

Apnea Monitors

UMDNS

12575 Monitors, Bedside, Respiration, Apnea

GMDN

35194 Respiratory apnoea monitoring system

Other common names:

Cardiorespiratory monitors; Monitor, recording, apnoea

Health problem addressed

Apnea monitors detect the cessation of breathing (apnea) in infants and adults who are at risk of respiratory failure and alert the parent or attendant to the condition. Some prolonged respiratory pauses result in low oxygen concentration levels in the body, which can lead to irreversible brain damage and, if prolonged, death.

Product description

The components of apnea monitors depend specifically on the type. However, in general they are composed of a set of sensors which obtain the information of different physiological parameters. This information is passed to a micro computer system, which analyses the sensors' information and determines if apnea is occurring.

Principles of operation

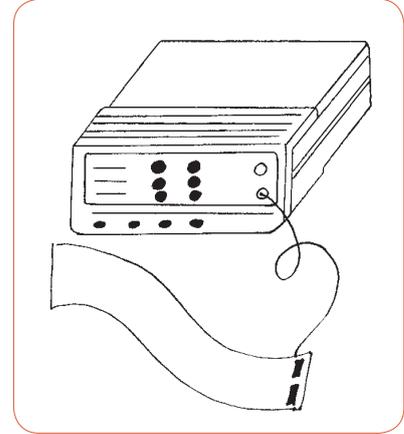
Monitors that use impedance pneumography detect small changes in electrical impedance as air enters and leaves the lungs and as the blood volume changes in the thoracic cavity. Mattress-type motion sensors typically monitor changes in the capacitance or resistance of a mattress transducer. Pneumatic abdominal sensors also detect breaths as changes in pressure. More direct methods of respiration detection monitor the airflow into and out of the lungs; these include thermistors, proximal airway pressure sensors, and carbon dioxide (CO₂) sensors.

Operating steps

The apnea monitor is attached to the patient using appropriate sensor for the measurement technique (e.g., mattress motion sensor, pneumatic abdominal sensors, thermistors, proximal airway pressure sensors, carbon dioxide (CO₂) sensors, cannula). Once connected, as the patient breathes, the unit monitors different body parameters. If an alarm sounds, the operator must attend the patient immediately.

Reported problems

Apnea monitors may fail to alarm during an episode because they sense artifact (artifacts include vibrations, heart activity, patient movement). Electromagnetic emissions from electronic devices (other electronics or equipment) can also cause interference, possibly leading to false breath and heartbeat detection. Impedance pneumographs are more subject to cardiovascular artifact. Misinterpreting impedance changes because of heartbeats perceived as breaths frequent when instrument sensitivity is not adjusted.



Use and maintenance

User(s): Nurse, medical staff, home care providers

Maintenance: Biomedical or clinical engineer/technician, medical staff, manufacturer/servicer

Training: Initial training by manufacturer, operator's manuals, user's guide

Environment of use

Settings of use: Hospital, home, ambulatory care center, nursery

Requirements: Uninterruptible power source, battery backup

Product specifications

Approx. dimensions (mm): 150 x 120 x 120

Approx. weight (kg): 0.75

Consumables: Batteries, cables, electrodes/sensors

Price range (USD): 200 - 5,000

Typical product life time (years): 8

Shelf life (consumables): NA

Types and variations

Stand-alone, modular

