Health problem addressed

These devices are commonly used to provide thermal support for newborns in the delivery suite, for critically ill infants who require constant nursing intervention, and for infants undergoing treatment that prolongs exposure to a cool environment. Prolonged cold stress can overwork heat-producing mechanisms, drain energy reserves, and result in hypoxia, acidosis, hypoglycemia, and, in severe cases, death.

Product description

Infant radiant warmers are overhead heating units. They typically consist of a heat source, a skin-temperature sensor, an automatic (servo) control unit, and visual and audible alarms.

Principles of operation

A heating element generates a significant amount of radiant energy in the far IR wavelength region (longer than three microns to avoid damaging the infant’s retina and cornea). The radiant output of the heating unit is also limited to prevent thermal damage to the infant. The IR energy is readily absorbed by the infant’s skin; increased blood flow in the skin then transfers heat to the rest of the body by blood convection (heat exchange between the blood and tissue surfaces) and tissue conduction (heat transfer between adjacent tissue surfaces).

Operating steps

After birth, infants are placed under a radiant warmer until they can achieve thermoregulation.

Reported problems

Because warming by IR energy is an efficient means of energy transfer, extreme hyperthermia, skin burns, permanent brain damage, or even death can result.

Use and maintenance

User(s): Nursing staff; physicians
Maintenance: Medical staff; technician; biomedical or clinical engineer
Training: Initial training by manufacturer and manuals

Environment of use

Settings of use: Hospital; birthing center
Requirements: Stable power source

Product specifications

Approx. dimensions (mm): 2100x1310x750
Approx. weight (kg): 110
Consumables: NA
Price range (USD): 3,250 - 26,000
Typical product life time (years): 8
Shelf life (consumables): NA

Types and variations

Freestanding; modular; permanently-mounted