Roles and responsibilities of speech-language therapists in neonatal interventions

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Orientation to neonatal intervention

- Neonatal interventions/therapy: From birth until discharge from any level of neonatal care: NICU, high care, KMC ward, until outpatient follow-up for all. Babies with brain injury and consequently dysmaturation, require a seamless transition to early intervention
- An ecological systems perspective for small and sick newborns with their parents: every mother is a person, with close and extended family members, her faith, culture, language, education, environment … dynamic, not static
- Speech therapy is much more than SPEECH intervention: responsible for dysfunctions of the ingestive system and speech-language system, driven by respiratory system
- Our earliest intervention, the heart of early intervention: Prevent and minimise problems for the best possible outcome in mother and baby
- Aim to be effective as possible using available evidence

SLT on the neonatal team

- We use the principles of NDSC and KMC (medical and nursing interventions), and add complementary expertise
- ASHA described our roles and responsibilities in the NICU in 2004 for the first time, now 21 years later…
- A much stronger evidence base to justify our roles in neonatal intervention
- Share the mission of the team with the parents
  - To protect the baby's brain and enhance neurodevelopment
  - To promote attachment, health and growth

S&S newborn population risks

1. Feeding
   - Oral feeding disorder in 33-36% preterm babies (ASHA), sick term babies, like HIE excluded. Feeding difficulties in late preterms (Pike et al., 2017)
   - Related to maturation, neonatal illness and genetic disorders
   - Ongoing oropharyngeal dysphagia
2. Speech, voice and language
   - Neurodevelopmental impairment – ADHD, CP, visual impairment
   - Hearing impairment, including auditory neuropathy spectrum disorder. Associated with higher grade IVH (Inder et al., 2023)
   - Widely reported persistent language delay (and learning difficulties at school), not associated with intellectual disability or hearing impairment. Strongly associated with cystic white matter injury (Inder et al., 2023)
3. Environmental
   - Postpartum depression associated with developmental delays, in particular language delay and listening skills (Lubotsky-Gete et al., 2021) - talk less to their babies?
   - Insecure mother-infant attachment relationships impact children's language competence; secure relationships with both parents boosts language (Dagan et al., 2024)

Dynamic systems theory for SLT intervention

A change in one system may enhance or diminish function in another

Dynamic systems framework for SLT and Audiology Neonatal Intervention

1. Swallowing and breastfeeding intervention

2. Facilitate early language development

3. Reduce noise and stress

4. Hearing test before discharge

5. Follow-up care

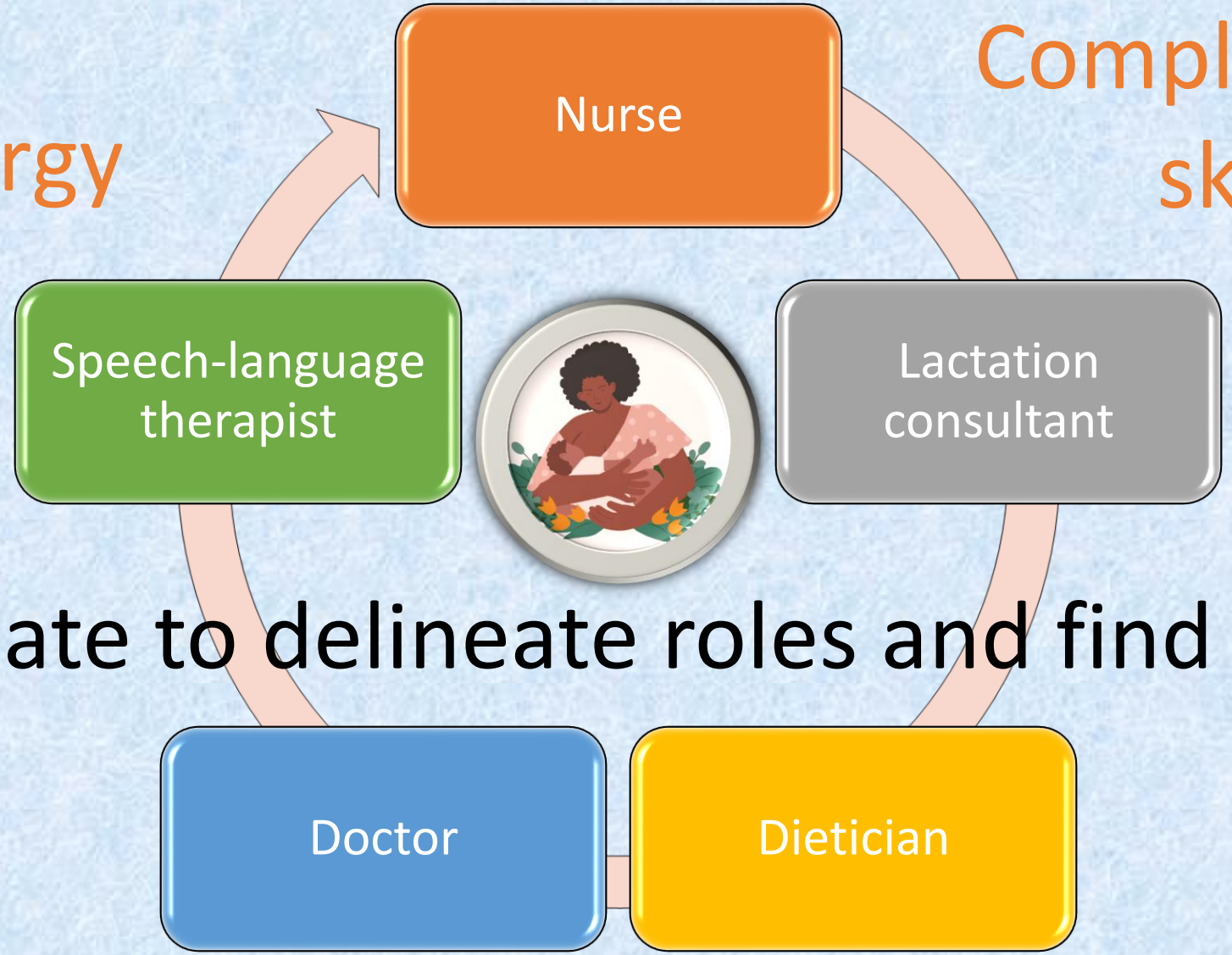
1st contribution: Oral feeding ability

- Oral feeding ability is a foundational skill with far reaching consequences. Typical development, growth, communication skills and psychosocial well-being is dependent on oral feeding (Arvedson et al., 2020). The first mother-infant communication interactions emerge during newborn (breast)feeding
- S&S newborns need direct breastmilk feeding if possible, or BM feeding (Liu et al., 2024; WHO)
- Our emphasis is on readiness and quality of oral feeding ability. Cue-based feeding vs scheduled feeding: SR & MA (n=2239). Shorten time to oral feeds, reduce feeding intolerance, enhance parent participation and satisfaction (Zhang et al., 2025).
- Mothers should be fully supported so that they continue BF after discharge.
- Advocate for KMC as it already enhances breastfeeding (Şimşek et al., 2022)
- But BF is a difficult achievement. Need swallowing and BF intervention since new evidence shows BF can start much earlier in S&S newborns than past practices

The neonatal feeding support team

Synergy

Complementary skillsets



Negotiate to delineate roles and find harmony

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A swallowing and breastfeeding intervention programme for small and sick neonates embedded in kangaroo mother care

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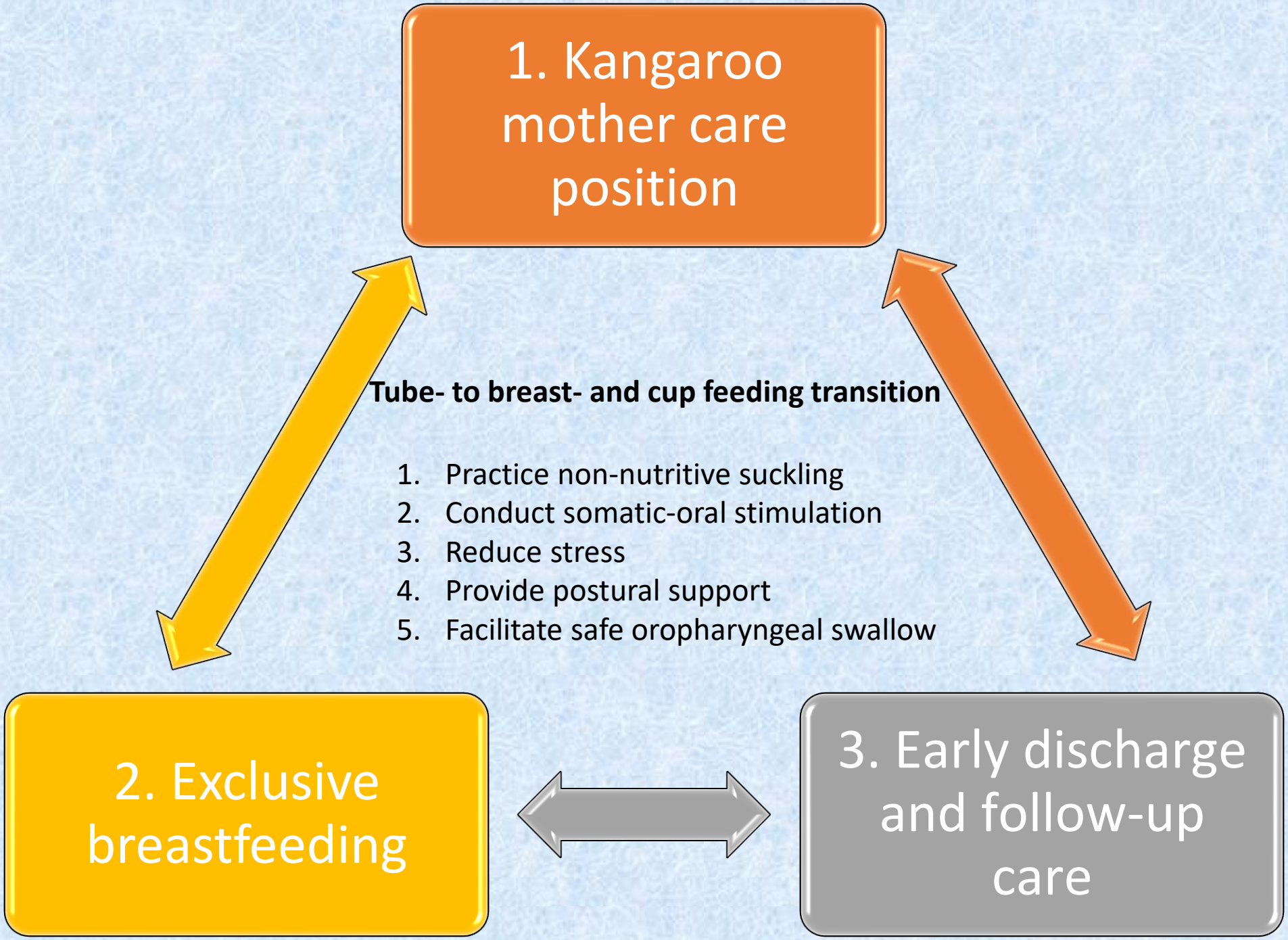
Available evidence of oral sensorimotor interventions for small neonates is not strong. Evidence of interventions for sick term neonates is largely lacking. Studies are limited by risk of bias and inconsistency. Evidence of interventions relying on a single stimulation technique only appears to be low to very low. Ongoing research is required.

Contribution: We describe a five-component neonatal swallowing and breastfeeding intervention programme embedded in the practice of kangaroo mother care (KMC). Drawing on oropharyngeal physiology, neonatology, neurodevelopmental care, breastfeeding- and KMC science, the programme is the product of collaboration between a speech-language therapist and a medical doctor, and their team. Its implementation is dependent on coaching mothers and the neonatal care team. Researchers are invited to determine outcomes of the programme.

Keywords: kangaroo mother care; neonatal care; oral feeding difficulties; oral sensorimotor intervention; practice guidelines; preterm and low-birthweight neonates; small and sick neonates; speech-language therapy; swallowing and breastfeeding intervention programme.

Introduction

The population of neonates with swallowing and breastfeeding difficulties includes diverse subgroups requiring effective intervention strategies. Among the groups, oral feeding difficulties are prevalent in very-preterm infants at term-equivalent age (Grabill et al., 2023), subtle breastfeeding difficulties are found in late-preterm infants (Pike et al., 2017), and the majority of term neonates with hypoxic-ischaemic encephalopathy present with symptoms of oropharyngeal dysphagia after therapeutic hypothermia (Krüger et al., 2019). Oral feeding challenges are


1. Kangaroo mother care position
Tube- to breast- and cup feeding transition
1. Practice non-nutritive suckling
2. Conduct somatic-oral stimulation
3. Reduce stress
4. Provide postural support
5. Facilitate safe oropharyngeal swallow
2. Exclusive breastfeeding
3. Early discharge and follow-up care

This is Online Appendix 1 of Kritzinger, A., Van Rooyen, E., & Bergh, A.M. (2024). A swallowing and breastfeeding intervention programme for small and sick neonates embedded in kangaroo mother care. *South African Journal of Communication Disorders*, *71*(1), a1055. https://doi.org/10.4102/sajcd.v71i1.1055

Online Appendix 1

A five-component swallowing and breastfeeding intervention for small and sick newborns, embedded in kangaroo mother care

Guidelines for speech-language therapists and healthcare workers to coach mothers

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The aim of the intervention is for mothers and their small and sick newborn babies to establish safe and independent breastfeeding. The practice of kangaroo mother care (KMC) is an integral part of the intervention. Mother-infant bonding and well-being, breastfeeding, and a baby's breathing, health and growth are better with KMC. The intervention can help babies move sooner from tube feeding to breast- and cup feeding, gain weight faster and be discharged earlier.

A hands-off approach is used to coach and monitor mothers. To build a mother's confidence and motivation to continue the intervention after coaching, she should *experience* the intervention techniques from the beginning. With support, mothers should *feel* their babies' first attempts at non-nutritive suckling (NNS), and *see* the effect of the somatic-oral techniques.

Coaching and monitoring are done individually or in groups. Use a doll to demonstrate the techniques or simulate the movements on the baby, almost without touching. A mother uses the techniques without a glove so that the baby becomes more familiar with her unique smell, touch, and the rhythm of her movements. Gloves provoke unfamiliar sensory experiences in babies. Always wash hands before starting the intervention. Fingernails should be short to prevent injury to the baby's mouth. The intervention may be necessary for a week or even several weeks, depending on the gestational age and feeding problems of the baby. The five intervention components are as follows:

1. Non-nutritive suckling

Start with KMC and NNS soon after birth. NNS is safe for babies <30 weeks gestational age. It is easy and can help with better feeding. There are two ways to activate NNS: let the baby suckle on the mother's near-empty breast or on her clean little finger. The mother slides her little finger into her baby's mouth, seeking entrance from the side of the mouth. She inserts her finger and positions the soft side of her finger on the front part of the baby's tongue. With her finger, she strokes the tongue 3 to 5 times with slow, rhythmical downward

2nd contribution:
We help language development

- **Get mother *talking* and *singing* with baby in their first language**
  - As soon as possible after birth (in-turned stage)
  - mother-infant communication interaction
  - promote attachment
  - stimulate baby's auditory system
  - all academic learning depends language development

Research evidence

- Monson et al., 2017
  - Maturation of nonprimary auditory cortex may be delayed in preterm newborns, and associated with language delay at 2 years (diffusion tension imaging)
- Partanen et al., 2022
  - Perinatal singing enhances auditory processing in S&S newborns (magnetoencephalography)
- Caskey et al., 2011
  - Increased vocalisations in babies from 32 GW when parents talk with them in NICU. Significantly less vocalisations when parent was not present (Lena recording device)
- Caskey et al., 2014
  - Long-term effects of parent talk: Increased language scores on Bayley-III at 7m and 18m with more parent talk
- Hirschel et al., 2023
  - Cortisol reduces and oxytocin increases when mothers are talking with their infants and touching them (Oxytocin measurements in maternal saliva)
- Filippa et al., 2020
  - Babies more active and alert when mothers talk with them – early vocal contact

Mothers talking and singing

- (Fetal) auditory system development requires stimulation by voices and music, but preterm newborns missed out
- Fetus has exclusive and continuous access to their mother's voice. Term babies are born with extensive knowledge of their mother's voice and language – they can discriminate and show it clearly
- Auditory stimulation is not a fundamental part of KMC, but during KMC the mother's voice is close to baby's ears
- We may help S&S newborns to catch up on the lost steps of fetal language development
- Add face-to-face communication interaction when baby is in reciprocal stage
- Effect of coaching on mothers? (Kritzinger & van Rooyen, 2014)
  - Mothers more sensitive to their infants and talk more than mothers who were not coached

Kangaroo mother care is the nurturing space where both (breast) feeding and mother-newborn communication interaction emerge … and the effects may last a lifetime

3rd contribution: neuroprotection

Environmental noise reduction

- Uncontrolled noise and talking in the NICU interferes with auditory stimulation (Graven & Browne, 2006), disrupting mother-infant communication interaction and language development
- Noise contributes to stress in babies, mothers and staff. Chronic stress in S&S newborns is associated with blunted HPA-axis response to vaccination at 4m (Stoye et al., 2022) and memory and attention problems in 6-7y olds (Lowe et al., 2022)
- Loud ambient and sudden noise has immediate effects on the cardiovascular and respiratory systems of small neonates (Wachman & Lavav, 2010) and can damage hearing, contributing to hearing loss
- Inform mothers about protecting her baby against noise
- Help create a more ideal sensory environment, reducing bright light, noise, adverse smells (when using gloves), avoid pictures on walls. Walls painted in pastels like soft purple is calming

Dynamic systems framework for SLT and Audiology Neonatal Intervention

1. Swallowing and breastfeeding intervention
2. Facilitate early language development
3. Reduce noise and stress
4. Hearing test before discharge
5. Follow-up care

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