Oral Defense Announcement

University of Missouri – St. Louis Graduate School

An oral examination in defense of the dissertation for the degree
Doctor of Philosophy in Nursing

Gail Davis

M.S.N. in Clinical Nurse Specialist, May, 1996, St. Louis University
B.S.N. in Nursing, May, 1990, Webster University

Monitoring Patient Safety in the Recovery Room

Date: September 14, 2017
Time: 10:00 a.m. to 12:00 p.m.
Place: Seton 312

Abstract

Respiratory depression is a serious complication after surgery. Early detection is a major patient safety concern for recovery room personnel as patients recover from anesthesia and experience pain. The opioids used for pain management may contribute to over-sedation effects and respiratory depression. Vital signs and pulse oximetry are standard postoperative monitoring procedures. End-tidal capnography and arterial blood gases may augment the standard-of-care procedures but may not be effective at detecting early respiratory depression. The purpose of this study was to generate baseline data trending patient safety variables and outcomes for postoperative patients using standard monitoring with standard-of-care plus transcutaneous capnography monitoring for CO_2 levels. Monitoring equipment with high sensitivity to CO_2 levels might help providers prevent respiratory depression in recovery room patients.

This study was guided by a retrospective, time series design with two study groups. A convenience sample of 800 patients from a large Midwestern hospital was assigned to postoperative recovery rooms equipped with standard monitoring (control group) or standard monitoring plus transcutaneous capnography (treatment group). The time series component refers to dependent measures collected at three points in time – admission to the recovery room and 30- and 60-minutes after admission. Dependent measures included respiratory rate, blood pressure, heart rate, oxygen saturation, pain score, Aldrete score, and opioid doses. Measures and time were treated as within subject factors.

Data were analyzed by: group (treatment vs control), dependent measures, and time using multivariate analysis of variance. Aldrete score and opioid doses were treated as within-subject factors. Recovery time was assessed using an independent samples *t*-test. Trends in variables over time showed significant differences by groups. The transcutaneous capnography treatment group showed a shorter length of stay in the recovery room and overall reduction in opioid administration compared to the control group. Pain scores worsened for the treatment group over time. The transcutaneous capnography may improve management of opioids and patients' level of consciousness but may have inadvertently heightened patients' awareness of pain. Transcutaneous monitoring of recovery room patients may be beneficial in avoiding respiratory depression and improving patient safety and it has long-term implications for health care costs.

Defense of Dissertation Committee

Kathie Records, Ph.D., RN, FAAN - Chairperson
Maryann Bozzette, Ph.D., RN, CLC
Nelda Martin, ANP-BC, CCNS
Ericka Sanner-Stiehr, Ph.D., RN