ABSTRACT

Moderate sedation utilizing high-alert narcotic and anxiolytic medications is required for many procedures performed in the clinic setting. This Point-of-Care Simulation Training (PoCST) study addresses a priority area of the VA National Center for Patient Safety (VA-NCPS): to reduce the rate of adverse drug reactions related to moderate sedation through simulation training. A study by Farnsworth et al. (2000) showed that medical simulators are excellent teaching tools, but their impact on patient outcomes has not been quantified. PoCST was conducted in the clinic setting, supplemented by study guides and cognitive aids, and followed by a training assessment questionnaire. The intent was to assess PoCST as a training method for possible system-wide implementation. Physiologic data including heart rate, blood pressure, respiratory rate, end-tidal CO2, and pulse oximetry were collected. In addition, adequacy of sedation was assessed by the physician-nurse teams as satisfactory or suboptimal. Perturbations for greater than 15 and 60 seconds were compared in pre- and post-training data sets. Statistically significant increases were identified in the incidence of bradycardia in the pre-training dataset and tachycardia in the post-training at both 155 and 260 second time points. While there were fewer suboptimal sedation levels, and increased incidences of arterial oxygen desaturation reported in the post-training dataset, the differences were not statistically significant. These initial findings point to PoCST as a promising alternative training method within the VA system that allows for improved sedation quality and more accurate patient risk assessment prior to the procedure.

RESULTS

• There was a trend toward a lower incidence of hypoxemia after training, but this did not reach statistical significance.
• There was significantly less bradycardia and, accordingly, more tachycardia in the post-training period.
• There was a trend toward a lower incidence of sub-optimal sedation cases in the post-training period [16/108 (14.8%) vs 11/103 (10.7%)].
• Overall pattern of drug use did not appear to change in this relatively small series.

INTRODUCTION

This project was funded by the VA National Center for Patient Safety. The goal was to develop a program to train non-anesthesiologists to administer moderate sedation using in-situ simulation, and to assess its validity as a training model by measuring clinical outcomes.

METHODS

Physiologic data (heart rate, blood pressure, pulse oximetry, respiratory rate, end-tidal CO2) as well as demographic data (age, weight, BMI, ASA) and procedural data (procedure, duration, drug totals) were collected. Pre-training (n=108) and post-training (n=103) datasets were compared for patients undergoing upper and lower endoscopic procedures in the GI clinic receiving moderate sedation administered by a nurse/non-anesthesiologist team.

TRAINING DESCRIPTION

Simulation scenarios were developed to train providers to recognize and effectively treat specific situations before they become critical. Using a mobile simulation unit, training occurred in the GI clinic with a fellow, nurse, and technician. Cases incorporated adverse events likely to be encountered during endoscopic procedures.

PATIENTS WITH HEMODYNAMIC PERTURBATIONS FOR ≥15 SECONDS

Patients with Hemodynamic Perturbations for ≥15 seconds

Patients with Hemodynamic Perturbations for ≥260 seconds

IMPLICATIONS

Point-of-care, or in-situ simulation appears to be a promising educational tool that incorporates a variety of patient care and safety training elements and can be customized to diverse practice environments.

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