

# Alarm Profiles to Reduce Alarm Fatigue in the Coronary Care Unit

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## 1 Background

Continuous physiologic monitoring of patients is standard practice in most ICU settings. Physiologic monitors provide nurses with a continuous feed of updated data on patients. Auditory alerts sound at the bedside and central monitors, and at a nurse's secondary device whenever a patient's data exceeds the alarm parameters set for that patient. The vast number of monitor alarms sounding may inundate clinicians, resulting in "alarm fatigue" (The Joint Commission, 2013). Manual disabling, silencing and inattention to alarms are potential negative consequences to alarm fatigue that can delay response time to actionable alerts and lead to sentinel events. False, nonactionable alarms, or nuisance alarms contribute to the burden of alarm sounds in the clinical setting, presenting an opportunity for implementation of interventions targeted to reduce the alarm burden (Cvach, M., Rothwell, Cullen, Nayden, Cvach, N., & Pham, 2015).

Evidence in the literature shows that alarm customization and profile protocols based on the needs of the patient may be used as a strategy to reduce alarms, while seeking to retain critical alerts for actionable criteria (Allan, Doyle, Sapirstein, & Cvach, 2017). This Evidence-Based Practice (EBP) project aims to implement this alarm reduction strategy through educational interventions within the Coronary Care Unit at Johns Hopkins Hospital.

## 2 Objectives

- Improve nurse awareness of alarm fatigue
- Improve awareness of pre-determined alarm setting profiles as a strategy to reduce non-actionable alarms
- Increase nurse confidence to autonomously customize alarm settings
- Increase nurse compliance with use of alarm profiles
- Decrease the number of non-actionable alarms/monitored bed/day in the CCU, thus reducing the alarm burden on nursing staff

## 3 Methods

- Audit alarm flood report data to measure baseline alarm data for the unit, and identify high non-actionable alarm outliers to target for reduction.
- Distribute the Healthcare Technology Foundation clinical alarm survey to measure CCU nurse perception and knowledge of customizing alarm settings at both baseline and post-intervention.
- Implement education based interventions:
  - Provide group education to RN staff and providers on the negative impact of alarm fatigue
  - Provide 1:1 staff education on the use of patient data to inform selection of unit-based alarm profiles, using real-time case reviews of admitted patients with high outlier alarm volume
  - Provide step-by-step visual aids on process to adjust alarm settings and set profile
- Monitor staff compliance with use of profiles and communication of appropriate alarm settings for each patient using the bedside rounding tool.

## 4 Preliminary Results

ST-segment monitoring alarms were selected as the target, and the use of two alarm profiles ("ST ON" and "ST OFF") were selected as the options for customization. While the intervention period is ongoing, preliminary results indicate that staff usage of profiles is increasing, and that audits of average number of alarms per shift are showing a modest decrease.

## 5 Conclusions

Preliminary data support the continued use of alarm profiles and continuation of staff education; however, complete analysis, evaluation of the data, and reporting is forthcoming.

## 6 Future Directions

- Re-survey staff on the Healthcare Technology Foundation clinical alarm survey to see if nurse perception of alarm burden has changed
- Interval data collection and graphing of data trends specific to timeline for interventions to reduce alarm fatigue
- Sustain educational efforts on the unit

## 7 References

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### Funding Source:

The Helene Fuld Leadership Program for the Advancement of Patient Care Quality and Safety



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