



# Global Impact of Non-Profits on Newborn and Infant Health Care



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## Problem: Newborn Jaundice

- ❖ 60% of infants have some degree of jaundice
- ❖ #1 reason newborns are admitted to hospital
- ❖ 6.7 M babies need photo-therapy, but are without access
- ❖ traditional devices are unreliable and expensive, costing up to \$3,000

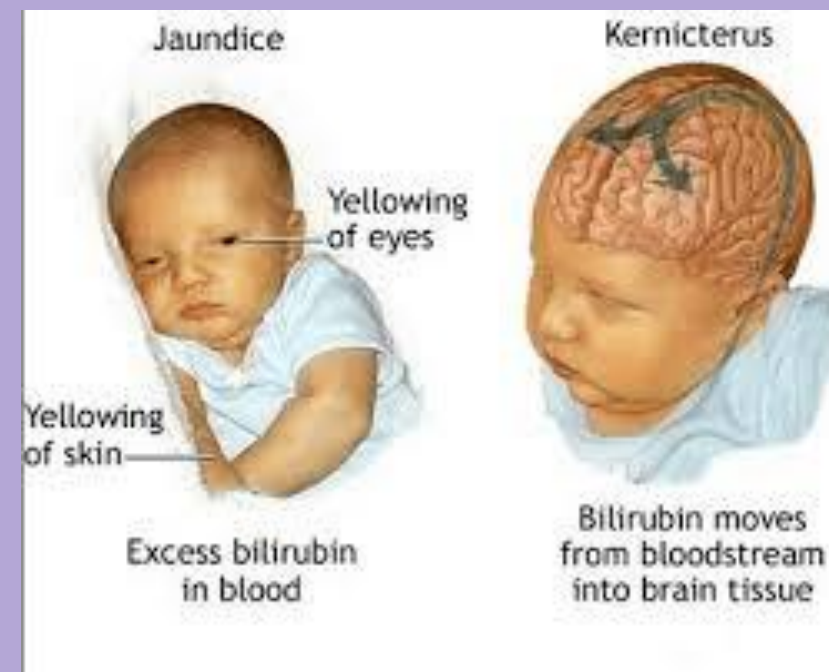


Fig. 1 Jaundice symptoms and possible effects

## Solution: Brilliance Phototherapy Device

- ❖ COST: \$400
- ❖ LEDs for durability and reliability, uses 40% of power
- ❖ adjustable hood for even distribution of blue light
- ❖ lasts 50,000 hrs minimum 8 years<sup>3</sup>

## Impact

- ❖ 375,000 babies treated<sup>5</sup>
- ❖ sold in 49 countries, expanding
- ❖ global distribution and self sustaining market<sup>4</sup>



Fig. 2 Brilliance Device



Fig. 3 Newborn receiving phototherapy treatment

## Introduction

Newborns are very susceptible to critical medical conditions due to their frailty and limited access to quality healthcare. However, certain conditions such as jaundice and hypothermia are more treatable now due to new devices being developed by some non-profit companies. These non-profits aim to make infant healthcare more accessible for areas in greatest need. One way the new technology is made accessible is through NASA's technology transfer program. The technology transfer program is a key part of NASA's mission to "Advance understanding of Earth and develop technologies to improve the quality of life on our home planet".<sup>1</sup> Stanford students founded Embrace Innovations and created an extremely successful infant warmer using NASA's technology. Another non-profit, D-Rev makes a phototherapy device, which treats jaundice. The aim of my research project was to examine the impact of two nonprofit companies on newborn healthcare in developing countries.

## D-Rev

- Design revolution based in San Francisco
- Focuses on mobility and newborn health



Krista Donaldson, CEO

## Embrace Innovations

- Started out as a Stanford University design project
- Used phase change material from NASA



Jane Chen, CEO

## Benefits of Non-Profits

Both D-Rev and Embrace innovations aim to not only develop cost effective and long lasting products, but to promote a social movement of improving the healthcare and treatment for newborns born into families with very limited resources. These companies stand out because of their widespread goals for these emerging markets. For-profit companies and corporations, even ones that have also used NASA's technologies, don't target those who need care the most: developing countries.

Utilizing grants and donations to create and design product

Use local companies (Phoenix Medical Systems)<sup>2</sup> to market, distribute and sell product

Self sustaining market, product can be produced and sold for a long term

## References

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## Problem: Newborn Hypothermia

- ❖ 15 million babies are born prematurely and are unable to regulate body temperature
- ❖ typical incubators cost \$20,000
- ❖ not enough incubators
- ❖ mothers have to travel for hours to a city hospital, too expensive



Fig. 4 Embrace Infant Warmer

## Solution: Embrace Infant Warmer

- ❖ Portable: can be used by a mother or midwife in a village clinic, not a city hospital that is hours away<sup>6</sup>
- ❖ easily heated in a warmer or in a bowl of hot water
- ❖ requires no continuous power supply. lasts for 8 hours, and is reusable
- ❖ seamless for easy cleaning

## Impact

- ❖ 300,000 babies treated<sup>7</sup>
- ❖ used in 22 countries, mainly india
- ❖ large scale network of non-profits
- ❖ global distribution of technology as well as education



Fig. 5 Embrace Infant Warmer in use

Fig. 6 Recuperated baby in Embrace infant warmer