


**CUDDLES, HUGS & KISSES:
NON-PHARMACOLOGICAL METHODS USED
IN THE TREATMENT OF NEONATAL
ABSTINENCE SYNDROME (NAS)**



Ada Malone, M.S., BSN, RN, ANLC, IBCLC
Lactation Educator and Consultant

SPEAKER DISCLOSURES

- o I have no financial disclosures or relationships with manufacturer(s) of any commercial products.
- o I work as an RN and Lactation Educator at a local hospital in Southern Illinois.

TOPIC OBJECTIVES

- Define Neonatal Abstinence Syndrome (NAS) and provide a historical review of opioid and other substance use.
- Discuss treatment goals in the care of NAS infants to restore normal newborn activities and prevent complications associated with NAS.
- Identify at least 3 non-pharmacological strategies used to treat newborns with NAS.
- Explore the role of breastfeeding and its positive impact on minimizing symptoms of NAS.



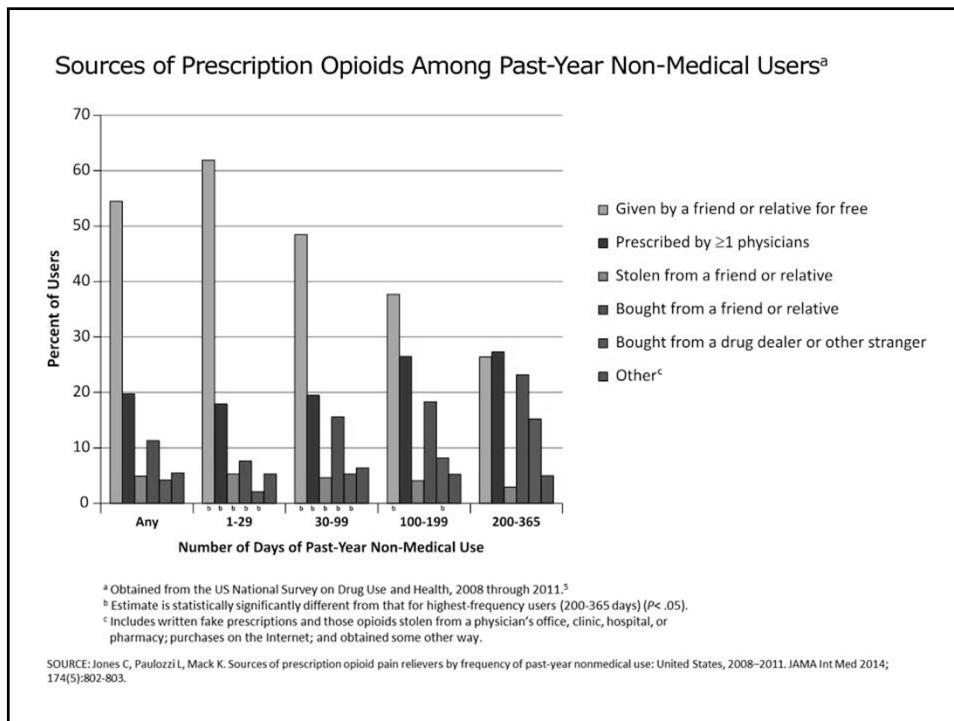
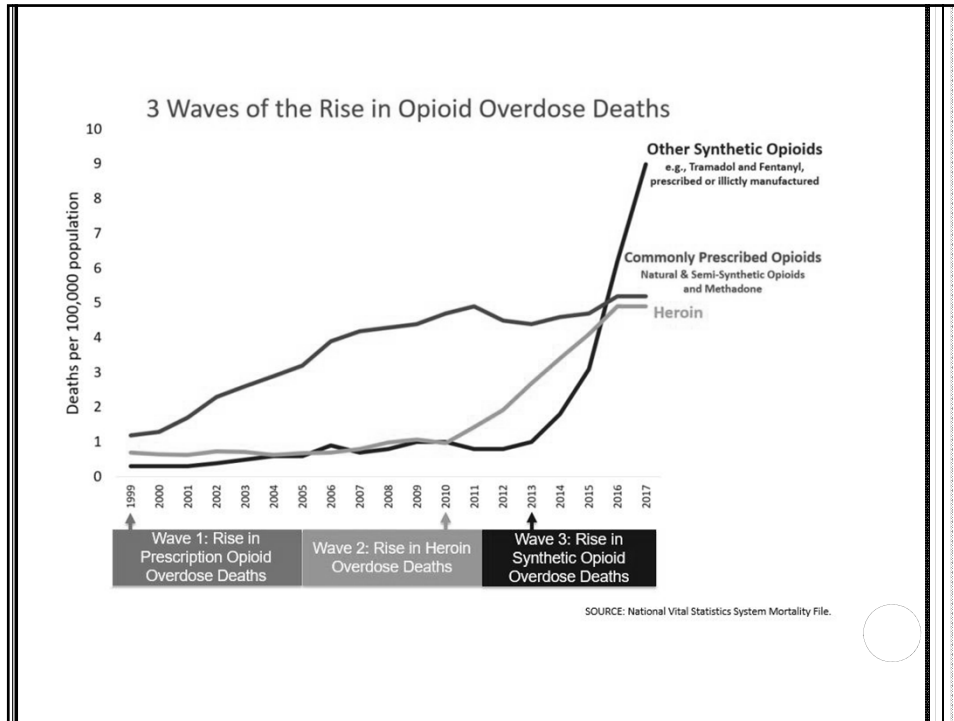
OPIOID USE IN THE UNITED STATES

- More than 700,00 deaths have occurred as a result of drug overdose from 1999-2017.
- In 2017, 70,200 people died from a drug overdose- 68% of those deaths involved an opioid.
- Approximately 130 Americans die everyday from an opioid overdose.



Source: www.cdc.gov/opioiduse





OPIOID USE DISORDER

Opioid use disorder is a pattern of opioid use characterized by tolerance, craving, inability to control use, and continued use despite adverse consequences.

Opioid use disorder is a chronic, treatable disease that can be managed successfully by combining medications with behavioral therapy and recovery support, which enables those with opioid use disorder to regain control of their health and their lives.

Source: American College of Obstetricians and Gynecologists, 2017

OPIOID USE IN PREGNANT WOMEN

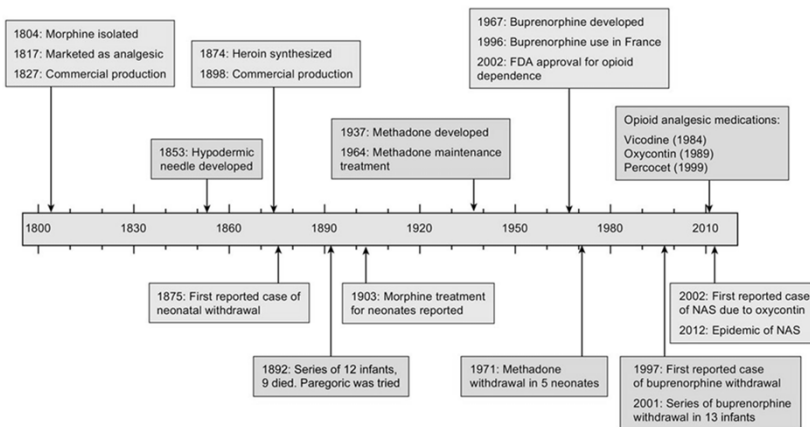
- 1 in 3 women had an opioid prescription in 2008-2014.
- 14-22% of pregnant women had an opioid prescription filled.
- The use of opioids by pregnant women has more than quadrupled since 1999.
- The use of opioids during pregnancy increases the incidence of NAS diagnosis in newborns.



Source: www.cdc.gov

OPIOID USE-HISTORICAL PERSPECTIVE

OPIOID USE-A HISTORICAL PERSPECTIVE



Source: American Academy of Pediatrics, 2014

Every **15** minutes, a
baby is born with **NAS**



Nearly **100** babies, each day

Source: Centers for Disease Control-2016

NEONATAL ABSTINENCE SYNDROME (NAS) AT-A-GLANCE

- Defined as an abrupt discontinuation of exposure to opiates or other illicit drugs during pregnancy.
- Characterized by a complex series of withdrawal symptoms including but not limited to:
 - Tremors
 - Increased muscle tone
 - Excessive sucking
 - High pitched crying
- Symptoms usually appear within 24-72 hours with peaks reaching between 48-72 hours.
- Infants who exhibit signs of withdrawal usually require a hospital stay.



NEONATAL ABSTINENCE SYNDROME (NAS) AT-A-GLANCE

- The incidence of NAS has increased to 300% since the 1980's.
- Opioid use among pregnant women has more than doubled from 1.2 mothers per 1,000 live births to more than 5.6 per 1,000 births.
- Between 60-80% of the NAS cases have been due to in utero exposure to heroin and methadone.
- Health care costs resulting from NAS care and treatment increased significantly from \$39,000 to \$53,400.
- The cost for 1 NAS infant's stay in the NICU is estimated to be \$2,700 per day.

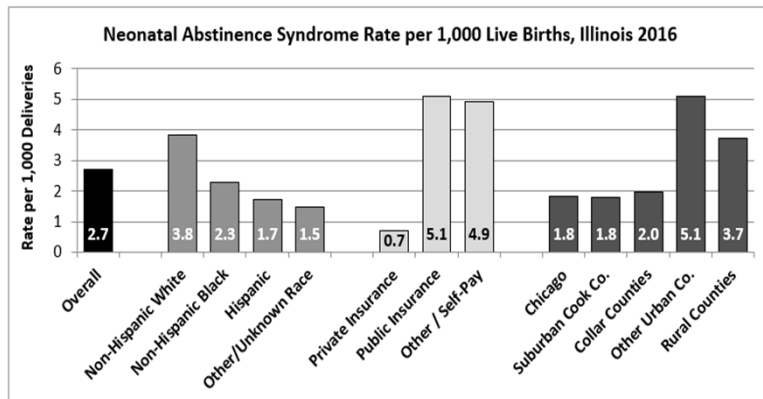
EFFECTS OF DRUG WITHDRAWAL ON NEWBORN

Drug (s)	Symptoms of Withdrawal
Opioids	Hyperirritability Excessive sucking Poor feeding, regurgitation Tremors High-pitched cry Increased muscle tone Seizures Nasal congestion Increased body temperature Tachypnea
Cocaine	No identifiable withdrawal symptoms
Benzodiazepines	Small number of infants have withdrawal symptoms
Cannabis/marijuana	Jitteriness, Tremors, Impaired sleeping
Selective Serotonin Reuptake Inhibitors (SSRI)	Jitteriness Respiratory distress Sleep disturbance

Source: Pediatric Nursing, 2014

NAS-ILLINOIS DATA

NEONATAL ABSTINENCE SYNDROME (NAS) ILLINOIS DATA



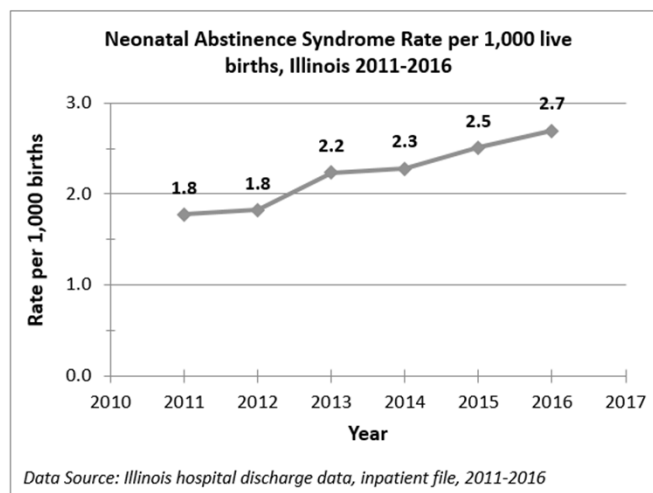
Source: Illinois Department of Public Health-2016

NEONATAL ABSTINENCE SYNDROME (NAS) ILLINOIS

- Infants born in Illinois with NAS have longer hospital stays and higher hospital charges than infants without NAS.
- In 2016, the median length of hospital stay after birth was 11 days longer for infants with NAS compared to infants without NAS.
- In 2016, the median charges for the birth hospitalization of infants with NAS were approximately \$33,700, compared to approximately \$4,400 for infants without NAS.
- In 2016, the total charges for the hospital care of infants born with NAS were nearly \$18 million higher than what would have been expected if they had been born without NAS.

Source: Illinois Department of Public Health-2016

NEONATAL ABSTINENCE SYNDROME (NAS) STATE OF ILLINOIS-HOSPITAL DATA



NAS ASSESSMENT TOOLS

NAS MODIFIED FINNEGAN TOOL

- Scoring system used to determine the severity of withdrawal symptoms.
- Each symptom is assigned a point value and assessed every 3-4 hours.
- Two consecutive scores that are 8 or greater warrants treatment (combination of pharmacological and non-pharmacological).
- The Finnegan scoring system can also be used to assess recovery and modify medical treatment.
- Mothers of these infants are encouraged to participate in the care and treatment of their baby.

Finnegan Neonatal Abstinence Scoring Tool (FNAST)

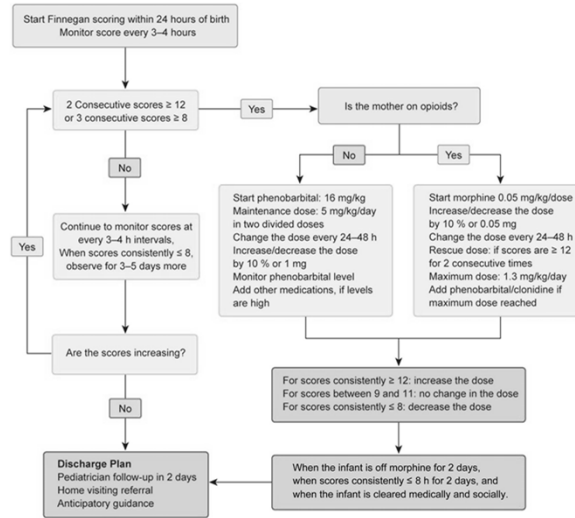
Patient ID: _____ Name: _____ Today's Weight: _____ DOB: _____ Date: _____

Signs & Symptoms	Time	Score	Today's Weight		Comments
			AM	PM	
Central Nervous System Disturbances					
Crying: Excessive High Pitched					
Crying: Cont. High Pitched					
Sleeps < 1 Hr After Feeding					
Sleeps < 2 Hr After Feeding					
Sleeps < 3 Hr After Feeding					
Hyperactive Moro Reflex					
Masledly Hyperactive Moro Reflex					
Mild Tremors: Disturbed					
Mod-Severe Tremors: Disturbed					
Mild Tremors: Undisturbed					
Mod-Severe Tremors Undisturbed					
Increased Muscle Tone					
Excoriation (Specific Area)					
Myoclonic Jerk					
Generalized Convulsions					
Metabolic, Vasomotor And Respiratory Disturbance					
Sweating					
Fever < 101 (37.2-38.3C)					
Fever > 101 (38.4C)					
Frequent Yawning (> 3)					
Mottling					
Nasal Stuffiness					
Sneezing (>3)					
Nasal Flaring					
Respiratory Rate (> 60/Min)					
Respiratory Rate (>60/Min With Retractions)					
Gastrointestinal Disturbances					
Excessive Sucking					
Poor Feeding					
Regurgitation					
Projectile Vomiting					
Loose Stools					
Watery Stools					
Score					
Total Score					
Average Daily Score					
Inter-Observer Reliability %					
Initials Of Scorer 1					
Initials Of Scorer 2					

SIGNS AND SYMPTOMS IDENTIFIED IN SCORING NAS

- Tremors
- Irritability
- Increased wakefulness
- High-pitched cry
- Exaggerated Moro reflex
- Seizures
- Frequent yawning and sneezing
- Increased sweating
- Nasal stuffiness
- Mottling
- Temperature instability
- Poor feeding
- Uncoordinated suck/excessive sucking
- Regurgitation
- Diarrhea
- Dehydration
- Poor weight gain
- Skin excoriation
- Increased muscle tone

PHARMACOLOGICAL PATHWAY TO TREAT INFANTS WITH NAS



Source: American Academy of Pediatrics, 2014

NON-PHARMACOLOGICAL THERAPIES FOR NAS TREATMENT

- Treatment goals in the care of NAS infants aims to restore normal newborn activities and prevent complications associated with NAS.
- Normal newborn activities include:
 - Adequate sleep patterns
 - Nutrition intake
 - Weight gain
 - Positive response and adaptation to his/her social environment
- Non-pharmacological methods used to treat NAS are strongly recommended at the earliest signs of withdrawal symptoms.



NON-PHARMACOLOGICAL THERAPIES FOR NAS TREATMENT

- Swaddling
- Holding/gentle rocking
- Minimal stimulation
- Low lighting
- Music therapy
- Breastfeeding
- Frequent feedings
- Non-nutritive suck
- Infant massage
- Kangaroo care
- Rooming-in
- Cuddler Program



MNO-MOTHERS AND INFANTS AFFECTED BY OPIOIDS-NEONATAL INITIATIVE (MNO)

- Created by the Illinois Perinatal Quality Collaborative-IDPH
- Goals:
 - Work with hospital teams across the state to standardize scoring assessment tools of NAS symptoms (Finnegan, Eat, Sleep, Console).
 - Engage mothers/families to be the primary sources of non-pharmacologic care implementation for their babies.
 - Use a multidisciplinary approach to coordinate discharge planning to improve newborn outcomes.



EAT, SLEEP & CONSOLE

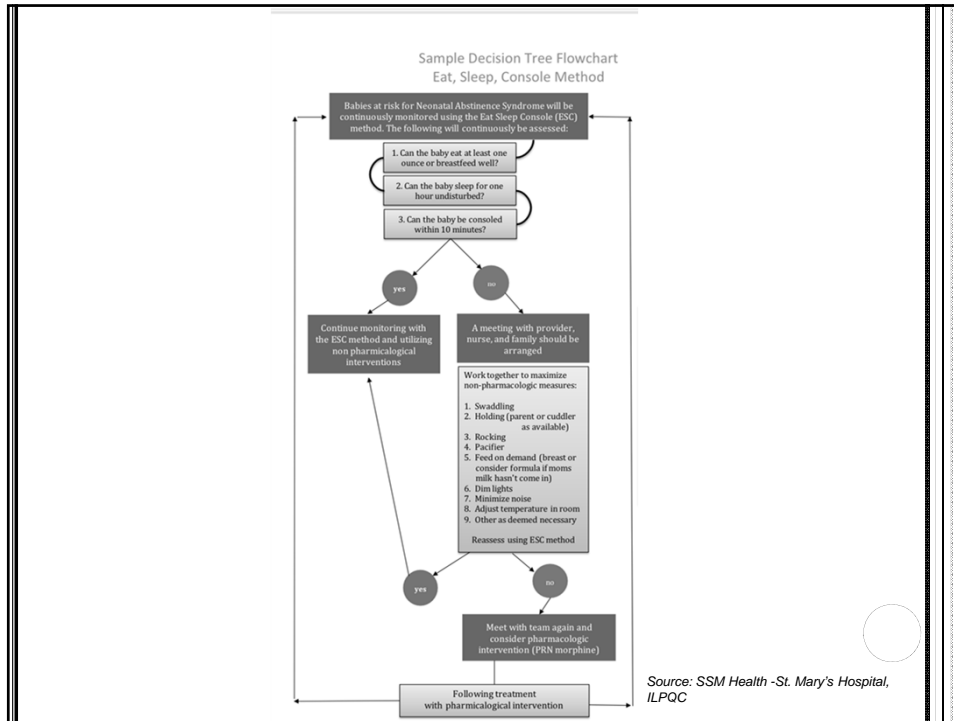
- Designed to provide comfort and care to the NAS infant with the use of non-pharmacological methods.
- Increase mom involvement in the treatment of NAS infants.
- Use of “prn” or “as needed” medication to treat NAS symptoms.



Source: Advanced Neonatal Care, 2019

EAT, SLEEP & CONSOLE

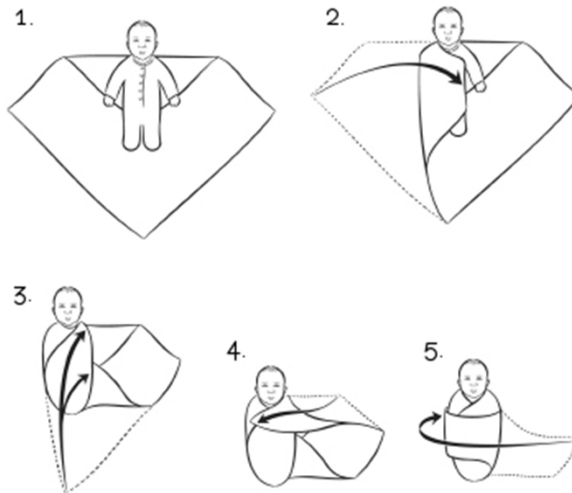
- Eat: The infant can Breastfeed well or take at least an ounce.
- Sleep: The infant can sleep at least an hour
- Console: The infant can calm in 10 minutes.



NON-PHARMACOLOGICAL THERAPIES FOR NAS TREATMENT

Type of therapy	Rationale
Swaddling	*Minimizes stimulation *Decreases crying times *Promotes more sustainable sleep *Infant should be placed on back or side
Gentle rocking and holding/Use of Cuddler volunteers	*Provides comfort, bonding *Reduces irritability and crying episodes *Promotes longer sleep times between feedings
Minimal lighting /Music therapy/	*Reduces the amount of external exposure to environmental stimuli *Allows infant to remain in a longer, calm state
Infant massage	*Assists infant to regain a calm affect *Reduces prolonged crying times *Enhances rest periods/increased ability to sleep
Kangaroo Care	*Encourages bonding times between mother and infant/increased sleep times *Noticeable decrease in Finnegan scores *Lessens early signs of withdrawal
Non-nutritive sucking	*Provides self-soothing *Reduction in periods of hyperirritability
Frequency of feedings	*Increased caloric intake *Lowers incidence of weight loss

SWADDLING



Source: www.baby.advice.com



SWADDLING BENEFITS

- *Minimizes stimulation.
- *Decreases crying times.
- *Promotes longer sleep.
- *Can provide comfort while eating and sleeping.
- *Increases a calming effect.
- *Infant should be placed on back or side.



ROOMING-IN





ROOMING-IN



- Less likely to require pharmacological treatment for withdrawal.
- Promotes more effective bonding between mother and infant.
- Reduces the prevalence and severity of neonatal withdrawal.
- Less likely to have a NICU admission.
- Mothers may play a larger part in the recovery of their infant- earlier recognition of withdrawal symptoms.



BREASTFEEDING





BREASTFEEDING AND NAS

- Breastfeeding is always the 1st choice for infant feeding.
- Breastfeeding provides optimal nutrition, promotes bonding, and greater participation of infant care given by mothers.
- Research has supported mothers who are chemically dependent to breastfeed their babies.
- According to 1 study, only 24% of opioid-dependent mothers breastfeed.
- Sixty percent (60%) of these mothers discontinue after 5-6 days.



BREASTFEEDING AND NAS



- Breastfeeding has been shown to:
 - Decrease the severity of NAS.
 - Delay the onset of withdrawal symptoms.
 - Decrease the need for pharmacological treatment.
- The transmission of methadone or buprenorphine in breast milk is small.
- Mothers who take prescription opioids may be advised that their infant may have increased sleepiness when breastfeeding.
- Breastfeeding is only contraindicated if mother is taking illicit drugs, has poly drug abuse or is infected with HIV.



FEEDING TECHNIQUES FOR INFANTS WITH NAS

- o Follow the baby's feeding cues.
- o Be flexible with feeding techniques.
- o Create a calm and relaxing environment.
- o Nurture the Caregiver/Infant relationship.
- o Build caregiver confidence.

Source: Neonatal Network, 2018



WHAT ARE THE THOUGHTS AND FEELINGS OF MOTHERS WITH NAS BABIES?



BREASTFEEDING AND NAS-MOTHER'S ATTITUDE/PERCEPTIONS-QUALITATIVE STUDY

- 2018 qualitative study by Howard et. al
 - perceptions and attitudes of breastfeeding and rooming-in among mothers with opioid use disorder.
 - 25 mothers were interviewed.
 - Thirty-six (36%) percent of the infants required pharmacological treatment.
 - Seventy-two (72%) percent began breastfeeding initiation.
 - Forty (40%) percent of these mothers continued bf after discharge.

BREASTFEEDING AND NAS-MOTHER'S ATTITUDE/PERCEPTIONS

- Identifiable Themes:
 - Information influences maternal infant feeding choice.
 - The hospital environment can be a stressor or support for mothers.
 - Signs and symptoms of NAS withdrawal negatively impacted mother's breastfeeding duration.
 - Stigmas (internal and external) negatively affected mother's self perception to care for her baby.
 - Mothers' history of abuse and trauma affected their decision to breastfeed and/or bond with her baby.

BREASTFEEDING AND NAS-MOTHER'S ATTITUDE/PERCEPTIONS

- Identifiable themes cont'd
 - Mothers' drug recovery process was emotionally and logistically challenging to feed and/or provide care for their babies.
 - Having an infant to care for provided a sense of empowerment and purpose for mothers on their road to recovery.
- Findings
 - Mothers felt stigma and joy simultaneously with a sense of purpose to care for their babies.
 - Breastfeeding initiation was based on information received by HCP and/or during hospital stay.
 - Trauma and past drug use history can negatively impact a mother's decision to breastfeed.
 - Any separation of the infant from their mother impacted the mother's ability to remain at the bedside.

HOWARD ET. AL-QUALITATIVE STUDY- CONCLUSIONS

- Accurate breastfeeding information/education is vital for mothers to make informed decisions to feed their baby.
- Minimize infant/mother separation.
- Create bias-free/non-judgmental environment.
- Promote interventions that are targeted towards mother's success to recovery and facilitate infant bonding.
- Offer resources and support-in hospital and within the community.
- Provide positive reinforcement and encouragement for mothers to care for their baby.

INFANTS WITH NAS-WHAT PARENTS NEED TO KNOW

- Define NAS-what is it?
- Signs and symptoms of NAS withdrawal.
- Ways to support and care for their baby.
- Types of treatment their baby will receive while in the hospital.
- Discuss infant feedings/breastfeeding.
- Community resources/support.
- Ask questions.



INFANTS WITH NAS-PARENT QUESTIONS

- When will my baby show signs of NAS?
- How long will NAS symptoms last?
- Can my baby stay with me in the hospital?
- When will I be able to take my baby home?
- How do I calm my baby when they start crying?
- Can I breastfeed my baby?
- Will my baby have delays as they get older?
- Will my baby be taken away?



FINAL POINTS

- Infants with NAS need a variety of care and support.
- Mothers of infants with NAS deserve treatment and care that is non-judgmental and free of bias.
- These mothers can and should be encouraged to breastfeed.
- Breastfeeding is the best choice for mother-infant bonding and attachment.
- Breastfeeding has been shown to decrease the withdrawal symptoms of infant with NAS.
- Support from health care providers and community groups is strongly encouraged to promote positive outcomes.



"There can be no keener revelation of a society's soul than the way in which it treats its children."

— Nelson Mandela, Former President of South Africa



NAS ONLINE RESOURCES

Centers for Disease Control-Opioid Use in the United States-<http://www.cdc.gov>.

March of Dimes-<http://www.marchofdimes.org>.

National Institute on Drug Abuse-
<http://www.drugabuse.gov>.

Substance Abuse and Mental Health Services-
<http://www.samhsa.gov>.

The National Center on Substance Abuse and Child Welfare-<https://www.pcassnow.org>.

NAS /OPIOID/SUBSTANCE ABUSE
RESOURCES-ILLINOIS

Illinois Department of Public health-
<http://www.dph.Illinois.gov>

Illinois Department of Health and Human Services-
Division of Alcohol and Substance Abuse-
<http://www.dhs.state.il.us>

Illinois Perinatal Quality Collaborative-Mothers and
Newborns Affected by Opioids-<https://ilpqc.org>



SUBSTANCE ABUSE RESOURCE HELP LINES

Illinois Helpline for Opioids and other Substances-
1-888-233-2FINDHELP (234-6343)

Illinois Women's Health Line-1-888-522-1282

SAMHSA Treatment Hotline-1-888-662-HELP (4357)



REFERENCES

Cleveland, L. (2013). Breastfeeding recommendations for women who receive Medication-Assisted Treatment for Opioid use disorders. Journal of Obstetric, Gynecologic & Neonatal Nursing-AWOHNN Practice Brief No. 4

Ko, J.Y., Patrick, MD, Tony, V.T., MPH, Roshni, P, MPH, Lind, J.PharmD & Barfield, W. MD (2016). Incidence of Neonatal Abstinence Syndrome-28 states 1999-2013-Morbidity and Mortality Weekly Report-65 (31) pg-799-802

MacMullen, N. J., Dulski, L.A. & Blobaum, P. (2014). Evidenced-based interventions for Neonatal Abstinence Syndrome. Pediatric Nursing Vol.40, No. 4

Sanlorenzo, L. MD, Stark, A., & Patrick, S. MD, MPH (2018). Neonatal Abstinence Syndrome: An Update-Author Manuscript. Department of Health and Human Services

Sublett, J. MSN, RN(2013). Neonatal Abstinence Syndrome-Therapeutic Interventions. Lippincott &Williams

REFERENCES

Gareth R., Dooley J., Gerber Finn, L., & Kelly, L. (2018) Nonpharmacological management of neonatal abstinence syndrome: a review of the literature. The Journal of Maternal-Fetal & Neonatal Medicine, DOI: 10.1080/14767058.2017.1414180

Johnson, B. & Bole, J. (2017)The Children's Corner: Perspectives on Supportive Care . Pediatric Nursing ,Vol. 43/No. 4 207

Neonatal Abstinence Syndrome Advisory Committee Annual Report to the General Assembly (2018). Illinois Department of Public Health

Nonopioid Management of Neonatal Abstinence Syndrome
Pediatric Nursing. 43(4):206–207, July 2017

Patrick, et al. (2015). Dramatic increases in maternal opioid use and neonatal abstinence syndrome. National Institute on Drug Abuse. Retrieved from www.drugabuse.gov

REFERENCES

ACOG Committee Opinion-Opioid use and Opioid use disorder in pregnancy (2017) The American College of Obstetricians and Gynecologists. The American Society of Addiction Medicine, 711 (1-11)

Gomez-Pomar & Finnegan, L.P. (2018). The epidemic of Neonatal Abstinence Syndrome, historical references of its origins, assessment and management, *Frontiers in Pediatrics*. [Http://www.frontiersin.org](http://www.frontiersin.org)

Groer, M., Maguire, D., & Taylor K. (2018). Supporting breastfeeding for infants born to opioid dependent mother, *American Academy of Nursing on Policy*. [Http://doi.org/10.1016/j.outlook.2018.07.003](http://doi.org/10.1016/j.outlook.2018.07.003)

Howard, M., Wachman, E., Levesque, E., Schiff, D., Kistin, C., & Park, M.G. (2018) The joys and frustrations of breastfeeding and rooming-in among mothers with opioid use disorder: a qualitative study. *Hospital Pediatrics Vol 8, (12)* <http://hosppeds.aapublications.org>

REFERENCES

Maguire, D. J., Shaffer-Hudkins, E., & Clark, L. (2018). Feeding infants with neonatal abstinence syndrome: Finding the sweet spot. *Neonatal Network*, Vol. 37 (1), 11-17. [Http://dx.doi.org/10.1891/0730-0832.37.1.11](http://dx.doi.org/10.1891/0730-0832.37.1.11)

Martins, F., Santos, Barroso, & Gallardo (2019). Opioid use in pregnant women and neonatal abstinence syndrome-a review of literature. *Toxics*.7 (9) 1-17. <http://www.mdpi.com/journal/toxics>

Wu, D. & Carre (2018). The impact of breastfeeding on health outcomes for infants diagnosed with neonatal abstinence syndrome: A review. *Cureus* 10 (7): e3061.DOI 10.7759/cureus.3061

REFERENCES

- o Sample Decision Tree Flowchart: Eat, Sleep, Console, SSM Health St. Mary's Hospital St. Louis, ILPQC
- o Illinois Perinatal Quality Collaborative-Mothers and Newborns Affected by Opioids-<https://ilpqc.org>

