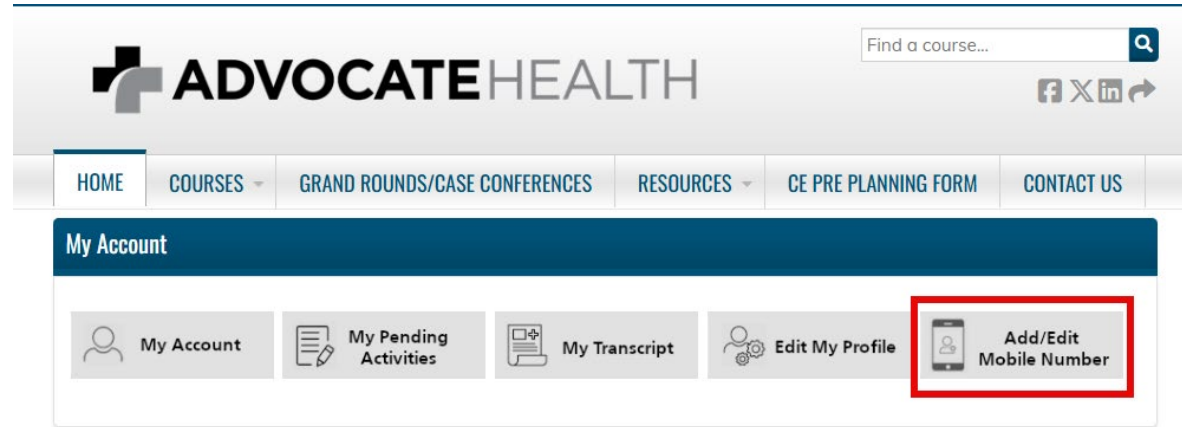




Claim CE credit by TEXTING the code after the activity.

What you need to do:
Ensure your mobile number is
linked to your profile.



Welcome to the July 2026 Nursing Grand Rounds

“SMART Tool: Breaking Barriers in NICU Feeding Assessment”

This is a Microsoft Teams Meeting with Contact Hours

- **Focus is on the presenters with all participants muted**
- **Participants are encouraged to post questions/comments in the “Q&A” They will be addressed during the Q & A session at the end**
- **Details about evaluation and contact hours will be provided at the end**
 - **REMINDER – now a text code process – make sure your cell number is updated in the CE Learning platform in order to receive CEs**
- **Session is recorded and will be available as a digital self-learning module with continuing education credit on the CE Learning platform**
- **Please visit the Nursing Grand Rounds webpage for direct links.**

Disclosure:

None of the planners or presenters for this educational activity have relevant financial relationships to disclose with ineligible companies

IPCE Designation and Accreditation



Accreditation Statement

In support of improving patient care, Advocate Health is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

Credit Statement(s)

American Nurses Credentialing Center (ANCC)

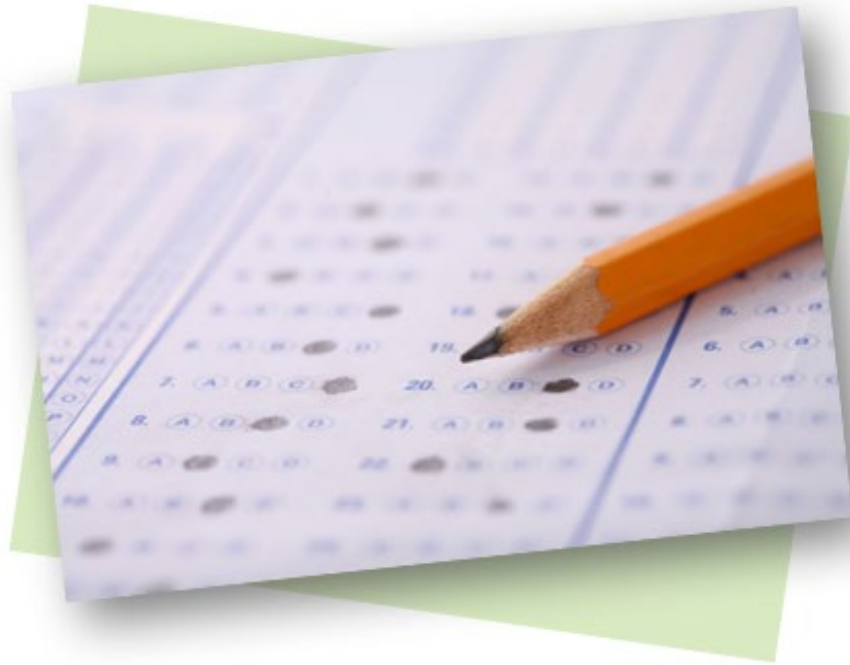
Advocate Health designates this live activity for a maximum of 1.0 ANCC contact hours. Nurses should claim only the credit commensurate with the extent of their participation in the activity.

Learner Objectives



At the end of this session, learners should be able to:

1. Describe the prevalence and impact of feeding disorders in the NICU patient population.
2. Discuss the evidence for developing the SMART Tool for infant feeding skill assessment in the NICU.
3. Identify the results of the psychometric study supporting the validity/reliability of the SMART Tool.
4. Relate how researchers are implementing the SMART Tool & measuring the impact with NICU babies.
5. Identify 1-2 key take aways about how new tools are developed and used to standardize care.



AUDIENCE POLL

Which division and care environment are you attending from?



Atrium Health



Aurora Health Care



Wake Forest University
School of Medicine

Now part of  **ADVOCATE**HEALTH

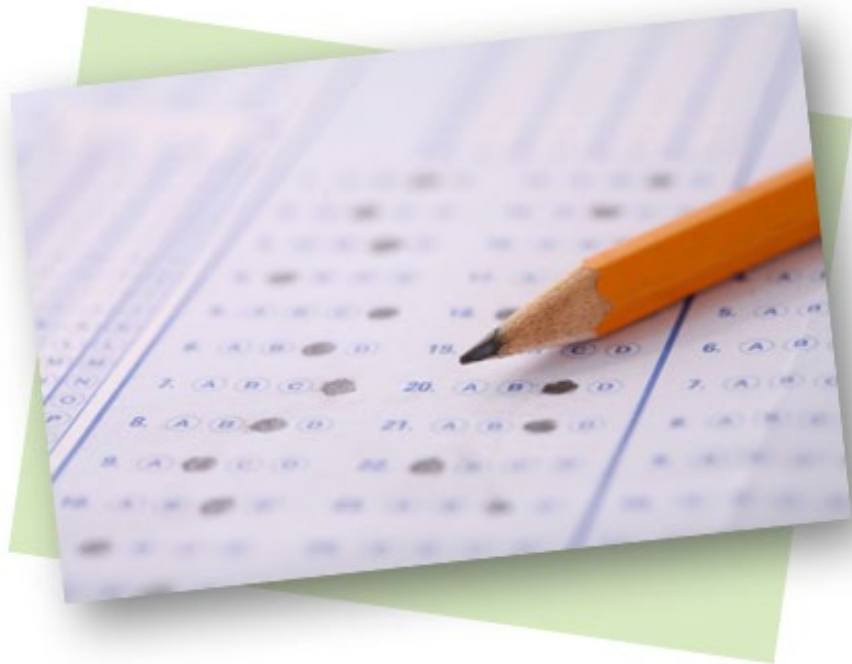
SMART Tool: Breaking Barriers in NICU Feeding Assessment

Cynthia Lira-Crame, MSN, RNC-NIC, NPD-BC

Anne Albi, M.S., CCC-SLP, IBCLC

Myla Barias Mangubat, BSN, RN, CPN

Nursing Grand Rounds 07.16.2026



AUDIENCE POLL

Approximately 80% of preterm infants in neonatal intensive care units (NICU) have difficulty feeding

1. True
2. False

Background & Prevalence

In U.S. 10.5% of infants are born preterm (<37weeks) ¹

Approx. 80% of preterm infants in the NICU have feeding difficulty ²

Problematic oral feeding can lead to: Failure to thrive, oral aversion, aspiration, prolonged feeding tube use, longer hospital stay ^{2,3,4}

NANN recommends the use of a standard feeding skill assessment (FSA) tool for NICU infants ^{5,13}

There is no GOLD standard FSA for NICU infants ^{6,7,8}

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Beyond the NICU

“Problematic feeding was highly prevalent (42%) in children under 4 years of age who were prematurely”

Pados et al. *BMC Pediatrics* (2021) 21:110
<https://doi.org/10.1186/s12887-021-02574-7>

BMC Pediatrics

RESEARCH ARTICLE

Open Access

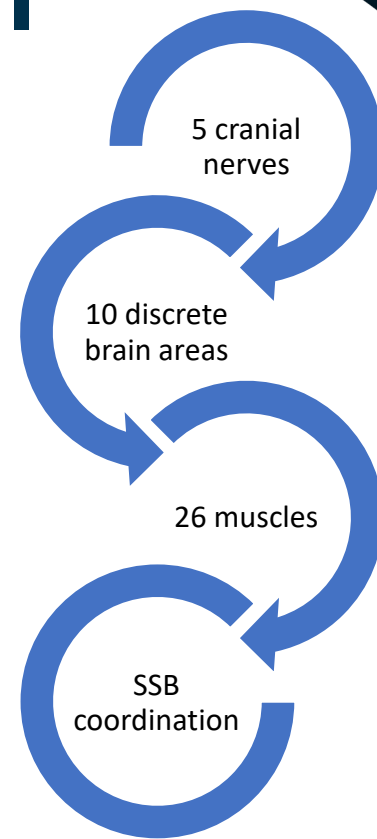
Prevalence of problematic feeding in young children born prematurely: a meta-analysis



Britt Frisk Pados^{1*}, Rebecca R. Hill¹, Joy T. Yamasaki², Jonathan S. Litt³ and Christopher S. Lee¹

Anne Albi M.S., CCC-SLP, IBCCLC

Feeding is a Complex Skill



Advocate Health



NICU INFANT
FEEDING



ASSESSMENT
TOOLS



HEALTH SYSTEM

The “Optimal” FSA tool

1. Applicable
2. Holistic
3. Interpretability
4. Robust psychometric properties
5. Feasible

(Mishra et al., 2025)

Tool	NOMAS	LATCH	IDFS	EFS	NEOA
PI	Palmer	Jensen	Waitzman	Thoyre	Pineda
Year	1983	1994	2014	2018	2020
Tool Characteristics					
Factors or Subscales	Jaw and Tongue Movement	Latch, Audible swallow, Type of nipple, Comfort, Hold	Readiness Quality	Respiratory Oral Motor Swallow Engagement Physiologic	I. Pre-Feeding Behaviors II. Oral Feeding III. Observation end of Feeding
Items	27	5	2	19	19
Intended User	Clinician Specialized Training	Clinician or Mother	Clinician Specialized Training	Clinician Specialized Training	Clinician
Feeding Method	Breast or Bottle	Breast	Breast or Bottle	Breast or Bottle	Breast or Bottle
Score	0-13	0-10	1-5	-	6-90
Psychometric Testing					
Validity	Spearman	Content validity	Delphi	IDFS-Q GA PMA	NOMAS t-Test Chi-square
Reliability	Inter-rater Test-retest Cronbach α	-	-	Inter-rater Cronbach α Factor Analysis	Inter-rater Interclass Fleiss κ

SMART
Tool

The SMART Tool

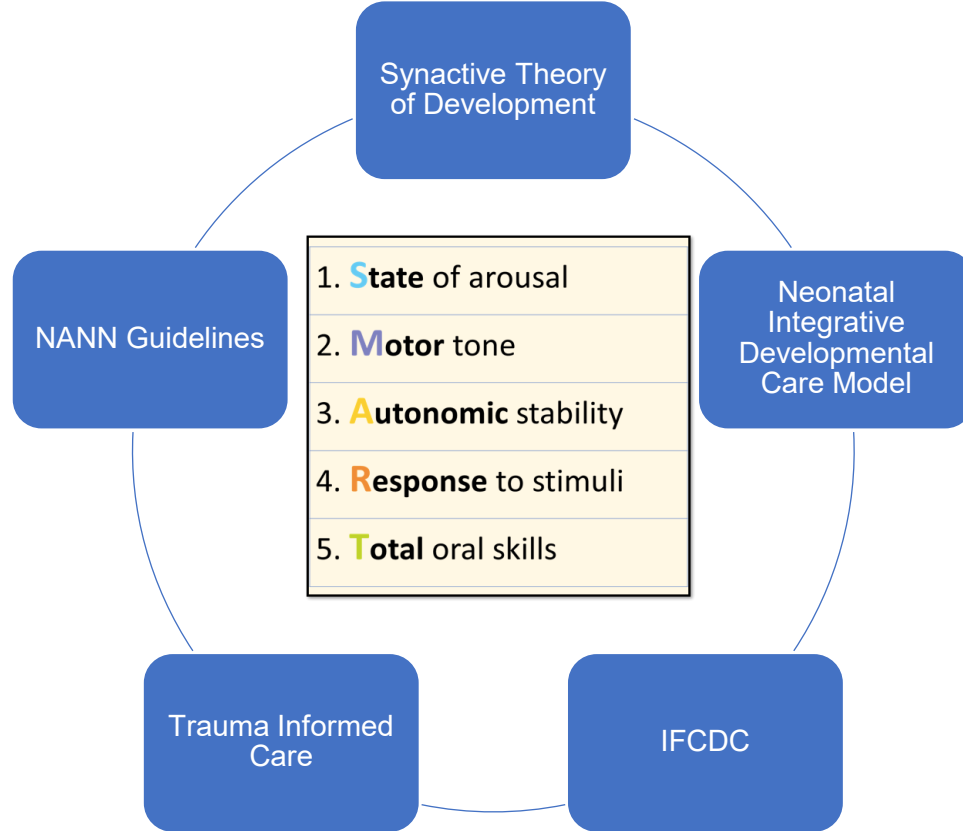


SMART Tool for Neonates

Table 1	Baseline Checklist
Birth GA	HR
Current GA	RR
Date	Sats
Time	Oxygen
By	
Mother	Baby
Present	VLBW/SGA
Involved	Cardiopulmonary
Breastfed/Pump	Infection/NEC
Skin to Skin Care	Neurology/HIE
Unable to care	Syndrome/NAS
Physical stress	Malnutrition
Mental stress	Cleft Lip/palate
Breast issues	Tongue Tie/large
Milk supply low	Recessed jaw
Position	Nipple
Side-lying	Regular
Upright	Slow Flow
Face-to-Face	Preemie
Cradle	Ultra-Preemie
Cross Cradle	Breastfed +/- Shield
Football	Others
Laid-back (mom)	Tube Fed
Interventions	
Burping	Rest Breaks
Change Nipple	Re-alerting
Change Position	Reduce Stimuli
Pacing	Others
Swaddle	Nonnutritive

Place patient sticker here:

Table 2	SMART Tool				
A. PRE-FEED Evaluation	Severe	Moderate	Mild	None	
Assess Subsystem Impairment	5	10	15	20	Score
State of Arousal	Sleepy	Variable	Arousable	Alert	
Motor tone	Hyper/Hypotonic	Fluctuating	Reduced flexion	Normal flexion	
Autonomic Instability [C]	Severe	Moderate	Mild	None	
Response to Stim	None	Inconsistent	Disorganized	Normal	
Total Oral Skills (Non-Nutritive)	0 to 15 sec	15 to 30 sec	30 to 60 sec	Above 60 sec	
Pre-Feed Score Total					
B. POST-FEED Evaluation	Severe	Moderate	Mild	None	
Assess Subsystem Impairment	5	10	15	20	Score
State of Arousal	Sleepy	Variable	Arousable	Alert	
Motor tone	Hyper/Hypotonic	Fluctuating	Reduced flexion	Normal flexion	
Autonomic Instability [C]	Severe	Moderate	Mild	None	
Response to Stim	None	Inconsistent	Disorganized	Normal	
Total Oral Skills (Nutritive) [D]	The sum of TOS from section D below				
Post-Feed Score Total					
C. Autonomic Instability	Severe (Hard Stop)	Moderate	Mild	None	
Lowest HR (bpm)	60	80	100	120	Select The Lowest Score
Lowest Sats (%)	60	70	80	90	
Apnea (20 seconds or more)	Yes	No	No	No	
Highest RR (bpm)	100	90	80	70	
Cough, Choking	2	1	0	0	
Number of Events	3	2	1	0	
D. Total Oral Skills (Nutritive)	Severe	Moderate	Mild	None	
Assess Oral Impairment	1	2	3	4	
Rooting	No response	Diminished	Sometimes	Always	
Sucking bursts	0 to 3 sucks	3 to 5 sucks	5 to 10 sucks	10 to 30 sucks	
Bolus Control	Cough/Choke	Disorganized	Spillage	Normal	
SSB Coordination	Hard Stop	Needs pacing	Uncoordinated	Coordinated	
Stress Cues	Shut Down	Frequent	Sometimes	None	
Sub-total of Total Oral Skills					
E. Assess Feeding Performance	Pre-Feed Score	Action	Post Feed Score	Skill Level	
	Under 70	No PO feeds	Under 60	Caution	
		Use NG + NNS	60 to 90	Developing	
	70 or more	Feed PO	Above 90	Capable	



Basis for the SMART Tool

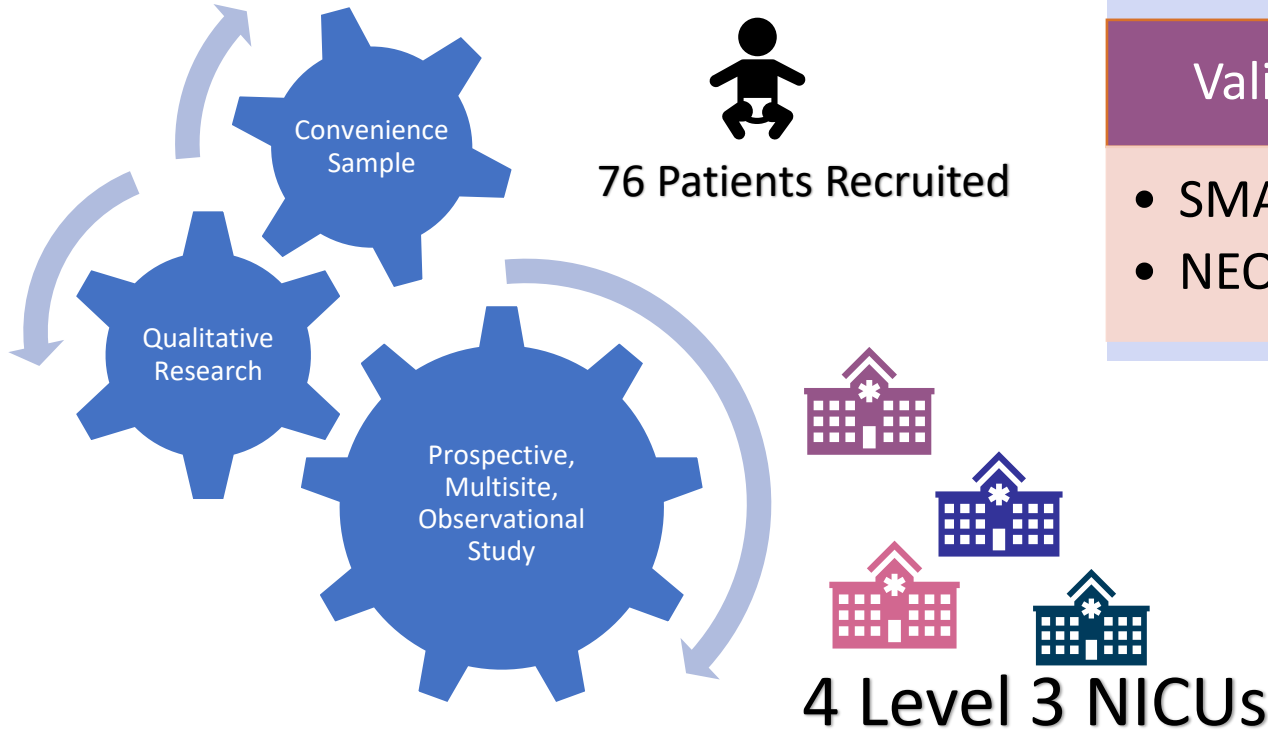
Interprofessional Research Study

The SMART Tool was developed by an interprofessional team at this health system.

Goals of the study were to establish the psychometric properties of the SMART Tool a novel infant feeding skill assessment:

1. Valid: Measuring what it proposes to measure
2. Reliable: Produces a consistent result

Study Design



Validity	Reliability
• SMART • NEOA	• Inter-rater • Intra-rater

Results: Validity

SMART Capable	NEOA Normal			Test	Calculate	Percent	SE Mean	95% CI	Result
	Yes	No	Total	Sensitivity	32/42	76 %	0.06	0.6 – 0.8	Pass
Yes	32	9	41	Specificity	43/52	82 %	0.05	0.7 – 0.9	Pass
No	10	43	53	PPV	32/41	78 %	0.06	0.6 – 0.9	Pass
Total	42	52	94	NPV	43/53	81 %	0.05	0.7 – 0.9	Pass

Analysis: Using Spearman's Rho

- Moderate to strong positive correlation ($r = 0.706$)
- Statistically significant at $p < 0.0001$ (high confidence)

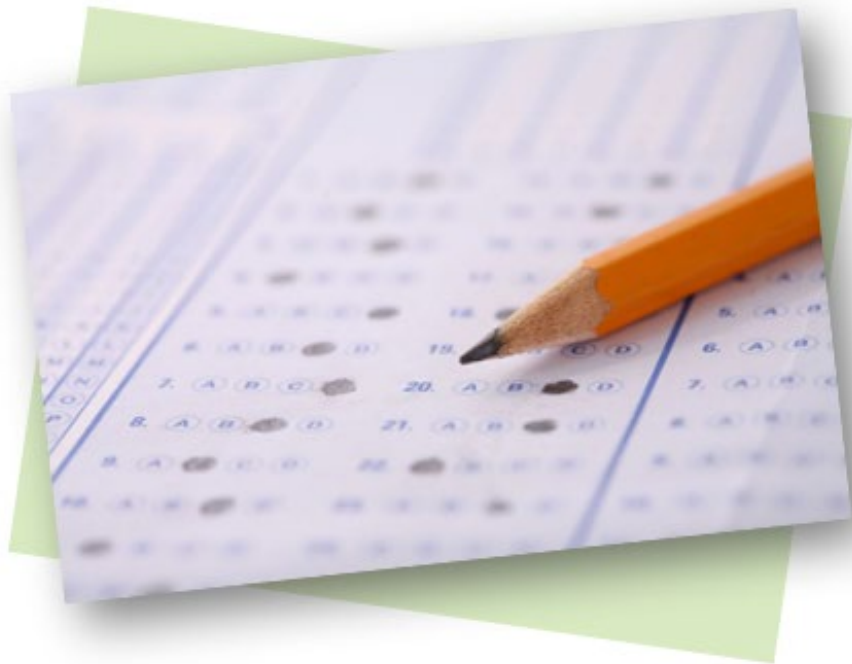
Results: Reliability

Test	Feed Event	Observe	Agree %	Symmetry	Differ (p)	Agree K(SE)	K (95% CI)	Result
Inter Rater	Pre vs Pre	10	80	Bowker's	0.574	0.67 (0.19)	0.29 to 1	Pass
Inter Rater	Post vs Post	10	100	McNemar's	N/A	1.00 (0.00)	1 to 1	Pass
Test	Feed Event	Observe	Agree %	Symmetry	Differ (p)	Agree K(SE)	K (95% CI)	Result
Test Retest	Pre vs Pre	12	50	Bowker's	0.8013	0.14 (0.21)	-0.28 to 0.5	Pass
Test Retest	Post vs Post	10	80	McNemar's	0.1573	0.60 (0.23)	0.14 to 1	Pass

Analysis

- Agreement: Strong agreement (Cohens Kappa: $K \geq 0.6$)
- Difference: Not Significant ($p > 0.05$)

Tool	NOMAS	LATCH	IDFS	EFS	NEOA	SMART
PI	Palmer	Jensen	Waitzman	Thoyre	Pineda	Mishra
Year	1983	1994	2014	2018	2020	2025
Tool Characteristics						
Factors or Subscales	Jaw and Tongue Movement	Latch, Audible swallow, Type of nipple, Comfort, Hold	Readiness Quality	Respiratory Oral Motor Swallow Engagement Physiologic	I. Pre-Feeding Behaviors II. Oral Feeding III. Observation end of Feeding	State Motor Autonomic Regulation Total Oral Skill
Items	27	5	2	19	19	10
Intended User	Clinician Specialized Training	Clinician or Mother	Clinician Specialized Training	Clinician Specialized Training	Clinician	Clinician Specialized Training
Feeding Method	Breast or Bottle	Breast	Breast or Bottle	Breast or Bottle	Breast or Bottle	Breast or Bottle
Score	0-13	0-10	1-5	-	6-90	25-100
Psychometric Testing						
Validity	Spearman	Content validity	Delphi	IDFS-Q GA PMA	NOMAS t-Test Chi-square	NEOA Spearman Sensitivity/Specificity PPV/NPV CVR/CVI
Reliability	Inter-rater Test-retest Cronbach α	-	-	Inter-rater Cronbach α Factor Analysis	Inter-rater Interclass Fleiss κ	Inter-rater Test-retest Cohen's Kappa



AUDIENCE POLL

When evaluating a measurement instrument what factors should you consider?

- **Validity**
- **Reliability**
- **Feasibility**
- **Cost/Licensing**
- **Interpretability**
- **All of the above**

Myla Barias Mangubat, BSN, RN, CPN

Implications for Practice



Research

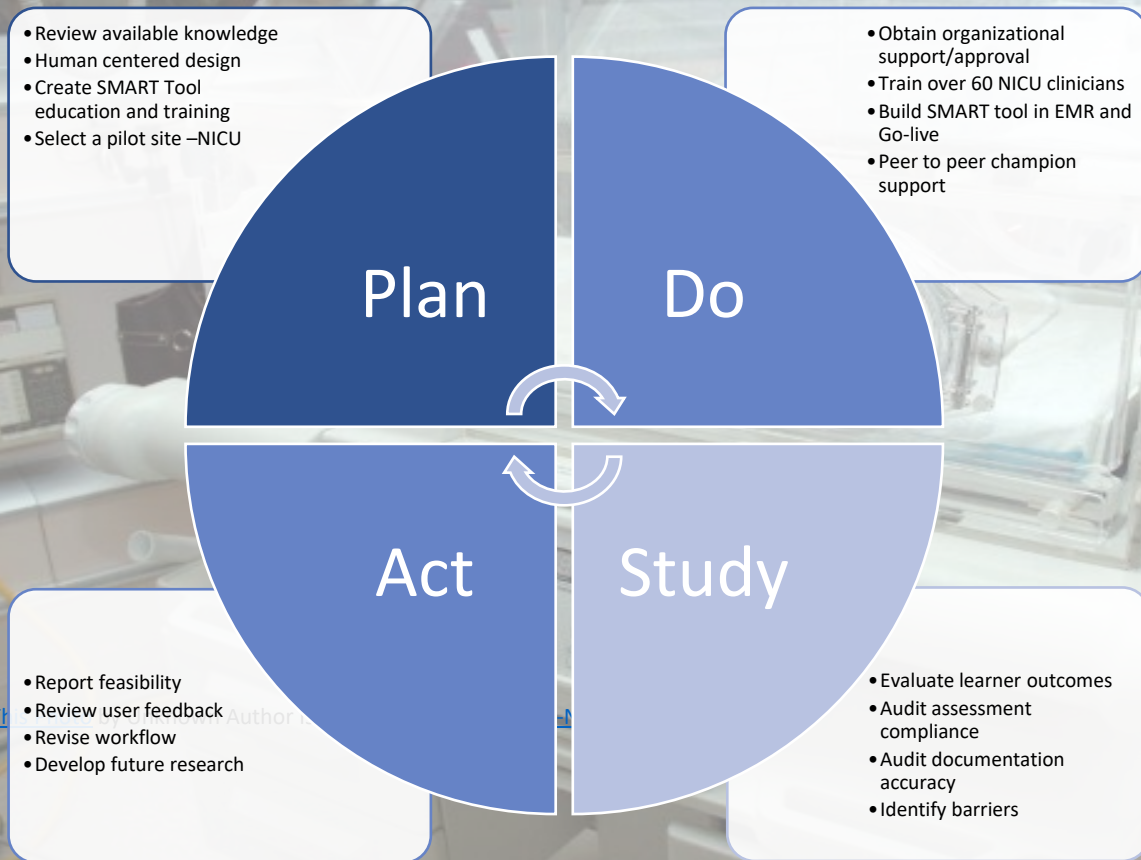


SMART Tool



Interprofessional
Practice

Pilot Implementation



Provide feedback below



A word cloud of feedback comments. The word 'tool' is the largest and most central. Other prominent words include 'babies', 'SMART tool', 'explicit examples', 'preemie babies', 'Charting directly', 'great tools', 'feeding practice', 'Excellent presentation', 'scoring and time videos', 'reliable tool', 'important tool', 'educational opportunity', 'outcomes', 'good tool', 'safely feeding', 'unit', 'EPIC', and 'videos'.

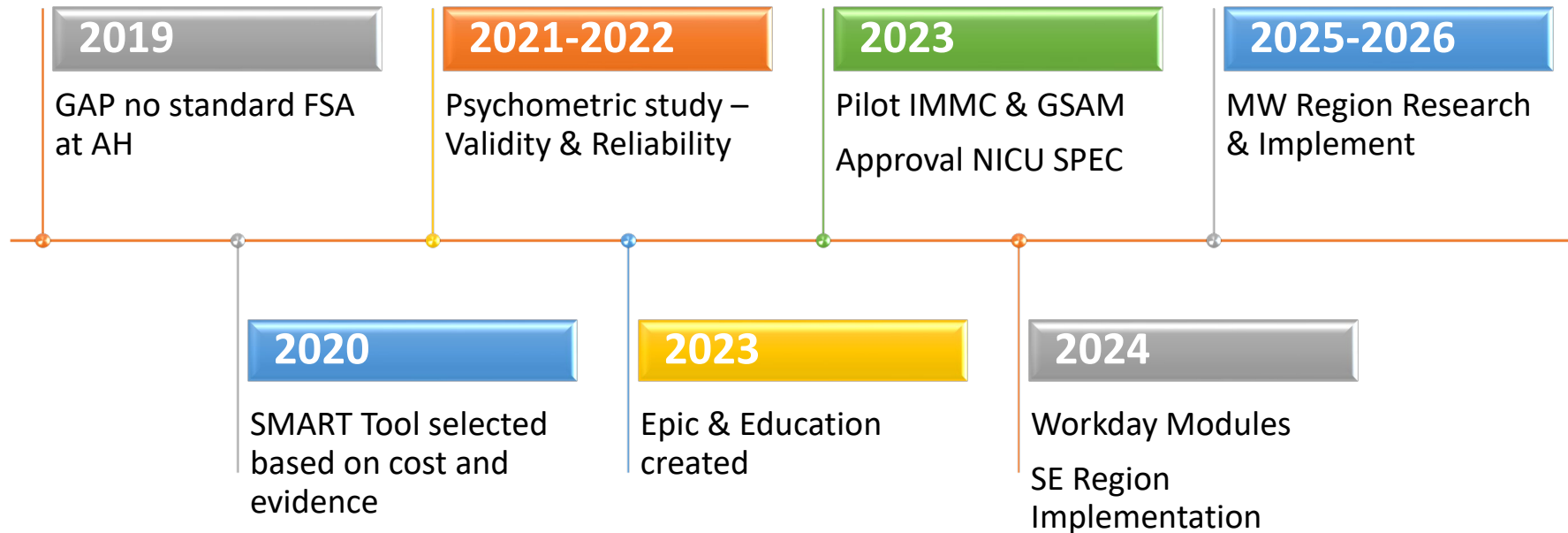
important tool
reliable tool
EPIC
unit
scoring and time videos
Excellent presentation
feeding practice
educational opportunity
outcomes
tool
babies
SMART tool
great tools
feeding practice
good tool
safely feeding
explicit examples
preemie babies
Charting directly



**“How does the
SMART tool help
the patient?”**

Myla RN

SMART Tool Journey



SAFEST Study

Standard Application of Feeding Evaluations using SMART Tool

- 2025 – 2026: Implementation of the SMART Tool in 14 NICUs
 - Step Wedge Cluster Randomized Trial (SWCRT)
 - 3 Groups, 14 Clusters, Staggered rollout of SMART tool
 - Inter-cluster and Intra-cluster comparisons
- Aims
 - Does the ST impact clinical outcomes: Length of Stay?
 - Does the ST impact the safety and quality of feeds?

Key Takeaway

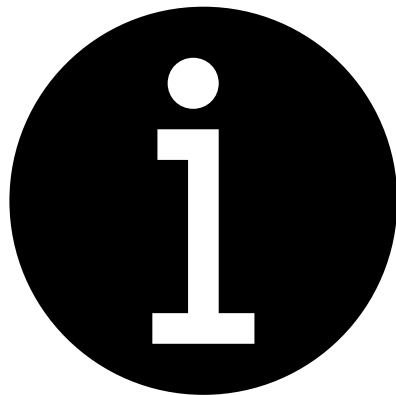
- Feeding difficulty is a prevalent issue for preterm infants
- Use of a standard feeding skill assessment in the NICU is best practice
- SMART tool was developed using
 - Synactive theory of human development
 - Developmental Care/Trauma Informed Care
- The SMART tool has strong psychometric properties
 - Valid and reliable measurement of feeding skill
- Pilot implementation supported SMART tool feasibility, clinical utility, improved learner outcomes
- SAFEST Study underway to evaluate patient outcomes

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2. You will also receive a reminder email within 24 hours with instructions on how to claim your credit
3. To fully claim credit, go to “MY ACTIVITIES/Pending Activities” tab to complete evaluation and/or assessment

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Please direct any related IPCE questions to cme@aah.org

Nursing Grand Rounds

Sponsored by Enterprise NGR Committee & System Nursing Research

August 20th 2026 3-4 pm Central
4-5 pm Eastern

Take a Break! Why & How to Make It Happen

Presenters:

Desiree Bellon, DNP, RN, NEA-BC

Noah Blalock, MPH (Atrium Cabarrus)

Brenna Knoch, MSN, RN (Aurora Kenosha)

Zoe Frantom, BSN, RN, CMSRN (Illinois Masonic)

Stephanie McDonald, DNP, MSL, RN, NEA-BC



Overview:

Research has shown that high work demands can deplete physical and psychological resources and lead to exhaustion, fatigue and burnout. Work breaks are essential to the well being, psychological health and performance of nurses. Breaks are often skipped or cut short for a variety of reasons. This program will feature the evidence about the benefits of work breaks and reports about unit-based and future initiatives to ensure breaks happen during the work shift.

Scan here to register and receive an email with calendar invite **or** join day of



Registration on the CE Learning Platform: [CLICK HERE TO REGISTER](#)