

# A baby boon for pre-termers: The LED baby-warmer

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Research in the *International Journal of Biomedical Engineering and Technology* takes a new look at the problem of treating hypothermia in pre-term infants.

Babies born pre-term often have [low birth weight](#) and lose [body heat](#) very quickly because of inadequate deposits of insulating subcutaneous fat. As their core temperature falls it can drop below physiologically tolerable levels leading to cold stress and ultimately hypothermia.

Sarath S. Nair and D.S. Nagesh of the Biomedical Technology Wing at Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), in Kerala, India, describe a much-improved approach to providing pre-term infants with a thermally neutral environment that can help them maintain body temperature. The approach exploits the potent thermal insulating properties of polyethylene sheets filled with [polyurethane foam](#) in which [infrared light](#) emitting diodes (LEDs) can be embedded.

The team's bench-top tests show that the heating-insulating device they have developed takes just fifteen minutes, on average, to reach an optimal temperature and can keep a baby warm for more than 24 hours and help it maintain its core [temperature](#) in the normal range of between 36.5 to 37.7 degrees Celsius. The team has successfully tested their LED baby warmer for reliability over a three-month period, just over, in fact, 100 days. This timescale is long enough for an otherwise healthy baby to thrive and gain sufficient weight and fat beneath the skin to eventually no longer need the LED baby-warmer. The team says the device also meets international efficacy, safety, and performance standards.

Such a device will be a boon in those parts of the world where costly baby incubators are not so readily available and where heating costs may well be prohibitive for their ongoing use.

"The absence of direct heating by electric current, [hot water](#) and air provides enhanced safety when compared to conventional infant warmers," the team writes. They add that the device is inexpensive, portable and can run on a portable battery rather than being mains

powered. The heating pad is watertight and easily cleaned. A cotton outer cover is also readily washable. The team foresees their LED baby-warmer as being useful in transporting pre-term [babies](#) in hospital from station to station of whatever assessments and treatments they need until they can be discharged to their home.

**More information:** D.S. Nagesh et al, Thermo regulated infant warming wrapper with infrared light emitting diodes for prevention of hypothermia in preterm low birth weight babies, *International Journal of Biomedical Engineering and Technology* (2023). [DOI: 10.1504/IJBET.2023.10054324](#)

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