Incubator, Infant

Health problem addressed
At birth, an infant's core and skin temperatures tend to drop significantly because of heat loss from conduction, convection, radiation, and water evaporation. Prolonged cold stress in neonates can cause oxygen deprivation, hypoglycemia, metabolic acidosis, and rapid depletion of glycogen stores.

Product description
Bassinets enclosed in plastic with climate controlled equipment and hand-access ports with doors that are intended to keep infants warm and limit their exposure to germs.

Principles of operation
These devices provide a closed, controlled environment that warms an infant by circulating heated air over the skin. The heat is then absorbed into the body by tissue conduction and blood convection. Ideally, both the skin and core temperatures should be maintained with only minor variations.

Operating steps
The neonate lies on a mattress in the infant compartment, which is enclosed by a clear plastic hood. Incubators have hand-access ports with doors that permit the infant to be handled while limiting the introduction of cool room air. The clinician can raise or remove the plastic hood or open a panel to gain greater access to the infant.

Reported problems
Deaths and injuries to neonates in incubators have been linked to thermostat failure that caused incubator overheating and infant hyperthermia and to malfunctions or design defects that produced fires and electric shock hazards. Inadequate control over the amount of oxygen delivered in an incubator can cause hyperoxia or hypoxia.

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

Environment of use
Settings of use: Hospital (primary care, intermediate care, intensive care areas); transport units used in ambulances
Requirements: Stable power source

Product specifications
Approx. dimensions (mm): 1326 x 1040 x 750
Approx. weight (kg): 93
Consumables: NA
Price range (USD): 13,000 - 43,000
Typical product life time (years): 7 to 10
Shelf life (consumables): NA

Types and variations
Incubator; incubator/warmer; transport; mobile