Preventing Newborn Hypothermia in District Hospitals

Otter is a warming solution designed for low resource hospitals to prevent newborn hypothermia. It can work independently or during other treatments.

Global Health – Seattle, possible Asia

This project requires participants to sign an intellectual property agreement.

Motivation

In 2015, 2.7M infants in developing countries died within a month of birth due to complications of prematurity, low birth weight, and infection (WHO). Providing at-risk newborns with a warm, clean environment could prevent over three-quarters of these deaths. Current warmers are too complex, too expensive to own and operate, and difficult to keep clean in these contexts. District hospitals need a warmer to treat newborns in intensive care rather than risk transport to crowded central facilities.

Stakeholders

Stakeholders in district-level hospitals include newborns, their families, doctors who prescribe treatment, nurses and midwives who operate warmers, service technicians, and manufacturers. In addition, governments, NGOs, donors, distributors, and private hospitals who purchase equipment are important constituents.

Status

This is the 5th semester of a project proposed by Design that Matters (DtM). The project is in the development phase of the ADE pipeline. The first market test will take place via a charitable rollout.

Proposed activities

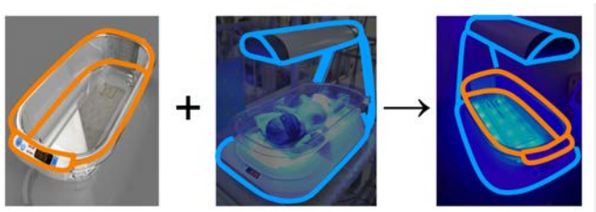
- Perform failure mode effects analyses to identify potential harmful points of failure in current design and recommend design updates.
- Develop a way to rapidly test heating element layouts compliance with int'l standards including heat uniformity and time to reach steady state.
- Propose heat sensor system that could provide closed-loop feedback to ensure safe warmer operation compliant with int'l standards.
- Refine the mechanical design of handles for injection molding and test durability through prototyping and doing a drop test.
- Design for ease of assembly.
- Refine the value proposition, business model, and value chain for a complex, multi-stakeholder set of nonprofits and for-profits.
- Improve pricing model and analysis model for cost-benefit and return on investment.
- Build relationships with non-governmental organizations (NGOs) such as Doctors without Borders (MSF) who may purchase Otter.
- Market test and raise the profile of Otter through presenting, pitching, and networking at events and via personal networks.

Talents needed

Experimental, electrical, mechanical, and human factors engineering; product design; entrepreneurial thinker and actor; financial modeling; marketing; partnerships; stakeholder engagement; public speaking.

Collaborators

Non-profit design firm Design that Matters, Seattle, WA. Many advisers including neonatal experts at Newton Wellesley and Brigham & Women's Hospitals.



Otter Firefly Otter + Firefly

Otter can work independently or during jaundice treatment with Firefly phototherapy.

ADE team lead (center) gathering newborn warmer feedback at Yen Minh District Hospital, Vietnam.

Testing to international standards.

Works-like and interacts-like prototype created by ADE.