

# And the Cradle Will Fall: Best Practices for Neonatal Abstinence Syndrome

Corresponding Authors: *Ariana D. Olds and Katie E. Ray*

School of Nursing, Marieb College of Health and Human Services

Faculty mentor: *Paula Davis-Huffman, DNP, APRN, ANP, PPCNP-BC, School of Nursing*

## ABSTRACT

**Background:** The opioid epidemic is a growing problem, unfortunately, the abuse of drugs does not necessarily stop if a user becomes pregnant. This subjects approximately six in every 1000 neonates to neonatal abstinence syndrome (NAS).

**Problem:** Opioid abuse during pregnancy leads to neonates being born experiencing symptoms of withdrawal. The syndrome affects the body as a whole; neonates can experience a wide range of symptoms primarily because of hyperactivity of the central, autonomic, and gastrointestinal systems.

**Search Methods:** Using keywords and key phrases to explore multiple databases, 110 publications were acquired. Of those 12 met the inclusion criteria for this project and contained multiple interventions for neonates experiencing NAS.

**Interventions:** Caring for a drug dependent neonate is very individualized based on symptoms. First line treatment has been the use of pharmaceuticals. Supportive interventions, such as music therapy, skin-to-skin contact and other alternative therapy interventions, can reduce the behavioral and physiological symptoms related to NAS, but are not consistently utilized. These therapies can also reduce length of stay for affected neonates.

**Conclusions:** There are gaps in the research and knowledge deficits have been found among nursing staff, as well as limited supportive interventions being used. The use of supportive interventions first, before pharmacological therapies, can be beneficial in reducing length of stay and facilitate recovery. These interventions are discussed within this paper.

**Key Words:** Neonatal Abstinence Syndrome, NAS, Neonate, Infant, Withdrawal, Addiction, Care of, Drug Exposed, Intervention

## BEST PRACTICES FOR NEONATAL ABSTINENCE SYNDROME

Neonatal abstinence syndrome (NAS) consists of behavioral and physiological symptoms experienced by newborns going through withdrawal from being exposed to various pharmacological agents taken by their birth mother during pregnancy (March of Dimes, 2019). According to MacMullen, Dulski, and Blobaum (2014), there are two kinds of NAS, prenatal and postnatal exposures. Prenatal NAS pertains to drug exposure in utero from maternal drug use. Postnatal NAS mainly focuses on prolonged exposure to analgesia after birth in the United States (U.S.), over 225,000 neonates found to be exposed to illicit drugs yearly (MacMullen et al., 2014).

The U.S. has been experiencing an opioid crisis causing a corresponding increase in the prevalence of neonates experiencing NAS. Other drugs can also cause or contribute to NAS and include benzodiazepines, antidepressants, and barbiturates, among others, causing harm to both mothers and neonates (March of Dimes, 2019). Neonatal exposure to opioids particularly is a public health problem and the need to improve interventions to care for neonates experiencing NAS has become increasingly important.

Presentation of NAS varies from neonate to neonate, depending on the opioid, length of exposure, and other factors (MacMullen et al., 2014). NAS is characterized by effects on the central nervous system, respiratory system, gastrointestinal (GI) tract, and autonomic nervous system. Symptoms that are most common consist of tremors, high-pitched crying, fist sucking and GI regurgitation (Kelly,

Minty, Madden, Dooley, & Antone, 2011). In addition, more than 75% of infants exposed experience medical complications that increases their length of hospital stay and overall health costs. Each neonate requires specialized care from pediatric and neonatal practitioners based on the best evidence. This is important for nurses to enhance quality care of these neonates and prevent complications associated with NAS.

There are many interventions nurses use in practice, however, not all interventions are evidence-based. The purpose of this review of literature is to report on the best available evidence-based interventions for neonates experiencing NAS, which can be incorporated with pharmacological interventions already in place.

### A. *Clinical Question and PICO Components*

To determine the best search strategies, it is helpful to formulate the components of the initial question into population (P), intervention (I), comparison (C) and outcome (O), also known as the PICO format. In this case the following question was developed: In infants experiencing neonatal abstinence syndrome (P) what is the effectiveness of supportive care interventions (I) compared to current practice (C) on their recovery (O). Definitions of these components are as follows.

Population - neonates within one week of birth.

Intervention - supportive care. Supportive care consists of multiple interventions and is defined as skin-to-skin

contact, also known as kangaroo care, swaddling, rocking, swaying, music therapy, and other identified interventions found in the research.

Comparison - compared to current practice of pharmacological interventions, consisting of the use of methadone and opioid analgesics, primarily morphine.

The Outcome desired would be recovery or significant improvement at time of discharge, as defined as taking adequate oral feedings and acceptable weight gain (Hamdan, 2017).

#### AVAILABLE KNOWLEDGE/ REVIEW OF THE LITERATURE

This literature review used the following databases: Medline, Cochrane Library, ProQuest, Science Direct, and the Cumulative Index of Nursing and Allied Health Literature (CINAHL). After the initial search term “addicted mothers” was investigated to determine common terms associated with infants experiencing withdrawal post-delivery, the terms and key words used in subsequent searches included “Neonatal Abstinence Syndrome” or “NAS”, “infant”, “withdrawal”, “addict”, “care of”, “intervention”, “drug exposed” and interventions identified, such as “swaddle”. Date restrictions of the last ten years (2008-2018), Boolean operators, and English only, peer-reviewed evidence were included in the search criteria. The criteria for the chosen articles were based upon review of multiple interventions for post-delivery neonates experiencing neonatal withdrawal symptoms. Of the evidence found, 110 publications were reviewed. Of these publications, 12 were kept for further analysis that met the inclusion criteria of specific interventions for NAS. Each article/study was rapidly appraised using the Johns Hopkins Nursing Evidence-Based Research and Non-Research rapid appraisal forms (Dearholt & Dang, 2012). Please refer to Table 1 for further details of search strategies.

Current research provided interventions ranging from pharmacological to supportive. Pharmacological therapies included tapering of methadone or morphine for those neonates exposed to methadone in utero, opioid analgesics, and anti-seizure medications, such as phenobarbital. Supportive interventions discovered were kangaroo care, swaddling, music therapy, rocking/swaying, positioning, and breast feeding. The most up-to-date interventions recommended were individualized based on the neonate, specific symptoms,. In addition, the use of opioids and other drugs increased drastically leading to the current opioid crisis and subsequent increase in NAS.

According to Arora (2017), there was no requirement for pregnant women to be drug tested with prenatal visits. A deficit in knowledge was prominent in both nursing care and in pregnant mothers. Some mothers lacked knowledge on the personal effects they experienced from these drugs, as well as the effects these drugs would have on their infant (Arora, 2017). The relevant evidence on this topic has been organized into two themes, research evidence and non-research evidence. See Table 2 for full appraisal data, including strength and quality of the evidence.

**Table 1: Search Strategies for Best Practices for Neonatal Abstinence Syndrome**

Date	Database	Keywords/Synonyms/ Phrase	Search Strategy	Yield
6/1	MEDLINE	Neonatal abstinence syndrome	KP	512/9
6/1	MEDLINE	HS from searching the above	HS	22/3
6/1	CINAHL full text	Neonatal withdrawal AND intervention	BO; TI	1/1
6/1	Cochrane Library	Infant withdrawal AND interventions	BO	3/1
6/1	PROQUEST nursing and Allied health database	Drug exposed bab*	FT; T; KW; PR	1,833/4
6/1	PROQUEST nursing and Allied health database	<i>Neonatal Abstinence Syndrome: A Nurses Role</i>	HS; TI	17/4
6/1	ScienceDirect	Care of addict* infant	T; KW	263/1
6/4	Medline ProQuest	Neonatal abstinence syndrome	KW: Infant, newborns; PR	87/7
6/4	Medline ProQuest	Neonatal AND Withdrawal interventions	(general search)	121/2
6/4	CINAHL	Neonatal abstinence syndrome AND Interventions	BO; FT	77/2
6/4	CINAHL	Swaddling AND Interventions AND Neonatal Abstinence	BO; FT	4/3
6/4	EBSCO	Neonatal abstinence syndrome intervention	KP; DR; FT	2/1

*Notes:* FT = full text; KW = key word; KP = key phrase; TI = title; PR = peer reviewed; HS = hand searching ~ reviewing the references of an article to locate relevant studies; BO = Boolean operators ~ list specific BO used with key words, etc.; T = Truncation; DR = date range (last 5 years); EBSCO = Elton B. Stephens Company, CINAHL = Cumulative Index of Nursing and Allied Health Literature.

#### B. Research Evidence

Of the 12 publications retained for further review only four were research studies. Arora (2017) conducted a meta-analysis, which investigated supportive interventions such as kangaroo care. The author concluded that there was no standard of care for non-pharmacological treatments. In the future, after more studies have been conducted, the author concluded that kangaroo care does have the potential to be a first line treatment for NAS. A meta-analysis by Hudak and Tan (2012) looked at a standardized screening protocol for NAS and discussed pharmacological therapies, in . . .

**Table 2: Critical Appraisal of Research Utilized for Best Practices for Neonatal Abstinence Syndrome**

Author (Year) Design Sample Size	Results (R) Conclusions (C)	Strengths (S) Weaknesses (W)	Limitations	Evidence Level
Arora (2017) Meta-Analysis n= 83	R: A standard for non-pharm treatment has not been established C: Only non-pharm interventions discussed	S: Benefits of kangaroo care; W: multiple limitations	Only non – pharm interventions; small ss	IA
Beauman (2005) Expert Opinion ref= 49	R: NICU nurses must identify subtle signs of drug abuse in mothers & infants AT risk of NAS; Author is a neonatal clinical nurse specialist with consulting C: Addresses incidence of maternal drugs abuse, maternal care issues, & medical management for infants with NAS	S: Different studies completed for each type of medication; W: Some studies were not significant	S & W were not easily assessable; insignificance in some studies	VA
Casper et al. (2014) Clinical Practice Guideline ref= 32	R: Nursing specific intervsn for NAS are limited; Intervsn need to increase being that they spend the most time with the infants compared to other team members C: Describes how new ways of caring need to be implemented to decrease symptoms & increase comfort	S: Clinical practice guidelines addresses current practice; W: limitations were not discussed	Not discussed	IVA
Hudak et al (2012) Meta-Analysis ref= 165	R: A lack of education of harmful effects of drugs by mothers exists; a lack of screening tools C: Substance abusing mothers cause harm to infants;	S: Organized, clinical highlights reviewed W: Tx was individualized difficult to say one specific standard of care.	Limited evidence from previous studies	IA
Kelly et al. (2011) Lit Review n=48	R: Rec intervsn: monitoring, scoring system, breastfeeding C: Good review of lit, valuable	S: tx is addressed through scoring system; W: low level of evidence	None noted	VB
MacMullen et al. (2014) Systematic Review n=480	R: Rec intervsn: cuddlers, music therapy, massage, water beds, room in C: Valuable to topic; discusses nonpharm intervsn	S: large sample size; high level of evidence; W: future research needs to have higher level of evidence	None noted	IA
Maguire (2014) Meta-Analysis, ref= 62	R: Rec all NICU nurses advance their education on this subject C: Pharm & nonpharm intervsn were helpful for NAS.	S: Large sample sizes. W: Need for further testing	No studies available for initial dosing of methadone; One study excluded infants exposed to benzodiazepines during gestational period.	IA
Minozzi,et al. (2013) Experimental n= 271	R: Psychosocial intervsn for NAS limited; pharm treatment is the standard of care C: Gives detailing about medications; reviews current standard of care	S: 2 different countries used; wider range of standardize care; W: small ss of studies; no significant difference medications	Availability of recent data; small sample sizes of studies	IA
Nelson (2013) Expert Opinion ref=25	R: NAS 100% preventable; collaboration between mother, infants, and healthcare workers should be strengthened C: Background on NAS, substance abusing mothers, and nursing interventions	S: Chart with the specific symptoms associated with NAS; W: limited details	Not discussed, limited information	VA
Sublett (2013) Clinical Practice Guideline	R: Pharm interventions are used; gaps in lit for nonpharm C: Very valuable to topic	S: scoring system for tx modalities addressed; W: nonpharm interventions are not explored in depth	None noted	IVA

*Notes:* NAS=Neonatal Abstinence Syndrome NICU =Neonatal Intensive Care Unit; SS= Sample Size ; Rec= recommendations; nonpharm/pharm= nonpharmacological/pharmacological; lit= literature; quasi= quasi-experimental; intervsn=interventions; tx=treatments; The Johns Hopkins Nursing Evidenced Based Practice (JHNEBP) Rapid Appraisal forms were utilized to evaluate the evidence found here.

rating of symptoms in four classification areas - central

**Table 2 (continued): Critical Appraisal of Research Utilized for Best Practices for Neonatal Abstinence Syndrome**

Author (Year) Design Sample Size	Results (R) Conclusions (C)	Strengths (S) Weaknesses (W)	Limitations	Evidence Level
Wachman (2016) Systematic Review n=53	R: Research was found supporting nonpharm intervs; further research needs to be done Very valuable & relevant	S: Strong/high level of evidence W: small sample size	Evidence is based on low quality studies; preterm infants not considered; and more	IA
Wiles et al. (2014) Clinical Guideline Review n=60	R: Maternal-infant dyad treatment is the goal; room for quality improvement C: Valuable	S: cost is acknowledged; W: low level of evidence	No long-term studies of chronic exposure have been done	IVA

*Notes:* NAS=Neonatal Abstinence Syndrome NICU =Neonatal Intensive Care Unit; SS= Sample Size ; Rec= recommendations; nonpharm/pharm= nonpharmacological/pharmacological; lit= literature; quasi= quasi-experimental; intervs=interventions; tx=treatments; The Johns Hopkins Nursing Evidenced Based Practice (JHNEBP) Rapid Appraisal forms were utilized to evaluate the evidence found here.

addition to opioids. Another meta-analysis by Maguire (2014) encouraged all NICU nurses to increase their knowledge on the syndrome. The author included a table that detailed multiple supportive measures with benefits for both mother and baby, as well as statistical findings. Finally, a Cochrane systematic review by Minozzi, Amato, Bellisario, Ferri, and Davoli (2013) was significant in that it discussed two main pharmacological treatment measures used in NAS, along with conducting research in two different countries (Australia and the U.S.) (Hudak & Tan, 201). Conducting research in multiple countries could show a different style of caring, which in turn could improve evidenced based interventions and provide a new standard of care.

### C. Non-Research Evidence

The non-research articles retained discussed multiple interventions and treatments that exist in the clinical setting. Beauman (2005) authored an expert opinion article, as a neonatal clinical nurse specialist. The author suggested that to improve practice, nurses must be able to recognize signs of drug abuse in mothers and the subtle signs of NAS in neonates as it is developing. The author also touched on the pharmacological side of the medical management of neonatal abstinence syndrome. Nelson (2013), provided an expert opinion that provided a detailed explanation, as well as the background of NAS, and supported care focusing on keeping mother and baby as resilient as possible.

A literature review by Casper and Arbour (2014) was extremely beneficial as it discussed a clinical practice guideline for NAS, which also considered the lack of consistency among interventions (Casper & Arbour, 2014). A new way of caring could improve education, increase comfort level, utilize screening systems that in turn would boost consistency of care. More supportive measures could be used as first line interventions in conjunction with pharmacological interventions, the current practice.

In a literature review by Kelly et al. (2011) the authors discussed non-pharmaceutical treatment as first line therapy for infants with low NAS scores, using the Finnegan scoring system to assess neonatal withdrawal. According to Sublett (2013), the Finnegan scoring system provides a number

nervous system irritability, respiratory distress, GI distress, and autonomic nervous system symptoms. A Finnegan score higher than eight is typically clinically significant for withdrawal (Sublett, 2013). Kelly et al. (2011) identified low light and minimal stimulation, swaddling, soothing, and side positioning as first line interventions. Even if exposed to illicit drugs, breastfeeding was found to decrease the risk of NAS in drug-exposed neonates, according to the authors. In addition, maternal rooming-in decreased the need for treatment and overall frequent monitoring, although recurrent scoring was still needed. Morphine and phenobarbital were the most recommended interventions for scores greater than eight on the NAS scale (Kelly et al., 2011).

In a systematic review MacMullen et al., (2014) focused on symptom management, making standardization of NAS treatment difficult to adopt because symptoms vary in each neonate. The authors' recommendations included matching the drug used in treatment to the drug abused, i.e., methadone for neonates who were exposed to methadone in utero, and supportive interventions, such as breastfeeding, nutrition, and skin care, as these could reduce symptoms. In neonates with fewer symptoms, supportive interventions were recommended as adjuvant treatment. Supportive interventions included swaddling, gentle awakening, quiet, low stimulation, sucking, positioning, and rooming-in (MacMullen et al., 2014). These interventions correlated with the findings in the literature review by Kelly et al. (2011).

In a review of clinical practice guidelines, Wiles, Isemann, Ward, Vinks, and Akinbi (2014) and Sublett (2013) identified the most common intervention in current practice as drug therapy, although the safety and effectiveness of the drugs utilized has not been studied, according to the authors. Sublett (2013) discussed risks and benefits of drug therapy and highlighted the gaps in knowledge related to neonate withdrawal, and further identified another common denominator in treatment as continuous monitoring and frequent evaluation of at-risk neonates. Interventions that were noted by Sublett (2013) and found useful were holding and rocking, kangaroo care (skin-to-skin contact), and breastfeeding. The author noted

that pharmacologic therapy was more commonly used due to the knowledge deficit associated with complementary and alternative medicine (CAM) regarding NAS. In summary, Sublett (2013) recommended further research regarding CAM when caring for the NAS population.

In a review of current practice, Wiles et al. (2014) found there was not enough evidence to support any single treatment for NAS due to the variety of drugs, symptoms, and absence of long-term outcome data. They recommended that every nursery adopt a standard measuring tool for determining a neonate's risk for NAS. The authors also discussed interventions such as swaddling, positioning, gentle handling, rocking, rooming-in and breast feeding as having been found to be effective, and that initial treatment should focus on non-drug therapy to mitigate the need for medication. Promoting a strong mother-infant bond was also identified as being key in the recovery of mother and neonates (Wiles et al., 2014).

In another systematic review, Wachman, Schiff, and Silverstein (2018) found that the most substantial research supported nonpharmacological therapies, most specifically breastfeeding and rooming-in. According to the authors, further research was needed to identify diagnoses and outcomes in relation to drug versus non-drug therapies (Wachman et al., 2018).

## SUMMARY

Summation of the evidence communicates that due to the vast array of presentations of NAS, developing a standard of care has been difficult. The initial treatment in current practice most frequently has been drug therapy, however, research suggests non-pharmaceutical therapies should be adopted as first line treatments, especially in those neonates with low NAS scores. With continuous monitoring, drug/nondrug therapy can be effective in conjunction with CAM therapies. Determination of interventions for care should be based on parental preferences/responses, safety, NAS presentation, and hospital budgeting. The studies reviewed identified gaps in the literature primarily surrounding best evidence and current practice, which is more prominently based on tradition, rather than evidence. The research found suggested additional studies should be conducted on supportive care interventions.

## DISCUSSION

Based on this literature review, the steps needed to further this knowledge would be to select an Evidence-Based Practice Model when implementing NAS protocols. According to The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care (Iowa Model) (The Iowa Model Collaborative, 2017) the evidence found was sufficient to implement CAM therapies into practice. The next step would be to design and pilot a practice change to begin initiating new interventions into practice. The Iowa Model suggests starting by identifying current practices in a local hospital neonatal intensive care unit (NICU). From there it should be determined what could be changed to support an evidence-based standard of

practice. In doing so, ethical dilemmas should be addressed such as informed consent and approval from the applicable Institutional Review Board (IRB). According to the Iowa Model, the next steps would be to create an implementation and evaluation plan as well as promote adoption (The Iowa Model Collaborative, 2017). This will determine if the new interventions are ready to be integrated and sustained in the clinical setting and accepted as a standard of care.

Ideally, a scoring system would be incorporated with the practice change to determine what supportive measures could be used based on symptoms. The goal would be to make supportive interventions for lower scores the first line treatment to prevent complications associated with pharmaceuticals. With higher scores it would be recommended that supportive interventions and pharmacological interventions be started concurrently. Studying both methods of treatment could establish whether adopting supportive care management would be beneficial to pharmacological therapies alone in neonates scoring low NAS scores. With successful integration, dissemination of the findings would then become important to further expand evidence-based practices.

## ETHICAL CONSIDERATIONS

The ethics of this change in practice project would play a major role, in that neonates are unable to give informed consent, and the decision-making capacity of their parents may be impaired. Impaired individuals, as well as any ethnic minority groups that may be involved, would also be considered vulnerable populations.

## REFERENCES

- Arora, G. (2017). *Skin-to-skin interventions in infants with neonatal abstinence syndrome* (1990966232). Doctoral dissertation, Boston University. Retrieved from <https://open.bu.edu/handle/2144/26606>
- Beauman, S. S. (2005). Identification and management of neonatal abstinence syndrome. *Journal of Infusion Nursing*, 28(3), 159-167
- Casper, T., & Arbour, M. (2014). Evidence-based nurse-driven interventions for the care of newborns with neonatal abstinence syndrome. *Advances in Neonatal Care*, 14(6), 376-380. <http://doi.org/10.1097/ANC.000000000000118>
- Dearholt, S., & Dang, D. (2012). *Johns Hopkins nursing evidence-based practice: Models and guidelines* (2nd ed.). Indianapolis, IN: Sigma Theta Tau International.
- Hudak, M. L. & Tan R. (2012). Neonatal drug withdrawal. *Pediatrics*, 129(2), e560. <http://doi.org/10.1542/peds.2011-3212>
- Kelly, L., Minty, B., Madden, S., Dooley, J., & Antone, I. (2011). The occasional management of narcotic exposure in neonates. *Canadian Journal of Rural Medicine*, 16(3), 98-101.
- MacMullen, N. J., Dulski, L. A., & Blobaum, P. (2014). Evidence-based interventions for neonatal abstinence syndrome. *Pediatric Nursing*, 40(4), 165.

- Maguire, D. (2014). Care of the infant with neonatal abstinence syndrome: Strength of the evidence. *The Journal of Perinatal & Neonatal Nursing*, 28(3), 4. <http://doi.org/10.1097/JPN.0000000000000042>
- March of Dimes. (2019). Neonatal abstinence syndrome. Retrieved on May 12, 2020 from [https://www.marchofdimes.org/complications/neonatal-abstinence-syndrome-\(nas\).aspx#](https://www.marchofdimes.org/complications/neonatal-abstinence-syndrome-(nas).aspx#)
- Hamdan, A. H. (20 December 2017). What are the discharge criteria for infants with neonatal abstinence syndrome (NAS)? Retrieved on May 12, 2020 from <https://www.medscape.com/answers/978763-94883/what-are-the-discharge-criteria-for-infants-with-neonatal-abstinence-syndrome-nas>
- Minozzi, S., Amato, L., Bellisario, C., Ferri, M., & Davoli, M. (2013). Maintenance agonist treatments for opiate-dependent pregnant women. *The Cochrane Database of Systematic Reviews*, (12):CD006318. <http://doi.org/10.1002/14651858.CD006318.pub3>
- Nelson, M. M. (2013). Neonatal abstinence syndrome: The nurse's role. *International Journal of Childbirth Education*, 28(1), 38-42. Retrieved from <http://icea.org/>
- Sublett, J. (2013). Neonatal abstinence syndrome: Therapeutic interventions. *The American Journal of Maternal Child Nursing*, 38(2), 9. <http://doi.org/10.1097/NMC.0b013e31826e978e>
- The Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing*, 14(3), 175-182. <http://doi.org/10.1111/wvn.12223>
- Wachman, E. M., Schiff, D. M., & Silverstein, M. (2018). Neonatal abstinence syndrome: Advances in diagnosis and treatment. *Jama*, 319(13), 1362-1374. <http://doi.org/10.1001/jama.2018.2640>
- Wiles, J. R., Isemann, B., Ward, L. P., Vinks, A. A., Akinbi, H., (2014). Current management of neonatal abstinence syndrome secondary to intrauterine opioid exposure. *Journal of Pediatrics*, 165(3), 440-446. <http://doi.org/10.1016/j.jpeds.2014.05.010>

Neonatal abstinence syndrome (NAS) is a group of problems that occurs in a newborn who was exposed to opioid drugs for a length of time while in the mother's womb. Causes. NAS may occur when a pregnant woman takes drugs such as heroin, codeine, oxycodone (Oxycontin), methadone, or buprenorphine. These and other substances pass through the placenta that connects the baby to its mother in the womb. If you are already pregnant and take medicines or drugs not prescribed to you, talk to your provider about the best way to keep you and the baby safe. Some medicines should not be stopped without medical supervision, or complications may develop. Your provider will know how best to manage the risks. Alternative Names. NAS; Neonatal abstinence symptoms. Images. Neonatal abstinence syndrome tend to be responding well to morphine or phenobarbitone. Neonatal abstinence syndrome itself tends to resolve over time. However if any complications related to illicit drug use occur, the prognosis might change dramatically depending on the complications. Even after medical treatment for neonatal abstinence syndrome is over and babies leave the hospital, they may need extra TLC for weeks or months. References [ + ]. 1, 2. Finnegan, LP, Kaltenbaach, W. The Assessment and Management of Neonatal Abstinence Syndrome. Primary Care, 3rd editions, Hoekelman + Nelson (eds), C.V. Mosby Company, St. Louis, MO, pp 1367-1378, 1992. 3. Practice Essentials. Neonatal abstinence syndrome (NAS) is a group of problems that occur in a newborn who was exposed to addictive illegal or prescription drugs while in the mother's womb. Two major types of NAS are recognized: NAS due to prenatal or maternal use of substances that result in withdrawal symptoms in the newborn and postnatal NAS secondary to discontinuation of medications such as fentanyl or morphine used for pain therapy in the newborn. Signs and symptoms. Maguire D, Groer M. Neonatal abstinence syndrome and the gastrointestinal tract. Med Hypotheses. 2016 Dec. This first edition of our national neonatal care clinical guidelines is an initiative that aims to ensure that all the neonates in the Kingdom of Eswatini are offered standard, best quality of care and the best possible start in life. The guidelines have been formulated from various global sources and tailored to the needs and health practises of the country. They are designed to serve as a guide to all healthcare providers in the country to provide standardized quality neonatal care. I would like to congratulate the team that worked with zeal and commitment to ensure that this initiative was ...