



# THE PATH TO ALARM SAFETY

## STEP-BY-STEP GUIDE FOR IMPROVING CLINICAL ALARM MANAGEMENT AND REDUCING ALARM HAZARDS

**R**EDUCING ALARM HAZARDS THROUGH better alarm management is a complex and lengthy process. And for Joint Commission-accredited hospitals it's a necessary one, now that alarm management has been established as a National Patient Safety Goal. To successfully navigate this process, your facility will need to develop a plan. But where do you start?

To help, ECRI Institute has mapped out the path toward reducing clinical alarm hazards. The approach described here is based on ECRI Institute's on-site work helping healthcare facilities improve their management of clinical alarms and on our research into the initiatives implemented at other healthcare facilities.

### LEADERSHIP DEMONSTRATES A READINESS TO TACKLE THE PROBLEM

Because of the time involved and the complexity of the issue, a program of this magnitude must be supported from the top of the organization. Moreover, the culture of the organization, which leadership helps establish, will play a key role in the success of the effort. Questions to consider can include:

- Are staff comfortable talking about safety problems, or are they reluctant to report adverse incidents or near misses?
- Are staff across multiple departments willing and able to work together, or do real or perceived barriers prevent multi-disciplinary cooperation?

### A MULTIDISCIPLINARY ALARM SAFETY/MANAGEMENT TEAM IS FORMED

With the support of leadership, a team should be formed consisting of stakeholders — individuals across many disciplines whose work touches on the management of alarms. That team will then coordinate the facility's efforts. Participation from nursing and clinical engineering will be essential, with other important roles to be played by key medical personnel and representatives from administration, patient safety/risk management, and IT.

### THE TEAM PRIORITIZES THE CARE AREAS, DEVICES, AND ALARMS TO BE ADDRESSED AND IDENTIFIES WAYS TO TRACK PROGRESS

The Joint Commission's National Patient Safety Goal specifies that, during 2014, healthcare facilities must "identify the most important alarm signals to manage." To make the most efficient use of limited resources, the alarm management team will want to prioritize its efforts. A facility may decide to start by targeting one or more care areas where alarm hazards are deemed to be significant. Alternatively, it may decide to focus on specific types of devices (e.g., telemetry monitors) or even specific alarm conditions (e.g., ECG leads-off alarms). Or it may conclude that some other approach would allow it to achieve the most significant gains. Ultimately, the determination will depend on local factors — that is, the

best approach for one facility may not be the best for another.

### THE TEAM CONDUCTS AN ALARM AUDIT TO ASSESS THE RISKS SPECIFIC TO EACH CARE AREA

To identify vulnerabilities or failures that could lead to patient harm, members of an alarm management team will need to inventory and analyze the devices that incorporate clinical alarms and all the conditions for which an alarm might activate. Because the circumstances will vary in different care areas, separate analyses will be required for each.

Collecting and analyzing alarm data associated with these devices — in whatever form that data can be obtained — will help the team identify problem areas, which in turn will help guide their efforts. For example, alarm data may reveal a large number of alarms for a condition that frequently resolves on its own, without any intervention from staff. In such cases, to reduce unnecessary alarms your medical personnel may recommend instituting a brief delay before transmitting an alarm for that condition to staff; if the condition does not resolve itself within the defined period, an alarm would then sound. Or, if alarm data reveals a pattern of minor alarm limit transgressions that do not require a staff response, your medical personnel may determine that the alarm limits should be adjusted to more clinically significant values. Such approaches can help reduce the number of alarms that

don't require a staff response, while still protecting the patient.

A thorough audit would address all aspects of how alarms are initiated and communicated. The following are just a few of the factors to consider:

- Alarm load — the number of alarms to which caregivers are exposed.
- Alarm notification — whether alarms are reliably communicated from the medical device to staff.
- Alarm content — the information that is passed to the caregiver along with the alarm signal.

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#### IMPLEMENT THE MOST APPROPRIATE STRATEGIES FOR EACH CARE AREA

There is no one-size-fits-all, institution-wide solution to addressing alarm hazards. Because the needs of each care area are unique, the team will need to understand the particular risks present in each and develop strategies that address those risks. "Solutions" that aren't well matched to the environment or workflow of a care area will likely prove to be ineffective — and worse, they could erode staff confidence in the team's work. Thus, input from frontline workers will be invaluable in assessing which strategies are practicable and which aren't.



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#### THE TEAM ASSESSES THE EFFECTS OF THE IMPROVEMENT STRATEGIES AND DETERMINES WHETHER REFINEMENTS ARE NEEDED

After a strategy has been implemented and taken root, the team should reassess the care area to identify whether alarm problems persist and whether additional changes are needed.

Data should again be collected — using the same metrics as in the planning stages — so that changes can be measured. Being able to compare “before” and “after” measurements of the number of alarms of a certain type in a certain care area, or the response time, or whatever metrics are relevant, provides powerful proof of the effectiveness of certain interventions or the need for additional adjustments.

Before starting on the journey to improve clinical alarm management, recognize that the path can be a long one, taking years before institution-wide improvements have been made. And in truth, the work of an alarm management team may never end: With technologies and standards of care continually evolving, the path will not have a defined endpoint, a time when all alarm hazards have been eliminated. Rather, the team will be instituting a mindset and a process that continually assesses risks and reduces the likelihood of adverse events.

With this approach, the healthcare facility will be moving purposefully in the direction of continuous improvement, resulting in better patient care.

#### NEED HELP?

ECRI Institute has assisted many hospitals with an assessment of their alarm management practices and can recommend implementable solutions to make them effective. Our reviews and recommendations parallel the Joint Commission's standards, and also consider culture, infrastructure, practices and technology in the unique context of your organization. If your facility needs assistance with the Joint Commission's National Patient Safety Goal on alarms, please email [consultants@ecri.org](mailto:consultants@ecri.org), or visit [www.ecri.org/alarms](http://www.ecri.org/alarms) to learn more. ✨

**THIS ARTICLE IS BASED ON** guidance that appears in the December 2013 issue of ECRI Institute's Health Devices journal, available to members of the Health Devices System. Additional articles in ECRI Institute's series on alarm management are available in the August and September 2013 issues of Health Devices.

**TO LEARN MORE ABOUT** the Health Devices System or any ECRI Institute services, visit [www.ecri.org](http://www.ecri.org) or call (610) 825-6000, ext. 5891.