Case
Pratik was born prematurely, and is now three months old. He is receiving nutrition non-orally and while not ready for oral feedings, is receiving feeding therapy to begin building the skills he will need to feed by mouth. The OT has him doing NNS to build oral motor skills. Pratik’s parents are skeptical, as they know their son will not be feeding by mouth for some time. They wonder why NNS is important in the development of oral motor skills compared to allowing natural skill development.

Does non-nutritive sucking improve oral motor skills in pre-term infants?

Non-nutritive sucking (NNS), or sucking without receiving nutrition, is a strategy often used by occupational therapists. A review of the literature examines the evidence supporting its efficacy in the development of oral motor skills in pre-term infants.

1 Ask: Research Question
   In pre-term infants, what is the effect of NNS on the development of oral motor skills compared with no intervention?

2 Acquire: Search Terms
   Patient/Client group: infant, low birth weight OR infant very low birth weight OR infant, extremely low birth weight OR preterm AND infant
   Intervention: non nutritive sucking OR non-nutritive sucking OR non-nutritive sucking
   Comparison:
   Outcome(s): infant behavior OR oral OR oral motor

2a Acquire: Selected Articles
   Arvedson et al. (2010): A systematic review on the effects of oral motor interventions, including NNS, on feeding/swallowing outcomes and pulmonary health in preterm infants.
   Pickler et al. (1996): A randomized cross over study on the effects of NNS on behavioral organization and feeding performance in 13 preterm infants.
   Pimenta et al. (2008): A randomized control trial (RCT) of 96 preterm infants that examined the influence of NNS and oral stimulation programs on breastfeeding rates.

2b Acquire: Selected Articles
   Arvedson et al. (2010): A systematic review on the effects of oral motor interventions, including NNS, on feeding/swallowing outcomes and pulmonary health in preterm infants.
   Pickler et al. (1996): A randomized cross over study on the effects of NNS on behavioral organization and feeding performance in 13 preterm infants.
   Pimenta et al. (2008): A randomized control trial (RCT) of 96 preterm infants that examined the influence of NNS and oral stimulation programs on breastfeeding rates.

3 Appraise: Study Quality
   Arvedson et al. (2010): Suggestive: Eligibility criteria to narrow the focus down. Large sample sizes but few of the studies included randomization in their study design.
   Pickler et al. (1996): Inconclusive: Examined NNS alone, but sample size was small. Did not specify participant selection or describe co-morbidities or additional interventions that could have impacted the data.
   Rocha et al. (2007): Suggestive: Large n-size, high quality design. Treatment is a combination. Did not exclusively address the effects of the solo treatment of non-nutritive sucking.

3b Appraise: Study Results
   The majority of the studies found at least suggestive positive results for NNS when used along with oral stimulation therapy in supporting the development of oral motor skills in preterm infants. These studies utilized strong study designs that validated and strengthened their outcomes. Because most of the studies did not examine the isolated effects of NNS, more research is needed to determine if NNS intervention alone promotes the development of oral motor skills.

4 Apply: Conclusions for Practice
   Based on the evidence, the use of NNS is recommended in conjunction with oral stimulation as part of feeding therapy for Pratik because the evidence shows that when used in combination with oral stimulation there are consistent positive outcomes. Additionally there were no adverse effects reported, thus the intervention would either not affect his skills or benefit them. The studies also look at these interventions within the pre-term infant population, making NNS and oral stimulation especially appropriate and generalizable to Pratik and that general population.

References

Reviewers:
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Date completed: April 27, 2011

✅ Unclear: Further research is needed to determine if NNS alone is effective for promoting the development of oral motor skills in pre-term infants.