

Abstract 4

Primary Author: Ruthann Zafian, MSN, MA, ACNS-BC, APRN

Hospital Affiliation: Hartford Hospital, Grandby, CT

Co-Author(s): Sean Frenette

Title: Can the Occurrence of Nuisance Alarms be Reduced by Changing How Electrodes are Used?

Background:

Alarm fatigue has been a focus of several articles and studies published over the past few years. The concern over this issue was raised to new heights when the Joint Commission made the topic a National Patient Safety goal. Our team has been trying small tests of change to determine if we could reduce nuisance alarms such as “leads fail” (a few electrodes or wires are off the patient), “no telemetry” (all the electrodes or wires are off the patient) and “arrhythmia suspend” (there is so much artifact that the monitor can’t interpret the rhythm at all). Our objective was to find effective ways to reduce nuisance alarms.

Methods:

We collected 3 months of baseline data. Then over the next three months, we inserviced the involved staff members to alter their usual practice, one type of practice change every month. During the 4th month of the study, the staff members were inserviced on hospital guidelines for aspects of care involving skin prep and electrode use. Specifically, this involved starting with a good skin prep before the application of a fresh electrodes and changing the electrodes every 5 days. During the 5th month of the study, the staff were instructed to continue the practice as they have been taught for the previous month, but to now also write the date of the electrode application on the electrode so they would know the date when they were to change the electrode; 5 days later. We also gave the staff packages of electrodes containing only 5 electrodes and their usual packages of 50 electrodes were taken away. During the 6th month the staff members were told to change electrodes daily.

Results:

The results of the study demonstrated a drop in nuisance alarms by approximately 50%, just by doing a good skin prep. No further benefit was demonstrated by using the packages of 5 electrodes or changing electrodes daily. Statistical significance was demonstrated by comparing the number of alarms during the three months before the change with the number during the three months after the change. A Mann-Whitney U test showed a statistically lower number of each alarm type ($p < 0.05$) and of total alarms ($p < 0.001$) during the three months after. Data were also analyzed to determine if unit census could explain the drop in the number of alarms. The decrease in alarms during the post- period was not due to a decrease in patients. In fact, there was a greater number (although not statistically significant, $p = 0.338$) of

patient days in the Jan-Mar post- period (~618) than in the corresponding Oct-Dec pre- period (~585).

Conclusion:

Skin preparation prior to the application of electrodes is an essential step to obtaining a good ECG signal for cardiac arrhythmia monitoring. Other techniques that might increase cost, such as using packages of 5 electrodes (vs. 50 packs) or changing electrode daily are unnecessary. Study limitations: Data regarding the numbers of nuisance alarms were collected via a third party server system. When analyzing the data, gaps in the data were discovered at times when the server was overloaded with data. This amounted to only a few hours over the 6 month study period, however we believe it did not significantly impact the trend demonstrated by the drop in alarms.