Alarm Adjustments: A Simple Solution to Decrease False Physiological Monitor Alarms

Tina Closson, MSN, RN, CNL, CCRN-K
Susan Houp, BSN, RN, CCRN-K

Northern Light Health

Background

- Alarm fatigue results from the large number of inaccurate and non-actionable alarms produced by monitoring devices in a critical care setting.
- Alarm fatigue is a recognized by The Joint Commission as a patient safety concern.
- When nurses experience alarm fatigue, critical patient events may go unnoticed and patient harm may occur.
- Physiological monitoring delivers the largest number of alarms in a critical care unit.
- Studies have shown that 80 to 99 % of ECG monitor alarms are false or clinically insignificant.
- The Clinical Alarm Management Compendium recommends targeting low hanging fruit to focus on making immediate improvements in the volume of alarms.

Purpose

To decrease false alarms by setting the alarms limits at actionable levels

Methods

- An 8-day audit of all alarms in a 20-bed cardiac intensive care unit was completed using an alarm reporting tool.
- Results indicated that highest number of alarms were generated from **pulse oximeters.**
- The audit results and suggested alarm settings were presented to the hospital wide clinical alarm committee and the Critical Care Quality committee.
- Default changes were agreed upon.

CHANGES

- The low parameter alarm for SPO2 was changed from 90% with a 6 second delay to 88% with a 16 second delay.
- The low parameter alarm was changed from a low priority alarm to a medium priority alarm to generate attention in a timely manner.
- Nurse education on the new default changes was provided.

Results

SPO2 Alarms

Oct-18	14822
Jan-19	2314

Oct-18 Jan-19
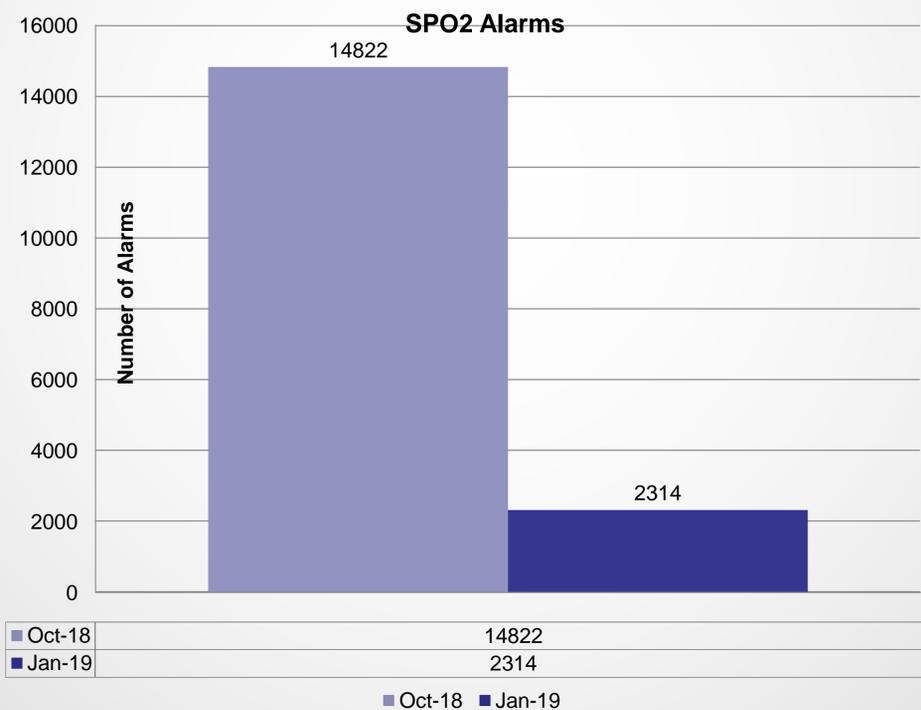
Between the first 8-day audit and the second 8-day audit:

- The cardiac intensive care unit consolidated and added 4 more beds.
- The GE Monitoring system was updated, and default changes were made.

Initial results found:

- 14,822 low level alarms for low SPO2 occurring over an 8-day period in 20 beds.
- After the default changes, the follow up alarm audit found a reduction in low SPO2 parameter alarm to 2,414 medium priority alarms in 24 beds with no patient safety concerns or untoward events related to SPO2 monitoring.

Discussion

- Alarms are distracting and interfere with nurses' ability to perform other critical work in a timely manner.
- Frequent unactionable alarms contribute to alarm fatigue so that alarms for true events are less likely to draw the attention of the nurse.
- Alarm fatigue can be dangerous because staff may not intervene quickly enough to alarms that occur when a patient's condition has changed, risking patient safety with the potential to result in adverse events and even death
- A large number of audible alarm can disturb patients and prevent sleep/rest and patients' recovery.
    - Lack of sleep/rest during hospitalization is a major dissatisfier for patients.
- Adjusting the defaults is one way to reduce alarm noise.

Conclusion

- Alarm default adjustments is a simple way to decrease the number of unactionable alarms.
- Work continues throughout the hospital on adjusting default settings.

References

Clinical Alarm Management Compendium. (2015). AAMI Foundation.
Jepsen, S., Sendelbach, S. (2018). Managing Alarms in Acute Care Across the Life Span: Electrocardiography and Pulse Oximetry, CCN, 38(2), 16-20
Sandau KE, Funk M, Auerbach A, et al. Update to practice standards for electrocardiographic monitoring in hospital settings: a Scientific Statement from the American Heart Association. Circulation. 2017;136(19):e273.
Turmell JW, Coke L, Catinella R, Hosford T, Majeski A. Alarm fatigue: use of an evidence-based alarm management strategy. J Nurs Care Qual. 2017;32(1):47-54.