

Partnering to Improve Health Care Quality for Mothers and Babies

## INTER-RATER RELIABILITY

NAS Initiative Webinar April 16, 2019

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May 30-31, Lakeland Regional Medical Center

# QUALITY IMPROVEMENT METHODS TRAINING FOR PERINATAL HEALTHCARE PROVIDERS

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    4782623/







# Importance of NAS scoring and inter-rater reliability

Karen Fugate MSN RNC-NIC, CPHQ

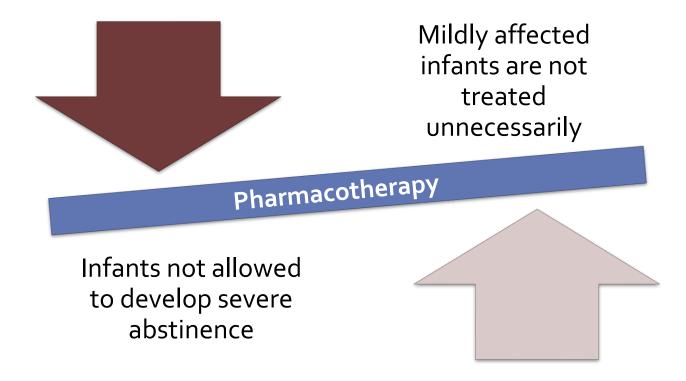
Nurse Specialist

Tampa General Hospital NICU

kfugate@tgh.org

# Importance of a scoring system

- Used to quantify the severity of NAS
- Determine when pharmacological intervention is needed
- Assist in monitoring, titrating, and terminating therapy
- Help determine safe discharge



Tool and Year Tool Published	No. of Items	Score Range	Score for Treatment	Published Item Definitions	Interobserver Reliability Established	Training Materials or Formal Course Available	Strengths and Limitations	
Finnegan Neonatal Abstinence Scoring Tool (1975) <sup>1</sup>	21	0–62	≥8 on three con- secutive evalu- ations	Yes	Yes	Training manual available as online video or DVD	Is the seminal and most widely used scoring tool; is frequently modified, causing confusion among clinicians; has a length and complexity that make it less practical to use than other tools; has an internal consistency <sup>57</sup> (Cronbach's alpha) that does not exceed 0.62	
Lipsitz Neonatal Drug Withdrawal Scoring System (1975) <sup>58</sup>	11	0–20	≥4	No	No	No	Has a moderate number of items for scoring; involves simplicity and sensitivity of scoring; does not ad- dress reliability; has no item definitions provided with the tool; has no available training materials	
Neonatal Narcotic Withdrawal Index (1981) <sup>59</sup>	7	0-14	≥5 on two evalua- tions in 24 hr	Yes	Yes	No	Is a simple tool with limited number of items for scor- ing; has a high level of interobserver reliability; has no available staff education and training module	
Neonatal Withdrawal Inventory (1998) <sup>60</sup>	7	0–19	≥8	No	Yes	No	Is rapidly administered because of the small number items for scoring; has high sensitivity, specificity, and interobserver reliability; has no available staff education and training module	
MOTHER NAS Scale (2010) <sup>28</sup>	19	0-42	9; rescore before initiation of drug treatment	Yes	Yes	Video developed for training of multicenter re- search staff only	Is a modified version of Finnegan Neonatal Abstinence Scoring Tool with redundancies removed and two items added for specificity; includes instruction for nursing staff and a protocol for pharmacologic treatment; has high interobserver reliability; has no available staff education and training module; has an internal consistency <sup>57</sup> (Cronbach's alpha) that does not exceed 0.62	
Finnegan Neonatal Abstinence Syndrome Scale — Short Form (2013) <sup>61</sup>	7	0–16	≥8	Yes†	Yes	No‡	Involves rapid assessment with limited items for scor- ing; has strong correlation with original Finnegan tool according to factor analysis <sup>61</sup> ; may be inade- quate to assess neonates with rapidly escalating signs and symptoms of withdrawal; requires further testing before widespread use	

Interobserver **Training Materials** Tool and Year Tool No. of **Published Item** Reliability or Formal Course Score Score for Published Range Treatment **Definitions** Established Available Strengths and Limitations Items Finnegan Neonatal 21 0-62 ≥8 on three con-Yes Training manual Is the seminal and most widely used scoring tool; is Yes available as frequently modified, causing confusion among **Abstinence Scoring** secutive evaluclinicians; has a length and complexity that make Tool (1975)1 online video ations it less practical to use than other tools; has an interor DVD nal consistency<sup>57</sup> (Cronbach's alpha) that does not exceed 0.62 Lipsitz Neonatal Drug 11 0 - 20Has a moderate number of items for scoring; involves >4 No No No Withdrawal Scoring simplicity and sensitivity of scoring; does not address reliability; has no item definitions provided System (1975)58 with the tool; has no available training materials 7 Neonatal Narcotic 0-14 ≥5 on two evalua-Is a simple tool with limited number of items for scor-Yes Yes No Withdrawal Index tions in 24 hr ing; has a high level of interobserver reliability; has no available staff education and training module (1981)59 Neonatal Withdrawal 7 0 - 19≥8 Is rapidly administered because of the small number No Yes No items for scoring; has high sensitivity, specificity, Inventory (1998)60 and interobserver reliability; has no available staff education and training module 19 MOTHER NAS Scale 9: rescore before Yes Video developed Is a modified version of Finnegan Neonatal Abstinence 0 - 42Yes Scoring Tool with redundancies removed and two (2010)28 initiation of for training of items added for specificity; includes instruction for drug treatment multicenter renursing staff and a protocol for pharmacologic treatsearch staff only ment; has high interobserver reliability; has no available staff education and training module; has an internal consistency<sup>57</sup> (Cronbach's alpha) that does not exceed 0.62 Finnegan Neonatal 7 0-16 Involves rapid assessment with limited items for scor-≥8 Yes† Yes Not ing; has strong correlation with original Finnegan Abstinence Syndrome Scale - Short Form tool according to factor analysis<sup>61</sup>; may be inadequate to assess neonates with rapidly escalating (2013)61 signs and symptoms of withdrawal; requires further testing before widespread use

Table 4. Assessment Tools to Guide Pharmacologic Treatment of the Neonatal Abstinence Syndrome.\*

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<sup>1.</sup> McQueen K, Murphy-Oikonen J (2016). Neonatal abstinence syndrome. N Engl J Med; 375: 2468-2479.

# Finnegan Neonatal Abstinence Scoring Tool (FNAST): Strengths and

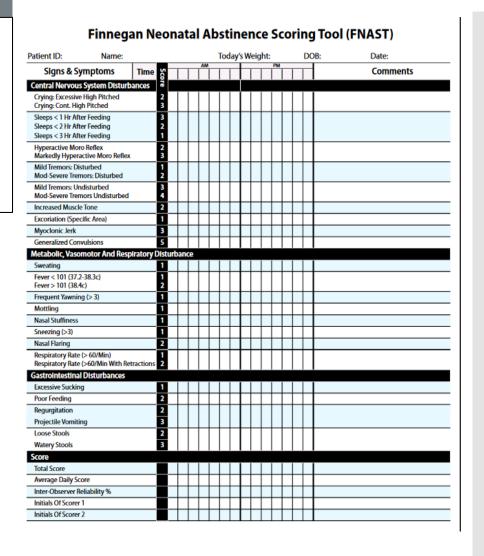
Weaknesses

### Pros

- Established inter-rater or inter-observer reliability
- Has published definitions and training tools
- Most widely used tool
- Recommended by the AAP<sup>1</sup>

### Limitations

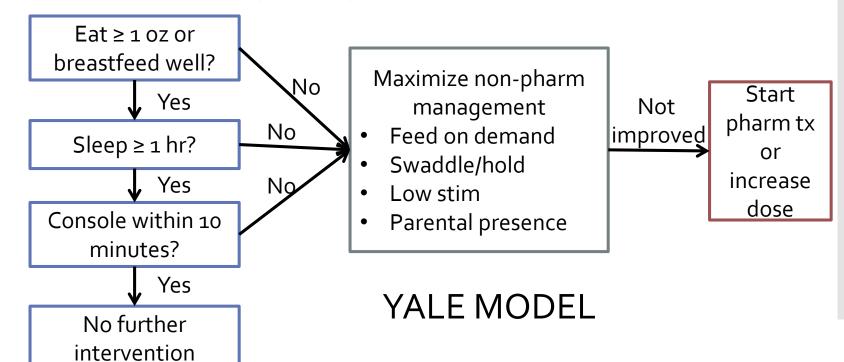
- Not intended for preterm infants
- Complex (21 items)
- Less than ideal internal consistency (Cronbach's alpha 0.62)
- Challenging to maintain consistent inter-observer reliability<sup>2,3</sup>



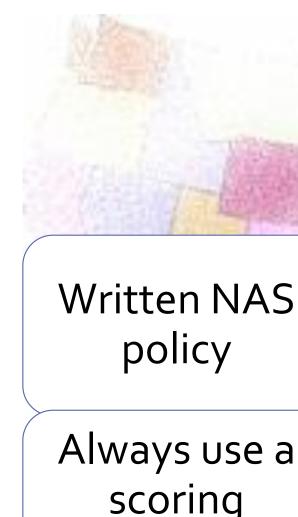
- 1.. Hudak ML, Tan RC & The Committee on Drugs, and the Committee on Fetus and Newborn (2012). Neonatal drug withdrawal. Pediatrics, 129(2).
- 2. Kocherlakota P. (2014). Neonatal abstinence syndrome "state-of-the-art review article". Pediatrics, 134(2):e547-e561. Retrieved from https://pediatrics.aappublications.org/content/pediatrics/134/2/e547.full.pdf
- 3. D'Apolito KC (2014). Assessing neonates for neonatal abstinence: Are you reliable? J. Perinat Neonat Nurs, 28(3): 220-231.

# New Horizons: Functional scoring using the Eat, Sleep, Console (ESC) method

- Move away from scoring signs
- Focus on ability of infant to "function"
- Reduction in pharmacologic treatment
- Reduction in LOS
- Developing tool kit and inter-rater reliability testing
- Currently an evolving QI project NeoQIC and NNEPQN



# How are we doing nationally?



2006 - 54%

2016 - 73%

Always use a scoring system

policy

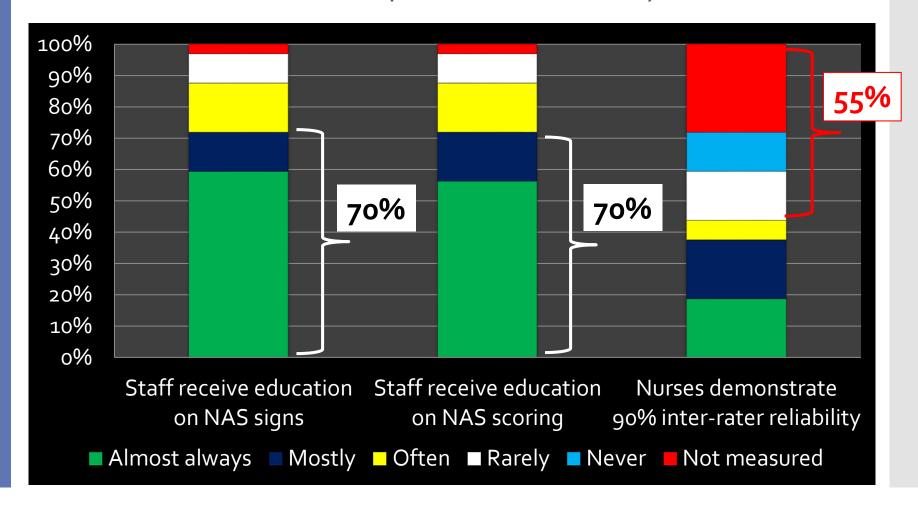
2006 - 70%

2016 – 99%

- Mehta A, Forbes, KD, Kuppala VS (2016). Neonatal Abstinence Syndrome management from prenatal counseling to postdischarge follow-up care: results of a national survey. Hosp Pediatr, 3(4): 317-323.
- 2. Sakar S, Donn SM (2006). Management of neonatal abstinence syndrome in neonatal intensive care units: a national survey. J Perinatol, 26: 15-17.

# How are we doing in Florida?

# FPQC NAS Initiative Pre-implementation survey



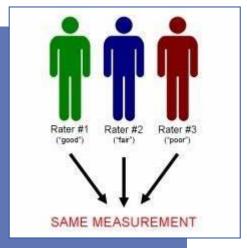
# What scoring tool should we use?



- All have strengths and limitations
- Staff should be trained in the correct use of a standardized abstinence assessment tool<sup>2</sup>
- All tools are subject to inter-rater variability
- The Finnegan is the most commonly used scoring tool in the U.S.<sup>1</sup>
- 97% surveyed hospitals at FPQC NAS Kick-off use Finnegan or Modified Finnegan NAST

# Pick a tool and use it well!

- 1. Sakar S, Donn SM (2006). Management of neonatal abstinence syndrome in neonatal intensive care units: a national survey. *J Perinatol*, 26: 15-17.
- 2. Hudak ML, Tan RC & The Committee on Drugs, and the Committee on Fetus and Newborn (2012). Neonatal drug withdrawal. Pediatrics, 129(2).



• The extent to which two or more observers observe and record behavior in the same way

# Inter-observer reliability

• FPQC NAS Initiative requires 70% of staff to achieve ≥ 90% inter-observer reliability on YOUR chosen scoring tool

# Potential benefits of establishing inter-observer reliability

- Appropriate pharmacologic management
- Decreased LOS<sup>1</sup>
- Increased provider confidence that scores are accurate<sup>2</sup>
- Increased trust from parent that scores are reliable to matter what nurse scores the infant<sup>2,3,4</sup>

- 1. D'Apolito KC (2014). Assessing neonates for neonatal abstinence: are you reliable? J Perinat Neonat Nurs; 28(3),220-231.
- 2. Romisher R, Hill D, Cong X (2018). Neonatal Abstinence Syndrome: exploring nurses' attitudes, knowledge, and practice. Adv Neonat Care; 00(00), 1-9.
- 3. Cleveland LM, Bonugli R (2014). Experiences of mothers of infants with neonatal abstinence syndrome in the neonatal intensive care unit. JOGNN; 43(3), 318-325.
- 4. Cleveland LM, Gill SL (2013). Try not to judge: mothers of substance exposed infants. MCN Am J Matern Child Nurs; 3(4),200-205.

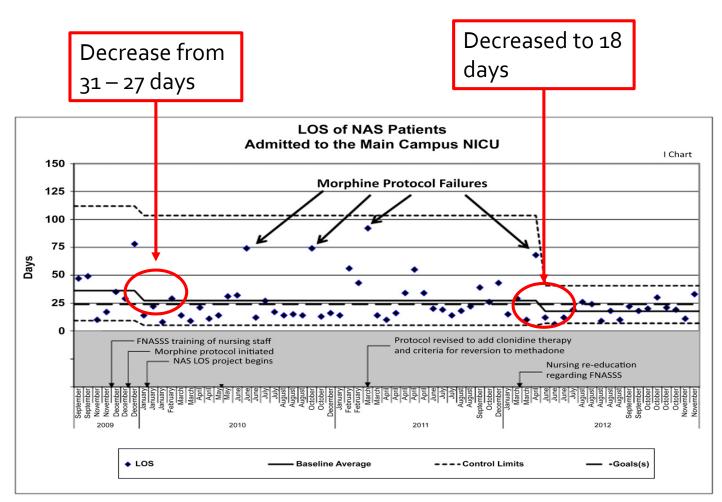
## A Quality Improvement Project to Reduce Length of Stay for Neonatal Abstinence Syndrome

Lindsey Asti, MPH<sup>a,b</sup>, Jacqueline S. Magers, PharmD°, Erin Keels, RN, MS°, Jonathan Wispe, MD<sup>c,d</sup>, Richard E. McClead Jr, MD, MHA<sup>c,e</sup>

### Pediatrics, 135(6) June 2015

Implementation Date	Quality Improvement Interventions					
May 2009	Methadone protocol trial					
November 2009	FNASSS training of nursing staff					
December 2009	Morphine protocol initiated					
January 2010	NAS LOS project begins					
May 2010	Protocol revised to decrease morphine initiation criteria and phenobarbital therapy					
March 2011	Protocol revised to add clonidine therapy and criteria for change to methadone therapy					
March 2012	Nursing re-education regarding FNASSS					

 Identified excessive variability in FNASS scores as a key driver to reduce LOS



# Challenges



A Quality Improvement Initiative to Increase Scoring Consistency and Accuracy of the Finnegan Tool: Challenges in Obtaining Reliable Assessments of Drug Withdrawal in Neonatal Abstinence Syndrome.

Adv Neonatal Care. 2018; 18(1):70-78 (ISSN: 1536-0911)

Timpson W; Killoran C; Maranda L; Picarillo A; Bloch-Salisbury E

- 170 nurses
- Increased accuracy from 18.8% to 34.7% (P < .001) with training, bedside reference, and re-configured Finnegan
- Improvements did not persist over time

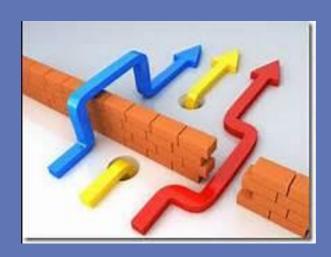
### **FULL TEXT ARTICLE**

# Interobserver Reliability of the Finnegan Neonatal Abstinence Scoring Tool in an Acute Care Setting

Catherine M. Retskin DNPc, MSN, RNC and Mary Ellen Wright MSN, ARPN, CPNP

Journal of Obstetric, Gynecologic & Neonatal Nursing, 2014-06-01, Volume 43, Pages S61-S61, Copyright © 2014 AWHONN, the Association of Women's Health, Obstetric and Neonatal Nurses

- 122 nurses viewed video vignette and completed the FNAST
- Avg. total score interclass correlation coefficient (ICC) = 0.996
- Single measure correlation was not reliable (ICC 0.694)
- Greatest discrepancy was within central nervous system portion



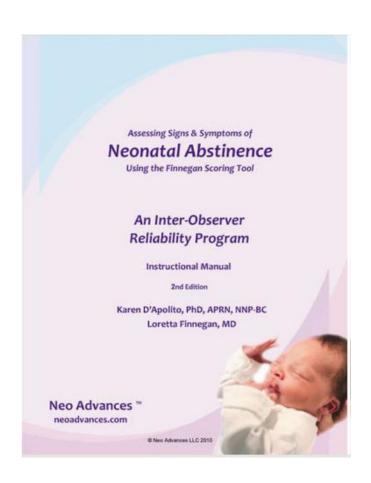
# Suggestions

- Include in annual competency and new nurse orientation<sup>1</sup>
- Frequency of performing exams drives how often inter-rater reliability checks should be performed<sup>2</sup>
- Item definitions should be readily available so nurses can refer to them if needed<sup>2</sup>
- One staff member scores while another observes at same time<sup>2</sup>
- Staff member scores with expert<sup>2</sup>
- Nurse scores after viewing a vignette(s)<sup>2</sup>
- Decrease the number of nurses who score

# • Goal is ≥ 90% agreement

- 1. Retskin C, Wright ME (2014). Inter-observer reliability of the Finnegan Neonatal Abstinence Scoring Tool in an acute care setting. *JOGNN*; 43(1), S61.
- 2. D'Apolito KC (2014). Assessing neonates for neonatal abstinence: are you reliable? *J Perinat Neonat Nurs*; 28(3),220-231.

# FNAST Instructional Manual and DVD



- Self-instructional
- Item definitions included
- Takes ~ 45 min to complete
- Review definitions prior to viewing vignette on DVD and taking exam to test interobserver reliability
- Various packages available for purchase at Neoadvances.com <a href="https://neoadvances.myshopi-fy.com/collections/products">https://neoadvances.myshopi-fy.com/collections/products</a>
- Could videotape your own exam to use in training.

# Winnie Palmer Experience

Susan Bowles, DNP, APRN, RNC-NIC, CBC

Clinical Nurse Specialist

Neonatal Services

Winnie Palmer Hospital for Women and Babies

Susan.Bowles@orlandohealth.com



# How do we get Inter-Observer Reliability for FNAST

- ♥ Easier said than done ②
- Need to have definitions for scoring items
  - ■We have a NAS education book to remind team members of the definitions
    - Currently being updated
- Utilize NAS champions to make sure items are scored correctly



# Barriers

- V It is a very subjective tool
- What people think the tool says versus the actual definition
- VII was developed when a majority of infants were formula fed
- Scoring is dynamic not static
- It was developed for OPIOIDS and should not be used with other drugs
- Staff and family biases



# Inter-Observer Reliability Check

- Solution Barriers that we faced in terms of accurate scoring
  - Issues with interpretation of items scored
  - Team member biases
  - Lack of understanding NAS





# What do we do? We hold a Workshop!

- √ 4 hour class held monthly open to all WPH team members who care for NAS infants.
  - Review scoring, epidemiology and staff family dynamics too.
  - Continuing education credits are offered
  - All staff attend at least once.
  - ■Consistent instructor so all are taught the same
  - Focus is on the use of the tool



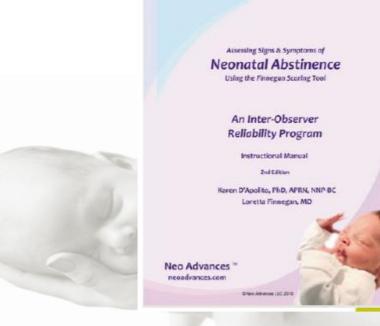
# What do we use?

- - Defines the items in the tool so staff can achieve more reliable scoring.
  - ■The program also aids in the reliability in assessing infants for signs and symptoms of opioid withdrawal.



# https://neoadvances.com/program.html







# How Perform the Inter-Observer Reliability Check

- ♥ One team member performs the exam, while the second observes
- Solution Both team members independently score the infant
- Count up the number of agreements without discussion of the observations.
- Then look at your reliability %



# Inter-Observer Reliability Check

- How frequently should you perform IORC?
  - ■Can be done weekly or yearly depending on how frequently you care for these infants
  - Consistency with the use of the criteria is the key
  - ■We added it to our peer review process





### APMC Nursing Peer Review Tool



Nursing Peer Review Topic: Neonatal Abstinence Syndrome (NAS)
Purpose/Procedure: To ensure proper documentation of scoring infants correctly with
NAS

Nursing Peer Review	Date:					
Item Reviewed	Re	sult			Interventions/Actions Taken	
☐ Is there an order to start scoring the infant with NAS?		Yes	No		N/A	
☐ Is there a parameter for the NAS scores under the appropriate section of Sunrise?		Yes	No		N/A	
☐ Is the NAS score documented every 2-4 hours?		Yes	No		N/A	
☐ Does the scoring extend from the end of one feed to the beginning of the next?		Yes	No		N/A	
□ Are all parameters on Finnegan Scale scored appropriately?		Yes	No		N/A	
Non-Pharmacologic  ☐ Are non-pharmacologic intervention implemented as indicated and applicable?		Yes	No		N/A	
☐ Are appropriate skin interventions utilized to prevent excoriation?  • Nose • Chin • Elbows • Knees		Yes	No		N/A	
Pharmacologic  If initial scores are elevated per algorithm, was healthcare provider notified?		Yes	No		N/A	
☐ If subsequent NAS scores are elevated per algorithm for two consecutive intervals, was healthcare provider notified and therapy adjusted?		Yes	No		N/A	
☐ Is there an order to discontinue NAS scoring when therapy is completed?		Yes	No		N/A	
☐ Were findings discussed during bedside handoff and documented?		Yes	No		N/A	
☐ Was NAS education provided to parent and documented?		Yes	No		N/A	

	ents	

### Documentation

- □ Completed Peer Review with Primary Nurse
- □ Completed Peer Review Roster for Reviewer
- □ Completed Peer Review Roster for Reviewee

APMC Peer Review Committee Approved Form 04-05-2018



Winnie Palmer Hospital for Women & Babies



# Conclusion

- The FNAST is a challenging tool to use because of its subjective nature.
- Every effort should be made to standardize scoring practices and the best way to do that is for each institution to develop a way to perform Inter-Observer Reliability Checks.





# St. Joseph's Women's Hospital Experience

Barbara Cirrito MSN, BSN, RNC-NIC

NICU Advanced Clinical Specialist

St. Joseph's Women's Hospital

Barbara.Cirrito@baycare.org

# Finnegan Scoring & Achieving Inter-rater Reliability

# St. Joseph's Women's Hospital NICU

April 16th, 2019



# **OBJECTIVES**

• Discuss the challenges identified to achieve inter-rater reliability.

• Discuss solutions identified and barriers encountered.

# BACKGROUND

 NAS Drug Withdrawal Medication: Starting and Weaning Protocol per Neonatology

- The NICU NAS Taskforce (2016)
  - Interdisciplinary Team
- A Collaborative Approach to the Care of the Infant with NAS (2017)
  - 6-hr class offered to NAS Taskforce
  - Inter-rater Reliability Competency achieved by taskforce members

# FPQC NAS INITIATIVE 2019-2020

- Problems identified:
  - All nurses taking care of NAS infants must be competent in Finnegan Scoring
  - Large nursing staff (~180 RNs)
    - Education
  - Avoiding copyright infringement regarding Dr. D'Apolito's DVD, "Assessment and Scoring of Infants with NAS"
    - Cost of obtaining copyright, licensure, and manuals for each team member

# FPQC NAS INITIATIVE 2019-2020

- Current Educational Solutions:
  - Assigning NAS taskforce nurses to NAS infants
  - Education on Wheels regarding Finnegan Scoring
  - Quick resource cards for Finnegan scoring available at each nurses' station (16 stations)
  - 2019 Unit Competency included Care of the Infant with NAS with a focus on Family Centered care

# FPQC NAS INITIATIVE 2019-2020

- Brainstorming Solutions:
  - Reached out to obtain permission to use and share "Assessment and Scoring of Infants with NAS" video with NICU staff
    - Permission denied
  - NAS Taskforce nursing team members are available to perform inter-rater reliability with any team member when possible
  - Researched using appropriate scoring videos from YouTube without success
  - Researching NAS simulation dolls
  - Develop scoring video to be produced by SJWH



Partnering to Improve Health Care Quality for Mothers and Babies

# Q & A

If you have a question, please enter it in the Question box or Raise your hand to be un-muted.

We can only unmute you if you have dialed your Audio PIN (shown on the GoToWebinar side bar).



# THANK YOU!

Technical Assistance:

FPQC@health.usf.edu

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