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Abstract

Neonatal opioid withdrawal syndrome is pervasive, reflected in a case rate increase among most demographics in the United States from 4.0 newborns per 1,000 hospitalized births in 2010 to 7.3 newborns per 1,000 hospitalized births in 2017. Historically, assessments have been based on present symptomatology, excluding the mother's input, and increasing the likelihood of pharmacotherapy. The Eat, Sleep, Console approach provides an opportunity for the mother to act as the treatment for her newborn as she performs nonpharmacologic interventions that reduce withdrawal severity. Maternal confidence to help her newborn grows with this level of involvement and mother/infant dyad care improves, as do nurse and mother interactions. Assessments are less subjective and less time-consuming for nurses to conduct than those of the often-used Finnegan tool, and are conducted in collaboration with the mother. Facilities implementing this approach have seen a reduction in newborn hospital length of stay, pharmacotherapy, associated medical costs, and improved breastfeeding rates. Implementing an Eat, Sleep, Console protocol involves a stepwise approach to ensure all stakeholders are effectively prepared for the transition. We present strategies to implement an Eat, Sleep, and Console clinical protocol. A stepwise approach to implementation along with a clinical nursing maternal education protocol exemplar is included. Methods to overcome barriers to implementation and recommendations for further development are discussed.

Key words: Implicit bias; Neonatal abstinence syndrome; Opioid use disorder; Rooming-in care; Social stigma.

STRATEGIES TO SUCCESSFULLY IMPLEMENT AN EAT, SLEEP, CONSOLE PROTOCOL

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Prevalence of neonatal opioid withdrawal syndrome (NOWS), previously neonatal abstinence syndrome (NAS), has increased proportionally to the upsurge in opioid dependence. A steady rise in opioid use disorder (OUD) has occurred over the last 20 years, specifically among young women of childbearing age. (Agency for Healthcare Research and Quality, 2021). Women with a diagnosis of OUD admitted to hospitals for birth increased by 131% from 2010 to 2017 (Hirai et al., 2021). Consequently, their newborns are at risk for developing NOWS. Estimated NOWS rates increased among most demographics from 4.0 newborns per 1,000 hospitalized births in 2010 to 7.3 newborns per 1,000 hospitalized births in 2017 (Hirai et al., 2021). One newborn is diagnosed with the syndrome every 19 minutes in the United States, an estimated 80 newborns per day (Centers for Disease Control and Prevention, 2021).

Nonpharmacologic interventions, preferably performed by the mother, are successful in reducing syndrome severity (Grossman et al., 2017; Substance Abuse and Mental Health Services Administration, 2018). Most NOWS severity assessments are focused on present symptomatology and exclude the mother's input. The Finnegan Neonatal Abstinence Scoring System is the most widely used assessment tool to quantify opioid withdrawal (Hein et al., 2021). It is a 21-symptom scale in which points are assigned based on the observer's subjective perception of newborn withdrawal (Grisham et al., 2019). Some evaluation methods used with the tool may exacerbate symptoms, such as waking a sleeping infant, and could undermine nonpharmacologic interventions; therefore, these perceived limitations have been used as rationale for adopting a more nonintrusive approach that does not use strict adherence to the Finnegan tool (Blount et al., 2019; Grossman et al., 2018).

An alternate approach, known as Eat, Sleep, Console (ESC), has emerged with a focus on maximizing evidence-based nonpharmacologic interventions. Nonintrusive assessments focus on the newborn's ability to eat well, sleep undisturbed, and be consoled with relative ease (Grossman et al., 2018). These three parameters are considered fundamental and indicate adequate newborn function. Eat, Sleep, Console began as a quality improvement initiative at Yale New Haven Children's Hospital. Grossman et al. (2018) initiated ESC as a novel approach and alternative to the Finnegan tool. The approach was


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Eat, Sleep, Console has emerged as an alternate approach with a focus on maximizing evidence-based nonpharmacologic interventions to reduce neonatal abstinence withdrawal syndrome severity.

developed based on years of observing and caring for newborns with NOWS and was aptly named to reflect the functional assessments it entails. Pharmacotherapy use was initially compared between the ESC approach and the Finnegan tool. If the newborn tolerated an adequate intake of formula or breastfed well, slept undisturbed, and was able to be consoled within 10 minutes, the newborn was considered functionally stable and pharmacotherapy unnecessary. If these parameters were not met, nonpharmacologic interventions were augmented. If these further interventions were unsuccessful, morphine management was initiated and slowly reduced with continued use of nonpharmacologic interventions thereafter. Pharmacologic treatment was reduced from 98% to 12% and average length of hospital stay was reduced from 22.5 days to 5.9 days (Grossman et al., 2018). As the Finnegan tool focuses on scoring some lesser symptoms of withdrawal, chances for unnecessary pharmacologic management are mitigated with inclusion of only three functional assessments, reducing narcotic exposure in the newborn.

Eat, Sleep, Console is initiated following birth when the mother and newborn are both inpatients and likely cared for simultaneously. Implementation continues following mother's discharge from the facility, whereas the newborn remains in the hospital for a specified observation period. Mother is encouraged to remain with the newborn as to continue performing ESC nonpharmacologic interventions; therefore, the necessity of the mother's ongoing presence and performance of the interventions as first-line treatment is emphasized. Maternal confidence to help her newborn grows with this level of involvement, mother/infant dyad care improves, as do nurse and mother interactions. The approach does not require the newborn to be disturbed upon assessment, and interventions can be initiated quickly if withdrawal interferes with normal functioning, as a withdrawing newborn is difficult to console (Grossman et al., 2018). We identify the importance of implementing an ESC protocol to assist in reduction of NOWS severity, improve mother/infant dyad care with consistency, facilitate mother as treatment for her newborn through education and hands-on assistance with nonpharmacologic interventions, and adequately transition the bedside nurse to this approach.

Opioid Use Disorder in the Perinatal Population

Associated factors for the steady increase in OUD in the perinatal population are chronic pain, opioid prescriptions written for women at higher rates than men, and taking higher doses for a longer period of time, further increasing vulnerability to dependence (American Society of Addiction Medicine, 2016). Common sociodemographics include young age, White, single, low income, high school education or less, unemployment, and residing in the rural Northeastern or Southern United States (Hand et al., 2017). Prescription opioids are the most abused drug by pregnant women in rural regions of the country (Soni et al., 2019). A history of depression, anxiety, and other psychiatric disorders is common among this population (Kozhimannil et al., 2019). They have likely been victims of partner violence, sexual abuse, suffer from posttraumatic stress disorder, malnutrition, and lack social support (Cleveland & Bonugli, 2014).

Many pregnant women with OUD are on medication-assisted treatment (MAT) that provides protective benefits to the mother and fetus. The two drugs used for MAT are methadone and buprenorphine. Use of MAT prevents opioid withdrawal in the mother and reduces risks of relapse, overdose, and obstetrical complications while providing a stable intrauterine environment for the fetus (American College of Obstetricians and Gynecologists, 2017; reaffirmed 2021; Substance Abuse and Mental Health Services Administration, 2018).

Signs of Neonatal Opioid Withdrawal Syndrome

Neonatal opioid withdrawal syndrome is a syndrome of dysregulation occurring in approximately half of newborns exposed to consistent prenatal opioids (Hudak & Tan, 2012; Patrick et al., 2020). Signs reflect opioid withdrawal from receptors located in the brain and gastrointestinal tract. These include, but are not limited to, tremors, hypertonia, vomiting, loose stools, poor and uncoordinated feeding, temperature instability, poor sleep, and excessive crying and sucking (American College of Obstetricians and Gynecologists, 2017; reaffirmed 2021; Grossman et al., 2018; Hudak & Tan, 2012; Patrick et al., 2020). Average hospital length of stay in the United States for newborns with NOWS is approximately 9 days longer compared with other birth hospitalizations (Hirai et al., 2021).

Nonpharmacologic interventions reduce withdrawal severity and are considered equivalent to pharmacologic management in the ESC approach (Grossman et al., 2018). Interventions minimize newborn dysregulation, reduce overstimulation, encourage rest, and improve overall functioning. Specifically, skin-to-skin contact and nonnutritive sucking reduce the pain response, whereas developmental swaddling and gentle maternal care improves regulation by lowering stress (Pahl et al., 2020). According to Graves et al. (2016), breastfeeding is associated with reduced NOWS severity in as little as 72 hours. Education and facilitation of these interventions with the mother are essential, as she may lack the awareness or emotional capability to recognize the newborn's need for regulation.

Evidence Supporting Eat, Sleep, Console

Blount et al. (2019) reported newborn average length of hospital stay was reduced from 10.3 to 4.9 days, and pharmacotherapy decreased from 92% to 19% when the ESC approach was applied, in what was described as a "paradigm shift" for their institution. Dodds et al. (2019) found a reduction in newborn average length of stay from 11.77 to 5.94 days, a reduction by 48% in average hospital costs per day, and a reduction by 79% for cumulative doses of morphine. Minear and Wachman (2019) found reductions in newborn length of stay from 18 to 10 days, use of pharmacotherapy from 87% to 40%, and a 34% improvement in breastfeeding. Hein et al. (2021) demonstrated pharmacotherapy was reduced from 31% to 24%, along with a 4-day reduction in length of stay. Townsend et al. (2021) reported a reduction in length of stay from 16.8 to 8.2 days and the need for pharmacotherapy from 64.1% to 29.9%. Physicians, nurse practitioners, and nurses quickly embraced ESC as an alternative to the Finnegan tool. Miller and Willier (2021) found reductions in newborn length of stay from 17.7 to 2.7 days, pharmacotherapy use from 58% to 2.7% with no scheduled dosing, and an increase in breastfeeding rates by 23%.

Nurses' Role in Implementing Eat, Sleep, Console

Eat, Sleep, Console assessments are performed by the nurse every 3 hours, preferably after feeding. The mother is actively involved in the assessment process, and her input is paramount to the interpretation of newborn wellbeing. Adequate functionality is determined if the newborn can tolerate a sufficient amount of formula based on gestational age per feed, breastfeed well, sleep undisturbed for more than 1 hour after eating, even if held, and is able to be consoled within 10 minutes. Each present assessment parameter results in one point. If all three parameters are present, the newborn is considered functionally stable and pharmacotherapy unnecessary. If these parameters are not met, a team meeting or huddle takes place with the mother and care team members. Effective nonpharmacologic interventions are maximized, and follow-up assessments are performed. If symptoms persist, another team huddle takes place that includes the provider. A decision to administer an as-needed dose of pharmacotherapy is made. Nonpharmacologic interventions can also be performed by family members, nurses, or trained cuddler volunteers if needed (Achilles & Castaneda-Lovato, 2019).

Eat, Sleep, Console is a holistic and family integrative approach. The role of the nurse is predominantly maternal and family educator, encouraging coach, and support person, providing instruction and hands-on assistance with nonpharmacologic interventions. The encouraging

coach role is essential, as the approach is not successful unless nonpharmacologic interventions are performed with consistency. Mothers should be sufficiently supported as their presence is optimum treatment for the newborn, and when performed by the mother, nonpharmacologic interventions have the greatest potential benefit. Instruction given to mothers should also be provided in a nonjudgmental and empowering manner, emphasizing maternal rest and self-care (Grisham et al., 2019; Grossman et al., 2017). Assistance with breastfeeding by lactation consultants and nurses is imperative, as mothers with OUD are encouraged to breastfeed if maintained on MAT (Patrick et al., 2020; Substance Abuse and Mental Health Services Administration, 2018).

Strategies in Implementing an Eat, Sleep, Console Protocol

Facilities implementing this approach have done so with consistency to the Grossman et al. (2017, 2018) model, making subtle changes as warranted. Establishment of a functional protocol serves as an operative guideline for multidisciplinary implementation. Initiating the approach should be performed in a stepwise method. Policies and procedures will best identify at-risk newborns, ensure timely assessments, provide criteria for huddles, outline implementation of nonpharmacologic interventions, provision of maternal and family education, and provide guidance for documentation. Facilities have adopted versions of their own ESC assessment tool and integrated these into the electronic medical record (Achilles & Castaneda-Lovato, 2019; Dodds et al., 2019; Minear & Wachman, 2019). Clinical leaders are well suited to suggest parameters for administration of as-needed pharmacotherapy, criteria for scheduled and weaning pharmacotherapy, evaluating newborn weight gain, identifying criteria for the minimum number of observation days, and newborn discharge criteria.

Rooming-in occurs when mother and newborn remain together in a private room for the duration of mother's hospital stay. The ESC approach is best implemented on a mother baby or postpartum unit where rooming-in is possible after birth and can be continued following mother's discharge from the hospital. Because the ESC approach begins immediately after birth, and continues until the newborn is discharged, in most settings mother will be discharged before the newborn. Most facilities observe the newborn for withdrawal symptoms at least 3 to 7 days after birth, as recommended by the American Academy of Pediatrics (Patrick et al., 2020). This observation typically requires transfer out of a mother baby unit to another special care area. Providing private rooms in newborn care areas allows for an uninterrupted and similar rooming-in experience, maximizing opportunities for success. In addition to mother baby units, private mother/newborn rooms can be incorporated into neonatal intensive care units, intermediate or special care nurseries, and pediatric settings allowing for continuous maternal and family involvement.

Because success with ESC is difficult to achieve without sufficient interaction of mother and family performing nonpharmacologic interventions, a protocol developed for nurses specifically addressing maternal and family instruction is an integral part of the implementation plan. See Figure 1 for an education protocol exemplar. Comprehensive education includes instruction on the signs and symptoms of NOWS, the importance of performing nonpharmacologic interventions to reduce NOWS severity, hands-on instruction and assistance in performing the interventions, timing and processes of targeted ESC assessments, criteria for huddles, and overall expectations for care. Maternal education should begin prenatally to effectively prepare the mother for postpartum. Adequate prenatal education can be achieved through direct involvement of providers and integrated into established facility- or unit-specific prenatal education programs, and in the substance treatment and counseling centers tailored to this population. Provision of community resources and follow-up for mothers is vital for promoting and cementing behavior and lifestyle change. Multidisciplinary, ongoing care and support significantly improves outcomes and should be integrated as part of a comprehensive approach.

Eat, Sleep, Console Education for Nurses

An educational strategy to prepare nurses as they move from subjective-based assessments to the more focused assessments and family integrative approach of ESC is necessary for achieving a seamless transition. Mother's provision of nonpharmacologic interventions, and as integral in the assessment and huddle process, represents a significant change for nurses. Acceptance of this change increases with nurse's realization of benefits of the ESC approach and positive contrasts with the Finnegan tool. Team education should also include processes for instructing and actively assisting mothers and caregivers in implementing nonpharmacologic interventions. Establishment of a protocol outlining nursing assessments and reassessments, huddle requirements, documentation, and alerting physicians and nurse practitioners of newborn needs assists in the transition by reducing stress and limiting confusion. Use of an informed resource person per shift is helpful for obtaining immediate answers to questions, as-needed guidance, feedback, and to alleviate concerns.

Potential Barriers to Implementation

One significant barrier to implementing a family integrative model of care is the potential for disparities based on expressed or implicit bias of clinical team members. Feelings of judgment by caregivers are commonly expressed among new mothers with substance dependence, resulting in a hesitancy to participate in their newborn's care (Cleveland & Bonugli, 2014). Collaborative interactions that involve mutual respect change this paradigm. In one study, mothers with substance use disorder receiving emotional support from their infant's nurses in the neonatal intensive care unit responded with increased confidence in their ability to care for their baby (Cleveland & Bonugli, 2014). Educating physicians, nurse practitioners,

nurses, and other members of the health care team is imperative to dispel stigma by replacing it with accurate information. The act of "contact" in instructing and assisting mothers in implementing nonpharmacologic interventions acts to erase stigma by way of direct interaction (Recto et al., 2020). Clinical team members caring for mothers with OUD should receive education on trauma-informed principles and care, including the results trauma can have on personal decision-making, to further reduce bias and stigma (Linn et al., 2021).

Other potential barriers include lack of acceptance from stakeholders. Education about evidence of positive outcomes associated with implementing ESC is vital to improving acceptance of physicians, nurse practitioners, nurses, and ancillary clinical team members. Changing historical practices can be met with skepticism. Conducting listening and planning sessions with stakeholders improves collaboration allowing for the expression of alternative viewpoints.

Mothers or family members' continuous bedside presence for the duration of the newborn's hospital stay is vital for the success of ESC; therefore, access to private rooms for mother and newborn to remain together is essential. Clinical environments without private rooms will find the ESC approach challenging to incorporate. Neonatal intensive care, intermediate or special care, and pediatric care units without private room capacity should transition to private rooms or allocate some private rooms for this type of care if possible. Newborn withdrawal assessments are best conducted out of traditional neonatal intensive care settings and into private rooms where the newborn benefits from a quiet, nonstimulating environment, and mother and family can perform nonpharmacologic interventions out of public view. Grossman et al. (2020) found NOWS infants had shorter lengths of stay when predominantly managed on an inpatient pediatric unit following transfer from mother baby unit upon mother's discharge, compared with a traditional neonatal intensive care setting. The mother baby and pediatric units afforded the dyad the benefit of a private room where mother could remain at the newborn's bedside. Clinicians suggest neonatal intensive care units may not be the best environments for newborns with NOWS in general, as these newborns typically do not require intensive medical care, and the open bays of some neonatal intensive care units cannot conform to the established best practice of providing a low-stimulation environment (Grossman et al., 2020).

It may be challenging for some mothers to remain at the bedside when family responsibilities and medical requirements make this difficult. Family members approved by the mother and unit leaders can perform nonpharma-

FIGURE 1. CLINICAL NURSING PROTOCOL: EAT, SLEEP, CONSOLE MATERNAL EDUCATION

I. SCOPE AND PURPOSE

The purpose of this protocol is to provide guidance for nurses in the provision of maternal education and hands-on assistance in performing nonpharmacologic interventions that are part of the Eat, Sleep, Console (ESC) approach for increasing maternal knowledge and improving mother/infant dyad care.

II. POLICY

Mothers with known or suspected history of opioid use whose newborns are receiving the ESC assessment methodology will receive specific and targeted education. Family members will also receive this education per mother's discretion.

III. PROCEDURE

1. The newborn infant identified on admission as requiring monitoring and evaluation for neonatal opioid withdrawal syndrome (NOWS) will be provided the ESC approach. Mother will receive education about signs of NOWS, symptom management, and how to care for an infant with NOWS with the use of nonpharmacologic interventions that reduce NOWS severity.
2. This education will be provided by a staff nurse within 24 hours of admission and will take place in mother's hospital room. The nurse will spend sufficient time instructing and assisting with implementation of these interventions in a positive and empowering manner. The time allotted is dependent on the individual needs of the mother, family, and newborn.
3. Nonpharmacologic interventions are considered equivalent to pharmacologic management and include:
   a. Exclusive rooming-in and consistent parental presence. Encourage parents to be the primary provider of infant's needs and cluster care around sleep times
   b. Gentle handling when providing care
   c. Maintenance of a dimly lit room with minimal sound and stimulation, encourage limiting visitors
   d. Frequent skin-to-skin contact
   e. Breastfeeding is encouraged if mother is maintained on medication-assisted treatment. Other circumstances are to be decided in collaboration with the provider and lactation consultant
   f. Feeding on demand at early hunger cues, more frequent yet smaller feedings if needed, and nonnutritive sucking
   g. Swaddling supporting the midline
   h. Rocking with gentle movements
   i. Incorporation of Dr. Harvey Karp's 5 "S" strategy for newborn soothing: sucking in between feedings, swaddling, side-holding, shushing or white noise, and gentle swinging (Karp, 2015)

IV. DOCUMENTATION

The nurse will document the educational session and assistance with implementing nonpharmacologic interventions in the newborn's electronic medical record following conclusion of the session. Reinforcement of interventions will be documented when given.

cologic interventions in mother's absence. If trusted family members are unavailable, nurses, cuddler volunteers, and other trained hospital personnel can perform the nonpharmacologic interventions. The ongoing Covid-19 pandemic presents challenges as involvement of parent partners, family members, and cuddler volunteers has been reduced secondary to facility policies to minimize potential exposure of patients and clinicians to Covid-19. In both instances staffing patterns may need to be adjusted to allow hospital personnel to prioritize the performance of nonpharmacologic interventions.

Clinical Implications

Evidence from quality improvement projects support positive clinical implications for facilities and dyads where ESC has been implemented. Newborn length of stay is reduced, as is the need and duration of pharmacotherapy, resulting in a reduction in medical costs (Achilles & Castaneda-Lovato, 2019; Blount et al., 2019; Dodds et al., 2019; Grossman et al., 2018). Newborns are exposed to fewer medications and instead are cared for by mothers and other caregivers using nonpharmacologic interventions (Grossman et al., 2018). Breastfeeding rates have improved, affording positive benefits for the dyad, including bonding and improved newborn regulation (Miller & Willier, 2021; Minear & Wachman, 2019). Mother/infant dyad care improves as mothers are empowered and supported to care for their newborns in a manner unique to their relationship, enhancing both maternal/infant attachment and personal confidence. The mother's active role in implementing ESC interventions and NOWS severity assessments takes advantage of the increased receptiveness exhibited in the postpartum period, improving opportunities for lasting health behavior changes. This active role also allows mother to be successful at parenting her child, a notion that many mothers with OUD may find fleeting (Cleveland & Gill, 2013). Because ESC is noncomplex and focuses on three aspects of functionality, it is easily understood by the mother, reducing barriers of knowledge, adherence, and the need for consistent reinforcement (Grossman et al., 2018).

Nurses practicing in facilities that manage NOWS will be better informed on evidence-based nonpharmacologic interventions and ESC methods as an alternative to the Finnegan tool. Eat, Sleep, Console assessments are less subjective and less time-consuming for nurses to conduct than those of the Finnegan tool; collaborative assessments with inclusion of the mother fosters trust and engages the mother as a vital member of the care team. Positive, supportive, and encouraging communication with mothers changes the paradigm of care in a way mother is not merely a recipient of information but active in newborn care.

Collaboration with nurses on the ESC approach should continue to make necessary changes allowing for improvements in efficiency, safety, and agreement among personnel. Organizational leaders may consider evaluating patient and nurse satisfaction with the ESC approach in addition to other measures. Providing nurses with emotional support and learning opportunities on methods to care for newborns with NOWS and their families provides nurses with tools to navigate potential challenging situations enhancing the chances of positive outcomes. ✣

SUGGESTED CLINICAL IMPLICATIONS

- Implementing an ESC protocol can result in positive implications for the mother/infant dyad and facility such as a reduction in the need and duration of pharmacotherapy, hospital length of stay, medical costs associated with NOWS, and improved breastfeeding rates.
- Eat, Sleep, Console assessments are more efficient, do not disturb the newborn, and are conducted with mother's input.
- Chances for unnecessary pharmacologic treatment are mitigated with the inclusion of three functional assessments, the newborn's ability to eat well, sleep undisturbed, and be consoled with relative ease.
- Newborns are cared for by mothers using nonpharmacologic interventions.
- Mother is empowered as the treatment for her newborn, resulting in confidence and enhanced maternal/infant attachment.
- The role of the nurse is predominantly educator, encouraging coach, and support person, providing instruction and hands-on assistance with nonpharmacologic interventions.
- Patient care improves with use of an approach that supports and emphasizes family integration.

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