ETCO2 MONITORING IN EPIDURAL INFUSION FOR ACUTE POST-OP PAIN MANAGEMENT

Primary Investigator: Aleli G. Cabali, MSN, RN, CPAN, BC
UT MD Anderson Cancer Center, Houston, Texas
Co-Investigators: Evelyn Acosta, BA, BSN, RN, CPAN; Dwayne E. Brown, ADN, RN, CPAN; Arlene Lastimoso, BSN, RN, CPAN; Imelda Laxa, BSN, RN, BC; Elsy Puthenparampil, BSN, RN, CPAN, BC

Identification of the Problem:
Respiratory depression is one of the known risks to patients receiving epidural opioid analgesia. Most patients in the post anesthesia care unit (PACU) are still sedated due to effects of residual anesthetics received in the OR and opioid analgesics administered intravenously and/or by neuroaxial route. Standard monitoring of epidural analgesia includes clinical observation, sedation scale, respiratory rate (RR) and oxygen saturation by pulse oximetry (spO2). The end-tidal carbon dioxide (ETCO2) monitor is widely used only in critical care settings, like the operating room (OR) and intubated patients in the intensive care unit (ICU). The use of ETCO2 monitoring has been added as a standard practice by most PACU nurses. When patients transfer to inpatient units, ETCO2 monitoring is discontinued. Institutional policies and procedures do not require ETCO2 monitoring for patients with epidural analgesia. Use of spO2 monitoring may not be enough to detect early signs of respiratory depression and rescue patients from adverse outcomes.

EP Question/Purpose:
PACU Nurses reviewed the literature for the best evidence on the most effective method(s) of monitoring adult post operative patients receiving epidural opioid analgesia and early detection of respiratory depression.

Methods/Evidence:
Systematic literature review was conducted using key words: ETCO2, capnography, respiratory depression, epidural infusion, hypoventilation, analgesia, sedation, hypercapnia and pulse oximetry in electronic databases including CINAHL, PubMed, Cochrane, Scopus and Ovid. The search was limited to Humans, English, All Adult: 19+ years of age. Fifteen articles were selected.

Significance of Findings/Outcomes:
ETCO2 monitoring is an effective method of identifying early signs of respiratory depression in patients receiving opioid medications for conscious sedation and/or post-operative pain control by intravenous or epidural routes. Oxygen saturation monitoring does not detect hypercapnia, hypoventilation or early signs of impending respiratory depression.

Implications for perianesthesia and future research:
Epidural analgesia for acute pain control is not without risks. Evidence supports ETCO2 monitoring as a standard of care during the first 24-48 hours post-op. Further research on the use of capnography and epidural analgesia is recommended.