Core medical equipment - Information

Monitor, Central Station

Health problem addressed
Continuous monitoring is a valuable tool that helps provide additional information to the medical and nursing staff about the physiologic condition of the patient. Using this information, the clinical staff can better evaluate a patient’s condition and make appropriate treatment decisions and is used to treat a wide range of patient conditions.

Product description
Depending on their configuration, central monitors include modules to measure various parameters, including ECG, respiratory rate, NIBP and IBP, body temperature, SpO2, SvO2, cardiac output, ETCO2, intracranial pressure, and airway gas concentrations. They include computing capabilities and additional displays to observe trend information; some also include full-disclosure capabilities. They do not replace bedside monitors.

Principles of operation
Physiologic monitors can be configured, modular, or both. Configured monitors have all their capabilities already built-in. Modular systems feature individual modules for each monitoring parameter or group of parameters; these modules can be used in any combination with each bedside monitor or be interchanged from monitor to monitor. Some physiologic monitoring systems have the capabilities of both modular and configured systems. With these monitors, frequently used parameters (e.g., ECG) are configured to the monitor, but modules. As monitoring data is collected, some central stations are beginning to send the information to the patient’s electronic medical record (EMR).

Operating steps
Receivers are connected to a bedside monitor and/or central station monitor. Some central station monitors can be networked so that a patient’s waveform can be simultaneously displayed at multiple locations within a hospital. Some telemetry systems allow receivers to be connected to a bedside monitor or to be used on the same central station network as hardwired bedside monitors. This allows the clinician to view a patient’s ECG and other monitored information at the bedside and at the central station.

Reported problems
Central monitors may tempt hospital personnel to pay more attention to the equipment than to the patient connected to it. Even monitors that are functioning reliably cannot substitute for frequent direct observation. Frequent false positive alarms can cause alarm fatigue and result in clinical staff missing critical patient events like low oxygen saturation levels.

Use and maintenance
User(s): Physicians, nurses, other medical staff
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: General medical and surgical areas, intermediate care/step down units, cardiac rehab, telemetry units
Requirements: Uninterruptible power source, redundant data backups

Product specifications
Approx. dimensions (mm): Varies by configuration selected
Approx. weight (kg): Varies by configuration selected
Consumables: None
Price range (USD): 4,500 - 40,000
Typical product life time (years): 7-10
Shelf life (consumables): NA

Types and variations
Desk mounted, bedside mounted