

Background

A fetus's sense of smell begins developing very early in utero with olfactory receptors forming by 8 weeks and the sense of smell becoming functional by around 24 weeks of gestation (Lipchock et al., 2011). During the first year of life, smell is an infant's emotional compass, triggers feeding, and supports bonding; and is active before sight and language develop. Salinas Valley Health Medical Center's Neonatal Intensive Care Unit (NICU) nurses observed that infants had difficulty differentiating maternal figures from other caregivers, which led to them placing a referral to the Perinatal Unit Practice Council (UPC) to explore the use of scented cloth hearts for our neonatal population. Scented cloth hearts are worn by mothers to capture their scent and then provided next to infants to assist in their olfactory exposures and enhance parental bonding (see Figures 1 and 2). The goal is to provide the baby with a familiar, comforting smell that mimics the sensory experience of being close to the parent.

Figure 1



Figure 2



The scented cloth hearts are part of the Supporting and Enhancing NICU Sensory Experiences (SENSE[®]) program created by Bobbi Pineda, PhD, OTR/L, CNT, and Joan Smith, PhD, RN, NNP-BC, (Pineda et al., 2023). The SENSE program focuses on five main categories: tactile, auditory, olfactory, visual, and kinesthetic. The scented cloth hearts address the olfactory focus. Studies within the SENSE program have shown that it promotes consistent, age-appropriate, responsive, and evidence-based positive sensory exposures for preterm infants during the NICU hospitalization to optimize infant neurological development (Pineda et al., 2023). A pilot study of the SENSE program, which included the use of cloth hearts, found an increase in mothers' confidence, infants' neurobehavioral status at the term-equivalent age, caregiver satisfaction of neonate care in the NICU, and infants' feeding and bonding. In a large level IV NICU, it was found that 95% of neonates tolerated the original SENSE program (Pineda et al., 2023).

Purpose Statement

The purpose of this education initiative is to implement the scented cloth hearts to provide appropriate sensory stimulation for optimal infant development and bonding in our NICU patients.

Methods

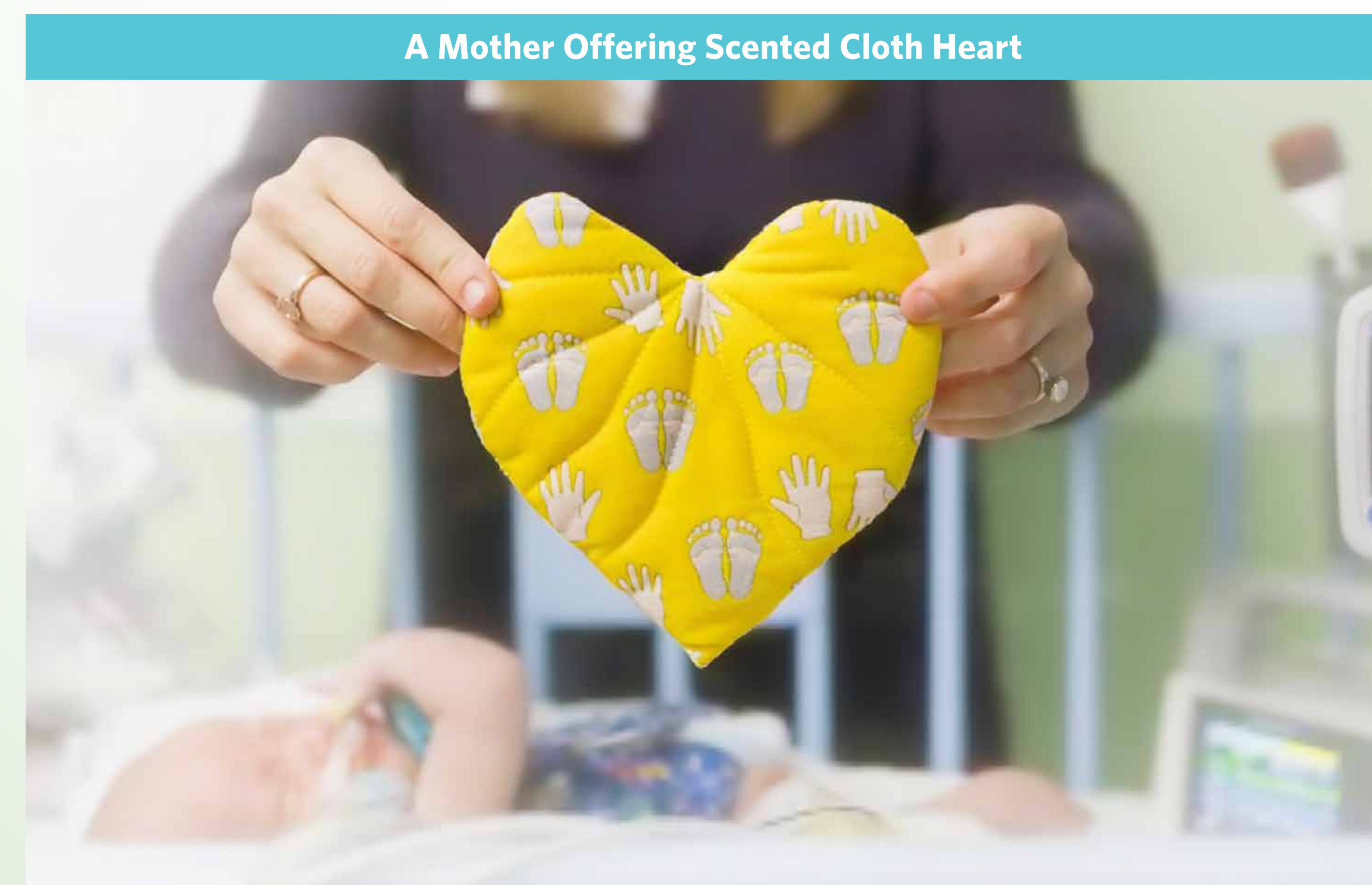
After the council received the referral, the medical center's NICU decided to implement the scented heart cloths. Nursing staff will provide parents with cloths in the shapes of hearts to be worn and then placed at bedside close to the infant. This, in turn, will promote a daily, positive, and evidence-based sensory experience.

How the program works:

- **For parents:** A parent wears one or two cloth hearts, often placed on their chest or pinned inside a shirt, to absorb their natural scent for a minimum of 3 hours.
- **For babies:** The parent leaves the scent-filled heart in the isolette or crib with the baby, providing a sense of comfort and security.
- **For bonding:** The familiar scent helps promote bonding and can ease stress and anxiety for both the baby and the parents, especially when physical closeness is limited. This may, in turn, also create increased milk supply for a pumping mother.
- **For repeated use:** The hearts are washable and reusable, allowing the process to be repeated.

During February 2026, NICU registered nurses will choose a pattern and material out of examples chosen by the primary author (JC). Criteria for the cloth material includes that it is soft, breathable, hypoallergenic, and gentle on infants' skin. Potential materials include natural fibers, such as cotton, or synthetic blends, like microfleece or flannel. Implementation for the scented heart cloths is planned for March 2026. The new initiative will start with instructing the NICU nurses on the use of the scented cloth hearts. NICU nurses will educate all NICU parents on the use and handling of the scented cloth hearts. Nurses will offer parents to wear a scented cloth heart for at least 3 hours and then place it in the bed space of their infant (Figure 3).

Figure 3



To evaluate program effectiveness, we plan to collect feedback through surveying parents before and after implementation.

During implementation, admission nurses will ask the following questions during daily rounding and/or during or at the end of the stay:

- Has someone explained the benefits of using cloth hearts to bond with your baby?
- Have you been offered a cloth heart?
- Do you plan on implementing this practice into your active bonding with baby?
- Did you bring your scented cloth heart with you today?
- Do you feel that the use of the cloth hearts is promoting a bonding with your baby?

Nurses will ask parents the following questions close to discharge:

- What helped you feel more connected or bonded with your baby during the hospital stay?
- On a scale from 1-4, where 1 indicates not at all bonded and 4 indicates very bonded, how bonded do you feel with your baby at discharge?

At discharge, post-implementation, nurses will also ask:

- Do you feel that the scented cloth heart experience benefited you and your baby? Why or why not?

Feedback will be collected for 6 months after implementation. The primary author (JC) will review feedback monthly. This feedback will be used to make program adjustments and guide the NICU team about additional ways we can improve the NICU environment and care of our babies.

Results

We expect to see positive feedback from parents regarding reports of feeling more connected and involved in their infant's care even when away from the bedside.

Conclusions

The SENSE program seeks to actively involve parents, by positioning them at the core of a variety of SENSE-based interventions, including the scented cloth heart, for their infant during the NICU stay. Nurses will educate parents about scented cloth hearts and encourage parental involvement. We believe the initiative will benefit our patient and parent populations, as the SENSE program supports infant neurological development and parental bonding, positively impacting our patients. Scented cloth hearts continue to be recommended for infants whose parents regularly visit and those that cannot (Pineda et al., 2023). Emphasis will be placed on the importance of bonding and how parents' olfactory input is used to promote infants' neurological development.

References

- Lipchock, S. V., Reed, D. R., & Mennella, J. A. (2011). The gustatory and olfactory systems during infancy: Implications for development of feeding behaviors in the high-risk neonate. *Clinics in Perinatology*, 38(4), 627-641.
- Pineda, R., Kellner, P., Ibrahim, C., SENSE Advisory Team Working Group, & Smith, J. (2023). Supporting and enhancing NICU sensory experiences (SENSE): An update on developmentally appropriate interventions for preterm infants. *Children*, 10(6), 961.
- Scents Hearts, (n.d.). Bellin Health. Retrieved November 17, 2025, from <https://bellin.org/sites/bellin/files/acquiadam/2023-07/NICU-Scents-Hearts.pdf>