Health problem addressed

20 million low-birth-weight babies are born yearly; 4 million die, and those that survive, grow up with severe problems, like low IQ, early onset of diabetes, heart disease. Incubators are costly and usually available in urban areas. Home solutions include wrapping hot water bottles around their bodies, placing them over hot coals or under light bulbs.

Product description

We have developed a low-cost infant warmer that can work without electricity and provides heat to an infant at a constant temperature, the key factor needed for survival. Our product costs less than 1% of traditional incubators, has no moving parts, is portable and is safe and intuitive to use. It also complements skin to skin care.

Product functionality

The re-usable warmer provides heat to infants weighing 1.5-3.0 kg. It is comprised of: a phase-change material (PCM) pouch; a heater that heats the pouch to 37°C; a sleeping bag that holds the infant and the pouch in adjacent compartments to promote sustained warming. The pouch will remain above 35°C for 4-6 hrs, providing heat to the infant.

Developer’s claims of product benefits

Other technologies include Kangaroo Mother Care (KMC), Indian and Chinese low-cost incubators and radiant warmers, donated traditional incubators, and at-home remedies. While these solutions assist in saving the lives of some low-birth weight babies, the infant warmer described here aims to achieve greater results. KMC can enable thermal stabilization, but it can only assist in saving a premature baby if it is done continuously. Incubators and radiant warmers require electricity, and are designed for a hospital setting only. In-home remedies such as tying hot water bottles to the baby or placing it close to a stove or an electric lamp are extremely dangerous.

Operating steps

The pouch is heated up to approximately 37°C by placing it in the electric heater, which runs off 240V AC power, and beginning the heating cycle which takes approximately 20 minutes. Then, the pouch is removed and placed into the sleeping bag with the infant. The pouch will remain above 35°C for over 4 hours, providing heat to the infant.

Development stage

Design and clinical testing of the device has been completed. Currently, our product is being manufactured for launch in April 2011. Additionally, we have filed for CE approval. The product will initially be available in India, and then available to the rest of the world.

Future work and challenges

Our technology will initially be available in India where use will be carefully assessed. Monitoring and evaluation will allow for product iteration (if needed), the product will be made available to the rest of the world subsequently. Ideally, we would like to sell to Governments and NGOs; establishing contacts requires time. Additionally, this is a novel concept; people in rural settings want the product to be recommended by doctors (so we are selling to clinicians first).

Use and maintenance

User: Family member, nurse, midwife, physician, technician
Training: Users will be given usage and sanitizing instructions in local languages.
Maintenance: Nurse, physician, technician, engineer, manufacturer

Environment of use

Setting: At home or in health care facilities.
Requirements: Requirements depend on what model of the heater is used (electric or non-electric). The electric infant warmer can be used in areas with access to electricity supply. The rural version does not require electricity. Our design is simple to use and therefore does not need specialized operation or operators.

Product specifications

Dimensions heater (mm3): 440 x 290 x 60
Weight heater (kg): 2.6
Dimensions pouch (mm3): 380 x 220 x 20
Weight heater (kg): 1.3
Dimensions sleeping bag (mm3): 520 x 250 x 50
Retail Price (USD): 150-200
Other features: The infant warmer is portable and reusable.
Year of commercialization: Expected 2011
Currently sold in: To be launched in India.
Disclaimer

Eligibility for inclusion in the compendium has been evaluated by EuroScan member agencies and WHO. However, the evaluation by EuroScan member agencies and WHO has been solely based on a limited assessment of data and information submitted in the developers’ applications and, where available, of additional sources of evidence, such as literature search results or other publicly available information. There has been no rigorous review for safety, efficacy, quality, applicability, nor cost acceptability of any of the technologies. Therefore, inclusion in the compendium does not constitute a warranty of the fitness of any technology for a particular purpose. Besides, the responsibility for the quality, safety and efficacy of each technology remains with the developer and/or manufacturer. The decision to include a particular technology in the compendium is subject to change on the basis of new information that may subsequently become available to WHO. WHO will not be held to endorse nor to recommend any technology included in the compendium. Inclusion in the compendium solely aims at drawing stakeholders’ attention to innovative health technologies, either existing or under development, with a view to fostering the development and availability of, and/or access to, new and emerging technologies which are likely to be accessible, appropriate and affordable for use in low- and middle-income countries.

WHO does not furthermore warrant or represent that:
1. the list of new and emerging health technologies is exhaustive or error free; and/or that
2. the technologies which are included in the compendium will be embodied in future editions of the compendium; and/or that
3. the use of the technologies listed is, or will be, in accordance with the national laws and regulations of any country, including but not limited to patent laws; and/or that
4. any product that may be developed from the listed technologies will be successfully commercialized in target countries or that WHO will finance or otherwise support the development or commercialization of any such product.

WHO disclaims any and all liability and responsibility whatsoever for any injury, death, loss, damage or other prejudice of any kind whatsoever that may arise as a result of, or in connection with, the procurement, distribution and/or use of any technology embodied in the compendium, or of any resulting product and any future development thereof.