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Abstract

Background and Purpose: More than 1,800 medical devices used in patient care produce alarm sounds, 85% of which are false alarms. Repetitive false alarms cause sensory overload and desensitization to alarm sounds, known as alarm fatigue (AF). AF poses significant patient safety risks. The purpose of this project was to implement an evidence-based bundled approach to reduce false alarms and AF.

Methods: The project utilized a one-group pre/posttest quasi-experimental intervention design. The intervention included alarm management, alarm customization, proper skin care and daily electrode changes, and timely alarm delays. Participants included 30 telemetry nurses and alarm data from three patient beds with the highest alarms. Alarm knowledge was measured with a 3-item standardized scale. Alarm fatigue was measured with a 13-item Alarm Fatigue Questionnaire (AFQ). The number of true and false alarms were extracted from the *Phillips alarm system* device, seven days before and after the 60-day intervention. Analyses included descriptive statistics, Wilcoxon Sign-Rank, and Chi-square.

Results: Most participants were females employed full-time working the night shift. The intervention resulted in a statistically significant increase in AF knowledge prevention methods (Mdn_{pre} = 0 vs. Mdn_{post} = 1), and no change in familiarity or causes on AF. There was a 1.4% decrease in alarm fatigue (M_{pre} = 26.1 [SD=7] vs. M_{post} = 26.87 [SD=6.3]), which was not statistically significant (p=0.56). Finally, there was a statistically significant decrease in false alarms after the intervention, from 99.3% pre-intervention to 97.3% post-intervention (p<.01).

Conclusion: This project demonstrated an evidence-based bundled approach can have a measurable reduction in false alarms and an increase in AF prevention knowledge.

Implications: Hospitals can implement the bundled alarm management approach with little upfront costs. Reducing false alarms can decrease nurses' desensitization to alarm sounds and may have lasting effects on patient safety.

Key words: alarm sounds, desensitization, false alarms, telemetry, quality improvement