Caring for the Infant With Neonatal Abstinence Syndrome in a Community-Based Setting

Infants born with neonatal abstinence syndrome (NAS) are among the most challenging patients to care for in the neonatal intensive care unit. The withdrawal symptoms associated with prolonged in utero chemical exposures often include extreme irritability characterized by inconsolable crying, gastrointestinal disturbances of vomiting, diarrhea, and problematic feeding, and neuromuscular consequences ranging from rigidity to seizures. Without proper treatment and care, the infant born with NAS is at significant risk of neonatal morbidity and mortality.

Infants with NAS require ongoing clinical assessment and care for withdrawal symptoms, as well as closely monitored pharmacological therapy. Pharmacological therapy typically involves administration of opiates or phenobarbital in the inpatient setting. Infants with NAS often require lengthy hospitalizations, with the average length of stay reported between 40 and 50 days. Not only does prolonged hospital-based care require increasingly limited resources within the inpatient setting, but it also separates the mother and the child, becoming a barrier to maternal-infant bonding. Furthermore, the intensive care environment characteristic to many neonatal intensive care units may not be the best match for an infant with NAS who requires a quiet environment and cannot cope with hyperstimulation. As the number of women who are chemically dependent during pregnancy continues to increase, and thus the number of infants who are born with NAS also increases, we must evaluate the care we provide to this vulnerable patient population. One major aspect of care that has recently been explored by clinical investigators is the setting (ie, inpatient hospitalization, outpatient clinic, home-based) where care is provided for the infant with NAS. The notion of providing care to the infant with NAS on an outpatient basis or even at home was an unlikely scenario in the past. However, this model of care has been shown to be feasible and perhaps even optimal for some infants and their families. Here, I review some recent findings on providing care to infants with NAS and their families in an outpatient setting, as well as home-based detoxification. In light of these findings, I suggest that more research is needed and that there may be a need to develop a model of transitional care, which includes a transitional care nursing role for these infants and their families.

TRANSITIONING METHADONE-TREATED INFANTS FROM AN INPATIENT SETTING TO AN OUTPATIENT SETTING

The Ohio State University Medical Center developed a multidisciplinary combined inpatient and outpatient treatment program for infants with NAS in light of the fact that following initial stabilization, many infants with NAS are otherwise healthy and may not require intensive care. In addition, this program was developed on the basis of reports by other investigators indicating that adverse events related to administration of medication in a community-based setting were rare. The combined treatment program was made available to women enrolled in an antenatal substance program on methadone or buprenorphine that requires infants and their caregivers to fulfill specific clinical criteria and agree to a physician-caregiver commitment. Interventions including intensive education on medication administration and signs and symptoms of drug overdose were provided to all caregivers. To ensure...
safety, the amount of methadone prescribed before the initial outpatient appointment was limited to a dose needed for 3 days. Upon discharge from the inpatient setting, infants were seen in a dedicated outpatient clinic by the same physician who provided care during the inpatient hospitalization, ensuring that a long-term relationship is developed with these families.

When evaluating the outcomes associated with the combined treatment program, it is important to appreciate that Backes et al emphasize that success of this new program was strongly dependent on patient selection (ie, all mothers were in an antenatal treatment program and were required to meet both medical and social work criteria) and the dedication of a committed physician who cared for the infants across the continuum of care. When compared with traditional inpatient care of the infant with NAS, infants who were cared for in the combined treatment program had a shorter length of hospital stay (25 ± 15 days for the traditional group and 13 ± 5 days for the combined group; \( P < .001 \)) and far lower hospital costs ($27,546 for those in the traditional group and $13,729 for the combined group). These outcomes were not surprising, given that the infants were discharged from the hospital sooner as part of the combined program. The more unexpected outcomes from this study were that the infants in each program received a similar cumulative amount of methadone, despite a longer duration of methadone therapy in each program. Furthermore, infants in the combined group were breast-fed significantly more than those in the traditional group (24% vs 8%；\( P < .05 \)). Infants in the combined group were similar to those in the traditional group in incidence of readmission and/or emergency department visits for NAS-related symptoms.

HOME-BASED DETOXIFICATION FOR NAS

The Royal Women’s Hospital in Melbourne, Australia, is a large tertiary perinatal hospital where a dedicated Drug and Alcohol Service program provides care for pregnant women with antenatal drug dependence. The families of infants with NAS are offered the option for home-based detoxification based on a specific assessment that includes factors such as the mother’s ongoing substance use, mental health status, stability of living arrangements, current history of domestic violence or abuse, substance use by others in the household, degree of compliance with referrals, supports, and services, ability to access visiting nurse and primary care for weekly appointments, and agreement to home-based management. Little is known about the clinical outcomes associated with this type of home-based approach to care of infants with NAS.

In a recent study by Smirk et al, outcomes associated with the home-based approach were compared with those of the traditional inpatient hospitalized setting. The investigators found that providing detoxification in a home-based setting resulted in reduced hospital admission without prolonging exposure to opiates and, for some infants, increasing rates of breast-feeding. Not surprisingly, this study also found that hospital length of stay was shorter for the group that received home-based care. Finally, the average weight gain per day was similar between the 2 groups of infants, suggesting that the symptoms associated with NAS were managed effectively in the home-based setting. While the authors report that serious adverse events were rare among the infants who were cared for at home, it was noted that 2 medication errors did occur: one related to inappropriate weaning based on the parent’s discretion and the other related to inappropriate administration of morphine due to parental perception of withdrawal symptoms at home.

DETERMINING THE OPTIMAL CARE SETTING FOR INFANTS WITH NAS

The studies led by Backes et al and Smirk et al provide us with some new information about outcomes associated with caring for the infant with NAS in a community-based setting and add to a growing body of evidence suggesting that infants may be safely discharged home on medication and adverse events associated with the administration of medications by caregivers in a home or community-based setting are rare. Further study of these alternative approaches to NAS care is required, and safety concerns for this vulnerable population will always need to be carefully considered. Determining the most optimal care setting for infants with NAS and their families according to evidence-based criteria will be an important aspect to designing state-of-the-art care for this growing patient population. This evidence will need to be generated from carefully constructed prospective studies that account for maternal health, infant health, and the support system available to the family as a whole.

As more research is conducted on developing the optimal plan of care for infants with NAS and hospital-based resources become increasingly limited, it is likely that an increasing number of infants with NAS will be cared for in community-based settings. What nursing care will these infants need to effectively make the transition from an inpatient setting to an outpatient or home-based setting? A transitional plan of care for the
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infant and family that is specific to this change in caring for infants with NAS will need to be developed. Neonatal nurses seeking to develop and implement these plans of care may adopt some best practices learned from the Transitional Care Model developed for older adults. Some of the essential elements of an effective Transitional Care Model that may apply to the infant with NAS include the following:

1. Use of a transitional care nurse to deliver and coordinate care of the infant with NAS within and across all healthcare settings.
2. Collaboration with family caregivers and team members in the implementation of a streamlined, evidence-based plan of care designed to promote positive health and cost outcomes.
3. Regular home visits by the transitional care nurse with available, ongoing telephone support (7 days per week).
4. Continuity of care between the hospital, outpatient, and primary care clinicians facilitated by the transitional care nurse.
5. Active engagement and education of family caregivers on all aspects of NAS.
6. Implementation of a multidisciplinary approach that includes the family caregivers and healthcare providers from all care settings.
7. Ongoing investment in optimizing transitional care via performance monitoring and improvement.

Developing trusting relationships with the family and providing effective education will be of vital importance to the success of a plan of care that aims to transition care for infants with NAS from the hospital to the community-based setting. In addition, developing an effective safety assessment for families both before and after discharge from the hospital will be important. Finally, forging strong relationships between the hospital-based team and community-based partners will be critical to success. The development and implementation of a transitional care nursing role may be an important strategy in achieving all of these aspects and thus be critical to the future state-of-the-art care for infants with NAS.

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References