

NIFTY™ Infant Feeding Cup

Health need

Infants with a high risk of breastfeeding difficulties include preterm infants, those with cleft palates, and neonates whose mothers die of birth-related causes. Preterm infants often require short-term supplemental feeds while they transition to exclusive breastfeeding. Infants with cleft palates and motherless infants require a long-term viable feeding option. Feeding tools in high-resource settings such as nasogastric tubes, bottles, and breast pumps are impractical, unhygienic, and unsafe in settings that lack clean water and electricity. For these reasons, the World Health Organization and the United Nations Children's Fund recommend hand expression of breast milk and the use of a small cup to feed newborns with feeding difficulties. Generic cups available in low-resource settings (e.g., coffee mug or medicine cup) have wide rims relative to an infant's mouth, which impedes efficient feeding. Suboptimal pacing of a feeding decreases intake, and wide rims increase spilling of hand-expressed breast milk. Repeated over multiple feeds, a feeding pattern of insufficient caloric intake results in longer feeding times, reduced endurance, compromised nutritional status, and increased susceptibility to infection and death. The difference between adequate and inadequate intake can be small, for example, as little as two teaspoons per feed for a 33-week 1,800 g preterm infant. This minute addition can translate into substantial growth, development, and strength even over a short period of a few days.

Technology solution

PATH and our partners are working to develop an appropriate cup design for delivering this small but critical increase in intake. The NIFTY™ cup is a prototype technology designed to be simple to use, easy to clean, inexpensive, and efficient in the delivery of expressed breast milk (or formula) to infants unable to breastfeed. The cup has an extended reservoir off the cup lip that is similar in size to a neonate's mouth and a delivery channel to the reservoir with minimal grooves that is designed to optimize feeding efficiency. A novel and key feature of this product is that it combines two functions—the ability to capture hand-expressed breast milk directly into the cup and to feed an infant with the expressed mother's milk.

Current status and results

In collaboration with our partners—the University of Washington, Seattle Children's Hospital Craniofacial Center, and Komfo Anokye Teaching Hospital in Kumasi, Ghana—we conducted an inventory of infant cup feeding options, defined NIFTY™ cup product specifications, and created a prototype based on those specifications. We developed simple pictorial instructions to demonstrate correct use to target populations of caregivers, midwives, community health workers, and other health care providers. In the near term, we will assess the feasibility and acceptability of our prototype in relation to hand expression of breast milk and current infant feeding practices. A comprehensive business plan is being developed to identify key stakeholders, current procurement practices, targeted value propositions, revenue/cost models, and supply chain opportunities and obstacles in low-resource settings where infant cup feeding is recommended and practiced.



PATH

The NIFTY™ cup.

“Cup feeding is recommended as a feeding method for sick and low birth weight infants by WHO and UNICEF.”

World Health Organization (WHO). *Optimal Feeding of Low Birth Weight Infants*. Geneva: WHO; 2006.

Availability

For more information regarding this project, contact Patricia Coffey at pcoffey@path.org.

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