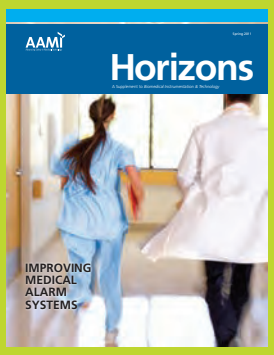
Alarms Pose Challenges to Healthcare Facilities



Medical device alarms provide essential warnings to alert caregivers of changes in a patient's condition. When alarms work well, the environment of care is enhanced. When alarms don't work well, they pull caregivers away from other duties and other patients—or worse, train caregivers to ignore the alarm sounds altogether. Alarms that are ignored can and have resulted in patient deaths.

Today, by and large, medical device alarms don't work well. Too many devices sound too many alarms and are wrong too often. Why is that, and what can be done about it?

The Problem

As the number of devices in patient care areas have multiplied, so have the noises they make. Experts say that most alarms generated by medical devices don't require any action at the bedside—from 85% up to 99%. These "nonactionable" alarms add to the noise, confusion, and stress in an already-stressful environment.

High false alarm rates intertwine with other alarm problems including:

- Alarms parameters often are not properly customized to individual patients or patient environments.
- Alarms from individual devices are not integrated with those from other devices in the same area.
- Components in the signal path—sensors, cables, lead wires—may fail intermittently.
- Legal liability concerns cause a strong bias toward false positives rather than false negatives.
- Confusing alarm sounds don't convey needed information to users.

Possible Solutions

Some facilities have had astounding success at improving alarm performance. Dartmouth Hitchcock Medical Center in Lebanon, NH, undertook an alarms improvement initiative on a post-surgical orthopedic floor. It succeeded in reducing the average number of alarms per patient per day to only four. William Beaumont Hospital in Detroit, MI, reduced its mean alarm response time on a telemetry floor from 9.5 minutes to 39 seconds by implementing a new communication system. Johns Hopkins Hospital in Baltimore, MD, revamped alarm procedures in a medical step-down unit and achieved a 43% decrease in critical alarms.

Experts agree that resolving problems with medical device alarms requires interdisciplinary effort and buy-in from a wide array of players at the highest levels. They also say that technology—the very devices that sound these alarms—can be used to alleviate the problems they have created.

What can be done? Suggestions include:

- Improved design for more accurate parameter recognition and human factors
- More research on alarm origins and causes as well as proper alarm settings for various patient groups
- Facility-wide policy initiatives supported at the highest levels to ensure that alarms are consistently set (in terms of defaults, alarm thresholds, and audio volume) and that caregivers respond appropriately
- Improved facilities design to enhance alarm recognition
- Multiparameter monitoring that integrates related physiological alarms into "smart" alarm systems
- Integrated alarm systems that collect data from disparate devices and present that data more effectively, perhaps on dashboard-like displays
- Better methods to train staff on alarms technologies and procedures
- Distributed alarm systems that transmit the right notifications to the right caregivers in the right way
- Better international standards on alarm systems that address distinctive alarm sounds and user interfaces
- Consideration of alarms issues unique to the home health environment

These topics and more will be considered at the fall Medical Device Alarms Summit, set for October 4-5, 2011 in Herndon, VA. Visit www.aami.org/alarms for details.

Visit www.aami.org/HorizonsPlus for more!

Hear alarm sounds from a typical "day in the life" of an intensive care unit nurse.

View animated guidance designed to take the stress out of alarm troubleshooting and improve patient care.