



PHILIPS

Clinical Services

Alarm management:
evidence for action

In the past few years, global institutions have placed a renewed focus on the need to address patient safety directly. This recognizes that one of the most important indicators of quality of care is real improvement in patient outcomes, alongside other measures, such as the level of workflow efficiency.



Alarm management is a component of a much larger initiative for hospitals to become high-reliability organizations similar to commercial aviation, petrochemical plants and nuclear power operators.”

—AAMI Foundation¹

A recognized problem for staff

Nurses work in busy, stressful dynamic environments, and monitoring patients is just one of their responsibilities. When it comes to responding to medical alarms, they are forced to make difficult decisions on a nearly continuous basis about whether to respond to alarms from different patients, or to continue with the tasks at hand.

So it's no surprise that the majority of nurses indicate that they perceive alarm management to be a major issue², with serious clinical consequences beyond the simple inconvenience of distraction. Chief Nursing Officers (CNOs) are also aware of the clinical, operational and human resource impacts of excessive alarming, and are seeking to address it in ways that do not compromise patient care.

What exactly is alarm fatigue?³



Alarm fatigue is when a nurse or other caregiver is **overwhelmed with non-actionable alarms**.



Alarm fatigue is when a true life-threatening event is **lost in a cacophony of noise** because of the multitude of devices with competing alarm signals, all trying to capture someone's attention, without clarity around what that someone is supposed to do.



Alarm fatigue is compounded by **inconsistent alarm system functions** (alerting, providing information, suggesting action, directing action or taking action) or **inconsistent alarm system characteristics** (information provided, integration, degree of processing, prioritization).



Alarm fatigue is a systems failure that results from **technology driving processes** rather than processes driving technology.

The alarm management challenge

Whether or not alarms are technically false, there are undoubtedly a large number of alarm events that do not correspond to a truly urgent clinical situation.

Alarm management is not synonymous with false alarm elimination, though improving the diagnostic yield of alarm systems is undoubtedly a key part of the puzzle. The real challenge is to make alarms consistently useful in supporting the clinical team in decision-making so they can continue to deliver excellent care to their patients. Meeting this challenge may have technical and human components, and can rely on technological, operational, organizational and cultural changes.

Why re-evaluate your alarm management approach?

12 reasons why improving alarm management should be a key priority right now²

1. There is clear evidence that alarm frequency in many clinical environments is excessive.
2. Most alarm signals are NOT actionable: 50 – 80% according to published literature.
3. Alarms cause stress for healthcare professionals, with sound levels of 80 decibels common in clinical units.
4. Alarms stress patients and interrupt sleep. Stress and poor sleep can impact recovery, extend length of stay and result in worse long term function.
5. Alarm fatigue results in depression and reduced productivity in nursing staff. More than 50% of nursing staff identify themselves as affected by alarm fatigue.
6. Background noise, signal overload and alarm fatigue can lead to unconscious filtering, destroying the function of alarms and increasing the risk of missing a critical notification.
7. Alarm fatigue can lead to conscious filtering, including disabling and silencing alarms, which increase the risk of missing a critical notification.
8. Increasing the frequency, priority and volume of alarms to overcome alarm fatigue is a self-defeating strategy – you can't shout over the crowd.
9. If a critical notification is missed, patients may die, litigation can cost millions of Euros and the image of a hospital can be tarnished irrevocably.
10. If a sub-critical notification is missed, patients may recover more slowly, with extended length of stay, and possible transfer to critical care settings.
11. Decreased patient satisfaction and adverse publicity from quality-failure events can impact referrals to a hospital.
12. Non-actionable alarms waste substantial nursing resources today, costing the health care system billions of Euros each year.



Optimizing alarm configurations for patient populations requires a multidisciplinary team. The organization, team membership and authority of the team requires executive sponsorship; otherwise, recommendations may not be enforceable.”

–AAMI Foundation

Hospital alarm charter: one example

The AAMI offers this template for when you're ready to convene a working group to examine the issue.

(Hospital name) is committed to providing a safe and healing environment for our patients and caregivers. We depend on medical devices to notify caregivers of an unsafe or undesirable condition.

The Clinical Alarm Safety Committee, reporting to the (executive sponsor) will engage clinical, administrative and technical stakeholders in developing procedures that optimize alarm behavior for each care area to ensure the highest level of patient safety.

Tips for team building from the AAMI⁴

- Select people who have a passion for improving alarm safety, not just professional credentials.
- Create a safe environment in which everyone supports a questioning attitude and is comfortable sharing issues and ideas.
- Consider bringing in a skilled facilitator to ensure that everyone has a voice.

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. "Just a Nuisance?", accessed 2017, <https://images.philips.com/is/content/PhilipsConsumer/Campaigns/HC20140401%5FDG/Documents/Just%2Da%2DNuisance.pdf>
3. "Clinical Alarms 2011 Summit", accessed 2017, http://s3.amazonaws.com/rdcms-aami/files/production/public/FileDownloads/Summits/2011_Alarms_Summit_publication.pdf
4. AAMI. "Alarm Management Compendium", accessed 2017, http://s3.amazonaws.com/rdcms-aami/files/production/public/FileDownloads/HTSI/Alarms/Alarm_Compndium_2015.pdf

