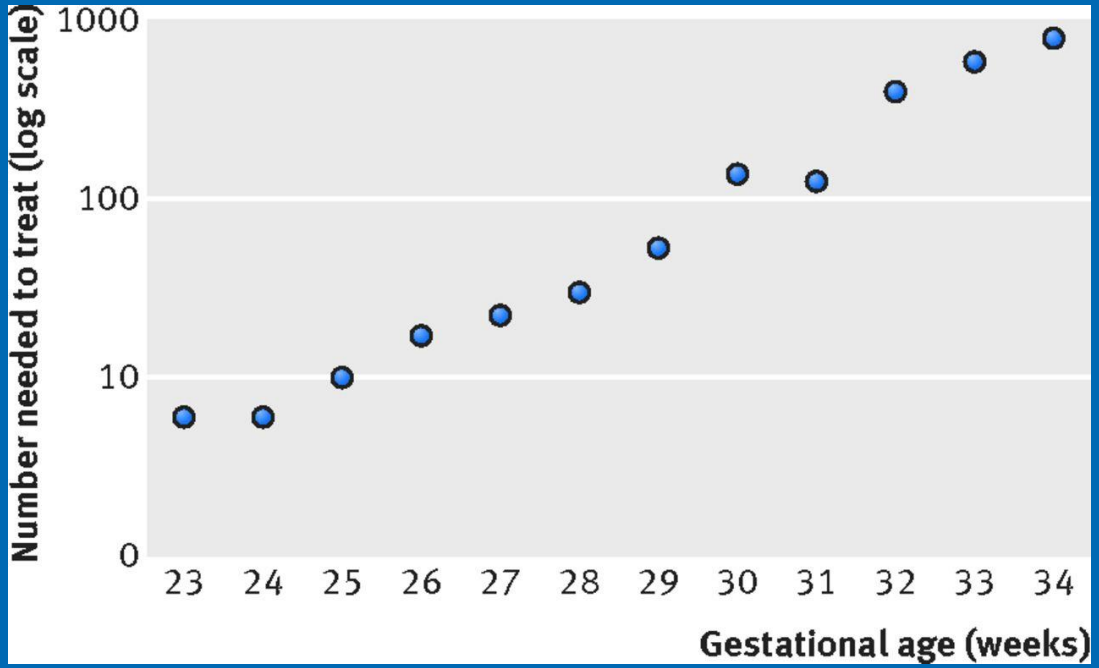
Proactive neonatal treatment at 22 weeks of gestation: a systematic review and meta-analysis

Carl H. Backes, MD; Brian K. Rivera, MS; Leanne Pavlek, MD; Lindsey J. Beer, MD; Molly K. Ball, MD; Eli T. Zettler, BS; Charles V. Smith, PhD; Jeffrey A. Bridge, PhD; Edward F. Bell, MD; Heather A. Frey, MD, MSci

- Survival overall was 29%
- Greater survival 39% among infants who were provided ACS and than among infants who were solely provided neonatal treatment 19.5%
- Survival without moderate or severe impairment was 37%

Steroid Benefits



(Travers et al BMJ 2017)

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Review

Ethical issues in treatment of babies born at 22 weeks of gestation

John D Lantos

Correspondence to Dr John D Lantos, Children's Mercy Bioethics Center, Children's Mercy Hospital, 2401 Gillham Road, Kansas City, MO 64108, USA; jlantos@cmh.edu

Abstract

Many centres now report that more than half of babies born at 22 weeks survive and most survivors are neurocognitively intact. Still, many centres do not offer life-sustaining treatment to babies born this prematurely. Arguments for not offering active treatment reflect concerns about survival rates, rates of neurodevelopmental impairment and cost. In this essay, I examine each of these arguments and find them ethically problematic. I suggest that current data ought to lead to two changes. First, institutional culture should change at institutions that do not offer treatment to babies born at 22 weeks. Second, we need more research to understand best practices for these tiny babies.

http://dx.doi.org/10.1136/archdischild-2020-320871

- Neurodevelopmental Outcomes
- Parental Preferences
- Societal Costs

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Updated National Data

Table 2.

Survival of Infants Born at 22-28 Weeks' Gestational Age in 2013-2018 for All Infants and Infants Actively Treated at Birth

Survival	No./total (%), by gestational age, in weeks						
	2013-2018						
	22	23	24	25	26	27	28
Infants actively treated at birth [d]							
No.	201	958	1369	1589	1827	1976	2400
Survived >12 h	159 (79.1)	856 (89.4)	1298 (94.8)	1546 (97.3)	1788 (97.9)	1943 (98.3)	2375 (99.0)
Survived to discharge or 1 y[c]	60/200 (30.0)	535/958 (55.8)	972/1362 (71.4)	1266/1584 (79.9)	1608/1826 (88.1)	1787/1968 (90.8)	2266/2393 (94.7)

Bell EF, Hintz SR, Hansen NI, et al. Mortality, In-Hospital Morbidity, Care Practices, and 2-Year Outcomes for Extremely Preterm Infants in the US, 2013-2018 [published correction appears in JAMA. 2022 Jun 7;327(21):2151]. *JAMA*. 2022;327(3):248-263. doi:10.1001/jama.2021.23580

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NRP 8 Updates

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1963- JFK

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NRP 8th Edition Practice Changes

Table 1: Overview of NRP 8th Edition Practice Changes

Change	NRP 7th Edition	NRP 8th Edition
Umbilical cord management plan added to 4 pre-birth questions, replacing "How many babies?"	The 4 pre-birth questions: (1) Gestational age? (2) Amniotic fluid clear? (3) How many babies? (4) Additional risk factors?	The 4 pre-birth questions: (1) Gestational age? (2) Amniotic fluid clear? (3) Additional risk factors? (4) Umbilical cord management plan?
Initial steps reordered to better reflect common practice.	Initial steps: Warm and maintain normal temperature, position airway, clear secretions if needed, dry, stimulate.	Initial steps: Warm, dry, stimulate, position airway, suction if needed.
An electronic cardiac monitor is recommended earlier in the algorithm	An electronic cardiac monitor is the preferred method for assessing heart rate during cardiac compressions.	When an alternative airway becomes necessary, a cardiac monitor is recommended for the most accurate assessment of the baby's heart rate.
Epinephrine intravenous/intraosseous (IV/IO) flush volume increased.	Flush IV/IO epinephrine with 0.5 to 1 mL normal saline	Flush IV/IO epinephrine with 3 mL normal saline (applies to all weights and gestational ages)
Epinephrine IV/IO and endotracheal doses have been simplified for educational efficiency. The dosage range is unchanged. The simplified doses (IV/IO and ET) do not represent an endorsement of any particular dose within the recommended dosing range. Additional research is needed.	Range for IV or IO dose = 0.01 - 0.03 mg/kg (equal to 0.1 - 0.3 mL/kg) Range for endotracheal dose = 0.05 - 0.1 mg/kg (equal to 0.5 – 1 mL/kg)	The suggested initial IV or IO dose = 0.02 mg/kg (equal to 0.2 mL/kg) The suggested endotracheal dose (while establishing vascular access) = 0.1 mg/kg (equal to 1 mL/kg)
Expanded timeframe for cessation of resuscitative efforts	If there is a confirmed absence of heart rate after 10 minutes of resuscitation, it is reasonable to stop resuscitative efforts; however, the decision to continue or discontinue should be individualized.	If confirmed absence of HR after all appropriate steps performed, consider cessation of resuscitation efforts around 20 minutes after birth (decision individualized on patient and contextual factors).

IV = intravenous IO = intraosseous ET = endotracheal HR = heart rate

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American Academy of Pediatrics (AAP) and American Heart Association (AHA) NRP 8th Edition Busy People Update #1 – December 2020

See References slide for additional information.

Golden Hour Fundamentals

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Coney Island

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Goals in the Delivery Room

1)Ventilation

2)Thermoregulation

3) Delayed Cord Clamping

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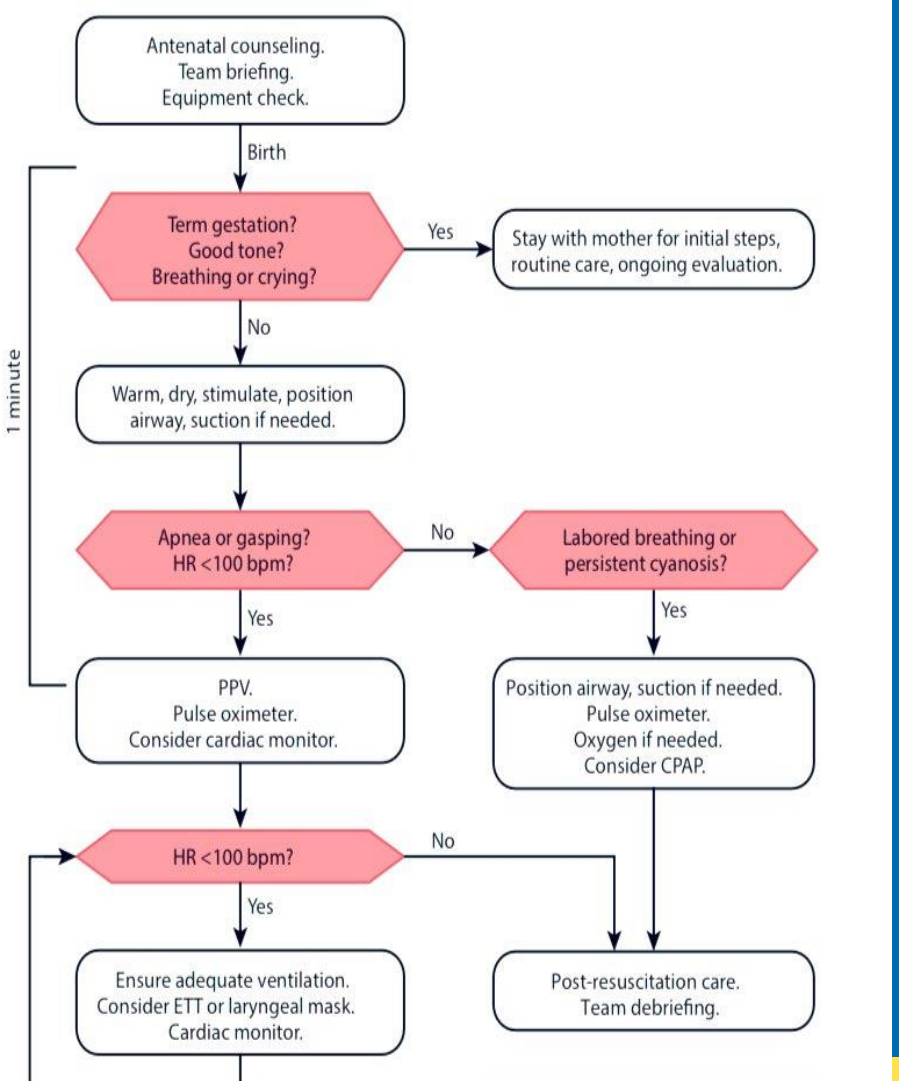

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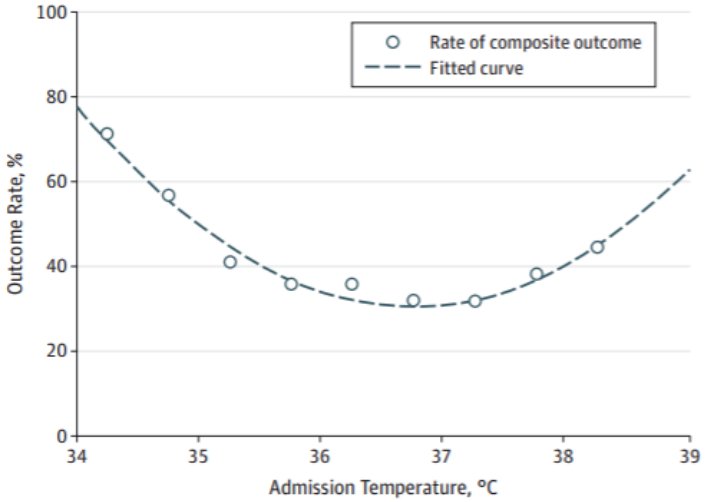
Consequences of Hypothermia

Figure 2. Association of Admission Temperature With a Composite Mortality/Morbidity Outcome



Unadjusted data for rate of a composite mortality/morbidity outcome plotted against admission temperature and fitted with a curve indicating the U-shaped relationship between admission temperature and the composite outcome.

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Lyu Y, Shah PS, Ye XY, et al. Association between admission temperature and mortality and major morbidity in preterm infants born at fewer than 33 weeks' gestation. *JAMA Pediatr*. 2015;169(4):e150277. doi:10.1001/jamapediatrics.2015.0277

Physiologic-Based CC

- Non-vigorous infants largely excluded from clinical trials
- Potential benefit to maintaining constant cerebral and myocardial perfusion
- Baby DUCC
- ICR
- Stabilizing cardiac output to reduce cerebrovascular injury in asphyxiated near-term lambs

Polglase GR, et al. Cardiopulmonary Resuscitation of Asystolic Newborn Lambs Prior to Umbilical Cord Clamping; the Timing of Cord Clamping Matters! Front Physiol. 2020 Jul 30;11:902. doi: 10.3389/fphys.2020.00902. PMID: 32848852; PMCID: PMC7406709.

Badurdeen et al.; Baby Directed Umbilical Cord Clamping (BabyDUCC) collaborative group. Physiologically based cord clamping for infants ≥32+0 weeks gestation: A randomised clinical trial and reference percentiles for heart rate and oxygen saturation for infants ≥35+0 weeks gestation. PLoS Med. 2022 Jun 23;19(6):e1004029. doi: 10.1371/journal.pmed.1004029. PMID: 35737735; PMCID: PMC9269938.

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Neonatal Pain

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Virgina Apgar

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Neonatal Pain

- Balancing the risks and benefits of treating pain
- Since 2010, the AAP recommends premedication for non-emergent intubation
- NEOPAIN Trial

Allen KA. Premedication for neonatal intubation: which medications are recommended and why. Adv Neonatal Care. 2012 Apr;12(2):107-11. doi: 10.1097/ANC.0b013e31824c1583. PMID: 22469965; PMCID: PMC3319658

Anand KJ, Hall RW, Desai N, et al. Effects of morphine analgesia in ventilated preterm neonates: primary outcomes from the NEOPAIN randomised trial. *Lancet*. 2004;363(9422):1673-1682. doi:10.1016/S0140-6736(04)16251-X.

Marazzi, Andrea and Palau, Sarah. Pain and Sedation in the NICU

See References slide for additional information.

Updates with Perinatal Cannabis Use and Breastfeeding

3rd Annual Children's Hospital Colorado
Virtual Pediatric Care Symposium
Hot Topics in Neonatology
October 26, 2022

Children's Hospital Colorado
Affiliated with University of Colorado Anschutz Medical Campus
School of Medicine

Erica Wymore, MD MPH
Assistant Professor, Neonatal Perinatal Medicine
Children's Hospital Colorado
University of Colorado School of Medicine

Disclaimer

The harm reduction strategies shared in this presentation are experimental in maternal populations.

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CHoSEN

Fall Forum, October 20, 2022

Harm Reduction Strategies with Breastfeeding and Cannabis Use

The CHoSEN Collaborative

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illuminate
Building Brighter Childhoods

SCHOOL OF MEDICINE
Department of Pediatrics
UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS

cpcqc

CHoSENCollaborative.org

The Dilemma

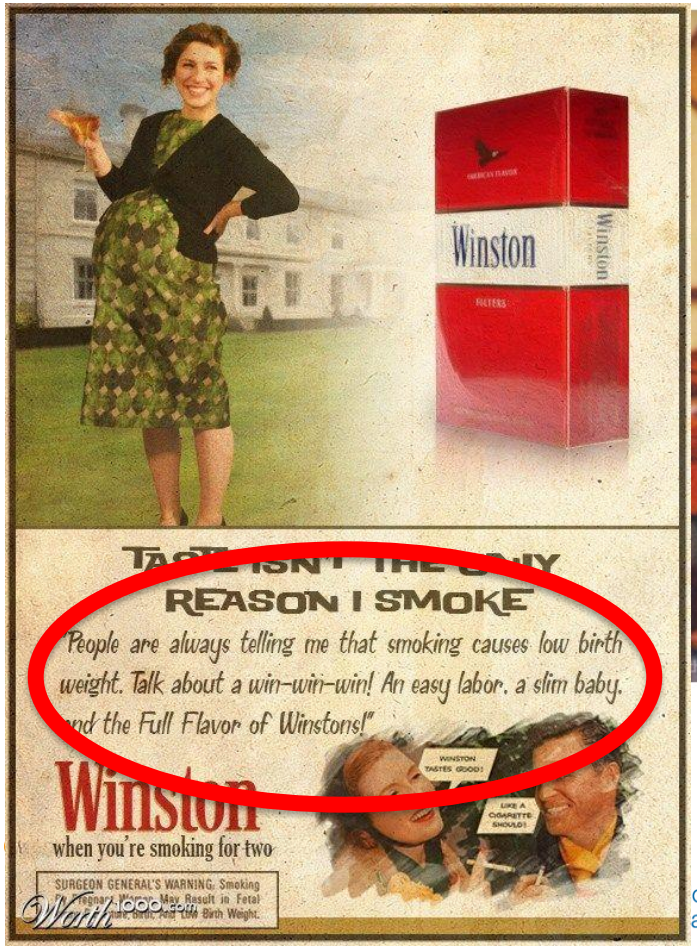
Cannabis legalization has led to increasing use among many people, including those who are pregnant.

Despite national medical organizations' professional guidelines recommending against the use of cannabis during pregnancy and breastfeeding, prevalence of use has continued to increase.

This has led to challenges in the provider-patient relationship throughout pregnancy, delivery and beyond.

Volkow JAMA 2019

Public Health- Previous Lessons?



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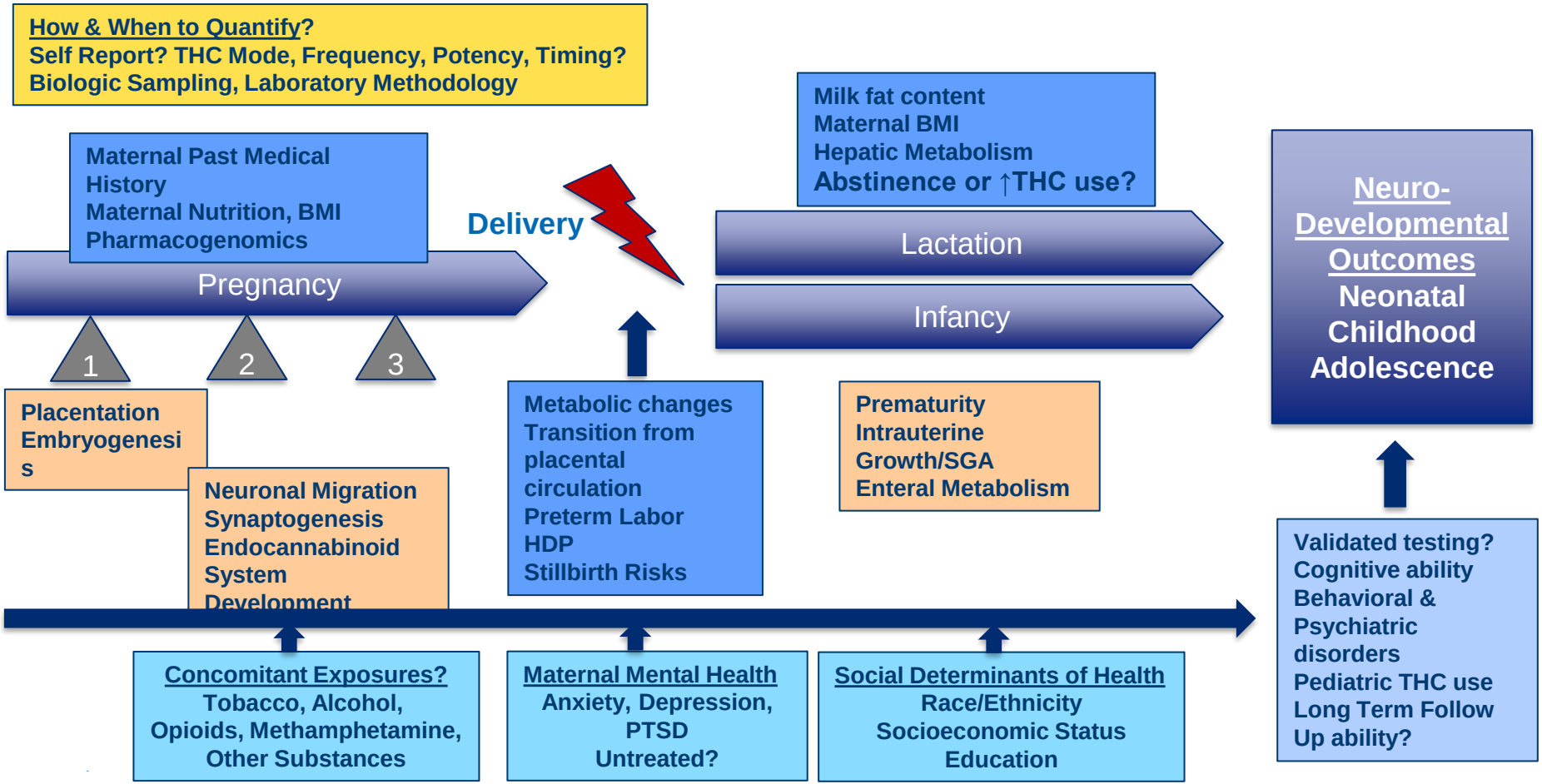
Challenges in Studying Perinatal Cannabis Exposure



National Guidelines for Breastfeeding with Cannabis Exposure

AAP	ACOG	ABM
• Breastfeeding encouraged in narcotic-dependent mothers if enrolled in supervised drug treatment program, and have negative screening for HIV and illicit drugs • Breastfeeding contraindicated in women using illicit drugs (2012) • Insufficient data but concerns remain, maternal marijuana use while breastfeeding discouraged	Women should not use marijuana during pregnancy or while lactating Ob-Gyns should not prescribe for medicinal purposes to pregnant or lactating women • Universal screening of all pregnancy women for substance use • Access to postpartum psychosocial support incl SUD treatment/relapse prevention programs • Insufficient evidence for effects of marijuana on nursing infant, and in absence of such data, marijuana is discouraged	Breastfeeding mothers should be counseled to reduce or eliminate their use of MJ to avoid exposing their infants and advised of the possible long-term neurobehavioral effects from continued use. • Carefully weigh risks of initiation and continuation of breastfeeding while using marijuana with the risks of not breastfeeding • Reduce/eliminate marijuana use; counsel possibly long-term neurobehavioral effects; urge caution
AAP. Breastfeeding and the Use of Human Milk. 2012, 2022	ACOG, Committee Opinion No. 722, Marijuana Use During Pregnancy and	ABM Clinical Protocol #21 2015

FROM THE AMERICAN ACADEMY OF PEDIATRICS | POLICY STATEMENT | JUNE 27 2022

Policy Statement: Breastfeeding and the Use of Human Milk

Joan Younger Meek, MD, MS, RD, FAAP, FABM, IBCLC ✉; Lawrence Noble, MD, FAAP, FABM, IBCLC; Section on Breastfeeding

Address correspondence to Joan Younger Meek, MD, MS, Florida State University College of Medicine, 250 E. Colonial, Suite 200, Orlando, FL 32801 E-mail: jmeek@fsu.edu

Pediatrics (2022) 150 (1): e2022057988.

https://doi.org/10.1542/peds.2022-057988 **Article history**

Reinforce breastfeeding and human milk are 'normative standards for infant feeding and nutrition'

Recommend exclusive breastfeeding for first 6 months

Supports continued breastfeeding from 6 months to 2 years and beyond (with appropriate solid foods introduced at 6 months)

Special Considerations

Current data are insufficient to assess the effects of exposure of infants to maternal marijuana use during breastfeeding. As a result, maternal marijuana use while breastfeeding is discouraged. Because the potential risks of infant exposure to marijuana metabolites are unknown, women should be informed of the potential risk of exposure during lactation and encouraged to abstain from using any marijuana products and avoid second-hand marijuana smoke exposure.[36]

36 Ryan SA, Ammerman SD, O'Connor ME; Committee on Substance Use and Prevention; Section on Breastfeeding. Marijuana use during pregnancy and breastfeeding: implications for neonatal and childhood outcomes. *Pediatrics*. 2018;142(3):e20181889

Studies Describing THC Excretion in Breastmilk

Author	Design	Study N	Post Partum Eligibility Window	Sampling Time Intervals	Number of Samples Analyzed	Median BM THC (ng/mL)*
Baker, 2018	Prospective Observational	8	2-5 months	20 min; 1, 2, 4 hours	32 Milk	44.7 (12.2-420.3)
Bertrand, 2018	Cross sectional	50	12 months	-	54 Milk	9.47 (1.01-323.0)
Moss, 2021	Prospective Observational	20	Delivery	2wk, 2 months	40 Plasma + Milk	27 (0.8-190.5)
Wymore, 2021	Prospective Observational	25 (7)**	Delivery	2-5 times/wk for 6 weeks	402 Plasma + Milk	5.5* (4.4-16.0)

* Reported median max THC concentrations
** Sub-cohort who abstained

General Precaution

There is no safe amount of cannabis use during pregnancy or breastfeeding, and no medical indication for use during the perinatal period.

The American College of Obstetrics and Gynecology (ACOG), American Academy of Pediatrics (AAP) and the Academy of Breastfeeding Medicine discourage cannabis use in pregnancy or while breastfeeding.

Harm reduction strategies utilized for other substances (opioids, tobacco, alcohol) may be of assistance in the setting of perinatal cannabis use, with a focus on prevention and positive interventions.

**ACOG 2017,
AAP 2012, 2022
ABM 2015**

An Opportunity?

An opportunity exists to improve family education beginning with prenatal care, emphasizing early safe breastfeeding counseling, to promote a collaborative experience at delivery in addition to newborn care and lactation.

Education and Partnership

ACOG recommends universal screening for substance use with a validated tool for reproductive aged and pregnant women for any substance use.

Increased screening for anxiety and depression has also been recommended.

A positive screen provides the opportunity for education, intervention and referrals to treatment if warranted, and a discussion about the patient's plans for breastfeeding.

Partnerships between obstetrics, midwifery, lactation specialists and pediatric providers can raise awareness of cannabis use prevalence and provide a consistent approach across disciplines to education and patient care.

Education and Partnership

Delivery hospitals may consider incorporating ‘safe breastfeeding counseling’ in guidelines or policies when a positive screen for cannabis use occurs. Ideally, education surrounding safe breastfeeding should occur prior to the delivery hospitalization.

Suggested Timing of Screening for Cannabis Use:

Educating patients to anticipate repeated screening questions and assessment of cannabis use at future healthcare visits is recommended.

SBIRT (Screening, Brief Intervention, Referral to Treatment)

- In the past 6 months, how many times have you used cannabis?
  - Do you want to stop using cannabis?
  - How difficult do you think it would be to stop using?

- Next step: Identify quantity and frequency of use. Consider further screening using the CUDIT-R, or another screening tool.

- Provide a brief intervention and referral to treatment, if indicated.

SBIRT (Screening, Brief Intervention, Referral to Treatment)

https://www.sbirtcolorado.org

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Brief Screen for Substance Use

Question	Positive Screen Criteria
TOBACCO	
Do you currently smoke or use any form of tobacco?	**Positive Screen** = Yes **NEXT STEP:** Explore readiness to quit. Offer assistance and/or arrange additional services.
ALCOHOL	
Drinks per week: How many drinks do you have per week? 12 fl oz beer = 5 fl oz table wine = 1.5 fl oz liquor (vodka, tequila, etc.) 	**Positive screen** = More than 7 drinks per week for a female of any age or a male over age 65 **Positive screen** = More than 14 drinks per week for a male up to age 65 **NEXT STEP:** Consider further screening using the AUDIT or another screening tool. Provide a brief intervention and referral to treatment if indicated.
Drinks per day: When was the last time you had 4 or more drinks per day? (Asked of all females and males over the age of 65) **OR** When was the last time you had 5 or more drinks per day? (Asked of males age 65 and younger)	**Positive Screen** = in the past year **NEXT STEP:** Consider further screening using the AUDIT or another screening tool. Provide a brief intervention and referral to treatment if indicated.
MARIJUANA	
In the past year, how many times have you used marijuana?	**Positive screen** = 1 or more times **NEXT STEP:** Explore quantity and frequency of use. Consider further screening using the CUDIT-R or another screening tool. Provide a brief intervention and referral to treatment if indicated.
OTHER DRUGS	
In the past year, have you used or experimented with an illegal drug or a prescription drug for non-medical reasons?	**Positive Screen** = Yes **NEXT STEP:** Identify specific drugs, quantity and frequency of use. Consider further screening using the DAST or another screening tool. Provide a brief intervention and referral to treatment if indicated.
OTHER POSITIVE SCREEN CRITERIA	
For those age 18 – 20	Any alcohol use
For pregnant women	Any alcohol use

An improved brief measure of cannabis misuse: the Cannabis Use Disorders Identification Test–Revised (CUDIT–R)

Simon J Adamson [1], Frances J Kay-Lambkin, Amanda L Baker, Terry J Lewin, Louise Thornton, Brian J Kelly, J Douglas Sellman

- **Developed to identify problematic cannabis use**
- **8 items from domains of consumption, cannabis problems (abuse), dependence, and psychological features.**
- **Sensitivity (91%), Specificity (90%) for screening of problematic cannabis use**
- **Use in potentially hazardous situations: driving, operating machinery, caring for children- occurring almost daily**

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The Cannabis Use Disorder Identification Test – Revised (CUDIT-R)

Have you used any cannabis over the past six months? **YES / NO**

If **YES**, please answer the following questions about your cannabis use. Circle the response that is most correct for you in relation to your cannabis use over the past six months:

1.	**How often do you use cannabis?**				
	Never 0	Monthly or less 1	2-4 times a month 2	2-3 times a week 3	4 or more times a week 4
2.	**How many hours were you "stoned" on a typical day when you had been using cannabis?**				
	Less than 1 0	1 or 2 1	3 or 4 2	5 or 6 3	7 or more 4
3.	**How often during the past 6 months did you find that you were not able to stop using cannabis once you had started?**				
	Never 0	Less than monthly 1	Monthly 2	Weekly 3	Daily or almost daily 4
4.	**How often during the past 6 months did you fail to do what was normally expected from you because of using cannabis?**				
	Never 0	Less than monthly 1	Monthly 2	Weekly 3	Daily or almost daily 4
5.	**How often in the past 6 months have you devoted a great deal of your time to getting, using, or recovering from cannabis?**				
	Never 0	Less than monthly 1	Monthly 2	Weekly 3	Daily or almost daily 4
6.	**How often in the past 6 months have you had a problem with your memory or concentration after using cannabis?**				
	Never 0	Less than monthly 1	Monthly 2	Weekly 3	Daily or almost daily 4
7.	**How often do you use cannabis in situations that could be physically hazardous, such as driving, operating machinery, or caring for children:**				
	Never 0	Less than monthly 1	Monthly 2	Weekly 3	Daily or almost daily 4
8.	**Have you ever thought about cutting down, or stopping, your use of cannabis?**				
	Never 0		Yes, but not in the past 6 months 2		Yes, during the past 6 months 4

Scores of 8 or more indicate hazardous cannabis use.
Scores of 12 or more indicate a possible cannabis use disorder, for which further intervention may be required.

Explore Reasons for Use and Alternatives to Cannabis Use

- Consider underlying symptoms of anxiety, depression or other mental health concerns.
- Symptom relief for pain or sleep? Suggest/refer to appropriate provider for safe alternatives for symptoms.
- Perceptions of benefit? Education, medical indications?
- Perceptions of safety? Education, and honesty with limits of evidence but not proven to be safe.

Education

Approach with empathy and compassion, with focus on support and harm reduction:

- No known benefits of cannabis use in perinatal period
- Possible risks of cannabis use during pregnancy and lactation- evidence has limitations, but evolving and concerning
- Cannabis use discouraged during pregnancy and lactation
- No known safe amount of cannabis use
- Legalization ≠ Safety
- Insufficient Data ≠ Safety

Metz Obstet Gyne 2018
Ryan Pediatrics 2018

Harm Reduction Approach

Strategies are intended to reduce problems associated with substance use while recognizing that for some users, abstinence may be neither realistic nor desirable.

Primary goal: encourage abstinence as a way to avoid harm, while including means for reducing harm among those who continue substance use.

It may be helpful to provide evidence-based recommendations to reduce the harm of use, despite the perception of condoning use.

Fischer Am J Public Health 2017
Fischer Int J Drug Policy 2022

Harm Reduction Approach

- Similar to tobacco harm reduction, providers should advise patients to minimize frequency of cannabis use, never smoke/vape while actively breastfeeding and never smoke/vape inside the home or car (or while driving).

Lower-Risk Cannabis Use Guidelines (LRCUG) for reducing health harms from non-medical cannabis use: A comprehensive evidence and recommendations update

Benedikt Fischer [1], Tessa Robinson [2], Chris Bullen [3], Valerie Curran [4], Didier Jutras-Aswad [5], Maria Elena Medina-Mora [6], Rosalie Liccardo Pacula [7], Jürgen Rehm [8], Robin Room [9], Wim van den Brink [10], Wayne Hall [11]

- **Third systematic review (2012, 2017) from international collaboration content experts (Canada, New Zealand, US, The Netherlands, United Kingdom)**
- **Endorsed by leading government agencies and health/addiction stakeholder organizations**
- **International widespread distribution, adapted for target audiences**

Fischer Int J Drug Policy 2022

Recommendations for PWUC*

1. There is no universally safe level of cannabis use
2. Avoid use while pregnant or breastfeeding
3. Avoid mixing with tobacco
4. Minimize ‘frequent use’ (daily or near-daily use) to occasional ‘less than weekly’ use
5. Avoid ‘smoking’ or deep inhalational use, for pulmonary health
6. Avoid driving after use- dependent on mode of consumption/potency, may range from 6-18 hours
7. Use legal/regulated cannabis products, low THC potency and/ or strains with high CBD to THC ratios
8. If experiencing cognitive impairment, consider suspending or substantially reducing use

* PWUC = People Who Use Cannabis

Follow Up & Plans of Safe Care

For Maternal/Obstetric Care:

- Consider increased risks for perinatal mood and anxiety disorders and screen accordingly.
- Consider earlier follow up than the routine 6-week postpartum care for uncomplicated pregnancies and deliveries.
- Continue assessment and support for reducing cannabis use if breastfeeding.

For Pediatric Care:

- Warm hand-off from the delivery hospital pediatric provider to the outpatient pediatric provider.
- Known cannabis use in pregnancy to trigger additional anticipatory guidance:
  - Assessment of ongoing cannabis use if breastfeeding
  - Screening for perinatal mood and anxiety disorder
  - Safe and sober caregivers for infant
  - Reinforce safe sleep practices
  - Safe storage of cannabis products in the home

Resources for Providers

Colorado Department of Public Health & Environment- Healthcare Provider Resources:

- **https://www.colorado.gov/cdphe/marijuana-clinical-guidelines**
- **Patient fact sheets: https://cdphe.colorado.gov/marijuana-fact-sheets-in-multiple-languages**

- **1(800) CHILDREN will connect patients with substance use disorder resources**

Alcohol and Substance Abuse Screening, Brief Intervention, Referral to Treatment (SBIRT)

- **https://www.sbirtcolorado.org**
- **Access the 'clinical tools', or the 'online training' tabs**

Cannabis Use Disorder Identification Test- Revised (CUDIT-R)

- **https://bpac.org.nz/BPJ/2010/June/docs/addiction_CUDIT-R.pdf**

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GOOD to KNOW
www.GoodToKnowColorado.com

Colorado Hospital Substance Exposed Newborns Collaborative

Acknowledgements

Breast Milk Research Team

Maya Bunik, MD MSPH
Claire Palmer, MS
Torri Metz, MD MSCS
Sam Wang, MD
Cristina Sempio, PhD (iC42 Lab)
Jost Klawitter, PhD (iC42 Lab)
David Bourne, PhD
Jessica Scott, BS, MA
Kelly Griffith, RN & PCTRC
Megan Gorski, BA (CHCO RI)
Halley Isberg, BA (CHCO RI)
Jocelyn Phipers, RN CCRP

Collaborators & Mentors

Theresa Powell, PhD
Paul Rozance, MD
Jim Barry, MD
Lactation Teams-
University of Colorado Hospital
Children's Hospital Colorado
Jashvant Unadkat, PhD (Univ Washington)
Marilyn Huestis, PhD (Thomas Jefferson Univ)

Funding

NIDA R01
CDPHE RFA 2902
CHCO Research Institute (RI)
Colorado Fetal Care Center

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