# Alarm Fatigue and Its Management Have Become Serious Healthcare Safety Issues

The constant beeping of clinical alarms and an overabundance of information transmitted by medical devices such as ventilators, blood pressure monitors and ECG (electrocardiogram) machines, etc. are creating ***alarm fatigue*** that puts hospital patients at serious risk, according to an April 2013 Sentinel Event Alert issued by The Joint Commission (TJC).

The TJC Alert urges healthcare leaders to take a focused look at this serious patient safety issue. Over a recent four-year period, a U.S. Food and Drug Administration (FDA) database shows more than 560 alarm-related deaths, and TJC's sentinel event database includes reports of 80 alarm-related deaths and 13 serious alarm-related injuries during a similar period. Patient deaths related to alarms on monitoring devices have also been the focus of national media attention and special reports by the Association for the Advancement of Medical Instrumentation (AAMI) and ECRI Institute.

The Joint Commission, AAMI, ECRI Institute and American College of Clinical Engineering brought together patient safety and health care experts at a 2011 summit to seek solutions to problems with medical device alarms. These alarms are intended to alert caregivers of potential problems, but can compromise patient safety if they are not properly managed.

Many patient care areas have numerous alarms, and the barrage of warning noises tend to desensitize caregivers and cause them to ignore alarms or even disable them. Other issues associated with effective alarm management include too many medical devices with alarms or individual alarms that are difficult to hear. Pre-set or default settings also may cause problems because the device sounds a warning even when no action or decision by a caregiver is required. Rather than calling attention to a patient's needs, these settings may distract caregivers.

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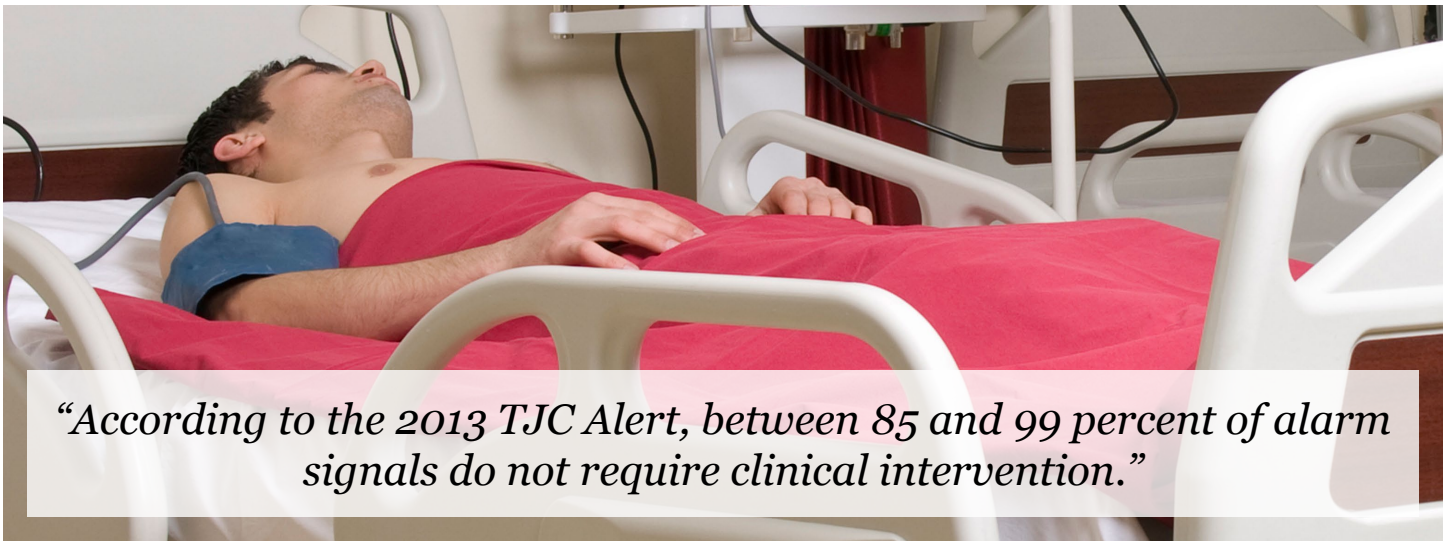

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According to the 2013 TJC Alert, between 85 and 99 percent of alarm signals do not require clinical intervention. As a consequence, hospital workers may respond by turning the alarms off, reducing their volume or even changing their settings to a level deemed unsafe for patients. Thus, those suffering from alarm fatigue may potentially ignore real emergencies — a circumstance that could have very real implications for patient safety.

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"Alarm fatigue and the management of alarms are important safety issues that we must confront," says Ana McKee, M.D., executive vice president and chief medical officer, The Joint Commission. "The recommendations in the 2013 Alert report offer hospitals a framework on which to assess their individual circumstances and develop a systematic, coordinated approach to clinical alarms. By making alarm safety a priority, lives can be saved," Dr. McKee added.

The Joint Commission recommends health care organizations take various actions, which also correspond with recommendations made by both AAMI and ECRI Institute.

The recommendations begin with ensuring there is a process for safe alarm management and response in all areas identified by the organization as high risk. Prepare an inventory of alarm-equipped medical devices used in high-risk areas and for high-risk clinical conditions, and identify the default alarm settings and the limits appropriate for each care area.

Establish guidelines for alarm settings on alarm-equipped medical devices used in high-risk areas and for high-risk clinical conditions; include identification of situations when alarm signals are not clinically necessary. Establish guidelines for tailoring alarm settings and limits for individual patients. The guidelines should address situations when limits can be modified to minimize alarm signals and the extent to which alarms can be modified to minimize alarm signals.

Inspect, check and maintain alarm-equipped medical devices to provide for accurate and appropriate alarm settings, proper operation, and detectability. Base the frequency of these activities on criteria such as manufacturers' recommendations, risk levels and current experience.

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Institute an alarm management policy and a technology approach that will mitigate the effects of alarm fatigue. For example, route alarms from a single patient or room directly to the responsible party. This way clinicians can be directly notified of the alarms that pertain to them and them alone. This reduces noise on the unit making the environment more restful for patients and easier on clinicians.

This also significantly reduces distractions of alarms from non-responsible parties. The alerts should be locked down so clinicians cannot lower the volume or silence them. Additionally, it should be ensured that the devices cannot be powered off. This prevents the users from defeating the alerting mechanism.

Alert tones from the medical device should be matched to coincide with tones that are generated from the physiological monitor. Therefore, learning curves for alarm tones are eliminated, and nurses can quickly and immediately identify warning/critical level alarms from their personal alerting devices.

The Joint Commission Alert also recommends training and education for all clinical care team members on safe alarm management and responses in high-risk areas. Seeking input from patient care providers, healthcare engineers, risk managers and information technology professionals, healthcare providers should also establish policies and processes for alarm safety that include the regular review of trends and patterns that reveal improvement opportunities. Finally, the TJC Alert urges organizations to share information about alarm-related incidents, prevention strategies and lessons learned among all parties concerned.

Providers are encouraged to adopt a strategy that lets the entire care team share the organization's critical alarm experiences -- enterprise-wide. By using a reporting tool that includes easy-to-comprehend dashboards and charts, hospitals administrators and clinicians can view how their facility is responding to the myriad of clinical alarms, quantify the issues that are arising and take appropriate actions to improve upon them.

For example, a good reporting tool can help organizations:

- *Track the number of alarms per unit, nurse, and patient;*
- *Track the number of clinical false alarms;*
- *Track clinician response statistics;*
- *Track how many alarms were responded to, and how quickly clinicians responded.*

All of these important statistics can be used to make determinations on how to alter behaviors to lessen alarm fatigue. Should nurses change


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leads every 12 hours, once per day, etc.? How does this affect alarm response performance? How effectively are units/nurses customizing alarming levels for physiological monitors? All of these actions can be monitored and improved if you have the right information.

By studying the causes and sources of clinical alarms, you can discover why, where and when unnecessary alarms are occurring. Without these statistics to support and back-up your corrective actions, it's impossible to tell if you are improving your alarm fatigue environment.

A major East coast hospital recently put these recommendations into action and received an award for their work on alarm fatigue. The award was presented by the ECRI Institute, an independent, nonprofit organization that researches the best approaches to improving the safety, quality, and cost-effectiveness of patient care. The hospital uses a critical alerting solution that includes a response paging system and a reporting tool that lets them view their clinical alarm activities to reduce alarm fatigue by combining excellent performance with reliability, helping to ensure that all critical alert alarms are handled properly.

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### *About the Author*

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