

**Rapid Fire Research Presentations:**  
**Pediatric, Neonatal, Pregnancy, and Lactation**

**Abstract of Distinction**

**759295 - A Novel Human Milk Fortifier Container Prevents Breast Milk Waste and Makes the Process of Breast Milk Fortification More Efficient.**

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**Purpose:** Fortification of breast milk in a Neonatal Intensive Care Unit is a time-consuming multiple-step process requiring several steps, and is often wasteful of breast milk. The purpose of this study was to compare time, waste, and steps needed to prepare breast milk fortified with human milk fortifier (HMF) packaged in a single-use vial, a single-use sachet, and a novel flexible-dosing bottle. We hypothesized that the novel flexible-dosing bottle would reduce the time to prepare, supplies used, steps taken, and milk wasted when compared to the two currently available HMF packages.

**Methods:** The experiments took place at two centers with three subjects at each site. Each of the three fortifiers was prepared in three different volumes (10, 200, 500 mL) to 24 calories per ounce according to manufacturer's instructions (Enfamil single-use vial n=54, Similac single-use sachet n=54, Flexible-dosing bottle n=54). Each volume was prepared three times for each product. A person unrelated to the study randomized the order of preparation by sorting the instruction cards. Each site prepared the milk in the same order. The subjects were blinded to the maker of the novel bottle and the sponsor of the study. The investigators organized the supplies on a preparation table. Skim milk served as a substitute for breast milk. Instruction cards detailed mixing instructions for each volume of milk (10, 200, or 500 mL). The investigator read instructions to each subject before the start of the experiment. Once the subject picked up the instruction card, she then collected the supplies, disinfected the counter, performed hand hygiene, donned gloves, placed a disposable pad on the counter, laid the supplies on the pad. She then fortified the milk according to the instructions. Once fortified, she placed the lid on the container of fortified milk. The investigators timed the process using a stopwatch. Time began once the subject picked up the instruction card and stopped once the subject placed the lid on the bottle of prepared milk. Once the subject finished, the investigator recorded the data. The subject then returned to the supply table and began the process again until she completed 27 preparations.

**Results:** There were statistical differences among the three packages for time to prepare (F 17.99, p<.001). The Tukey multiple comparison procedure showed that the single-use vial (mean 2.88) and single-use sachet (mean 3.13) took longer to prepare than the flexible-dosing bottle (mean 1.98). Number of steps taken was statistically different among the groups (F 40.34, p<.001) with the flexible-dosing bottle requiring seven fewer steps. Milk waste was significantly different among the groups (F 352.12, p<.001). The Tukey multiple comparison procedure showed that the flexible-dosing bottle had significantly lower volumes of milk wasted (mean 0.67) than the single-use vial (mean 13.3) and the single-use sachet (mean 13.52). The Flexible-dosing bottle reduced milk waste by 97%, time by 37%, and steps taken by 61%.

**Conclusion:** A novel multi-use bottle reduces the time needed to prepare fortified breast milk, supplies used, steps taken, and milk wasted when compared to the two currently available HMF containers. This simple change can prevent waste of breast milk and make the process of breast milk fortification more efficient.

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