Ashford and St. Peter's Hospitals
NHS Foundation Trust

Guideline for Non Nutritive Sucking

Neonatal Family Integrated Care

Amendments			
Date	**Pages**	**Comment (s)**	**Approved by**
Feb 2021		**New Guideline**	

Primary Author: **Catherine Dunham & Jo Leonard**

NICU FIC Team

Contact for comments: **Sr Nora Chin**

Status: Approval date:

Ratified by: Neonatal Guidelines Group

Review date: February 2026

Patients first • Personal responsibility • Passion for excellence • Pride in our team

Aim:

To provide a framework for identifying babies who are developmentally ready for non-nutritive sucking (NNS) opportunities and to standardise both the rationale and clinical practice used to support the development of NNS on the unit. This framework is applicable to all babies within St Peter's Neonatal Unit.

Clinical practice:

See also NNS Quick Reference Guide (Appendix 1)

Recognising when a baby is ready for NNS opportunities

- The baby is able to maintain physiologic, motor and state stability at rest, on handling and in care giving situations
- The baby demonstrates a stable respiratory state. This may need to be reviewed on an occasion by occasion basis. If a baby has a compromised respiratory status they are more likely to find NNS practice challenging
- The baby demonstrates emerging oral reflexes, e.g. rooting (reflex present from 28 weeks), sucking (emerging from 26 weeks) hands to mouth, licking, sucking.
- The baby shows interest in oral activities, e.g. showing a positive response to the taste of their mother's milk, beginning to latch to breast, responds positively to a dummy or finger offered to their mouth

Practice guidelines for promoting NNS on the NICU

Opportunities for encouraging Non Nutritive sucking practice are an extension of positive oral experiences already taking place on the unit, such as skin to skin & positive oral experiences such as touch, massage and mouth cares.

Positive oral experiences and NNS practice aim to counterbalance the negative impact of elements of medical interventions (e.g. tube/tape changes), reflux, feed intolerance and use of OGT/NGT or NJT. There is clear evidence that developing NNS skills in premature infants aids the transition to nutritive sucking and oral feeding when they are developmentally ready. ***See Background to Policy for more information.***

NNS opportunities on the unit must be appropriate for the infant's developmental maturity. Opportunities offered must also take into account and support transition towards the mother's feeding preference, e.g. promoting NNS opportunities at the breast when the mother is expressing milk for NG feeds and wishes to breast feed when her baby is ready for oral feeding, but encouraging the infant to self soothe on their own fingers or accept a dummy if their mother is not present.

Parents are encouraged to be the primary givers of care for their babies. Staff will support parents to feel confident in all aspects of care, including encouraging their baby's to engage in NNS activities.

NNS opportunities on the NICU

Interventions at the Pre-oral stage (<26 wks)	- Involving parents in cares to promote bonding, e.g. cuddles, touching babies in incubator, talking to their babies - Positive touch including to the face/mouth - Skin to skin - Supporting mums lactation
Opportunities to develop NNS sucking coordination (>26wks)	Offering sucking practice; - On the baby's own hands (through appropriate positioning in the cot to bring hands to mouth, e.g. side lying) - On a dry dummy/ or adult gloved finger - On a recently expressed breast (<30mins previously) - Sucking on dry finger/dummy during NG feed
Opportunities to link NNS with tastes of milk	Once NNS has been established, offer; - Opportunities for sucking & tasting at a recently expressed breast - Milk to baby's lips with finger or dummy to promote licking and tasting. This can be done outside of a feed time if the baby is on a continuous/hourly NGT feed and unlikely to feel hunger at specified feed times - Dummy/finger dips during NG feed, continuing with tastes while the baby is responding positively.

Encouraging NNS with a dummy

Dummys should be used appropriately and sensitively. The following dummies are available for use on the NICU at St Peter's Hospital.

Nuk Premature Soother 	For premature babies with a weight less than 1,750grms
Phillips Avent – Wee Soothie (purple) 	For 'small for gestational age' or 30 - 34 weeks gestational babies for use during their hospital stay. Most babies will transition to the Soothie once they are successfully breast or bottle feeding
Phillips Avent – NICU Soothie (green) 	Designed for newborns and babies over 34 weeks gestation, without teeth, who are successfully bottle or breastfeeding. Babies should be transitioned on to their own dummy prior to discharge from the unit.
Parents provide their own	Staff should assess the suitability of the dummy together with parents. Aim to promote optimum tongue movements by assessing suitable size & length of teat. Large ball-type pacifiers should be discouraged as it encourages little tongue movement

Indications for dummy use;

- The baby is awake, alert and calm
- The baby is receptive to the dummy when offered. Signs that indicate acceptance include licking, rooting, opening mouth, remaining stable (ie no significant increase in HR, RR, WoB)
- Use the same dummy each time for consistency
- Encourage the baby to open their mouth wide and extend their tongue by stroking around their mouth on the sides of their cheeks. Gently place the dummy in the infant's mouth. Never use force.
- Babies less than 34wks gestational age are unlikely to be able to keep the dummy in their mouth independently. Help them by holding the dummy gently in place but watch carefully for their cues that they are finished
- If the baby is struggling with suck, swallow, breathe (SSB) coordination offer external pacing as needed. Their inability to maintain a consistent suck pattern may simply be a reflection on their stage of maturity
- Signs the baby does not want the dummy/ to suck any more or include; grimacing or crying, turning or arching away from the dummy, blocking the dummy with their hands or by keeping lips closed, stress cues such as finger splaying, hiccups or sneezing, drop in oxygen saturations, gagging, loss of alertness
- Do not use an empty bottle teat or a teat stuffed with cotton wool or other substances.
- Vanilla scented dummies are not supported on the unit. ***See Guidelines for Taste and Smell, July 2019.***

NB: If a baby tolerates a dummy, a dummy can be offered during an unpleasant procedure to help calm the baby. Sucrose is sometimes used for maximum effect. Sucrose should not be used outside of these times.

Storage

Dummies to be stored in individual, sterilising pots, labelled with baby's name

Contra-indications of using a dummy

Historically there have been some concerns with the use of dummies especially when parents wish to exclusively breastfeed, with the most common worry being nipple confusion. Although this has been supported by some research (Neifert et Al; Fish and Inch) more recent research has reported that the use of a dummy in preterm infants does not affect the ability to breastfeed (Warren and Bond 2010). There have also been some concerns that the use of non-nutritive sucking, especially when completed using a dummy, goes against the advice of the Baby Friendly Hospital Initiative (UNICEF/ World Health Organisation) but UNICEF have issued supporting guidance for its use in premature babies. It should be noted that it is widely agreed that non-nutritive sucking and the use of dummies should be phased out once breastfeeding is starting to be established

Some concerns of the long- term use of dummies, in relation to ear infections, thrush, and orthodontic complications have also been noted, although as the unit supports weaning non-nutritive sucking once feeding starts to be established, this should not pose a problem.

With this in mind it should be noted that when consent is gained for the use of a dummy, parents can make stipulations for it not to be used for comfort or pain relief and used solely during feeding to minimise any concerns that have over negative associations with the use of a dummy. It should also be noted that if parents decide to not give consent for the use of a dummy, then this does not mean that non-nutritive sucking cannot be used. Different methods such as encouraging infant to use their own hands or a recently expressed breast should be encouraged.

Aversive behaviours such as gagging, increased vomiting, signs of distress are all indications that the baby is not ready for the challenge of NNS at that time. It may necessitate slowing down oral feeding progression.

<u>Supporting parents</u>

Parents should be provided on the unit with written information (**Appendix 2 NNS Parent advice leaflet + Appendix 3 NNS parent poster)** that explains the rationale for NNS promotion on NICU and how it is encouraged (whether dummy, finger or expressed breast). Parents should have opportunities to discuss the information and any concerns they have with professionals.

Parents should be supported to carry out cares for their baby, including encouraging NNS skills in their baby. Parents should have provided verbal consent for a dummy being used with their baby. This is documented on the Milk as Medicine sheet held in the FIC folder. Mothers should be supported to establish their milk supply and express regularly, particularly after skin to skin time with their baby or NNS practice at expressed breast.

<u>Assessment of when the baby is ready to move to nutritive sucking/oral feeding opportunities</u>

- The baby is able to maintain quiet alert state and manages their secretions
- The baby is able to achieve short bursts of NNS without becoming breathless
- Suck burst improve in coordination and become more rhythmical
- The baby begins to wake in response to a feeding time approaching
- Staff/parents can use the 'Infant Feeding Assessment' document (**Appendix 4**) to assess readiness for feeding
- Where there are difficulties transitioning to oral feeding, referral to the Speech and Language Therapist may be considered

Contents

See also: Any relevant trust policies/guidelines or procedures

Developmental Care guidelines on intranet

1. Introduction

1.1

- In the pre-oral phase babies are not able to maintain physiologic, motor or state stability and are challenged by any handling. During this pre-oral phase they demonstrate absent or weak oral reflexes and poor non-nutritive sucking (NNS) skills. The focus of care is to minimise the impact of negative stimulation and promote behavioural organisation through interventions such as skin to skin & positive touch
- As premature babies become more physiologically stable, behaviours and reflexes emerge that show us they are mature enough to begin working on developing their non-nutritive sucking skills
- The sucking reflex begin in utero around 26 -28wks
- The swallowing reflex begins in utero from 12 weeks but does not begin to synchronise with the suck reflex until 32-34 weeks
- Before 32-34 weeks babies are not effectively coordinated for oral feeding however there is evidence to suggest that helping premature babies work on NNS development has a positive impact on their feeding journey

2. Scope

2.1 This guideline in relevant to all staff caring for babies across neonatal intensive care, transitional care and maternity.

3. Purpose

3.1 This guidelines aims to facilitate a common approach to the management of babies admitted under neonatal care. At times deviation from the guideline may be necessary, this should be documented and is the responsibility of the attending consultant.

3.2 This guideline is subject to regular review to ensure ongoing evidence based practice.

4. Duties and responsibilities

4.1 All individuals responsible for the care of premature infants have a duty to be familiar with developmental care practices.

5. Background to Policy

Evidence shows that there are multiple benefits for premature infants when they are given opportunities for NNS.

- NNS promotes state regulation, comfort and reduction of stressed state to maximise brain development & growth
- NNS is supportive as pain relief, e.g. during painful procedure
- NNS supports the development of muscle tone & coordinated sucking patterns essential for transition to oral feeding in the future. According to research two factors affect progression in ability to feed orally – the infant's state of health & oral feeding experience. Neuro-maturation of the ability to regulate oxygen, development of alertness, development of sucking strength and organisation of sucking pattern all contribute to an individual infants skill in feeding
- Evidence suggests that NNS plays an important role in stimulation of the milk ejection reflex (MER) therefore working on NNS skills improves breast feeding outcomes when an infant is ready to feed
- NNS has been shown to help maximise nasal CPAP delivery by supporting achievement of an effective seal
- NNS during feeding stimulates enzyme production, promotes normal peristalsis & helps aid digestion. Increases insulin secretion, promotes glucose absorption. All these things can improve weight gain and reduce GOR
- NNS is linked to a reduction in the incidence of Sudden Infant Death Syndrome (SIDS)
- Opportunities for NNS, when an infant is not developmentally ready or not medically able to feed can help to reduce oral aversions in the future

6. Approval and Ratification

6.1 This guideline will be approved and ratified by the Neonatal Guidelines Group.

7. Dissemination and Implementation

7.1 This guideline will be uploaded to the trust intranet 'Neonatal Guidelines' page and thus available for common use.
7.2 This guideline will be shared as part of ongoing education within the Neonatal Unit for both medical and nursing staff.
7.3 All members of staff are invited to attend and give comments on the guideline as part of the ratification process.

8. Review and Revision Arrangements

8.1 This policy will be reviewed on a 5 yearly basis.
8.2 If new information comes to light prior to the review date, an earlier review will be prompted.

9. Document Control and Archiving

9.1 Amendments to the document shall be clearly marked on the document control sheet and the updated version uploaded to the intranet. Minor amendments will be ratified through the Neonatal Guidelines Group. A minor amendment would consist of no major change in process, and includes but is not limited to, amendments to documents within the appendices.

10. Monitoring compliance with this Policy

Measurable Policy Objective	Monitoring/ Audit method	Frequency of monitoring	Responsibility for performing the monitoring	Monitoring reported to which groups/ committees, inc responsibility for reviewing action plans
Compliance with policy	Weekly developmental care ward rounds		Developmental care team	

11. Supporting References / Evidence Base

<u>Other Documents / Guidelines:</u>

1. Guideline for Taste and Smell – July 2019
2. Thames Valley & Wessex Operational Delivery Networks Guideline for non-nutritive sucking.
3. Non Nutritive sucking Neonatal Clinical Guideline v2, December 2019, Royal Cornwall Hospital NHS Trust
4. Draft version of Non Nutritive guideline for East Kent Hospitals University NHS Foundation Trust – with permission of SLT in post

<u>References</u>

1. Non-nutritive sucking for increasing physiologic stability and nutrition in preterm infants, Jann P Foster, Kim Psaila, Tiffany Patterson, Cochrane Neonatal Group Cochrane Database Syst Rev. 2016 Oct; 2016(10): CD001071.
2. Non-Nutritive Sucking in the Preterm Infant, Roberta Pineda, Kelsey Dewey, Amy Jacobsen, Joan Smith, Am J Perinatol. Author manuscript; available in PMC 2020 Feb 1.
3. Feeding and Swallowing Disorders in Infancy, Wolf L & Glass R, Hammill Institute 1992
4. The use of non-nutritive sucking to promote functional sucking skills in premature infants: An exploratory trial, Nutrition Vol 2, Issue 6, 2006 Harding C, Law J, Pring T

5. Prediction of nutritive sucking in preterm babies (<34 weeks) and preterm sucking readiness scale, Nisha Kumari, Ashish Jain, Siddarth Ramji, Matern Health Neonatol Perinatol. 2019; 5: 18
6. Do Orally-Directed Behaviors Mediate the Relationship Between Behavioral State and Nutritive Sucking in Preterm Infants?, Rosemary White-Traut, Li Liu, Kathleen Norr, Krisitin Rankin, Suzann K. Campbell, Thao Griffith, Rohitkumar Vasa, Victoria Geraldo, Barbara Medoff-Cooper, Early Hum Dev. Author manuscript; available in PMC 2018 Jun 1, Published in final edited form as: Early Hum Dev. 2017 Jun
7. The early feeding skills assessment for preterm infants, S Thoryre & C Shaker 2005
8. Changes in sucking performance from NNS to NS during breast and bottle feeding, K Mizuno & A Ueda 2006
9. Exploring factors related to oral feeding progression in premature infants, Advances in neonatal care, 2013; 13(4) White Traut 2013
10. Non-nutritive sucking evaluation in preterm newborns and the start of oral feeding: a multicenter study, Flávia C. B. Neiva, Cléa R. Leone, Claudio Leone, Lisiane L. Siqueira, Kátia Akiko Uema, Daiana Evangelista, Susana Delgado, Adriana Rocha, Karina Bernardis Buhler, Clinics (Sao Paulo) 2014 Jun; 69(6): 393–397.
11. The Effect of Non-Nutritive Sucking and Maternal Milk Odor on the Independent Oral Feeding in Preterm Infants, Zahra KHODAGHOLI, Talieh ZARIFIAN, Farin SOLEIMANI, Maryam KHOSHNOOD SHARIATI, Enayatollah BAKHSHI, Iran J Child Neurol. 2018 Autumn; 12(4): 55–64
12. Stress Signals During Sucking Activity Are Associated With Longer Transition Time to Full Oral Feeding in Premature Infants, You Gyoung Yi, Byung-Mo Oh, Seung Han Shin, Jin Yong Shin, Ee-Kyung Kim, Hyung-Ik Shin, Front Pediatr. 2018; 6: 54.
13. Baby Friendly Initiative, UNICEF, unicef.org.uk/babyfriendly
14. MOTHER-INFANT INTERACTION IMPROVES WITH A DEVELOPMENTAL INTERVENTION FOR MOTHER-PRETERM INFANT DYADS, Rosemary White-Traut, Kathleen F. Norr, Camille Fabiyi, Kristin M. Rankin, Zhyouing Li, Li Liu, Infant Behav Dev, Published in final edited form as: Infant Behav Dev. 2013 Dec; 36(4): 10.1016
15. Harding.C (2014) Non-nutritive sucking for infants: what are the issues? Infant, Vol 10, No 2, pp50-3.
16. Jen-Jiuan et al (2012) Non-nutritive sucking and facilitated tucking relieve preterm infnat pain during heel stick procedures: a prospective, randomised, controlled crossover trial. International Journal of Nursing studies, Vol 49, no 3, pp300-9.
17. Lullaby Trust (2013) Sudden Infant Death Syndrome :A guide for professionals. Lullaby Trust. www.lullabytrust.org.uk Lullaby Trust (2013) The Lullaby Trust : Evidence Base (SIDS) The lullaby trust. www.lullabytrust.org.uk
18. NHS (2019) Reduce the risk of sudden infant death syndrome. NHS Choice. www.nhs.uk/conditions/pregnancy-and-baby
19. Neiva.F et al (2014) Non-nutritive sucking evaluation in preterm newborns and the start of oral feeding: a multicenter study. CLINICS 69 (6), pp393-7.
20. Harding.C et al (2014) How does non nutritive sucking support infant feeding? Infant Behaviour and Development. Vol 37, no 4, pp457-64.
21. UNICEF (2006) UNICEF UK Statement on dummy use, SIDS and breatstfeeding. The Baby Friednly Initiative. www.unicef.org.uk/babyFriendly/News-and-Research
22. Warren.I (2010) Guidelines for infant development in the newborn nursery. St. Mary's Hospital, London.

23. Glazer Peres, K et al (2015) Exclusive Breastfeeding and Risk of Dental Malocclusion. Pediatrics, (doi: 10.1542/peds.2014-3276)
24. Shah PS, Aliwalas LL, Shah V. Breastfeeding or breast milk for procedural pain in neonates. The Cochrane Database of Systematic Reviews 2006; Issue 3
25. Odpietro L, Ceccarelli M, Ponzone A. (2008) Breastfeeding or oral sucrose solution in term neonates receiving heel lance: a randomized, controlled trial. Pediatrics; 122: e716-21.
26. Lings RJ et al (2007) Association between infant breastfeeding and early childhood caries in the United States. Pediatrics;120(4): e944-52
27. Zimmerman E, Carpenito T, Martens A (2020) Changes in infant non-nutritive sucking throughout a suck sample at 3-months of age. PLoS ONE 15(7): e0235741. https://doi.org/10.1371/journal.pone.0235741
28. When is the use of pacifiers justifiable in the baby-friendly hospital initiative context? A clinician's guide. Lubbe W, Ten Ham-Baloyi W.BMC Pregnancy Childbirth. 2017 Apr 27;17(1):130. doi: 10.1186/s12884-017-1306-8.
29. Neifert, M. Lawrence, R. and Seacat, J. (1995). Nipple confusion: Toward a formal definition. Journal of Pediatrics. 126 (6). p125-129.
30. Fish, C. and Inch, S. (1996). Nipple Confusion- Who is confused? Journal of Pediatrics. 129 (1). p174-175.

APPENDIX 5: EQUALITY IMPACT ASSESSMENT

Equality Impact Assessment Summary

Name and title:
Policy:

Background • Who was involved in the Equality Impact Assessment
Neonatal guidelines group
Methodology • A brief account of how the likely effects of the policy was assessed (to include race and ethnic origin, disability, gender, culture, religion or belief, sexual orientation, age) • The data sources and any other information used • The consultation that was carried out (who, why and how?)
The group considered the effect of the policy on the various groups within our neonatal population; and staff employed, including race and ethnic origin, disability, gender, culture, religion or belief, sexual orientation and age.
Key Findings • Describe the results of the assessment • Identify if there is adverse or a potentially adverse impacts for any equalities groups
The policy in inclusive
Conclusion • Provide a summary of the overall conclusions
No adverse features of the policy identified
Recommendations • State recommended changes to the proposed policy as a result of the impact assessment • Where it has not been possible to amend the policy, provide the detail of any actions that have been identified • Describe the plans for reviewing the assessment
The policy is suitable for implementation.

APPENDIX 6: CHECKLIST FOR THE REVIEW AND APPROVAL OF DOCUMENTS

To be completed (electronically) and attached to any document which guides practice when submitted to the appropriate committee for approval or ratification.

Title of the document:
Policy (document) Author:
Executive Director:

		Yes/No/ Unsure/ NA	Comments
1.	**Title**		
	Is the title clear and unambiguous?	Y	
	Is it clear whether the document is a guideline, policy, protocol or standard?	Y	
2.	**Scope/Purpose**		
	Is the target population clear and unambiguous?	Y	
	Is the purpose of the document clear?	Y	
	Are the intended outcomes described?	Y	
	Are the statements clear and unambiguous?	Y	
3.	**Development Process**		
	Is there evidence of engagement with stakeholders and users?	Y	
	Who was engaged in a review of the document (list committees/ individuals)?	Y	Neonatal guidelines group
	Has the policy template been followed (i.e. is the format correct)?	Y	
4.	**Evidence Base**		
	Is the type of evidence to support the document identified explicitly?	Y	
	Are local/organisational supporting documents referenced?	Y	
5.	**Approval**		
	Does the document identify which committee/group will approve/ratify it?	Y	
	If appropriate, have the joint human resources/staff side committee (or equivalent) approved the document?		
6.	**Dissemination and Implementation**		
	Is there an outline/plan to identify how this will be done?	Y	
	Does the plan include the necessary training/support to ensure compliance?	Y	
7.	**Process for Monitoring Compliance**		

		Yes/No/ Unsure/ NA	Comments
	Are there measurable standards or KPIs to support monitoring compliance of the document?	**NA**	
8.	**Review Date**		
	Is the review date identified and is this acceptable?	**Y**	
9.	**Overall Responsibility for the Document**		
	Is it clear who will be responsible for coordinating the dissemination, implementation and review of the documentation?	**Y**	
10.	**Equality Impact Assessment (EIA)**		
	Has a suitable EIA been completed?	Y	

Committee Approval (Neonatal Guidelines Committee)			
If the committee is happy to approve this document, please complete the section below, date it and return it to the Policy (document) Owner			
Name of Chair	 Dr M. S. Edwards	**Date**	

Ratification by Management Executive (if appropriate)
If the Management Executive is happy to ratify this document, please complete the date of ratification below and advise the Policy (document) Owner
Date: n/a