



PHILIPS

Clinical Services

A path forward:
approaches for making
effective change

Today, relatively few hospitals have developed comprehensive programs to manage alarms in their various care environments. More often, alarm management is occurring at the level of individual departments, or even individual nurses. Ad hoc solutions to excessive alarms, including unsanctioned adjustments to alarm settings, can be as much part of the problem as the solution.

Seeking a solution

There is an enormous amount that can be learned from solutions and workarounds on units, and many of the best tactics come from common-sense practices at the point of care. However, for a hospital striving to provide reliable quality care, efficiency and adherence to best practices throughout the facility, it is critical that the hospital administration understands and leads the change.

Particularly for approaches that may change the balance between sensitivity and specificity in patient monitoring, hospitals need to approach alarm management in a programmatic way.

That means having a thorough understanding of the current alarm environment, and a rational strategy to focus on top priorities and root causes. Forming a coherent strategy for alarm management should be **grounded in a data-based understanding of the specific alarm environment** for which they are responsible. Without clear, universal best practice guidelines, responsibility for determining the best approach for each facility will fall on the leadership of that facility.

Searching for consistency in alarm management solutions

In order to understand the underlying principles and success factors, Philips used a three-pronged approach to determine consistent factors in successful alarm management:

- A comprehensive literature review was conducted, looking at published papers on interventions to reduce alarm burden and/or improve the yield of alarms.
- 9 authors and wider opinion leaders were interviewed to understand their approaches to alarm management, and to capture lessons learned on how to approach an alarm management intervention.
- A thorough internal review of Philips experience with alarm management – quantification, diagnostics/audit and interventions – was completed.

Here is what we found:

A path forward: 4 steps for a successful program



Understand your starting point:

- What policies are in place?
- What information is available?
- What do you measure?
- What do you need to measure?
- How does change occur in your hospital.

Observe, measure and quantify the problem:

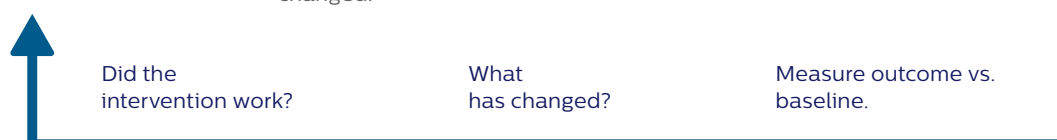
- How many alarms?
- How many resulted in action?
- Which alarms were informative, which not?
- Execute a root cause analysis?
- Identify 'low-hanging fruit' that can be quickly and easily changed.

Establish a program, and specific initiatives:

- Create a customized approach that accounts for organizational idiosyncrasies.
- Select from the broad palette of possible interventions the ones that will be feasible and impactful in your context.

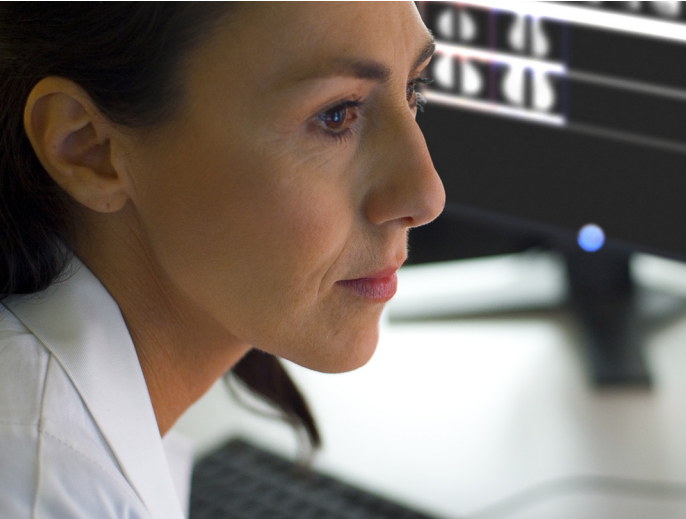
Implement changes:

- Provide clear organizational and cultural direction
- Label an executive champion.
- Go live with technology changes.
- Go live with procedural changes.
- Set timing and criteria for evaluation.



4 areas of focus to reduce non-actionable alarms

The Association for the Advancement of Medical Instrumentation (AAMI)¹ has identified key opportunities that alarm management teams should look for to improve alarm management and reduce the likelihood of alarm fatigue. The AAMI recommends basing plans on specific situations and using data from alarm reports to drive meaningful change.



It is important for a hospital to understand its own situation and to develop a systematic, **coordinated approach to clinical alarm system management.**²

—The Joint Commission²

By studying the alarm report data to determine those alarms that are “bad actors” and where substantial improvement can be obtained, the AAMI recommends making small but meaningful changes in these following areas:³

Alarm settings, limits and delays

- Establish appropriate (pediatric versus adult) default settings for hospital unit and patient population.
- Turn off duplicative alarms.
- Ensure alarm priority (high, medium, low) is set to actionable levels.
- Review high/low threshold limits and other settings.
- Small changes, such as decreasing a SpO₂ lower limit by 1 point, can have large effects on reducing non-actionable alarm signals.
- Consider using alarm signal delays to allow for alarm auto-correction (SpO₂ and ST alarms).
- Consider using secondary alarm notification devices to ensure alarm audibility.
- Consider using alarm escalation to increase alarm priority level.

Clinical population

- Establish default alarm settings/profiles based on patient population served.
- Create a process to customize alarm settings based on individual patient needs.

Staff education

- Educate clinicians on their role in alarm management.
- Ensure staff are trained and competent in recognizing and troubleshooting equipment alarm signals.
- Empower staff to manage non-actionable alarms by changing limits to actionable levels (based on policy and “standing” orders).
- Encourage staff to review trend data for repetitive alarms, especially during sleep. A perceived ‘false’ alarm may be a sleep apnea patient with multiple clinically relevant alarms who wakes up and self corrects when the nurse enters the room.

Patient education

- Educate patients and families about the physiologic monitoring system and their role in patient safety and alarm management.
- Encourage patients and families to notify staff when an alarm signal is not being addressed in a timely manner.
- Consult with other hospitals to determine where they have set their default physiologic monitor settings.

1. The AAMI is an American nonprofit organization that develops standards on the safety, performance and marketability of medical devices, and is a strong voice on regulatory policies and health care reform.
2. The Joint Commission is a United States-based nonprofit organization that accredits more than 21,000 US health care organizations and programs. There is also an international branch that accredits medical services from around the world.
3. Cosper, P., et al. “Improving Clinical Alarm Management: Guidance and Strategies”, Biomedical Instrumentation & Technology, March/April 2017, pp. 109–115.



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