

Reducing nuisance alarms in the Emergency Department

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1 Background

Bedside alarm signals are intended to provide easily recognizable cues to providers in order to elicit a response. An excessive number of alarms, particularly when many are false or low acuity alarms, can lead to desensitization and alarm fatigue. Alarm fatigue occurs when clinicians become desensitized and do not react to sensory overload created by a large number of alarms, many of which are alarms that do not require that any action be taken (NACNS, 2014). Alarm fatigue is a national problem and alarm hazards were cited as the top health technology hazard in 2013 (NACNS, 2014). Previous work in the Johns Hopkins Hospital Adult ED has made a decrease in cardiac alarms by almost half. From 12,000 to 7000 alarms per week. With the new ED redesign in 2012, to include a much larger footprint and all private rooms, the use of monitoring has increased.

2 Objectives

In an effort to continue to decrease the number of alarms, we examined the reason for the number of alarms to determine whether or not it is possible for the number to continue to decrease. This project aims to understand the role of nurses in alarm management in the emergency department and to better understand how nurses interpret the need for cardiac monitoring and setting alarm parameters to avoid unnecessary alarms.

3 Methods

A randomized survey was distributed to nurses in the emergency department. The survey asked nurses to record the number of current patients they had being monitored and details about how and why each patient was being monitored.

Does the patient have an order to be placed on the monitor?
Yes/No

If no, go to question 3.
If yes, is the order for continuous or intermittent monitoring?
Continuous/Intermittent

What are you monitoring? Select all that apply.
Pulse ox/Cardiac/Vital signs

Is this patient admitted to the monitor?
Yes/No

In your opinion, why is this patient being monitored?
Medical need/Convenience

Have you had to adjust the parameters to get the patient to stop alarming?
Yes/No

Survey distributed to nurses in ED.

Weekly alarm data for the emergency department was also reviewed throughout the data collection process. This provided data about the number and types of alarms occurring weekly. Finally, researchers conducted periods of observation in the emergency department to observe number of alarms and conditions of patients with alarms as well as staff response to alarms.

4 Results

The results of the survey showed that about three quarters of patients did not have orders to be put on the monitor, but 96% of patients were being monitored for medical need with 92% having been admitted to the monitor. These results suggest that placing patients on a monitor is standard procedure in the ED. Eighty percent of monitors did not have to be adjusted for unnecessary alarms, ruling out adjustment of parameters as a need for alarm management. In nearly three-quarters of patients on monitors, pulse ox, cardiac and vital signs were all being monitored. Ninety-two percent of patients were admitted to the monitor, meaning that the patients' vitals are displayed on a central monitor that can be visualized by staff at the work station nearby. If there was an alarm, it would sound on this central monitor. Staff observed that many of the alarms were related to staff from another department, radiology, etc coming to retrieve the patient and improperly removing the monitor. In addition, patient movements often disconnected monitor leads and caused unnecessary alarms.

Does the patient have an order to be on a monitor?

	n	%
Yes	11	21.5
No	40	78.4
Total responders	51	100

Is the order for continuous or intermittent monitoring?

	n	%
Continuous	8	0.2
Intermittent	0	0
Other	3	0.06
Total responders	11	0.26

40 participants did not answer this question.

What are you monitoring? Select all that apply.

	n	%
Pulse ox	39	76.5
Cardiac	48	94.1
Vital Signs	36	70.6
Total responders	51	

Is the patient admitted to the monitor?

	n	%
Yes	47	92.2
No	4	7.8
Total responders	51	100

Why is the patient being monitored?

	n	%
Medical need	49	96.1
Convenience	0	0
Other	2	3.9
Total responders	51	100

Have you had to adjust parameters to stop alarming?

	n	%
Yes	10	21.5
No	41	80.4
Total responders	51	100

5 Conclusions

The results of this research suggest that much of alarm use in the emergency department is a standard practice that nurses use without orders from a physician to ensure patient safety. Patients are monitored for various reasons, but with individual rooms in the emergency department, more patients are being monitored because they cannot be visualized constantly as easily as in the past and providers are not constantly present with the patient. Patient movement is likely causing many of the nuisance alarms as patients are not necessarily aware of how their movements can affect the leads connected to them. New patient education on alarms may be helpful in reducing the number of alarms as well as staff education for departments other than the ED. In addition, staff from outside the ED that are disconnecting monitors improperly causing nuisance alarms. This suggests a need for outside staff training as well.

6 Future Directions

Additional research in the use of alarms in individual rooms as compared to hospitals with open emergency departments may help to further support this evidence. Based on this research, education for staff and patients should be the next step rather than focusing on specifically on ED staff for education and training

7 References

Mitka, M. (2013). Joint commission warns of alarm fatigue: multitude of alarms from monitoring devices problematic. *JAMA*, 309(22), 2315-2316.

National Association of Clinical Nurse Specialists. (2014). Alarm Fatigue: Strategies to safely manage clinical alarms and prevent alarm fatigue. Retrieved from <http://www.nacns.org/docs/NACNSFatigueToolkit.pdf>

Sendelbach, S., & Funk, M. (2013). Alarm fatigue: a patient safety concern. *AACN advanced critical care*, 24(4), 378-386.

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