

Alarm Management

Technologies that enhance monitoring alarm accuracy and help combat alarm fatigue

Monitor alarms are essential for alerting caregivers to changes in patients' condition. But inaccurate or too-frequent alarms can erode the quality of care. Excessive alarms may increase patient and family anxiety, overwhelm and stress clinicians, and even lead to alarms being silenced, disabled or ignored. Alarm management technologies from GE Healthcare enhance patient monitoring and alarm accuracy, reduce false alarms, all while helping to ensure that when alarms do sound they are clinically significant. The technologies include sophisticated monitor algorithms and tools to help clinicians tailor alarms for specific patient conditions.



The GE EK-Pro multi-lead ECG algorithm reliably detects arrhythmias while reducing false alarms:

Reliable performance

- Detects cardiac events that might otherwise go unnoticed
- Assures uninterrupted ECG monitoring in situations where a single electrode contact failure is detected
- Distinguishes noise and artifact from true beats, reducing false alarms

Accuracy

- Multi-lead ST-segment analysis to help assess myocardial ischemia
- Our recent algorithm design development has focused on improvements of detection reliability. This means improvements with detection of true events, but also reduction of false detections.
- Can be configured for the unique waveforms of neonatal and pediatric patients

Advanced ECG processing

- **Continuous correlation** improves beat detection and recognition despite noise or artifact, comparing incoming waveforms to beat templates
- **Incremental template updating** accurately tracks subtle, progressive changes in beat shapes based on the multi-lead waveform templates used for beat classification and measurement
- **Contextual analysis** uses information from neighboring beats to identify arrhythmia events, evaluating features and information about the rhythm in a way similar to that used by clinicians



Making monitor alarms more flexible and reliable than ever

Monitor innovations from GE Healthcare help you ensure accuracy even in challenging environments, tailor alarms to suit a wide variety of patients and conditions, and allow custom alarm configurations while minimizing errors and misuse that could place patients in jeopardy. It all means greater reliability and fewer false alarms.

ApexPro® Telemetry, Dash®, Solar®, CARESCAPE™ CIC Pro central station and CARESCAPE modular monitors

SpO₂ monitoring

GE bedside monitors contains the Masimo® Signal Extraction Technology (SET)® or Nellcor® OxiMax™ pulse oximetry algorithms. Both use advanced digital signal processing technologies to deliver accurate SpO₂ and pulse rate readings despite patient motion and low perfusion.

Smart lead fail

Multi-lead arrhythmia monitoring goes uninterrupted without an audible alarm if one lead becomes disconnected. The remaining leads continue monitoring – with no delay to “relearn” the heartbeat – while a clinician restores the connection.

- On-screen alert tells clinicians when a lead is disconnected
- Alarm sounds if a second lead comes loose

Locking limits

Specific alarms can be set so they can not be turned off under any circumstances, for example, all cardiac patients are sure to receive continuous life threatening arrhythmia monitoring.

Latching alarms

Clinicians can configure alarms to sound continuously after intermittent but potentially serious events, such as asystole, ventricular tachycardia or ventricular fibrillation.

User-configurable alarm settings

Caregivers can adjust default settings to fit the patient: for example, reducing heart rate lower limits for patients with a known low heart rate. Conversely, limits can be tightened and alarm priority raised for a particular intermittent arrhythmia.

- Default limits reset when the patient is discharged
- Built-in default levels let caregivers choose alarm settings to fit patient profiles (such as trauma or cardiac cases)
- Central station can configure alarm levels for telemetry patients

CARESCAPE modular monitors and CARESCAPE CIC Pro central station

IntelliRate®

The algorithm extracts information from multiple physiologic signals (e.g., ECG, arterial blood pressure and pulse oximetry) and displays the heart rate source that has the highest likelihood of being accurate.

Absolute limits (guard limits)

Parameter limits can be set to keep a caregiver from erroneously setting the limits too high, too low, or with a range so wide that the alarm is essentially disabled.

ApexPro Telemetry and CARESCAPE CIC Pro central station Telemetry smart alarms

After five minutes, alarms will reactivate if the patient is within range of the antenna system for 15 seconds or longer and continuous ECG data is detected.



User-configurable alarm settings



Smart lead fail



Telemetry smart alarm



imagination at work

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