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.

Product description
These systems usually include a central station monitor that receives, consolidates, and displays the information and a set of monitors that are deployed near the patient (bedside monitors) to provide the required data from each patient (ECG, respiratory rate, noninvasive blood pressure (NIBP) and invasive blood pressure (IBP) (systolic, diastolic, and mean), body temperature, (SpO2), mixed venous oxygenation (SvO2), cardiac output, (ETCO2), intracranial pressure, and airway gas concentrations).

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 devices have the capabilities of both modular and configured systems. Many physiologic monitoring systems include a central station capable of displaying ECG waveforms and other information from any bedside within the system, and many are equipped with alarms that are coordinated with those at the bedside monitor.

Operating steps
Once patients are attached to the appropriate monitoring electrodes/pads, the cables are connected to the physiologic monitor. Then the monitor allows patients’ physiologic parameters to be continuously monitored so that changes can be identified and, if necessary, treated. The monitored parameters can be seen at the bedside and (if desired) shared with a central station. System suppliers offer different monitoring options to meet a variety of applications (such as critical care, the operating room, or transport).

Reported problems
Poor electrode preparation and attachment are most commonly reported. Cables and lead wires should be periodically inspected for breaks and cracks. Loss of patient alarms, misleading alarms, and parameter errors have been the causes of most monitor recalls. Even monitors that are functioning reliably cannot substitute for frequent direct observation. Many devices produce frequent “false alarms” which can lead to alarm fatigue and missed critical events.

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: Hospital, inter- and intra-hospital transport; mostly in intermediate care/step down units and in general medical and surgical areas
Requirements: Uninterruptible power source, battery backup, good lead/pad/cable connections

Product specifications
Approx. dimensions (mm): 375 x 275 x 238
Approx. weight (kg): 10
Consumables: Batteries, cables, sensors/electrodes, cuffs
Price range (USD): 3,000 - 50,000
Typical product life time (years): 7-10
Shelf life (consumables): NA

Types and variations
Bedside mounted, pole mounted, wall mounted, transport, handle