Alarm Fatigue and Alarm Safety in
Sparrow’s Regional Neonatal Intensive Care Unit (RNICU)

Research Team
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Purpose: The purpose of this study is to decrease alarm fatigue and improve alarm safety in the RNICU.

Aims: The specific aims or objectives of this study are as follows:
1. Determine whether the use of 5 sets of specific default options for physiological monitoring will significantly decrease the prevalence of nuisance alarms
2. Determine whether the implementation of a lead changing protocol will significantly decrease the prevalence of false alarms
3. Determine if the above interventions can be sustained over time
4. Pilot a survey tool designed to assess nurse perceptions on clinical alarms and alarm fatigue
5. Examine relationships of alarm fatigue and alarm safety related concepts

Significance: While the literature presents a quantity of research in the area of alarm safety and alarm fatigue, there is limited strength to this evidence and a deficit of literature that speaks to this topic related to neonatal care. Additionally, the current evidence is limited by a lack of a conceptual model and/or theoretical framework addressing alarm fatigue and alarm safety. Furthermore, while a survey has been conducted to assess clinician perceptions related to the effectiveness of clinical alarms, a tool to measure perceptions of alarm fatigue was not found. The significance to practice is the potential to create an environment where all or most alarms are clinically relevant and thereby create a sense of urgency in response. The significance to patient outcomes is the decreased risk of delayed or failed response to an alarm that could result in poor patient outcomes up to and including patient death.

Design: A quantitative, time series quasi-experimental design will be employed to address the study aims. The two independent variables in this study include the: 1) intervention of implementing 5 sets of specific default options and 2) intervention of implementing a lead changing protocol. The following dependent variables will be measured: 1) number of nuisance alarms, 2) number of false alarms, and 3) nurse perceptions on clinical alarms and alarm fatigue.

Samples: Given the aims of the study, there are two sampling strategies: 1) sampling of alarm frequencies and types and 2) sampling of nurses for assessing perceptions on clinical alarms and alarm fatigue. Related to the sampling of alarms, each of the 35 beds within the RNICU will be observed in 15 minute increments over a two week timeframe to collect data on alarm frequency and types; these observations will be done during 4-5 hour blocks of time at different times of the day and on different days of the week; observation data will be used to calculate averages; the data collection will be done pre-interventions and post-interventions at week 2 and week 6. Related to the sampling for completion of the survey tool, all RNICUs RNs will be invited to complete the survey pre-interventions and post-interventions at week 2 and week 6.

Future Funding: Following the successful completion of this study, we anticipate being well-positioned to seek funding from federal funding sources such as the NIH for further evaluation of these alarm reduction interventions and their impact on alarm fatigue and alarm safety.