

Dummies and non-nutritive sucking for preterm infants in neonatal care

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Non-nutritive sucking (NNS) is the process of sucking without a milk flow and consequent need to co-ordinate swallowing and breathing. It is one of the earliest motor reflexes to develop in fetal life and can be observed *in utero* at as early as 11 weeks' gestation; on scans babies are seen bringing their hands to their mouth and sucking on their fingers. Even *in utero* this self-initiated, innate activity is associated with comfort and self-regulation and has been observed in response to stress.

The pattern and co-ordination of NNS starts with occasional mouthing movements proceeding to more rhythmic tongue and jaw movements and sustained bursts of sucking. NNS is an integral part of early oro-motor experience and important for oral motor skills and sensory development. There is a critical period for the development of sucking neural networks in the brainstem that is experience-dependent and may remain in a waiting state until appropriate sensory input is received.^{1,2}

NNS is a reflexive activity associated with perioral stimulation that initiates rooting and mouth opening. Preterm infants can be supported with positioning to bring their hands to the midline and suck on their fingers. They may suck on their oral ventilation and feeding tubes, comfort cloth, a carer's fingers, a recently expressed breast or on a dummy (soother/pacifier). A variety of dummies are available to suit the size and medical circumstances of preterm babies, however more research is required to understand how the properties of different dummies impact NNS patterns to support manufacturers' claims.^{2,3}

There are a number of potential benefits specific to babies in neonatal care, in that NNS:

- contributes to self regulatory behaviour⁴
- improves physiological stability^{5,6}
- reduces stress during painful procedures if used with sucrose⁷
- maximises nasal continuous positive airway pressure delivery by providing an oral seal, reducing the need for chin straps
- improves gastric motility⁵
- may support bonding when used to support parents' understanding of their baby's communication^{6,8}
- provides positive oral touch and experience that may reduce the incidence of sensory-based oral feeding aversion
- supports and preserves the development of the suck reflex⁶
- speeds up transition from tube to enteral to full suck feeding.^{5,9}

Conversely, there has also been concern and debate about the potential disadvantages of NNS. Use of dummies and teats in the early establishment of lactation and breastfeeding behaviour in the healthy term infant may impact on breastfeeding success. The mechanism of this seems likely to be that a baby's feeding cues are responded to by giving the baby a dummy to settle, rather than putting the baby to the breast. Frequent and unlimited access to the breast stimulates lactation and establishes a good early milk supply that enables breastfeeding success. This was reflected in the Unicef Baby Friendly Initiative's (BFI) *10 Steps to Successful Breastfeeding* (recommendation 8): "No artificial teats and dummies are given to breastfeeding infants." Unicef BFI has since

updated *10 Steps* advising professionals to "counsel mothers on the use and risks of feeding bottles, teats and pacifiers."¹⁰ This highlights a shift in awareness of the use of dummies and offers flexibility for units needing to rationalise their use while adhering to Baby Friendly standards. There is little evidence to support the theory of nipple teat confusion; that a baby is unable to suck on a teat or dummy and then go back to effectively sucking at the breast.¹¹⁻¹³ In clinical practice babies in neonatal care seem able to be provided with NNS experiences on a dummy and go on to establish successful breastfeeding.¹⁴ What seems important is the establishment of a good milk supply by supporting the mother to express milk, practise skin-to-skin contact while her baby is too immature for active breastfeeding, respond to her baby's feeding readiness cues with opportunities at the breast, and reduce use of the dummy during this transition period.

Concerns regarding dental malocclusion and speech delay relate to long-term dummy use in childhood. Our recommendation would be that dummies are used to settle to sleep if that is what the baby is accustomed to but are otherwise used minimally post-discharge from neonatal care.

NNS is an important element of feeding support and development for the sick or preterm infant; however its use needs to be in context of the need to support lactation and cue-based responsive feeding in transition to enable breastfeeding success. The potential risks of infection through dummy use discussed in detail in the accompanying Letter to the Editor (page 9) need to be considered when selecting a dummy for use in neonatal care.

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