

Considerations for Implementing the Eat, Sleep, Console Care Approach

Improving outcomes for opioid-exposed newborns through engagement of caregivers, optimization of non-pharmacologic interventions, and focus on function-based assessments

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Considerations for Implementing the Eat, Sleep, Console Care Approach

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This summary document describes the process of introducing the promising Eat, Sleep, Console (ESC) care approach through use of the structured ESC Care Tool™ in a hospital or birthing center. It outlines several steps that may be helpful to prepare for implementation while awaiting long-term safety and outcome data.

Neonatal Opioid Withdrawal Syndrome

Newborns exposed to opioids in utero may develop symptoms of Neonatal Opioid Withdrawal Syndrome (NOWS) in the first few days to weeks of life. These symptoms can include tremors, excessive crying and irritability, and problems with consoling, feeding, and sleeping.

In the United States, at least one infant is born with NOWS every 24 minutes. The incidence of NOWS increased from 1.2 to 8.8 per 100 hospital births between 2000 and 2016, with increases in almost every state and demographic group.

While assessments and medical care for opioid-exposed newborns vary widely across hospitals, the most commonly used tool in the U.S. for the past ~50 years has been the Finnegan Neonatal Abstinence Scoring Tool (FNAST). This tool evaluates the severity of an infant's symptoms of withdrawal to determine the need for pharmacologic therapy based on a catalogue of non-functional signs and symptoms that an opioid-exposed newborn may experience. However there are concerns that the FNAST may overestimate the need for opioid medications after birth. In addition, the way in which institutions use scores to determine intervention has been found to be highly variable.

The ESC Care Approach

The ESC care approach, developed by pediatrician Dr. Matthew Grossman at Yale-New Haven Children's Hospital, bases assessment of NOWS severity on three main newborn functions — the infant's ability to eat, sleep, and be consoled.

This ESC care approach empowers families and caregivers to care for their infants with non-pharmacologic interventions as first-line treatment for NOWS. Parent/caregiver-led interventions such as holding, swaddling, rocking, and breastfeeding the baby in a quiet, calm rooming-in environment have shown promise in improving outcomes for opioid-exposed infants.

To support hospitals in standardizing ESC assessments, optimizing non-pharmacologic care and determining next steps in management for opioid-exposed newborns using the ESC care approach, pediatricians and neonatologists at the Children's Hospital at Dartmouth-Hitchcock (Bonny Whalen, MD and Kate MacMillan, MD, MPH) and Boston Medical Center (Elisha Wachman, MD and Susan Minear, MD) joined with Dr. Grossman to develop a formal ESC Care Tool in 2016.

The ESC Care Tool was first piloted at Boston Medical Center in 2016, followed by the Children's Hospital at Dartmouth-Hitchcock in 2017. Since this time, more than 70 hospitals participating in formal quality improvement initiatives with the Northern New England Perinatal Quality Improvement Network (NNEPQIN) and the Perinatal-Neonatal Quality Improvement Network of Massachusetts (PNQIN) implemented the ESC Care Tool, and providers and families have shared overall satisfaction with this new model of care. However, questions remained about the effectiveness and safety of the ESC care approach when applied on a broad scale in diverse settings.

New Evidence on the ESC Care Approach

A clinical trial funded through the [NIH Helping to End Addiction Long-term \(HEAL\)](#) Initiative was recently published in the [New England Journal of Medicine](#). Implemented by the [National Institutes of Health \(NIH\) Environmental influences on Child Health Outcomes \(ECHO\) Program](#) and the [NIH Eunice Kennedy Shriver National Institute of Child Health and Human Development](#) (NICHD), this trial assessed the effectiveness of the ESC approach at 26 U.S. hospitals across 18 states. Sites were diverse in their ability to provide all components of non-pharmacologic care including "rooming in." Sites involved in the trial used the ESC Care Tool to support consistent application of the ESC care approach across care settings. Expert faculty provided rigorous training to site hospital staff to ensure high inter-rater reliability, that is, to ensure that the tool was used consistently by all individuals involved in assessing newborn function and medical decisions regarding the baby's care.

Researchers found that the ESC care approach is more effective than traditional care approaches for the treatment of opioid-exposed infants. Newborns cared for with the ESC Care Tool were medically ready for discharge approximately 6.7 days earlier and were 63% less likely to receive medication as part of their treatment, when compared to newborns cared for using the traditional approach. At 3 months of age, there were no significant differences in the safety outcomes experienced by infants treated with the ESC care approach compared to those treated with the traditional approach.

6.7
FEWER DAYS
IN THE HOSPITAL

Study findings provide evidence on short-term safety outcomes for more than 1,300 trial participants. The research team is currently conducting longer-term follow-up to reassess safety and well-being outcomes at 2 years of age for all enrolled infants. Long-term follow-up is critical to further inform use of the ESC care approach.

Considerations for Implementing the ESC Care Approach

The following list outlines foundational components of the ESC care approach.

Foundational Components:

- 1. All perinatal staff trained in trauma-informed, compassionate care**
- 2. Prenatal education & preparation of birthing parents/families** to be their newborn's first line of treatment for NOWS and empowered in this role
- 3. Prioritization & optimization of non-pharmacologic care** as first-line treatment for NOWS in all care settings
- 4. Staff trained & reliable in bedside ESC assessments** using a standardized, structured assessment tool
- 5. Function-based symptom prioritization & full care team huddles for pharmacologic treatment decisions**
- 6. Use of a standardized non-pharmacologic care bundle & pharmacologic treatment protocol** to promote consistent evidence-based care among all hospital staff
 - **Rooming-in and parent-baby couplet care** when & where available
 - **Promotion of parental presence & engagement in care** with parent/caregiver huddles & shared decision making
 - **Promotion of skin-to-skin & breastfeeding** (unless medical contraindications exist)
 - **Infant-centered NOWS assessments & clustered care** around the baby's sleep/wake/feed cycle
- 7. Development of a Family Care Plan for safe, supported, & healthy transitions to home**

Some of these components may require significant changes to the current processes in many organizations. Prenatal education and rooming-in may not be available for all infants in all clinical settings, but organizations considering the ESC care approach should prioritize these options when available, advocate for them when they are not, and implement all other non-pharmacologic care interventions to the greatest extent possible in the hospital's individual care settings for every baby.

Planning for Implementation

We have found the following steps to be useful for implementation of the ESC care approach, including use of the ESC Care Tool, to support opioid-exposed newborns at a hospital:

- 1. Expanding knowledge:** Read the recommended articles from the [Key Readings/Resource List](#).
- 2. Reflecting on how to implement the model in a hospital:** Review the list of foundational components above and begin to think about what changes will be necessary to implement these components. What current protocols and space limitations could prevent success? Who will need to be involved in order to address these limitations?
- 3. Building leadership buy-in:** It is essential to share this document with leadership, along with key articles from the resource list, to begin building support for implementation of the ESC care approach.
- 4. Starting to build an ESC care approach team:** Ideally, this team would include parents/caregivers with lived experience and representatives from Addiction Psychiatry, Obstetrics, Labor and Delivery, Postpartum, Newborn Nursery, Pediatrics, SCN/NICU, Inpatient Pharmacy, and Quality Improvement. Consider including nurses, physicians, associate providers, physical & occupational therapists, social workers, care coordinators, recovery coaches, community health workers, nutritionists, lactation consultants, prenatal and postnatal educators, pharmacists, and caregivers. Identify one to two team leads who will serve as ESC champions within the organization. Additionally, it is recommended to identify one ESC champion in each applicable clinical care unit who can serve as lead ESC educator and “point person” for questions moving forward. The Chief Nursing Officer and/or nurse educator may play a particularly important role as a champion for this method.
- 5. Planning for policy and infrastructural changes:** Determine the steps necessary to make modifications to the medical record for ESC Care Tool documentation. Consider how to adjust space to allow for rooming-in and to create safe, quiet, private spaces for the newborn and caregiver.*
- 6. Building staff buy-in:** ESC champions within a hospital can serve as advocates for the method. Training in trauma-informed care, especially as it relates to pregnant and parenting people, is an important step toward reducing stigma and improving staff buy-in for the ESC care approach.
- 7. Identifying ESC training opportunities:** After implementing structural changes related to ESC and obtaining sufficient staff buy-in, it will be time to think about staff education and training. This will involve talking to any quality improvement networks the hospital is part of to see what trainings are available.
- 8. Planning for monitoring and evaluation:** It is important to generate a plan for documenting and reporting on key metrics related to implementation of ESC in a hospital. Metrics could include length of stay (days between birth and discharge from hospital) for opioid-exposed newborns, percent of opioid-exposed newborns receiving pharmacological treatment for NOWS versus receiving non-pharmacological interventions alone, and adverse events. Following these metrics before and after implementation will allow hospitals to ensure that they are providing the highest quality of care for opioid-exposed newborns in their specific care settings.
- 9. Prenatal education/preparation:** Partner with your prenatal clinics, colleagues, and support staff to educate pregnant people and families regarding the important role they can play in caring for their newborns. Prepare for the birth hospitalization by thinking through additional support needed to ensure parents can be present throughout the entire newborn hospitalization with support for their own self-care and mental health/addiction treatment needs (e.g., transportation, guest dosing for medication for opioid use disorder treatment (MOUD), other child and pet care, parental leave, additional caregivers to help provide respite during the newborn’s stay).

**We acknowledge that not all hospitals will be able to provide rooming-in but it is an important goal that hospitals should look to achieve.*

Key Readings/Resource List

Young LW, et al. [Eat, Sleep, Console approach or usual care for neonatal opioid withdrawal](#). *N Engl J Med*. 2023; 388:2326-2337.

ESC Care Approach/Development

The following literature informed the development of the ESC care approach and ESC Care Tool.

- *Grossman MR, Berkwitz AK, Osborn RR, et al. [An initiative to improve the quality of care of infants with neonatal abstinence syndrome](#). *Pediatrics*. 2017;139: e20164460.
- *Grossman MR, Lipshaw MJ, Osborn RR, Berkwitz AK. [A novel approach to assessing infants with neonatal abstinence syndrome](#). *Hosp Pediatr*. 2018 Jan;8(1):1-6.
- Wachman EM, Grossman M, Schiff DM, et al. [Quality improvement initiative to improve inpatient outcomes for neonatal abstinence syndrome](#). *J Perinatol*. 2018;38:1114-1122.
- *Wachman EM, Houghton M, Melvin P, et al. [A quality improvement initiative to implement the Eat, Sleep, Console neonatal opioid withdrawal syndrome care tool in Massachusetts' PNQIN collaborative](#). *J Perinatol*. 2020;1-10.

Non-pharmacologic Care / Parental Engagement

- Holmes AV, Atwood EC, Whalen B, et al. [Rooming-in to treat neonatal abstinence syndrome: improved family-centered care at lower cost](#). *Pediatrics*. 2016;137(6):e20152929.
- Atwood EC, Sollender G, Hsu E, et al. [Qualitative study of family experience with hospitalization for neonatal abstinence syndrome](#). *Hosp Pediatr*. 2016;10:626-632.
- *Howard MB, Schiff MD, Penwill N, et al. [Impact of parental presence at infants' bedside on neonatal abstinence syndrome](#). *Hosp Pediatr*. 2017;7:63
- *MacMillan KDL, Rendon CP, Verma K, et al. [Association of rooming-in with outcomes for neonatal abstinence syndrome: a systematic review and meta-analysis](#). *JAMA Pediatr*. 2018;172:345-351.
- *Video presentation on development of the ESC approach at Yale New Haven Children's Hospital: Dr. Matt Grossman's National Center on Substance Abuse and Child Welfare (NCSACW) 3/21/18 webinar "[Infants with prenatal substance exposure and their parents: family approach of Yale New Haven Children's Hospital](#)"



Additional Recommended Readings

NOWS/NAS-related Reviews and AAP Clinical Reports

- Hudak ML, Tan RC; Committee on Drugs, Committee on Fetus and Newborn, American Academy of Pediatrics. [Neonatal drug withdrawal](#). *Pediatrics*. 2012;129:e540–560.
- *Wachman EM, Schiff DM, Silverstein M. [Neonatal abstinence syndrome: advances in diagnosis and treatment](#). *JAMA*. 2018;319:1362–1374.
- *Whalen BL, Holmes AV, Blythe S. [Models of care for neonatal abstinence syndrome: What works?](#) *Semin Fetal Neonatal Med*. 2019;24:121–132.
- MacMillan KDL. [Neonatal abstinence syndrome: review of epidemiology, care models, and current understanding of outcomes](#). *Clin Perinatol*. 2019;46:817–832.
- *Patrick SW, Barfield WD, Poindexter BB, Committee on Fetus and Newborn, Committee on Substance Use and Prevention. [Neonatal Opioid Withdrawal Syndrome](#). *Pediatrics*. 2020;146(5):e2020029074.

Non-pharmacologic Care for the Opioid-exposed Newborn

- *Velez M and Jansson LM. [The opioid dependent mother and newborn dyad: non-pharmacologic care](#). *J Addict Med*. 2008;2:113–120.
- Edwards L and Brown LF. [Nonpharmacologic management of neonatal abstinence syndrome: an integrative review](#). *Neonatal Netw*. 2016;35:305–313.
- Bogen DL and Whalen BL. [Breastmilk feeding for mothers and infants with opioid exposure: What is best?](#) *Semin Fetal Neonatal Med*. 2019;24:95–104.
- Ryan G, Dooley J, Finn LG, Kelly L. [Nonpharmacological management of neonatal abstinence syndrome: a review of the literature](#). *J Matern Fetal Neonatal Med*. 2019;32:1735–1740.
- Pahl A, Young L, Buus-Frank ME, et al. [Non-pharmacological care for opioid withdrawal in newborns](#). *Cochrane Database Syst Rev*. 2020;12(12):CD013217.

Trauma-Informed and Trauma-Responsive Care

The following serve as key readings/resources for staff as you continue improvement work in caring for opioid-exposed newborns and their families.

- Dube SR, Felitti VJ, Dong M, et al. [Childhood abuse, neglect, and household dysfunction and the risk of illicit drug use: the adverse childhood experiences study](#). *Pediatrics*. 2003 Mar;111:564–572.
- Harris NB. [How childhood trauma affects health across a lifetime](#) [Video File].
- *SAMHSA's Trauma and Justice Strategic Initiative. [SAMHSA's concept of trauma and guidance for a trauma-informed approach](#). 2014.
- Oh DL, Jerman P, Marques SS, et al. [Systematic review of pediatric health outcomes associated with childhood adversity](#). *BMC Pediatr*. 2018;18:83.
- Camden Coalition of Healthcare Providers, The National Center for Complex Health & Social Needs, Vital Strategies. [Creating safe care supporting pregnant and parenting patients who use drugs](#). 2022.

Additional QI Experiences with ESC

- Dodds D, Koch K, Buitrago-Mogollon T, Horstmann S. [Successful implementation of the Eat Sleep Console model of care for infants with NAS in a community hospital](#). *Hosp Pediatr*. 2019;9:632–638.
- Blount T, Painter A, Freeman E, et al. [Reduction in length of stay and morphine use for NAS with the "Eat, Sleep, Console" method](#). *Hosp Pediatr*. 2019;9:615–623.
- Achilles JS and Castaneda-Lovato J. [A quality improvement initiative to improve the care of infants born exposed to opioids by implementing the Eat, Sleep, Console assessment tool](#). *Hosp Pediatr*. 2019;9:624–631.
- Parlamán J, Deodhar P, Sanders V, et al. [Improving care for infants with neonatal abstinence syndrome: a multicenter, community hospital-based study](#). *Hosp Pediatr*. 2019;9:608–614.
- Hwang SS, Weikel B, Adams J, et al. [The Colorado Hospitals Substance Exposed Newborn Quality Improvement Collaborative: standardization of care for opioid-exposed newborns shortens length of stay and reduces number of infants requiring opiate therapy](#). *Hosp Pediatr*. 2020;10:783–791.
- Ponder KL, Egesdal C, Kuller J, Joe P. [Project Console: a quality improvement initiative for neonatal abstinence syndrome in a children's hospital level IV neonatal intensive care unit](#). *BMJ Open Qual*. 2021;10(2):e001079.

About the ACT NOW Collaboration: The ESC Study is part of ACT NOW, a collaborative effort between the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD) and the Environmental influences on Child Health Outcomes (ECHO) Program to improve treatment and care of infants and children exposed to opioids during pregnancy. The program uses NICHD's Neonatal Research Network and ECHO's Institutional Development Award (IDeA) States Pediatric Clinical Trials Network to ensure a geographically and racially diverse group of participants.

About the Northern New England Perinatal Quality Improvement Network (NNEPQIN): NNEPQIN was founded at Dartmouth Hitchcock in collaboration with University of Vermont Medical Center (then FAHC) in 2003. NNEPQIN's mission is to improve perinatal health across Northern New England through collaboration on clinical guidelines, QI projects, case review, and educational conferences. For more information, visit nnepqin.org.

About the Perinatal-Neonatal Quality Improvement Network of Massachusetts (PNQIN): PNQIN is a joint venture of the Massachusetts Perinatal Quality Collaborative (MPQC) and the Neonatal Quality Improvement Collaborative of Massachusetts (NeoQIC). Through open sharing of data and promotion of best practices, it aims to achieve measurable improvements in perinatal health outcomes while eliminating health disparities and improving health equity among Massachusetts mothers, newborns, and their families. For more information, visit pnqinma.org.

About the Neonatal Quality Improvement Collaborative of Massachusetts (NeoQIC): NeoQIC is dedicated to improving the health outcomes of newborns throughout the state of Massachusetts. For more information, visit neoqicma.org.



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