

## Neonatal Abstinence Syndrome and Breastfeeding

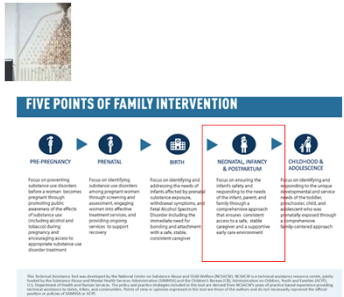
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## Objectives

- 1: Identify the impact of maternal SUD and subsequent NAS/NOWS on the family in general and the neonate specifically
- 2: Identify the role of non-pharmacologic care in the treatment of NAS/NOWN
- 3: Identify successful strategies to providing non-pharmacologic NAS/NOWN care to newborns

## Framework for Support

National Center on Substance Abuse and Child Welfare (NCSACW)



**FIVE POINTS OF FAMILY INTERVENTION**

- PRE-PREGNANCY**: Focus on preventing substance use disorders before or during pregnancy through education, screening, and counseling.
- PREGNANT**: Focus on identifying substance use disorders during pregnancy and providing appropriate care.
- BIRTH**: Focus on identifying and addressing the needs of newborns born to mothers with substance use disorders.
- NEONATAL ABSTINENCE SYNDROME**: Focus on providing the best care for newborns with NAS, including pain management and breastfeeding support.
- CHILDHOOD & ADOLESCENCE**: Focus on identifying and addressing the needs of children and adolescents with a history of SUD.

The National Abstinence Scale was developed by the National Center on Substance Abuse and Child Welfare (NCSACW). © 2018 NCSACW. All rights reserved. This document is for informational purposes only and does not constitute a medical recommendation. For more information, please contact NCSACW at 1-800-458-5231. The National Center on Substance Abuse and Child Welfare (NCSACW) was developed by a team of experts in the field of substance abuse and child welfare. NCSACW is a national resource for information, training, and technical assistance on substance abuse and child welfare issues. For more information, please contact NCSACW at 1-800-458-5231.

## Definitions

**SUD = Substance Use Disorder**

- Avoid pejorative, biased, or stereotypical language<sup>1</sup>
  - Addiction, addict, drug abuse, drug of choice,

**NAS and NOWS**

- Neonatal Abstinence Syndrome - All substances (includes non-opioids, tobacco and ETOH)
- Neonatal Opioid Withdrawal Syndrome (Includes illicit use, prescribed use, and Medication for Opioid Use Disorder MOUD)
- Signs and symptoms of withdrawal that may or may not require pharmaceutical intervention<sup>2</sup>

1- NIH Institute on Drug Abuse; 2- Jilani et al (2021) J of Perinatology

## Who are women with SUD?

Nearly 100% of SUD patients have high risk ACE diagnosis

- 60% of women in treatment report a hx of intimate partner violence
- 53% have a hx of sexual abuse
- 70% have a family hx of SUD
- 36% are involved with the child welfare system
- 70% need assistance with transportation to reach services

Problems and barriers to care are everywhere

NCPOE (2018)

## Demographics

Less than high school education

Began SUD at 14-15 years old

- Introduced by family or significant other
- All had family members with SUD

Comorbidity with mental illness

- Depression, anxiety, ADD

History of Personal Violence

- Childhood sexual abuse, intimate partner violence, physical or sexual assault

Incarceration

- Prostitution, drug possession

Cleveland and Bonugli (2014) JOGNN

Individual characteristics	Total sample (n)	Infants with NAS (n)	%
Age	4,503,944	277,132	0.56
Female	4,218,923	257,527	0.60
Race/ethnicity	5,574,975	323,014	0.59
White, non-Hispanic	3,096,411	171,011	0.55
Hispanic	2,250,065	142,003	0.59
Other race/ethnicity	2,228,499	109,999	0.51
Partner delivery	8,478,042	527,045	0.62
Provision delivery	834,785	52,141	0.50
Other type of delivery (category of null parity)			
Nulliparity	7,614,008	467,044	0.54
Parity 1 (1st or 2nd)	3,303,010	200,014	0.54
Parity 2 (3rd or 4th)	406,175	26,013	0.58
Parity 3 or more			
Highest county unemployment quarter <sup>1</sup>	2,914,064	18,936	0.64
Lowest unemployment quarter <sup>1</sup>	4,759,735	30,784	0.60
Unemployed			
Percentage high school graduates	3,814,156	49,917	0.28
Lowest county education quarter <sup>2</sup>	7,910,602	444,773	0.56
Highest education quarter <sup>2</sup>			

Faherty et al (2021) Addiction

## Opioid Misuse and Withdrawal

Chronic use leads to tolerance and physical dependence

Acute withdrawal activates the sympathetic nervous system

- Hypertension, tachycardia, GI symptoms
- Agitation
- Nasal congestion
- Yawning
- Muscle cramps
- N&V
- Depression

Extreme physical stress and discomfort can cause relapse

## Affects on pregnancy

Use and Withdrawal causes fluctuations of drug levels

Fluctuating reduction in blood flow to the placenta

Fluctuations in fetal oxygenation status

- Alters/retards physical development
- Increased rates of
  - Prematurity
  - Low birth weight
  - Fetal death

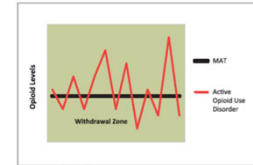


Figure 2. Opioid levels with active use versus medication assisted treatment

NCPOE (2018)

## Increased Rates of SUD affected infants

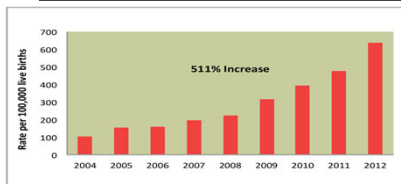


Figure 2. Rates of Infants Identified with Drug Withdrawal Syndrome by NC hospitals, per 100,000 Live Births. Adapted from North Carolina State Center for Health Statistics, Injury Epidemiology and Surveillance Unit (2014). [www.ncpoec.org](http://www.ncpoec.org)

CDC reports the number is 1010/100,000 in NC in 2018. <https://www.cdc.gov/oregon/2018/08/18/180818.html>

The rate of COVID among pregnant women is 590/100,000. *MMWR* 2020;69(44):1641. Epub 2020 Nov 6.

## Mother's Experiences in the NICU

Identified four themes

- Understanding Addiction
- Watching the infant withdraw
- Judging
- Trusting the Nurses

Expected nurses and health care staff to understand addiction as a disease

Felt guilt and low self-esteem

Cleveland and Bonugli (2014) *JOGNN*

## Understanding Addiction

"Until it happened to me, I didn't really think you could get addicted to a drug like that, and it's ugly"

**"We don't know how to cope with reality, and so we're scared of it.** When we relapse...just to go back to the comfort of numbing that, you know? And that's one of my things, like I'm scared of reality. I'm actually used to numbing it whether its methadone or something else. It's like...that's one of the things I pray for... give me the strength to cope with this reality."

**"It takes everything away from you.** It takes your kids away. It's taken so much away from me that I don't know how I still relapse...how I still give it a chance."

"I would tell [the nurses] to take it easy [on the mother]. You know, after being addicted, I realized that this is really a disease. There are some who abuse, **but if you're using while you're pregnant, you have a problem, a big problem... and you need help.** Obviously don't care about yourself, about anything, except the drug."

## Watching the infant withdraw

Mothers described the shame and guilt they felt when they watched their infant withdraw

**"When he would cry, sometimes I would cry with him because he would cry for hours, you know, and all I could do is just hold him and rock him."**

"I know its my fault, but she shouldn't have to suffer because of things I chose to do."

**"I needed him, and he needed me.** I needed him **because I felt...I did bad.** I hurt him, you know? If it wasn't for my drug use, my stupidity, he wouldn't be going through this. I put him through this. So, I needed to be there because he needed my help. He's just an angel. He's a baby. He doesn't understand, so I had to be there. **I put him in that situation, and I ...myself...had to help him... nobody else by me."**

## Judging

Women described being negatively judged by the nursing staff.

"I felt like the nurses thought of me as a drug user, and that was my whole life story."

"I felt judged and ridiculed all at once."

This prevented the mother's from being with their baby

"[The nurse] was like, 'you're going to have a lot of problems with that little baby because he's real jumpy and jittery. **His muscles are locking up because of his junkie mom.**' I didn't want to visit. I would call before and if [that nurse] was there, I wouldn't even go. Yeah and [CPS] was like, **well you're not even acting like you care about him. You're out using still.** And it wasn't that I was out using, it was that **I didn't want to be around that nurse** because she made me so uncomfortable."

## Trusting the nurses (or not)

Women described being unable to trust the nurses would provide care for their babies.

One woman described trying to be submissive when visiting so as not to anger the nurses, and admonishing her partner to do the same.

"You need to be careful with your tone of voice. Because we're gonna leave and he's gonna cry and **they're gonna leave him crying because they're gonna be like 'you know what? His parents are jerks!'**"

One woman reported her concerns about the baby's nurse and worried about retaliation against her baby.

"I went and told on her. You know, and then I was starting to worry. I told my mom. 'I'm worried now that she's still his nurse. **She's going to be ugly with him because I told the head nurse.**'"

## Stigma Negatively Impacts Care

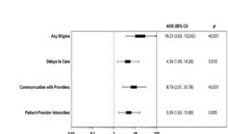


Figure 3. Adjusted odds ratios (AOR) and 95% confidence intervals of not receiving adequate prenatal care by responses to the Perceived Stigma Scale (Perceived Stigma scale). Odds ratios are adjusted for maternal age, race/ethnicity, education, marital status, public insurance, and parity.

Perception of stigma leads to a missed opportunity to provide care

Women who perceive stigma are 19 times more likely to receive inadequate prenatal care (AOR 19.23)

Women who detect stigma in their communication with HCP are nearly 9 times more likely to receive inadequate prenatal care (AOR 8.79)

Bann et al (2023) JOGNN

## HCP Bias and Stigma impacts care

Health care providers may refuse to offer certain services or administer appropriate pain medication

"I had a stillbirth caused by my drug use. I was delivering naturally and [the nurses] were getting stuff ready. [The baby] was coming feet first because she was very early and dead already for two weeks. It was a horrible experience. **I remember asking [the nurse] if I could have something for pain and she said 'No—you wanted to take your own medicine, so now deal with it!'**"

So [the nurses and doctor] said - **"Look what you did to your baby!"** But, I should have expected that after what I did to an innocent human being. MY son's dad was there with me, but they kicked him out because of the way everyone was treating me. He said, **"You don't have to treat her like an animal!"** He was cursing at the doctor, so they kicked him out - **and then I was all alone in the delivery room in pain and delivering a dead baby."**

## Ignorant HCP statements

When a mother wanted to breastfeed her baby:

"At the hospital, one of the nurses was just like, "Oh you're on methadone? Don't you think you shouldn't breastfeed? Like, **"The baby's going to be sick and you're going to be torturing it by giving it more methadone."** I just said, "No, that's not right. That's not what I was told." So, I didn't listen to her. Then she was like, "You were using [drugs] while you were pregnant? **Oh my God...they should put people in jail for that.**" I just thought, you're a nurse. You're not supposed to be saying that."<sup>4</sup>

Breastfed Newborns exposed to Methadone have decreased LOS, decreased severity of NAS symptoms, and delayed onset of NAS symptoms than formula fed newborns exposed to Methadone.<sup>2</sup>

1: Recto et al., (2020) Adv in Neo Care. 2: MgQueen et al., (2019) JOGNN

## Symptoms of NAS/NOWS

Sleeps <3 hours	19.6%
Tremors	81.6%
Increased tone	91.8%
Body Temp 37.2-38.3	30.4%
Sneezing (3)	34.9%
Respiratory Rate >60	17.9%
Excessive Sucking	46.2%
Poor Feeding	23.6%
Regurgitation	17.9%

Original Item	Score	Age (SD)
High pitched crying	2	187 (44.1)
Excessive	2	28 (8.4)
Continues	2	28 (8.4)
Stops after feeding, %	2	28 (8.4)
<10	1	83 (24.4)
<20	2	98 (25.8)
<30	3	79 (28.4)
More than 30	2	137 (40.0)
Infant's response	1	8 (2.0)
Tremors when disturbed	1	100 (27.4)
None	2	145 (44.2)
Respiratory rate	1	88 (28.0)
HR	1	88 (28.0)
Increased muscle tone	2	188 (58.4)
Excessive	2	144 (44.4)
Muscular jerks	1	11 (3.3)
Comatose/unconscious	1	0
Stiffness	1	28 (8.4)
Body temperature, °C	1	129 (38.4)
37.2-38.3	2	0
>38.4	1	31 (9.6)
Meaning 3 sneezing/interval	1	17 (5.0)
Meaning	1	134 (39.2)
Meaning	1	19 (5.9)
Meaning 11 sneezing/interval	1	148 (44.8)
Meaning	2	17 (4.9)
Meaning rate	2	138 (41.8)
>60/min	1	138 (41.8)
>60/min with retractions	2	20 (6.0)
Excessive sucking	1	138 (41.8)
Poor feeding	2	100 (30.0)
Regurgitation	2	76 (23.0)
Projectile vomiting	3	0
Stools	1	18 (5.4)
Loose	2	88 (26.8)
Meconium	1	18 (5.4)

Devlin et al (2020) JAMA open

## Two practice models

### NICU/SCN AND FINNEGAN

Admit to Nursery for evaluation and monitoring

Finnegan every 8-12 hours

Pharmacologic weaning

### COUPLET AND "EAT, SLEEP, CONSOLE"

Admit with Mother in the Postpartum/Family care unit

Assess ability to cope with possible symptoms of withdrawal

Non-pharmacologic Care  
 • Medication as needed

## Finnegan NAS Score

Begin at 2 hours of age and repeat q3-4 hours before a feeding.

3 Scores of >8 = Positive  
 2 Scores of >12 = Positive

Treatment involves weaning off opioids for several weeks

SYSTEM	SIGNS AND SYMPTOMS	SCORE	DAY 1							DAY 2									
			0	1	2	3	4	5	6	0	1	2	3	4	5	6			
CENTRAL NERVOUS SYSTEM DETOXIFICATION	Highpitched Cry	1																	
	Continuous High Pitched Cry	2																	
	Sleeps < 1 Hour After Feeding	1																	
	Sleeps < 2 Hours After Feeding	2																	
	Irregular Moro Reflex	1																	
	Abnormally Hyperactive Moro Reflex	2																	
	Abnormal Sucking	1																	
	Abnormally Slow Sucking	2																	
	Abnormal Sucking Reflexes Unobserved	1																	
	Abnormally Slow Sucking Reflexes Unobserved	2																	
RESPIRATORY	Respiratory Rate > 60/min	1																	
	Respiratory Rate > 60/min with Retractions	2																	
	Apnea	1																	
	Apnea > 10" (20" C)	2																	
METABOLIC/HAEMATOLOGIC	Frequent Vomiting (> 3-4 times/inter-vals)	1																	
	Vomiting	2																	
	Abnormal Stool	1																	
	Abnormal Stool (> 3-4 times/inter-vals)	2																	
	Diarrhea	1																	
	Diarrhea (> 3-4 times/inter-vals)	2																	
GASTROINTESTINAL	Diarrhea	1																	
	Diarrhea (> 3-4 times/inter-vals)	2																	
	Diarrhea (> 3-4 times/inter-vals)	1																	
	Diarrhea (> 3-4 times/inter-vals)	2																	
TOTAL SCORE	TOTAL SCORE																		
	SCORES BY SYSTEM																		
	STATUS OF THERAPY																		

Adapted from Finnegan L. Neonatal abstinence syndrome assessment and pharmacotherapy. Neonatal Therapy An update, F.F. Rubinfeld and B. Green, editors. Elsevier Science Publishers B.V. (North-Holland) Amsterdam, 1989, 122-146.

## Issues with the FNASS

Timpson et al (2018) Provided training with pretest/posttest evaluation for 170 Neonatal Nurses

Identified 5 most difficult items (Moro reflex, crying, sleep patterns, muscle tone, and tremors)

Increased accuracy from 18.8% (pre) to 34.7% (post)

- "correct" score was 8
- Average scores were significantly higher pretraining (9.31) than post-training (8.56)
- Training did not last
  - At six months after the training the average scores were again inaccurate with average score of 9.1

Timpson et al. (2018) Adv in Neo Care

## Eat, Sleep, Console Scoring

Eat: Can the baby eat one ounce or Breast feed well?

- No = Eat +
- Yes = Eat -

Sleep: Does the baby sleep at least one hour after feeding?

- No = Sleep +
- Yes = Sleep -

Console: Can the baby be consoled in 10 minutes?

- No = Console +
- Yes = Console -

Any + meets criteria for pharmacologic treatment

## Comparisons

MILLER 2021	BECKWITH 2021	HAALAND 2022	GROSSMAN 2017
ESC VS FNASS	SCN VS RI	ESC V FNASS	ESC V FNASS
LOS: 17.7 to 5.9 days	LOS: 20 to 5 days	LOS: 8.4 to 5.9 days*	LOS: 22.4 to 5.9 days
Rx: 58.9% to 2.7%	Rx: 93.3% to 5.3%	Rx: 28.3% v 6.1%	Rx: 98% to 14%
Wt loss: no change		Wt loss: no change	
BF: 41.8% to 64.86%	BF: 6.7% to 89.5%	BF: 30.4% vs 55.1%	BF: 20% vs 45%
	Cost: \$17,851 to \$6458	Admit NICU: 69.4 v 17.4%	Cost: \$44,824 to 10,289
	All used FNASS	*LOS M 20.6 to 11.3	

STRONG: Strong Together, Respecting and Encouraging New Mothers, Giving Them Hope

## Breastfeeding and NAS/NOWS

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