

# Drawing Up a New Game Plan to Reduce Alarm Fatigue

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CenturyLink Field, home of the Seattle Seahawks football team, is famous for being one of the noisiest venues in sports. *The Guinness Book of World Records* certified the stadium, which is nicknamed “The Clink,” as hosting the loudest crowd roar ever recorded—136.6 decibels—during a Dec. 2, 2013, football game versus the New Orleans Saints.<sup>1</sup>

Probably more than a few nurses or respiratory therapists would say that the noise levels in their care units could give the The Clink a run for its money.

Clinical alarm signals are intended to alert caregivers that a patient requires intervention. But 85% to 95% of alarms amount to little more than anxiety-inducing wild goose chases.<sup>2</sup> They send direct-care clinical staff scrambling and disrupt the recovery of patients. The average number of alarms signals generated per bed can approach 200 per day.<sup>3</sup>

The Seahawks at least have a Vince Lombardi Trophy to show for all the racket. Direct-care staff are instead rewarded with alarm fatigue—a condition where they are overwhelmed or desensitized by alarm information—and increased threats to the safety and well-being of their patients.

Healthcare associations and governing agencies, including the ECRI Institute and The Joint Commission (TJC), have documented the patient safety dangers inherent in alarm proliferation. Direct-care staff often respond to alarm fatigue by arbitrarily adjusting threshold settings on devices or shutting them off

completely—actions that increase the chance of a sentinel event. TJC reported 80 alarm-related patient deaths and 13 serious alarm-related injuries from 2009 to 2012.<sup>4</sup>

The problem is exacerbated by an increase in the number of medical devices that can generate alarms, including bedside physiologic monitors, pulse oximetry machines, bedside telemetry, infusion pumps, and ventilators. These devices also lack standards to specify the proper configuration of alarm parameters.

TJC recognized the adverse effects of these constantly blaring, mostly nonactionable alarms on patient safety and clinical workflow by making clinical alarm management a priority by approving its National Patient Safety Goal (NPSG) on Alarm Management (NPSG.06.01.01) in 2013. NPSG.06.01.01 mandates that hospitals take definitive steps to implement policies and procedures to safely reduce and prioritize clinical alarms.<sup>5</sup>

Although solutions and strategies abound for returning meaning and action to clinical alarms, hospitals must first understand their opponent.

## First Down: Draft Day

Achieving measurable progress in clinical alarm management requires that hospitals identify and support internal champions in all relevant departments, including nurses, respiratory therapists, biomedical engineers, and information technology (IT) staff. These interdisciplinary experts must come together to assess the current state of the clinical alarm

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environment both in their units and in the facility as a whole. Such an effort includes:

- Establishing baseline alarm quantities by department, patient cohort, and time of day or night.
- Reviewing current alarm settings.
- Identifying and developing targets for reduction.
- Implementing an agreed-upon plan using a staged or phased approach.
- Evaluating appropriate interventions, policies, and standards.

Without the input and expertise from hospital leadership, any clinical alarm management solution will fall short of institutional goals.

### Second Down: Film Review

Two of the biggest challenges for clinical alarm management are separating clinically relevant alarms (e.g., an abnormal heart rhythm) from nonactionable alarms (e.g., a patient sensor momentarily detaching or a temporary Wi-Fi disruption), and managing the ever-growing number of alarm-enabled medical devices.

Attaining clear insight into each of these challenges through a baseline alarm study is the first step in clinical alarm management. A baseline study involves a current state evaluation over a predetermined period of time and tracks a number of variables, including frequency, alarm type, device, variations by time and day, rooms and units, alarm parameters and thresholds, and physiological versus technical alarms.

After this evaluation is complete, the multidisciplinary team can use evidence to identify the nonactionable alarms from medical devices—not just the individual alarms—that could be adjusted or eliminated entirely.

### Third Down: Game Planning

With a baseline alarm study completed and the root causes of alarm proliferation identified, hospitals can begin developing standards and strategies for mitigating the problem. For example, should hospital leadership focus on reducing the total number of alarms, reducing the average number of alarms per bed, or assessing the delivery of real-time alarm signals to the appropriate caregiver?

Clinical alarm management consists of more than just the reduction of clinical alarms.

It's also about providing the right caregiver a holistic, real-time view of a patient's condition at the right time (i.e., before intervention is required). "Smart alarms" provide a real-time perspective for clinicians, including:

- **Trending alarms.** Patient alarm limits expand or contract on individual devices.
- **Consecutive alarms.** Patterns of consistent alarms are detected over a clinician-defined period of time.
- **Combination alarms.** Multiple parameters from different devices occur simultaneously, which may together indicate a degraded patient condition.

### Touchdown: And the Alarms Go Silent!

Alarm management is a classic example of interdisciplinary leadership, involving clinical, IT, biomedical engineering, and other departments. The scope of alarm management reaches beyond reducing nonactionable alarms. It is a gateway for more seamless care and a way for hospitals to leverage hard data to make continuous improvements to its care and response processes. ■

### References

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