

FONEASTRA

A safety management system for human milk banking

Breast milk is considered a pillar of child survival; it has unique immunological and nutritional properties that help infants get a healthy start to life. Infants who receive breast milk are less likely to become seriously ill or die from infections, compared to those who do not receive breast milk. This is especially true of vulnerable infants in developing countries who may face continual exposure to pathogens through unsafe water or unhygienic conditions. For infants whose mothers' milk is unavailable, the World Health Organization supports human milk banks (HMB) as a critical intervention for guaranteeing access.

To ensure safe pasteurization in resource-limited health care facilities, PATH is advancing a pasteurization management system based on a platform developed by University of Washington called FoneAstra. This system leverages the use of mobile phones to precisely monitor pasteurization of donor breast milk.

Implementation date: October 2011 to June 2013

About FoneAstra

To address the challenge of ensuring safe pasteurization



in homes and resource-limited health care facilities, PATH is advancing a safety management system based on a platform called FoneAstra.

FoneAstra is a real-time temperature monitoring device and remote data recording tool. This system leverages mobile phones to precisely monitor flash-heat pasteurization of

donor breast milk. FoneAstra components include a mobile phone, a USB cable and bridge, a glass jar and a temperature sensor probe. These are paired with simple

pasteurization equipment: a freezer, a pot and a heat source. A novel USB bridge connects the phone and temperature probe, allowing the phone to act as the CPU walking users through the pasteurization process through simple audio and visual instructions. The phone then transmits the data wirelessly to a central server for review, reports and archiving.

Evaluation and Results

In early 2012, PATH, in collaboration with the Human Milk Banking Association of South Africa, managed a one-year pilot study of FoneAstra. This included a field test to evaluate the use of FoneAstra as a low-cost HMB system compared to routine flash-heat. User assessments were performed with milk bank staff to validate they were able to correctly operate the system. A cost analysis was also conducted to guide scalability of HMB systems in South Africa.

None of the 100 samples pasteurized with the new FoneAstra system showed any bacterial growth. This finding confirmed the safety of this pasteurization method, since it was effective in completely destroying the bacteria present in 86 of the pre-pasteurized samples.

Lessons Learned

- Human milk bank technicians can successfully operate the FoneAstra devices.
- The ability to provide remote monitoring, as well as push updates remotely, is a key advantage of the platform and allows for off-site supervising and tracking.
- Some challenges that continue are the cost of the phones and the risk that they could be lost or stolen.
- Small-scale human milk banks can be fully operational even with limited staff using with simplified systems such as FoneAstra.



Conclusion

FoneAstra has undergone significant development and refinement, making the technology well-integrated with existing organizational workflows. It is a feasible, safe, and affordable tool, costing about US\$600, for resource-limited settings to ensure the safety and enhance the acceptability of donor breast milk. With its established quality measures, the pasteurization management system has the potential to prevent significant infant morbidity and mortality through increased access to contaminant-free donor milk, a critical step toward expanding HMB adoption.

Geographic Coverage: South Africa

Implementation Partners: PATH, University of Washington

Funder: Funding was provided from a grant from the Bill & Melinda Gates Foundation through the Grand Challenge Explorations Initiative, the University of Washington Department of Computer Science and Engineering,

donations from private foundations and individuals to the PATH Health innovation Portfolio, and the National Science Foundation Research Grant No. IIS-1111433.

Contact Information:

PATH: Kiersten Israel-Ballard, Technical Officer, Maternal and Child Health and Nutrition Program, (kisrael-ballard@path.org), Noah Perin, Commercialization Officer (nperin@path.org)

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1. PATH. Technology Solutions for Global Health: Safety Management System for Human Milk Banks. June 2012. Fact Sheet.

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