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Review Article

Dealing with Alarm Fatigue among Nurses: Tips & Strategies

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ABSTRACT

Biomedical equipment's like infusion pumps, patient monitors, ventilators, syringe pumps and feeding pumps etc are designed to generate alarm signals to indicate any unacceptable physiological patient conditions, unsatisfactory functional states of biomedical equipment or medical electrical systems, or to warn any operator threats. Too many alarms lead to alarm fatigue among nurses thus, leading to silencing of the alarms more often with no intervention. Hence, desensitization for alarm management and inability to differentiate between various biomedical equipment alarms simultaneously takes place. Risk of a missed or mismanaged actionable, relevant clinical alarms due to too many alarms ringing or any other factor can lead to patient's clinical deterioration and other adverse effect, thus jeopardizing the patient safety and lower productivity. Lack of knowledge and competency of nurses on handling clinical/technical alarm, normal ranges of alarms

and its management, wherever required. Noise can lead to acute stress for patients and chronic stress for caregivers, with direct physiological and psychological consequences. It disrupts the patient's sleep, leading to sleep deprivation and a depressed immune system, thus affecting the recovery and length of stay. High levels of non-actionable alarms absorb a significant amount of nurse time, thus compromising a pro-active patient care, with possible impact on quality and patient satisfaction. Consultant complaints due to missed/unattended alarms. Clinical alarms are a real and serious problem in all areas of the hospital. An effective alarm management program improves patient care, saves time and money, reduces alarm fatigue, and uses technology to improve the quality of life for the healthcare providers. Decreased alarm fatigue means nurses can more effectively take care of their patients. After successful implementation of the program, the competency of nurses on clinical alarms will be improved, resulting in the enhanced patient safety

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INTRODUCTION

Biomedical equipment's like infusion pumps, patient monitors, ventilators, syringe pumps and feeding pumps etc are designed to generate alarm signals to indicate any unacceptable physiological patient conditions, unsatisfactory functional states of biomedical equipment or medical electrical systems, or to warn any operator threats.

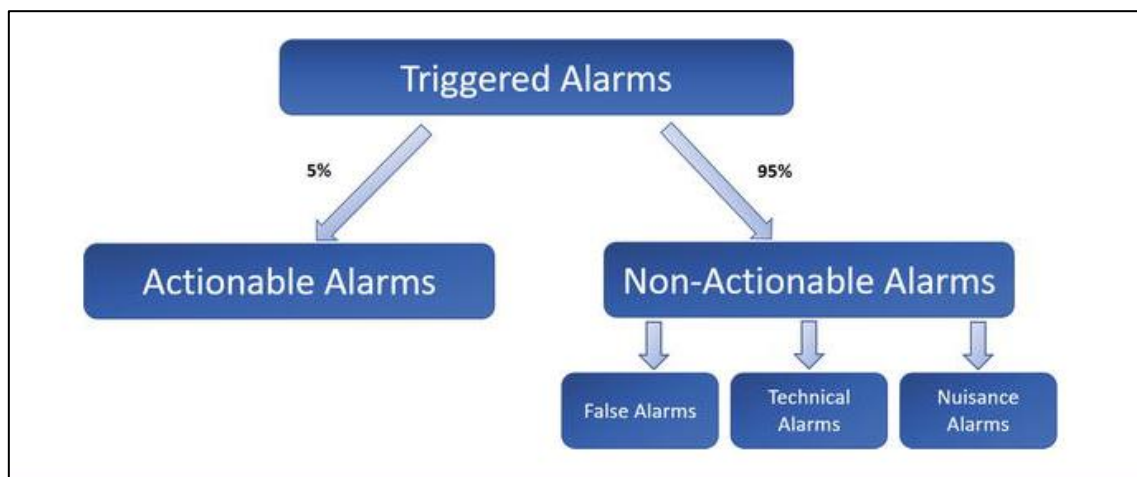
These are the alarms that are all too familiar to nurses & doctors, especially in the intensive care unit, and are all too acquainted with. Alarm fatigue occurs when 72% to 99% of all alarms are false, according to a study. Alarms meant to notify physicians of concerns with patients are sometimes ignored, unfortunately, due to the high frequency of false alarms. Assuming an alarm is false puts people at danger and may result in medical errors. Alarm fatigue occurs when the doctors/nurses are exposed to a large

volume of medical device alerts, resulting in alarm desensitisation and ignored or delayed alarms. Alarm fatigue is becoming more widely recognised as a serious patient safety issue as the number of alerts utilised in healthcare increases.

This article aims to suggest some Tips & Strategies to deal with the Alarm Fatigue among the nurses in a very short and a concise manner.

Types of Alarms

The alarms can be categorized into two categories namely- Actionable & Non-Actionable alarms, out of which 5% comprises of the Actionable Alarms & 95% consists of the Non-Actionable alarms (source: Ruskin [8]; Gorges[66]; Tsien[67]).



Actionable alarms are known as True Alarms, they are the ones which are triggered due to true variation in the patient's condition etc, where an action is needed from our side.

Non-Actionable alarms are further divided into False, Technical & Nuisance Alarms. False alarms occur when there is no true patient or system trigger and are usually caused by a measurement artefact.

Technical alerts require the provider to attend to some part of the monitoring system's functionality, such as when monitor leads/sensors need to be readjusted.

Nuisance alarms are alarms that are clinically minor but could interfere with patient care.

False Alarms occur when there is no true patient or system trigger and are usually caused by a measurement artefact.

Overall, the non-actionable alarms are the major cause of the desensitization of hospital staff towards alarms, thus resulting in the alarm fatigue.

Tips & Strategies to deal with the Alarm**Fatigue:**

- Review and adjust default parameter settings and ensure appropriate settings for different clinical areas as per the doctor's prescription/order.
- Nurses should ensure customization of the alarms based on the individual patient's condition as per the doctor's advice.
- Check that all of the equipment is in functioning order.
- Engage in ongoing education on monitoring systems and alarm management for unit staff.
- ECG electrodes must be properly prepared and placed on the skin.
- Using the right oxygen saturation probes and putting them in the right places.
- At the start of each shift, double-check the alarm settings.
- Keep the equipment clean- False alarms often occur because of dirty equipment. Set aside time to inspect and clean the equipment. This reduces the amount of notifications generated by technical issues.
- Replace single-use sensors on a regular basis to eliminate false or annoying warnings.
- Establish a routine for inspecting, cleaning, and maintaining alarm-equipped medical devices, and test them on a regular basis.
- Determine whether the acoustics in patient care locations allow for easy hearing of alarms and make necessary adjustments.

Nurses can also follow the mnemonic(ASSET) to help prevent alarm fatigue and increase patient satisfaction and outcomes:

- A-Alarm sensitivity
- S-Sounding notification
- S-Significant need to monitor
- E-Evaluate the situation
- T-Timely response/technology training

CONCLUSION

However, an integrated strategy to improving alarm safety can be done by considering

human, organizational, and technical elements. By following the safety culture aspects can reduce the total number of alerts, the number of false alarms, and overall alarm noise level. The risk evaluations should be used to guide the implementation of systems for safe alarm management and alarm technology adoption priorities. To effectively adopt these techniques to prevent alert fatigue, it is critical to invest in new technology training and education for caregivers, as well as getting buy-in at all levels and engaging interdepartmental groups/teams.

REFERENCES

- 1) www.ncbi.nlm.nih.gov
- 2) www.incrediblehealth.com
- 3) www.burroughshealthcare.com
- 4) www.ppahs.org
- 5) <https://healthmanagement.org/c/icu/issuearticle/nine-nurse-recommended-design-strategies-to-improve-alarm-management-in-the-icu-a-qualitative-study>
- 6) <https://www.spok.com/blog/8-ways-reduce-alarm-fatigue-hospitals/>
- 7) <https://www.intechopen.com/chapters/66118>

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