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Patient Safety Bulletin
Patient stories and safety improvement updates for providers at UCSF Medical Center

ALARM MANAGEMENT

Improving the safety of clinical alarm systems is one of the The Joint Commission’s 2015 National Patient Safety Goals. Alarms are designed to alert providers to situations in which a patient’s condition may be deteriorating. However, given the numerous alarms, providers can develop “alarm fatigue” and become desensitized, leading to missed or unintentionally disabled alarms. One study showed that in a single 31-day period at UCSF, there were a staggering 2,558,760 distinct alarms.¹

What happened?
A 67-year-old male was hospitalized in the ICU for pneumonia and COPD exacerbation. The patient was treated with BiPAP and placed on telemetry and continuous pulse oximetry. On hospital day two, he was transitioned to facemask. The patient’s oxygen saturation declined, which triggered an alarm. However, there was no response from staff for about 6 minutes. The patient was found unresponsive. A code was called and the patient was resuscitated. Given his poor prognosis, his family decided to transition him to comfort care.

A newborn baby was admitted to the NICU for a respiratory infection. She was placed on continuous cardiac and respiratory monitoring. Her oxygen levels began to drop and her heart rate slowed. The monitors alarmed appropriately but were not heard by staff. The baby was found apneic by her mother. A code blue was called and the infant was resuscitated, subsequently requiring intubation and mechanical ventilation.

What went wrong?
The monitoring system has 4 tiers of alarm settings: crisis, warning, advisory and message. In the first case, when the patient’s oxygen level reached a critically low level, a crisis or warning alarm did not sound because the monitor was set to an advisory tone. In the second case, the volume of the monitor was set to 60% and could not be heard amidst the noise in the room. Privacy screens prevented staff from having a clear view of the monitor. In both cases, nurses were busy performing multiple tasks for different patients.

Improvemnts: Alarm Management

Efforts to Reduce Alarm Fatigue
• For all critical care areas, volume settings standardized to ensure audibility with respect to competing noise
• Periodic review of alarm default settings by clinical oversight committees
• Alarm alerts at Mission Bay sent directly to nurses’ Voalté phones and thresholds modified appropriately to decrease total number of alerts nurses receive

Defining Practitioners’ Responsibilities
• Providers are responsible for setting notification parameters when ordering monitoring
• At shift change in the ICU, the nurse is responsible for reviewing and resetting alarms to default settings
• Alarms may require response by others if primary nurse is not available
• Only nurses or licensed practitioners familiar with the alarm device and the patient’s condition may silence an alarm
• Alarms may only be silenced after assessment of the patient and identification of the reason for alarm trigger
• In certain situations such as during surgery, a provider may have primary responsibility for alarm management


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