

Alarm Suppression in the NICU Setting: Decreasing Alarm Fatigue

Monique Lowery BSN RNC-NIC, Canaan Stage BSN RN, Greg Walkup BSCS, Natalia Rosado BSCSE
Lori Holleman MSN RNC-NIC, Paige Crunk BSN RN, and Kristi Morgan MSN RN CCRN

Contact

Monique Lowery, BSN, RNC-NIC – mmlowery@sentara.com
Canaan Stage, BSN, RN – ccstage@sentara.com



Introduction

Alarm fatigue is a real threat to nurse satisfaction and patient safety. Looking at some of these numbers one can understand why:

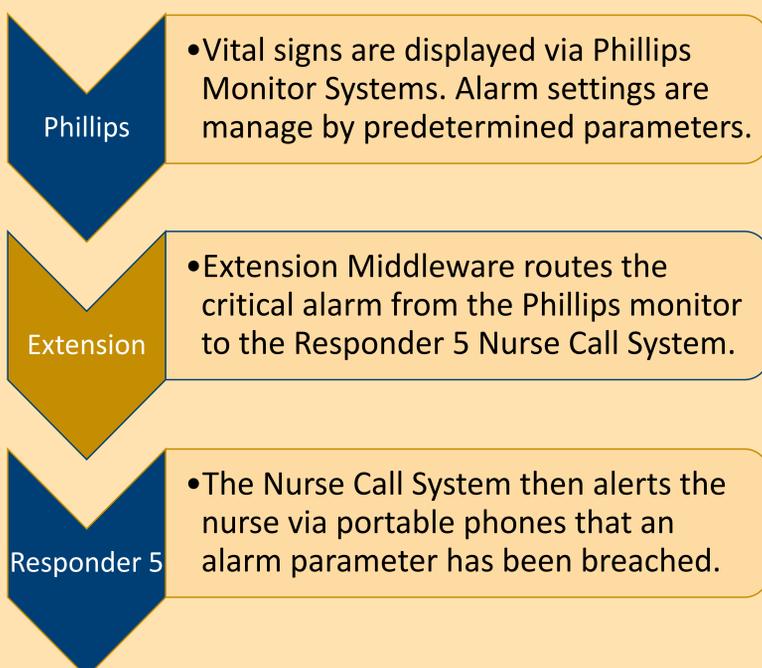
- A random twenty bed cardiac intensive care unit could generate 88 alarms per patient day.⁽³⁾
- Of 98 events reported over a 3 year period due to ignored alarms, 80 resulted in death.⁽²⁾
- An estimated 72%-99% of alarms result in no change to the patients plan of care.⁽¹⁾

While previous studies have looked to reduce alarms through alarm parameter customization, this quality improvement project demonstrates how Sentara Princess Anne Hospital's neonatal intensive care unit (NICU) was able to eliminate more than half of its unnecessary alarms, thus reducing the perceived alarm fatigue experienced by nurses.

Setting

- Community hospital with a 20 bed private and semi-private NICU.
- Staffed by 36 full and part-time RNs.
- Alarm management occurs via the use of portable phones that each RN carries.

Alarm to Phone Sequence



Background

Receiving alarms on a RN's phone has always provided a sense of comfort knowing that a patient does not have to be within sight to be monitored. However, this process did create some additional concerns:

- Monitors signal an alarm independent of the phone alarm (duplicate alarms).
- The system could not recognize when a nurse was intervening on a given alarm (nuisance alarms).
- In an emergent event an unanswered alarm would escalate to the entire nursing team some of whom may already be present in the room (repeat alarms).

Objectives

- Decrease the perception of alarm fatigue.
- Improve nurse satisfaction.
- Decrease the number of alarms escalated to the phones.
- Maintain a high standard of safety for the patients.

Method

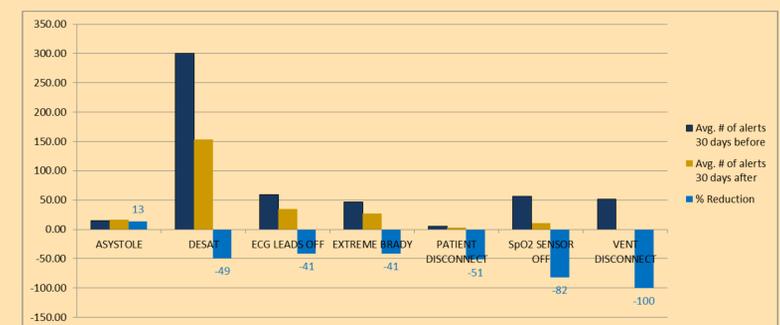
- RNs were asked to participate in a Pre and Post Survey.
- The survey utilized a five question Likert Scale to evaluate RN satisfaction. An additional open-ended question was included to gather RN's suggestions for change.
- Pre- and post- intervention alarm escalation data was obtained by the Information Technologies department.

Intervention

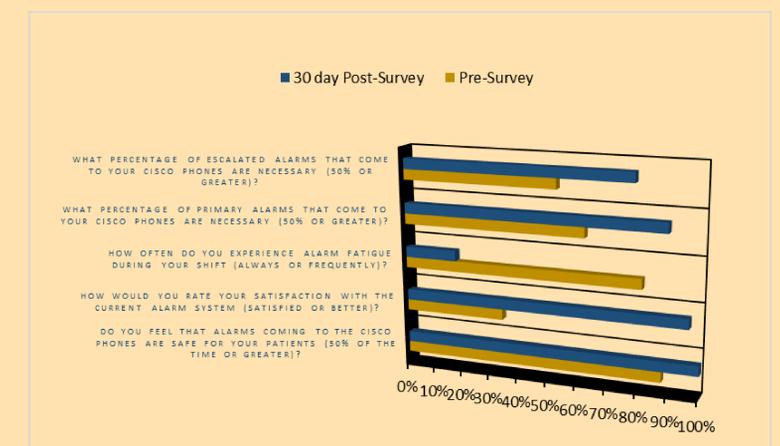
Considering the published data regarding alarm fatigue and the most common concerns voiced in the pre-survey, the Information Technology department was able to collaborate with a fourth system to alter the escalation pathway of these alarms. Versus Staff Tracking was able to recognize when a nurse was in the room and impede an alarm from reaching the Responder 5 system.

Results

- 54% of duplicative alarms were suppressed.
- RN driven or nuisance alarms such as suctioning (vent disconnect) or sensor changes (SpO2 sensor off) were observed to have the greatest change.



- Pre-survey identified that 96% of staff would like to see a change to the current system.
- Post-survey demonstrated an overall RN satisfaction with the alarm system increased from 34% to 96%.
- Across the survey improvements in perceptions of alarm fatigue, patient safety, and alarm necessity all saw improvements.



Implications

Many NICU models are transitioning to private and semiprivate rooms. One important factor to consider is the use of technology to limit alarm fatigue in this setting. Changes to alarm limits and parameters may decrease alarm fatigue but significant reduction can result from multiple device platform integration.

References

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- (2) Kettering Sincox, A., & Nault, D. S. (2014). Raising the alarm: patient care at risk from too many...bells, beeps, and buzzers. *Michigan Nurse*, 11-16.
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