Empowering Patients to Reduce IV Infusion Pump Alarm Incidence

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Introduction

With more electronic devices in the hospital, the incidence of audible alarms is increasing, promoting alarm fatigue and distressing patients. Empowering patients to reverse caution/impending alarm conditions before they develop into audible alarms may reduce alarm incidence and spare the attendant time and effort of clinicians. We applied the concept of active patient participation to intravenous (IV) line occlusions that cause approximately 40% of IV pump alarms.1

Methods

A verbal prompt was retrofitted to the IV pump to instruct patients to “straighten your arm” when a caution condition occurs. A catheter was supplied with normal saline was taped to the antecubital surface of 11 consenting, blinded lay volunteers. Subjects were instructed to fold the arm with the IV catheter across their chest (creating the occlusion) and, if needed, to press a provided nurse call button. In the initial control stage, the verbal prompt was disabled. If volunteers did not spontaneously straighten their arm, the occlusion caused a yellow caution light to blink for 15 seconds; the subsequent alarm was allowed to sound for 105 seconds.

In the intervention stage, upon detection of a caution condition, a verbal prompt to “straighten your arm” was triggered. If the caution condition was not reversed within 6 seconds, a more assertive prompt “straighten your arm now” was issued; if the caution was not reversed within 15 seconds, the alarm sounded. The subjects’ use of the nurse button was recorded.

Results

With the verbal prompt disabled, no subject prevented the alarm. With the verbal prompt enabled, 10 of 11 subjects corrected the caution within 6 seconds. One subject required a second verbal prompt. All subjects reversed the occlusion, prevented the alarm, and resumed the infusion (P < 0.001). Overall, the volunteers reacted positively to a talking pump and its usefulness.

Discussion

An IV pump occlusion may lend itself to being corrected without clinician intervention by empowering patients. With the increasing concern for alarm fatigue and the time and effort spent correcting alarm conditions and reducing noise in the hospital, patient-empowering devices may offer a novel opportunity to decrease alarm incidence.

References

1) Association for the Advancement of Medical Instrumentation. AAMI Clinical Alarms: 2011 Summit.

Acknowledgements

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