Initiative improves alarm management, reduces alarm fatigue

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A Florida hospital surgical intensive care unit (SICU) improved clinical alarm management practices and reduced nurses' self-reported alarm

fatigue, according to a study published in *Critical Care Nurse* .

"Implementing a Unit-Based Alarm Management Bundle for Critical Care Nurses" details how the 27-bed SICU at Mayo Clinic, Jacksonville, Florida, implemented a standardized approach to alarm management and improved nurses' knowledge for configuring the settings to better match the monitoring needs of individual patients.

Lead author Stephanie Bosma, DNP, APRN, FNP-BC, an advanced practice nurse practitioner at the hospital, conducted the quality improvement initiative as the capstone project for her Doctor of Nursing Practice (DNP) degree at Keigwin School of Nursing, Jacksonville University, Florida. Co-author Roberta Christopher, EdD, MSN, APRN, FNP-BC, EBP-C, NE-BC, CAIF, served as Bosma's DNP committee chair. She is an associate professor and lead DNP faculty at the nursing school and an advanced practice nurse.

"Clinical alarms are important, but they also contribute to a noisy hospital environment for patients and clinicians. With high sensitivity and low specificity, monitors can generate an overwhelming number of alarms, many of which are false or nonactionable alerts," Bosma said. "Our project gave alarm management skills much-needed attention and introduced a new tool to help staff maximize the benefits of clinical alarms."

A key aspect of the initiative was implementation of an evidenced-based, nurse-driven, patient-specific bundle as a way of standardizing alarm management. Called the CEASE bundle, the five-step tool addresses communication, electrodes, appropriateness, setup and education.

- **Communication**—focuses on working with colleagues (fellow nurses, respiratory therapists, providers and patient care

technicians) to identify patient-specific goals, as well as determine when to suspend or silence alarms while performing care activities that induce nonactionable alarms
- **Electrodes**—targets proper skin preparation for daily ECG electrode and pulse oximeter changes
- **Appropriateness**—encompasses determining what is clinically indicated for the patient and choosing appropriate monitoring parameters with physician and interprofessional team members
- **Setup**—includes customizing alarm parameters for individual patients at the beginning of each shift
- **Education**—relates to the need for continuing education on the clinical alarm monitoring systems

In addition to implementing the CEASE bundle, the project used a related audit tool during active rounding to assess compliance and ensure that nurses were checking alarm settings for each patient.

The CEASE bundle was introduced to nurses during their regular staff meetings, and descriptions were placed around the unit for easy reference.

A clinical alarms survey developed by Healthcare Technology Foundation was administered to all SICU nurses before and following implementation, with 70 nurses completing the initial survey and 60 completing the post-intervention survey.

The post-intervention survey included two additional questions specific to the intervention, finding that 82% of nurses reported that the CEASE bundle helped decrease their alarm fatigue and 83% reported the bundle was helpful and they would continue to use it.

Overall, implementing the CEASE bundle improved nurses' alarm management practices, perceptions and attitudes. Several indicators

improved from baseline, including nurses reporting that setting alarm parameters was less complex, staff was sensitive to alarms and responded quickly, and there were fewer instances of alarms being missed.

The unit uses the Philips physiological monitoring systems, and Bosma arranged for a company representative to conduct educational drop-in sessions and offer hands-on experience with a monitor in an empty patient room from 6:30 a.m. to 7 p.m. over two days. Of the 20 nurses who attended the training sessions, 95% indicated they felt confident and competent in using the equipment.

As a result of the project, alarm management skills and monitor training are being more formally integrated into the hemodynamic education already required for nurses at the hospital.

More information: Stephanie Bosma et al, Implementing a Unit-Based Alarm Management Bundle for Critical Care Nurses, *Critical Care Nurse* (2023). DOI: 10.4037/ccn2023418

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