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Continuous Epidural Analgesia for Postoperative Pain Management: A Policy Analysis

Madison Nowell

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CONTINUOUS EPIDURAL ANALGESIA FOR
POSTOPERATIVE PAIN MANAGEMENT:
A POLICY ANALYSIS

by

Madison C. Nowell

A Doctoral Project
Submitted to the Graduate School,
the College of Nursing and Health Professions
and the School of Leadership and Advanced Nursing Practice
at The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Nursing Practice

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ABSTRACT

Postoperative pain management is a necessary component of the care of every surgical patient. Epidural analgesia is a widely used method to provide excellent postoperative pain relief and enhance postoperative recovery (Sawhney, 2012). Epidural analgesia is associated with fewer side effects than alternative pain management techniques; however, when epidural catheters are managed improperly, or pain is inadequately assessed, epidural analgesia fails to provide adequate pain relief (Deni et al., 2016). More than 80% of surgical patients experience moderate to severe postoperative pain, and 28 to 50% of these patients have a pain score greater than 6 out of 10 at any given time (Chou et al., 2016; Duncan & Haigh, 2013; Nagelhout & Plaus, 2014). Epidural analgesia needs improvement because it has been linked to a failure rate of 30% in clinical practice (Duncan & Haigh, 2013). The purpose of this DNP project was to perform an epidural policy analysis at a hospital in Mississippi.

Questionnaires were collected from critical care nurses and anesthesia providers. Seventy-five percent of critical care nurses and anesthesia providers were not aware that epidural analgesia has a 30% failure rate. Also, 50% of nurses and 95% of anesthesia providers believed that having up-to-date, accessible policies outlining epidural care, and management can improve postoperative epidural analgesia. One hundred percent of nurses and 95% of anesthesia providers believed their institution's epidural policy demonstrates areas for improvement. Lastly, 75% of nurses and 95% of anesthesia providers felt that the hospital would benefit from an updated epidural policy.

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DEDICATION

I would like to recognize and sincerely thank my amazing friends, family, and mentors I have had throughout this three-year journey to attain my Doctor of Nurse Anesthesia Practice degree. Without the constant love, support, and guidance I have received from all of them, completing this project and obtaining this degree would not have been possible. I owe all my success and accomplishments to their continual inspiration.

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LIST OF ABBREVIATIONS

<i>AACN</i>	American Association of Critical-Care Nurses
<i>AANA</i>	American Association of Nurse Anesthetists
<i>APS</i>	American Pain Society
<i>ASRA</i>	American Society of Regional Anesthesia
<i>ADEPT</i>	Analysis of Determinants of Policy Impact
<i>CDC</i>	Centers for Disease Control and Prevention
<i>CRNA</i>	Certified Registered Nurse Anesthetist
<i>DNP</i>	Doctor of Nursing Practice
<i>IRB</i>	Institutional Review Board
<i>LAST</i>	Local Anesthetic Systemic Toxicity
<i>LMWH</i>	Low Molecular Weight Heparin
<i>MSBN</i>	Mississippi Board of Nursing
<i>NAP</i>	Nurse Anesthesia Program
<i>SNS</i>	Sympathetic Nervous System
<i>SWOT</i>	Strengths, Weaknesses, Opportunities, Threats
<i>USM</i>	The University of Southern Mississippi

CHAPTER I - INTRODUCTION

Postoperative pain management is a necessary component of the care of every surgical patient. Studies have shown that continuous epidural analgesia is a desirable and widely used method to provide excellent postoperative pain relief and enhance recovery after surgery (Sawhney, 2012). Epidural analgesia is a regional procedure that uses a local anesthetic with or without the addition of an opioid to improve postoperative pain relief; furthermore, it can reduce morbidity and mortality related to complications from unresolved pain (Sawhney, 2012). For example, epidural analgesia can decrease the use of opioids for analgesia, and it is associated with fewer respiratory side effects than opioids (Sawhney, 2012). Although extremely effective, epidural analgesia can result in serious complications if medications are not carefully administered and if pain and neurological status are not closely assessed (Nagelhout & Plaus, 2014).

Background and Significance

More than 80% of surgical patients experience moderate to severe postoperative pain (Chou et al., 2016; Nagelhout & Plaus, 2014). According to Duncan and Haigh (2013), the percentage of patients with a pain score greater than 6 out of 10 can range from 28 to 50 % at any given time. Unresolved pain, especially acute pain, often leads to adverse physical and psychological outcomes (Nagelhout & Plaus, 2014; Wells, Pasero, & McCaffery, 2008). These adverse outcomes negatively affect almost every organ system, particularly the cardiovascular, respiratory, and neurologic systems. These adverse outcomes ultimately delay recovery and lengthens hospitalization time (Carr et al., 2014). Improper pain management suppresses the immune system by activating the hypothalamic–pituitary–adrenal axis, which is the body’s stress response system. The

body's stress response to pain causes blood glucose levels to increase (Nagelhout & Plaus, 2014; Tennant, 2013; Wells et al., 2008). The immune suppression along with elevated blood glucose levels leads to delayed wound healing and increased risk of postsurgical infection (Nagelhout & Plaus, 2014; Tennant, 2013; Wells et al., 2008). Unrelieved pain postpones patient ambulation, which increases the risk for postoperative respiratory complications and can also result in the development of deep vein thrombosis (Nagelhout & Plaus, 2014; Wells et al., 2008). The sympathetic nervous system (SNS) is activated by pain and results in poor venous return, tachycardia, and hypertension, placing an increased workload on the heart (Nagelhout & Plaus, 2014; Wells et al., 2008). The endocrine system responds to pain by increasing hormone secretion to retain sodium and water, causing urinary retention, which can result in fluid volume overload and increased cardiac workload (Nagelhout & Plaus, 2014; Tennant, 2013; Weetman & Allison, 2006). An increased cardiac workload is clinically important because cardiac-related illness can increase mortality rates after anesthesia and surgery (Wells et al., 2008). Unrelieved pain and stress activates the SNS and causes the gastrointestinal system to reduce gut motility and delay gastric emptying, which results in nausea and vomiting and an increased risk for a paralytic ileus (Nagelhout & Plaus, 2014; Wells et al., 2008).

Death rates from opioid abuse in Mississippi increased by 200% from 2000 to 2014 (Mississippi State Department of Health [MSDH], 2017). Epidural analgesia provides better postoperative pain management than systemic opioids (Sawhney, 2012). With a declared opioid crisis in the United States (U.S.), epidural analgesia using local anesthetics without opioids can be a successful attempt to reduce the number of opioid-

related deaths in the U.S. (Mississippi State Department of Health, 2017; Sawhney, 2012).

Epidurals are mainly placed by anesthesia providers; these providers also manage the medications being delivered through the epidural catheter intraoperatively (Sawhney, 2012). In the postoperative period, nurses are responsible for managing epidurals and appropriately assessing the patient's pain. Therefore, nurses should be appropriately educated and trained on epidural analgesia (Deni et al., 2016; Sawhney, 2012).

Experienced anesthesia personnel can provide training and education on neuraxial analgesia methods. Proper communication between nurses and anesthesia providers supports multidisciplinary education and communication (Deni et al., 2016). Ensuring safe and effective delivery of postoperative pain relief methods is essential, and this assurance can be provided by having an institutional epidural policy that reflects best practice guidelines on epidural care (Sawhney, 2012). Interprofessional collaboration should be used when developing and implementing epidural guidelines and protocols to enhance nursing epidural care (Duncan & Haigh, 2013; McDonnell, Nicholl, & Read, 2003).

Problem Statement

The management of postoperative pain in hospitals continues to be problematic, despite the established perception of the problem and attempts at improvements (Carr et al., 2014). Since 80% of surgical patients experience moderate to severe postoperative pain, epidural analgesia must be properly managed to help reduce this statistic (Chou et al., 2016; Nagelhout & Plaus, 2014). Epidural analgesia is associated with fewer side effects than alternative pain management techniques; however, when epidural catheters

are managed improperly or pain is inadequately assessed, epidural anesthesia fails to provide the pain relief that is vital to patient recovery (Deni et al., 2016). Epidural analgesia is an area that needs improvement because it has been linked to a failure rate of approximately 30% in clinical practice (Duncan & Haigh, 2013).

Purpose of the Project

This project was aimed at determining whether the epidural policy and procedures manual at a hospital in Mississippi reflects the most current evidence-based practice guidelines for epidural nursing care. The purpose of this DNP project was to perform a policy analysis of the epidural policy at a hospital in Mississippi. The policy was compared to current evidence-based practice guidelines for delivering safe epidural analgesia. The findings from the comparison were presented to key stakeholders of the institution. These policies should be easily accessible and understandable by all disciplines involved in epidural analgesia.

Needs Assessment

A needs assessment performed at a hospital in Mississippi indicated that there is a need to examine and revise or update the existing epidural policy at the facility. Lack of clear and easily accessible guidelines for nurses may lead to errors in assessment and management of the epidural catheters. Sub-therapeutic pain relief is associated with numerous negative outcomes. The hospital's epidural nursing policies and procedures manual should be reviewed to ensure that it reflects the most current evidence-based guidelines for epidural care to improve postoperative pain management.

Theoretical Framework

The model that aided in this policy analysis was the Policy Analytical Framework developed by the Centers for Disease Control and Prevention (CDC). This framework outlines three important policy processes: problem identification, policy analysis, and strategy and policy development (CDC, 2013). In this framework, problems should be described in terms of statistical relevance (CDC, 2013). The problem in this DNP project is statistically relevant because 80% of surgical patients experience moderate to severe postoperative pain (Chou et al., 2016; Nagelhout & Plaus, 2014). Of the surgical patients receiving epidural analgesia for postoperative pain relief, there is a 30% failure rate to provide adequate analgesia (Duncan & Haigh, 2013). In the policy analysis phase, the CDC recommends reviewing the literature to discover the most current evidence-based practice guidelines; this DNP project precisely followed these CDC recommendations (CDC, 2013). The strategy and policy development phase includes evaluating the current policy and comparing it to the evidence-based criteria found in the literature review (CDC, 2013). Since the epidural protocol evaluated in this DNP project exhibited need for improvement, the evidence for suggested changes was documented and supported with adequate reasoning (CDC, 2013).

Doctor of Nursing Practice Essentials

The eight DNP essentials are crucial principles of the DNP degree. All DNP program graduates should become knowledgeable and proficient in applying these essentials to research and practice (AACN, 2006). This doctoral project meets all eight of the DNP essentials.

Essential I (Scientific Underpinnings for Practice)

This essential was met by assessing the current epidural policy and comparing it to the most current evidence-based practice epidural policy guidelines.

Essential II (Organizational and Systems Leadership for Quality Improvement and Systems Thinking)

This essential was met by evaluating the hospital's current epidural policies and procedures to identify any needs for updates or revisions with an intention to enhance clinical practice within the organization and to increase postoperative pain relief to enhance quality of care.

Essential III (Clinical Scholarship and Analytical Methods for Evidence-Based Practice)

This essential was met by conducting a thorough literature review and by using analytical methods to identify a clinical problem that needs improvement, to collect meaningful data, and to apply research findings into the clinical setting to perform a policy analysis and recommend evidence-based changes.

Essential IV (Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care)

This essential was met by using technology to evaluate institutional epidural policies and procedures. This information was used to perform a strengths, weaknesses, opportunities, and threats (SWOT) analysis comparing the current epidural policy with evidence-based epidural policies.

Essential V (Health Care Policy for Advocacy in Health Care)

This essential was met because the results of this policy analysis were presented to the key stakeholders of the institution.

Essential VI (Interprofessional Collaboration for Improving Patient and Population Health Outcomes)

This essential was met by gathering input from anesthesia providers and nurses for the policy change. Collaboration and effective communication are the foundation for the success of this DNP project.

Essential VII (Clinical Prevention and Population Health for Improving the Nation's Health)

This essential was met because this policy analysis presented updated epidural guidelines that may enhance postoperative pain relief.

Essential VIII (Advanced Nursing Practice)

This essential was met because the policy analysis and recommended updates were based on evidence-based best practice guidelines.

Review of Evidence

Postoperative patients receiving epidural analgesia should receive adequate pain relief. Adequate pain relief via epidural is achieved by proper epidural management and adequate pain assessment based on the most current evidence-based practice guidelines. The review of literature is a valuable way to establish these guidelines. The focus of this literature search was to find evidence-based practice guidelines related to epidural analgesia. The search was conducted using The University of Southern Mississippi's (USM) online library catalog. The databases used were PubMed, CINAHL, and

Ebscohost. The search terms used were *postoperative pain, epidural, analgesia, inadequate pain relief, epidural policy, and epidural adverse effects*. These terms were used interchangeably to find the most suitable articles. Inclusion criteria were that the article must be written in English and must be relevant to epidural analgesia and/or policy analysis. Exclusion criteria were any articles not written in English and articles that were not relevant to the proposed topic. The initial search returned 268 articles. After further examination, 14 articles were used because they were significantly relevant to the purpose of this DNP project. A literature matrix is included with information from each of the articles (See Appendix B).

Pain

Despite available evidence and acknowledgment as a significant problem, postoperative pain continues to be improperly managed (Carr et al., 2014; Duncan & Haigh, 2013; Sawhney, 2012). The incidence of postoperative pain is approximately 80% in all surgical patients with 86% of those reporting moderate to severe pain (Chou et al., 2016; Nagelhout & Plaus, 2014; Wells et al., 2008). The recurrence of clinically significant pain in the hospital environment may reflect inadequate assessment and management (Carr et al., 2014). In a study among physicians and nurses, inappropriate pain assessment was one of the most significant obstacles to patients achieving adequate postoperative pain control (Wells et al., 2008). Unresolved pain, especially acute pain, has negative effects on almost every organ system, particularly the cardiovascular, respiratory, and neurologic systems. Unrelieved pain causes immune suppression and can activate the body's stress response, increasing blood glucose levels (Tennant, 2013; Wells et al., 2008). The immune suppression and hyperglycemia delay wound healing

and increase the risk of postsurgical infection (Nagelhout & Plaus, 2014; Tennant, 2013; Wells et al., 2008). Unrelieved pain postpones patient ambulation, which increases the risk for postoperative respiratory complications and can also result in the development of deep vein thrombosis (Nagelhout & Plaus, 2014; Wells et al., 2008). Pain stimulates the sympathetic nervous system (SNS) and results in poor venous return, tachycardia, and hypertension, placing an increased workload on the heart (Nagelhout & Plaus, 2014; Wells et al., 2008). The endocrine system responds to pain by increasing hormone secretion to retain sodium and water, causing urinary retention, fluid volume overload, and increased cardiac workload (Nagelhout & Plaus, 2014; Tennant, 2013; Weetman & Allison, 2006; Wells et al., 2008). Increased cardiac workload is clinically important because cardiac-related illness can increase mortality rates after anesthesia and surgery (Wells et al., 2008). Unrelieved pain and stress activate the SNS and cause the gastrointestinal system to reduce gut motility and delay gastric emptying, which results in nausea and vomiting and an increased risk for a paralytic ileus (Nagelhout & Plaus, 2014; Wells et al., 2008). Reducing persistent pain is a vital component of patient care because it is essential for improving patient outcomes (Nagelhout & Plaus, 2014). Improved pain management can be achieved by developing or updating organizational pain management policies with quality improvement initiatives (Carr et al., 2014).

The goal of postoperative pain management is to minimize the negative effects pain has on the patient's functioning and quality of life (Baker, 2016; Chou et al., 2016; Nagelhout & Plaus, 2014; Wells et al., 2008). The Joint Commission recognized a problem with pain management and outlined national pain management standards that require pain to be promptly assessed and managed (Baker, 2016; Wells et al., 2008). The

standards require all healthcare professionals involved in pain relief interventions to systematically assess pain in quantitative means (e.g. numeric scale of 1 to 10) (Baker, 2016; Nagelhout & Plaus, 2014). Pain assessment and reassessment intervals should be directly determined by policies and procedures of either the hospital or individual unit within the organization (Mississippi Board of Nursing [MSBN], 2011; Sawhney, 2012; Wells et al., 2008). Pain assessment is the most critical component to providing adequate pain management (Naghelout & Plaus, 2014).

Epidural Analgesia

Regional analgesia is the temporary interruption of pain transmission conduction to nerve fibers that usually receive pain signals from an area of the body (Matras, Poulton, & Derman, 2012). According to Duncan and Haigh (2013), epidural analgesia is the gold standard for postoperative pain management. Epidural analgesia is a regional procedure that uses a local anesthetic with or without the addition of an opioid to greatly improve postoperative pain relief (Naghelout & Plaus, 2014; Matras et al., 2012). The two types of epidural medications commonly used for analgesia are opioids, usually fentanyl or hydromorphone, and local anesthetics, usually bupivacaine or ropivacaine (Matras et al., 2012). Medication infused via epidural must be free of any additives or preservatives to prevent potential neurotoxicity (Matras et al., 2012).

Epidural analgesia can reduce morbidity and mortality related to complications from unresolved pain (Duncan & Haigh, 2013; Sawhney, 2012). Epidural analgesia decreases the need for administration of opioids for analgesia and is associated with fewer respiratory side effects than opioids (Sawhney, 2012). Although extremely effective, epidural analgesia can result in serious respiratory, cardiac, and/or neurologic

complications if providers do not closely monitor vital signs, pain intensity, level of consciousness, and the degree of motor and sensory block (American Association of Nurse Anesthetist [AANA], 2017; Matras et al., 2012; MSBN, 2011; Sawhney, 2012).

Opioid-related side effects of epidural analgesia are dose-dependent; therefore, nurses must remain vigilant and must closely monitor their patients for adverse side effects from epidural analgesia (AANA, 2017; Matras et al., 2012). Respiratory and cardiac assessments must be meticulously performed to identify any indications of respiratory depression and hypotension (Matras et al., 2012). Naloxone (Narcan), an opioid antagonist, should be readily available counteract adverse effects of epidural opioids (Matras et al., 2012). Intravenous colloid solutions and vasoconstrictors, such as ephedrine, should be readily available to treat hypotension (Matras et al., 2012).

Epidural opioids can result in an undesired level of sedation, leading to respiratory depression (AANA, 2017; Matras et al., 2012; Sawhney, 2012). Slowed respiratory rate and respiratory depression are late signs of opioid overdose from epidural analgesia. These symptoms are preceded by lethargy and sedation (Chou et al., 2016; Nagelhout & Plaus, 2014). To prevent this adverse side effect, patient sedation scores should be assessed and documented at the same time that vital signs are recorded (AANA, 2017; Baker, 2016; Chou et al., 2016). Epidural infusions should be stopped for a respiratory rate less than 10 and/or a sedation score of 3 or more (Matras et al., 2012; Royal Cornwall Hospitals, 2017). In this instance, administer oxygen and inform the appropriate medical or anesthesia personnel (Matras et al., 2012; Royal Cornwall Hospitals, 2017). For a respiratory rate less than 5 or if the patient is apneic, call for help, administer oxygen, administer a stat dose of 100 micrograms (1 milliliter) of naloxone

every 5 minutes until the return of regular spontaneous respiration (Matras et al., 2012; Sawhney, 2012). Naloxone administration in low doses can reverse the adverse effects of epidural opioids while preserving some analgesia (Nagelhout & Plaus, 2014).

Nurses should monitor laboratory results for trends, especially bleeding times when anticoagulants are being administered to patients (Matras et al., 2012; Sawhney, 2012). Nausea, vomiting, headache, and any signs of changes in intracranial pressure must be promptly recognized and addressed (Matras et al., 2012; Sawhney, 2012).

Nurses must also regularly perform assessments of sensory and motor function to identify problems that may arise from pressure and irritation of spinal nerves or adverse effects of the epidural medications (AANA, 2017; Matras et al., 2012; Sawhney, 2012). Epidural opioids can cause urinary retention; therefore, hourly urine output assessments in patients with indwelling urinary catheters should be performed (Matras et al., 2012; Sawhney, 2012). Patients without indwelling urinary catheters may require straight urinary catheterization (Matras et al., 2012). Anesthesia and epidural analgesia can decrease gastrointestinal motility; therefore, patient ambulation should be encouraged as soon after surgery as possible (Matras et al., 2012; Sawhney, 2012).

Local Anesthetic Toxicity

Nurses should be extensively educated about signs of local anesthetic systemic toxicity (LAST); immediate intervention and reporting of this event is essential to minimize adverse outcomes (Matras et al., 2012; Nagelhout & Plaus, 2014; Sawhney, 2012). Symptoms of LAST are due to central nervous system (CNS) excitation and include restlessness, agitation, confusion, tongue and lip numbness, tinnitus, and double or blurred vision (Nagelhout & Plaus, 2014; Sawhney, 2012). These symptoms can

progress to limb heaviness, muscular twitching, and convulsions (Nagelhout & Plaus, 2014; Sawhney, 2012). Severe toxicity occurs with extremely high drug levels and manifests as unconsciousness, coma, cardiac arrest, and/or respiratory arrest (Nagelhout & Plaus, 2014). According to Nagelhout and Plaus (2014), the most frequently occurring symptom is convulsion.

The initial response of the nurse to symptoms of LAST is to stop the infusion, get help, and inform appropriate medical or anesthesia staff (Nagelhout & Plaus, 2014; Neal et al., 2012). The initial intervention is airway management and ventilation with 100% oxygen (Nagelhout & Plaus, 2014; Neal et al., 2012,). If seizures are present, they must be suppressed to help with airway management and reduce metabolic acidosis (Nagelhout & Plaus, 2014). The anticonvulsants of choice are benzodiazepines (Nagelhout & Plaus, 2014; Neal et al., 2012). Lipid emulsion therapy is a crucial component in the treatment of LAST (Nagelhout & Plaus, 2014; Neal et al., 2012). Twenty percent lipid emulsions should be bolused at 1.5 mL/kg intravenously over 1 minute and infused at 0.25mL/kg/min (Neal et al., 2012). Boluses can be repeated 1 or 2 times, and infusion rates should be increased to 0.5 mL/kg/min if hypotension persists (Neal et al., 2012). Lipid emulsion infusions should be continued for a minimum of 10 minutes after circulatory status stabilizes (Neal et al., 2012). A local anesthetic toxicity rescue kit with instructions for use should be readily available in units that have patients receiving local anesthetics (Nagelhout & Plaus, 2014; Neal et al., 2012).

Best Practice Guidelines for Nursing Care

According to the MSBN, adverse patient outcomes can be prevented by establishing clear policies and procedures and by providing proper education to registered

nurses (MSBN, 2011). Registered nurses caring for patients receiving epidural analgesia must have documented competency training to perform this skill (MSBN, 2011).

Frequent, focused assessments can prevent problems from becoming critical situations requiring invasive interventions (Schreiber, 2013). Evidence-based guidelines on pain assessment suggest that it must be performed on a regular basis using a standardized protocol (MSBN, 2011; Wells et al., 2008). After a pain assessment results in any type of intervention, reassessment of pain should be performed to evaluate whether the previous intervention was successful or if further action is needed (Baker, 2016; Chou et al., 2016; Wells et al., 2008). Pain assessment and reassessment intervals should be directly determined by policies and procedures of either the hospital or individual unit within the organization (MSBN, 2011; Sawhney, 2012; Wells et al., 2008).

Vital signs, pain assessments, epidural catheter status, and insertion site must be evaluated at regular, predetermined intervals (AANA, 2017; Matras et al., 2012; MSBN, 2011). Blood pressure and heart rate should be recorded every 15 minutes during the first hour of epidural analgesia and then every 30 minutes for the next 3 hours (Matras et al., 2012; Royal Cornwall Hospitals, 2017). If no rate increases or changes are made, assessment can be done every two hours until discontinued. Sedation scores and respiratory status should be assessed and documented every hour for the first 12 hours and then every 2 hours for the next 12 to 24 hours (Matras et al., 2012; Sawhney, 2012). Literature varies on sedation and respiratory assessment intervals after epidural analgesia initiation, but all literature agrees to assess these variables at least every two hours (AANA, 2017; Matras et al., 2012; Sawhney, 2012). Motor strength and sensory assessments should be recorded at least every four hours until the cessation of epidural

analgesia (AANA, 2017; Matras et al., 2012). Skin integrity and epidural catheter insertion site and dressing status should be assessed at least once per shift (Matras et al., 2012). Pain assessments should be performed at least every four hours (AANA, 2017; Matras et al., 2012; Royal Cornwall Hospitals, 2017). If a pain intervention is performed, reassessment of pain should be performed within 30 minutes (Chou et al., 2016). If patients complain of pain at the top or bottom of their surgical wound, the rate of infusion may need to be increased (Matras et al., 2012). Higher rates of infusion increase the surface area of local anesthetic spread, which blocks more nerve fibers (Matras et al., 2012; Nagelhout & Plaus, 2014). If a bolus dose is administered, the anesthesia personnel should stay with the patient to monitor vital signs every 5 minutes for the first 15 minutes after the bolus is administered (AANA, 2017). Vital signs should then be checked after a 15-minute interval and again after a 30-minute interval before resuming normal vital sign assessment (Matras et al., 2012). The registered nurse should not assume the responsibility of care until the patient is in stable condition (MSBN, 2011).

Nurses are required to check the complete epidural infusion system, including the empty infusion bag, the new infusion bag, the epidural pump, and the epidural infusion line (AANA, 2017; Royal Cornwall Hospitals, 2017). Epidural infusion systems should be clearly labeled to prevent medication errors (AANA, 2017; Matras et al., 2012; Sawhney, 2012). Nurses should inspect epidural infusion systems to ensure connections are intact and that tubing is not kinked (AANA, 2017; Matras et al., 2012). All members involved in providing epidural analgesia should know how to troubleshoot equipment malfunctions (Matras et al., 2012). Patients should maintain intravenous access throughout the entire duration of epidural analgesia (Matras et al., 2012). Nurses have the

responsibility to ensure that resuscitation equipment is easily accessible in the patient's room at all times (Matras et al., 2012). Nurses should immediately report any questionable or alarming assessments to the appropriate anesthesia personnel to prevent patient harm (Matras et al., 2012).

Nurses can assist providers with epidural catheter placement (MSBN, 2011). The scope of practice for registered nurses allows them to adjust infusion rates or inject medications after the initial dose has been administered by an anesthesia provider (MSBN, 2011). Most importantly, nurses are responsible for initiating emergency protocols in the event of serious adverse effects of epidural analgesia (AANA, 2017).

Registered nurses can discontinue and remove epidural catheters with a written order from appropriate anesthesia personnel (AANA, 2017; MSBN, 2011). Epidural catheters can only be removed two to four hours after the patient's last dose of systemic heparin; serum coagulation should be checked before removing the catheter (American Society of Anesthesiologists [ASA], 2015; Horlocker et al., 2018). Platelet counts should be checked before epidural catheter removal on patients who have been receiving subcutaneous heparin for longer than four days (ASA, 2015; Horlocker et al., 2018). Subcutaneous heparin can be given one hour after epidural catheter removal (ASA, 2015; Horlocker et al., 2018). Epidural catheters can only be removed after a minimum of 10 to 12 hours after the last dose of low molecular weight heparin (LMWH) (ASA, 2015; Horlocker et al., 2018).

Summary

Since a large percentage of postoperative patients experience unrelieved pain, which leads to diminished health outcomes and prolonged hospital stays, efforts must be

made to improve the quality of care for these patients (Chou et al., 2016). Epidural analgesia is known as the gold standard treatment for postoperative pain; however, with a failure rate of approximately 30% in clinical practice, it is an important area for clinical performance improvement (Duncan & Haigh, 2013). Since this DNP project meets all eight DNP essentials, the project has the ability to improve provider performance and quality of patient care through continuous quality improvement.

CHAPTER II - METHODOLOGY

Target Outcome

The purpose of this DNP project was to perform a policy analysis of the epidural policy at a hospital in Mississippi. The policy was compared to current evidence-based practice guidelines for delivering safe epidural analgesia. Since gaps were found between the institution's epidural policy and current evidence-based practice guidelines, the executive summary includes findings and suggestions for update or change to the epidural policy. The executive summary, after being reviewed by a group of advanced practice nurses skilled in policy analysis and epidural care, was presented to key stakeholders of the institution.

Key Stakeholders

Although the policy analysis focuses mainly on registered nurses, this DNP project also included anesthesia personnel. Any healthcare provider involved in epidural analgesia can be impacted by changes to the existing epidural policy. The epidural policy will be updated based on evidence-based guidelines for improving the quality of care for patients receiving epidural analgesia.

Design

A policy analysis was conducted at a hospital in Mississippi. In accordance with the first step of the CDC's Policy Analytical Framework, the problem at this institution was identified as unrelieved postoperative pain and inadequate epidural analgesia. The organization's epidural policy was analyzed with an intent to provide key stakeholders of the institution with suggestions for update or revision to their existing epidural policy based on current evidence-based guidelines. A formal copy of the organization's epidural

protocol was obtained from the nurse educator of a unit whose nurses are involved in direct care with patients who receive epidural analgesia. A systematic literature search and examination was conducted to find and compile the most current evidence-based best practice guidelines for epidural nursing care. A SWOT analysis was then conducted to compare the organization's current epidural protocol to the most current best practice guidelines for epidural nursing care as evidenced by literature. The SWOT analysis identified strengths, weaknesses, opportunities, and threats to revising or replacing the organization's epidural protocol.

Table 1 *SWOT analysis*

Strengths	Weaknesses
<ul style="list-style-type: none"> • Comprehensive policy analysis • No cost to the institution • Support from nurses and anesthesia providers 	<ul style="list-style-type: none"> • Subject to bias criticism based on personal views on policy • Generalized postoperative pain management guidelines • Limited research on postoperative epidural analgesia
Opportunities	Threats
<ul style="list-style-type: none"> • Enhanced postoperative epidural analgesia • Fewer reports of adverse effects from epidural analgesia • Enhanced interprofessional collaboration 	<ul style="list-style-type: none"> • Resistance to change • Disinterest by critical care nurses • Disinterest by anesthesia providers • Negative views on policy • Resistance from the administration of the institution

Evaluation of the organization's epidural policy and assessment of current evidence-based practice guidelines for epidural nursing care yielded a complete SWOT analysis. The SWOT analysis was reviewed by a group of nurses who are experienced in epidural care and policy analysis. The nurses involved were required to be affiliated with the organization of interest or with the anesthesia program at USM. After expert review, an executive summary was constructed. The SWOT analysis and policy analysis findings

and the executive summary were then disseminated to the key stakeholders at the organization.

Collection of Data

An epidural fact sheet, a copy of the policy analysis, and paper questionnaires were presented to critical care nurses and anesthesia providers. The questionnaires were collected over a period of one week with site visits on four consecutive days to answer any questions the providers may have. At the end of one week, 4 critical care nurses and 20 anesthesia providers had completed the questionnaires. The key facts sheet is included in Appendix C. The questionnaire is included in Appendix D. The policy analysis is included in the table below.

Table 2 *Policy analysis of epidural analgesia for postoperative pain management*

Current evidence-based guidelines	The hospital's epidural policy	Recommended updates/edits to the hospital's existing protocol
It is the responsibility of the nurse to ensure that resuscitation equipment is in the patient's room at all times and is easily accessible (Matras et al., 2012).	Resuscitative equipment and emergency drugs should be available in the patient area.	Change "patient area" to "in the patient's room at bedside"
Registered nurses can discontinue and remove epidural catheters with a written order from appropriate anesthesia personnel (AANA, 2017; MSBN, 2011).	Only the acute pain service (APS) or anesthesia providers can remove the epidural catheters.	Properly trained registered nurses can discontinue and remove epidural catheters with a written order and instructions from appropriate anesthesia personnel
Blood pressure and heart rate should be recorded every 15 minutes during the first hour of epidural analgesia and then every 30 minutes for the next 2 hours. If no rate increases or changes are made, assessment can be done every two hours until discontinued. Sedation scores and respiratory status should be assessed and documented every hour for the first 12 hours and then every 2 hours for the next 12-24 hours (Matras, et al., 2012; Sawhney, 2012).	Monitor and record sedation rating, respiratory rate, oxygen saturation, blood pressure, heart rate, pain assessment, sensory and motor function of legs every hour x 4 hours then every 2 hours until discontinued, or as ordered by the APS.	Monitor and record sedation rating, respiratory rate, oxygen saturation, blood pressure, heart rate, pain assessment, sensory and motor function of legs every 15 minutes during the first hour of epidural analgesia and then every 30 minutes for the next 2 hours. If no rate increases or changes are made, the assessment can be every two hours until discontinued.

Table 2 (continued).

<p>Epidural infusions should be stopped for a respiratory rate less than 10 and/or a sedation score of 3 or more. In this instance, administer oxygen and inform the appropriate personnel. For a respiratory rate less than 5 or if patient is apneic, call for help, administer oxygen, administer a stat dose of 100 micrograms (one milliliter) of naloxone every 5 minutes until the return of regular spontaneous respiration (Matras et al., 2012; Royal Cornwall Hospitals, 2017; Sawhney, 2012).</p>	<p>If respirations are 10 or less call the APS. If respirations progress to less than 6/min, stop the infusion, call the APS, and administer Narcan. Naloxone is used to reverse the effects of opiates.</p>	<p>For a respiratory rate less than 10 and/or a sedation score of 3 or more, stop the epidural infusion, administer oxygen, and inform the APS. For a respiratory rate less than 6 or if patient is apneic, call the APS, administer oxygen, administer a stat dose of 100 micrograms of naloxone every 5 minutes until the return of regular spontaneous respiration.</p>
<p>Skin integrity and epidural catheter insertion site and dressing status should be assessed at least once per shift. (Matras et al., 2012).</p>	<p>The RN should check the catheter from the infusion pump to the insertion site at the skin and monitor for any leaking or catheter dislodgement. For catheter dislodgement or leaking at the site, call the APS.</p>	<p>The RN should check the catheter from the infusion pump to the skin insertion site at least once per shift and monitor for any leaking or catheter dislodgement. For catheter dislodgement or leaking at the site, call the APS.</p>
<p>Motor strength and sensory assessments should be recorded at least every four hours until the cessation of epidural analgesia (AANA, 2017; Matras et al., 2012).</p>	<p>The local anesthetic drugs in the epidural infusion should allow the patient to move and walk normally while still receiving good pain relief, however, every patient should be assessed for motor strength before ambulation.</p>	<p>The local anesthetic drugs in the epidural infusion should allow the patient to move and walk normally while still receiving good pain relief. However, every patient should be assessed for motor strength and sensation at least every 4 hours until the cessation of epidural analgesia and any time before ambulation.</p>
<p>Epidural catheters can only be removed 2 to 4 hours after the patient's last dose of systemic heparin; serum coagulation should be checked before removing the catheter (ASA, 2017; ASRA, 2017).</p>	<p>No guidelines exist</p>	<p>Epidural catheters can only be removed 2-4 hours after the patient's last dose of systemic heparin; serum coagulation should be checked before removing the catheter.</p>

Ethical Considerations

The University of Southern Mississippi Institutional Review Board (IRB) granted approval before this DNP project was conducted (18020101). IRB approval from the institution of interest was not required since the project did not involve human research subjects. Involvement in this DNP project was voluntary and anonymous. All participants were informed that there would be no compensation to those who choose to participate and no penalty to those who choose not to participate. The DNP project was carried out following sound ethical principles. Participant involvement in this project was strictly voluntary and provided confidentiality of obtained data. Consent was included at the top of all questionnaires. Consent indicated that all participants were above the age of 18 and had read the instructions for completion and voluntary participation.

Summary

The policy analysis of the epidural policy was conducted at a hospital in Mississippi and provides key stakeholders of the institution with suggestions for updating their existing epidural policy. The suggestions were formulated after an extensive review of the current evidence-based guidelines. The policy analysis allowed all healthcare professionals involved with epidural analgesia delivery to voice their opinions and offer suggestions. By including opinions from these direct care providers, the purpose of the policy analysis was strengthened.

CHAPTER III – RESULTS

Results

When reviewing responses to the question that asked, “Were you previously aware that in surgical patients receiving epidural analgesia for postoperative pain relief, there is a 30% failure rate to provide adequate analgesia?”, 1 out of 4 (25%) nurses and 4 out of 20 (25%) anesthesia providers answered “yes”, and 3 out 4 (75%) nurses and 15 out of 20 (75%) anesthesia providers answered “no”. When asked if they believed that having up-to-date, clear, and accessible policies outlining epidural care and management can improve the statistic mentioned in the first question, 2 out of 4 (50%) of nurses answered “yes” and 2 out of 4 (50%) answered “no”; on the other hand, 19 out of 20 (95%) of anesthesia providers answered “yes” and only 1 out of 20 (5%) answered “no”. After reviewing the policy analysis, nurses and anesthesia providers were asked if they believed their institution’s epidural policy demonstrates areas for improvement and need for revision. When reviewing the responses from nurses, 4 out 4 (100%) answered “yes”. When reviewing the responses from anesthesia providers, 19 out of 20 (95%) answered “yes,” and only 1 out of 20 (5%) answered “no”. When asked if they felt that the hospital would benefit from an updated epidural policy to better reflect the most current EBP guidelines, 3 out of 4 (75%) of nurses answered “yes” and 1 out 4 (25%) answered “no.” There were 19 out of 20 (95%) of anesthesia providers that answered “yes,” and 1 out 20 (5%) answered NA; there were no anesthesia providers that answered “no” to this question. When asked if they believed that the policy analysis thoroughly addressed all discrepancies (if any) between their hospital’s epidural policy and the most current EBP

guidelines for epidural care, 4 out of 4 (100%) critical care nurses and 20 out of 20 (100%) anesthesia providers answered “yes” to the question.

One participant shared that he or she did not see the need for resuscitation equipment in the patient’s room if the patient was in the ICU. This same participant also expressed that he or she felt that the failure rate may be more attributed to catheter insertion rather than maintenance. Another participant expressed that policies should be revisited annually to ensure that they are meeting the desired outcome. One participant stated, “the incidence of unresolved postoperative pain is 80%” is overbroad.” This participant suggested narrowing this statistic down to reflect only those patients receiving epidural postoperative analgesia. Another participant stated that an updated policy would be beneficial for the Joint Commission, but not for real practice because most providers do not read the policies.

Summary

There were enough participant responses to gain significant insight to the benefits of updating the hospital’s current epidural policy and procedures manual to more accurately reflect evidence-based guidelines for epidural care. Both nurses and anesthesia providers were eager to review the policy analysis and offer their opinion and/or suggestions. Continuous quality improvement through healthcare policy is most effectively achieved when decisions include all members that will be affected by a change.

CHAPTER IV – DISCUSSION

Summary

Responses to the questionnaires allowed critical care nurses and anesthesia providers to provide their view points and actively participate in this policy analysis. Seventy-five percent of critical care nurses and anesthesia providers were not aware that epidural analgesia has a 30% failure rate. Also, 50% of nurses and 95% of anesthesia providers believed that having up-to-date, accessible policies outlining epidural care, and management can improve postoperative epidural analgesia. One hundred percent of nurses and 95% of anesthesia providers believed their institution's epidural policy demonstrates areas for improvement. Lastly, 75% of nurses and 95% of anesthesia providers felt that the hospital would benefit from an updated epidural policy. Gaining this insight is crucial to the importance of this policy analysis because it shows there is a lack of awareness of the problem and it demonstrates the usefulness of the policy analysis.

Implications for Future Practice

Future doctoral projects should be conducted on this topic in other settings because there are many other institutions that have an outdated or nonexistent epidural policy. Also, further work after the policy analysis could focus on developing in-service training to epidural providers. Since most pain management guidelines are generalized and do not offer specific evidence-based guidelines for postoperative epidural analgesia, more comprehensive research needs to be conducted on epidural analgesia used specifically for postoperative pain management. Since there is limited research on how to

conduct a policy analysis in a health care organization, an area of opportunity exists for research and creation of guidelines on how to perform policy analyses in these settings.

Limitations

Limited research on how to conduct a policy analysis in a healthcare organization prolonged this DNP project and made the process much more difficult. Most pain management guidelines are generalized and do not offer specific evidence-based guidelines for postoperative epidural analgesia. Human responsiveness is very unpredictable; therefore, untimeliness or unresponsiveness of key stakeholders and participants to engage in this policy analysis and complete the surveys is always a potential barrier.

Conclusion

The results of this DNP project showed that there were subtle discrepancies between the institution's epidural policy and current evidence-based guidelines for epidural analgesia. The questionnaires revealed that all participants believed that the policy analysis properly and thoroughly addressed all discrepancies between their hospital's epidural policy and the most current EBP guidelines for epidural care. Since most of the participants revealed they were unaware that there is a 30% failure rate of epidural analgesia, this serves as an important area for education. The majority of participants felt that their institution's epidural policy demonstrates the need for revision and that the hospital would benefit from updating the epidural policy to better reflect the most current EBP guidelines. Having an institutional epidural policy that reflects best practice guidelines on epidural care is an exceptional way to ensure safe and effective delivery of postoperative pain relief methods.

APPENDIX A– Literature Matrix

Author(s)	Year	Design	Sample	Findings	Notes
Baker “The Joint Commission statement on pain management”	2016	Expert Opinion/Commentary	N/A	The Joint Commission pain standards encourage institutions to establish education programs and training policies and procedures that enhance pain assessment and treatment without promoting unnecessary opioid use.	The Joint Commission pain standards address a serious, recurring problem that affects millions of people. The pain standards address inadequate pain control for acute and chronic conditions.
Chou et al. “Guidelines on the management of postoperative pain”	2016	Systematic Review	Of 32 total recommendations, 4 were supported by high-quality evidence, and 11 were supported by low-quality evidence.	Most surgical patients experience acute postoperative pain, and less than 50% report adequate postoperative analgesia. Multiple interventions are available for reducing and managing postoperative pain. Ideal management begins preoperatively with an assessment of the patient and the development of an individualized plan of care.	Safe and effective postoperative pain management should be based on an individualized plan of care and multimodal regimens are recommended in many situations.

Carr et.al "Pain: A quality of care issue during patients' admission to hospital."	2014	Descriptive cross-sectional exploratory design	810,774 pain scores were analyzed, representing 38,451 patients to establish how many patients experience clinically significant pain during their hospital stay.	38. 4% of the patients experience clinically significant unrelieved pain.	Reducing the risk of persistent pain is essential to improve patient safety. This can be achieved by developing organizational pain management processes with quality improvement initiatives.
Deni et.al "Efficacy and safety of an acute pain service among 10,760 postoperative patients."	2016	Meta-analysis	Postoperative pain, complications, side effects, and patient satisfaction scores were collected from 10,760 adult patients over a five-year period.	An Acute Pain Team improves post-operative pain control and decreases the incidence of serious adverse events.	APS has an important role in training patients and all medical staff involved epidural pain management; the team also performs audits and clinical research on the existence and efficacy of new therapies.
Duncan & Haigh "Measuring and improving the quality of postoperative epidural analgesia for major abdominal surgery using statistical process control charts"	2013	Qualitative study	Failure rates of epidural analgesia was evaluated in 293 surgical patients in a prospective observational study	Statistical Process Control is a useful device for measuring and improving the pain management quality. Implications for nursing management. The Statistical Process Control methods offer the potential to learn about changes and outcomes in	The study demonstrated a significant improvement in the failure rate of epidurals as the quality improvement interventions continued.

				an Acute Pain Service.	
McDonnell, Nicholl, & Read “Acute pain teams in England: Current provision and their role in postoperative pain management.”	2003	Meta-analysis	Questionnaires consisting of questions about the existence and efficacy of an Acute Pain Team were given to various acute care hospitals in Wales, England. 226 out of the total 320 questionnaires were completed and returned.	Acute Pain Teams (APTs) play an important role in utilizing more extensive analgesic methods, like patient-controlled analgesia (PCA) and epidurals; furthermore, the teams provide training and education of these analgesia methods. APT’s also help to audit research, and they help to develop and implement guidelines and protocols.	Hospitals with an Acute Pain Team utilized PCA and epidural analgesia more expansively than hospitals without an Acute Pain Team.
Matras, Poulton, & Derman “Pain physiology & assessment, patient-controlled analgesia, epidural & spinal analgesia, nerve block catheters.”	2012	Expert Opinion/Commentary	N/A	Self-Learning Package was developed to educate individuals on pain physiology and assessment and epidural analgesia	Accessibility of convenient, nationally-developed tools facilitate opportunities for continuing quality improvements
Mississippi State Department of Health “Epidemiologic report: Drug overdose	2017	Meta-analysis	From 2011 to 2016, there were a total of 715 deaths reported due to opioid overdose. 643 out of the 715	The number of opioid-related deaths has continuously risen in the past 5 years in	The results of this report emphasize the importance of statewide measures to control

deaths involving opioids from 2011-2016”			(89.9%) were accidental.	Mississippi. Between 2011 and 2016, opioid-related overdose deaths more than doubled.	Mississippi’s opioid epidemic. These measures could include utilizing multimodal analgesia postoperatively to reduce the number of patients receiving opioids alone.
Royal Cornwall Hospital “Clinical guideline for the care of epidural infusions (adult)”	2017	Expert Opinion/Commentary	N/A	There should be formal education and training for healthcare providers who are responsible for supervising patients receiving epidural analgesia. Training programs should include induction and regular update sessions; education should be consistent with the responsibility of the provider involved.	Institutional protocols should address management of inadequate analgesia and identification and management of early and late complications.
Sawhney “Epidural analgesia: What nurses need to know”	2012	Informative	N/A	Epidural analgesia is a safe and effective way to manage postoperative pain Since nurses spend the most time	Nurses providing care for patients receiving epidural analgesia should focus on safe administration,

				with patients, they must be prepared to identify problems with pain management	reaching optimal pain control, and recognizing complications.
Schreiber “We've come a long way: A review of cancer pain management”	2013	Comprehensive literature review	76% percent of patients received scheduled medications, 55% took the prescribed dose, 38% took less than the prescribed dose, and 7% took more than the prescribed dose. 88%–92% of patients had orders for breakthrough pain medications, but only 3% took the prescribed amount and 96% took less than the prescribed dose	The results of this study suggest that enhanced patient education would improve breakthrough pain management.	Understanding the knowledge and attitudes held by nurses about pain is of paramount importance when addressing their decisions about analgesic treatment options.
Tennant “The Physiologic Effects of Pain on the Endocrine System”	2013	Expert Opinion/Commentary	N/A	Physiologic effects of pain on the endocrine system is related to severe stress. If pain persists, the hormonal system is unable to adapt to the stress of pain, and hormone production decreases and serum hormone levels drop below normal.	Serum hormone levels are used as clinical biomarkers to detect uncontrolled pain.
Weetman & Allison.	2006	Expert Opinion/Commentary	N/A	This study provides a	None

<p>“Use of epidural analgesia in post-operative pain management”</p>				<p>framework of the use of epidural analgesia in the management of post-operative patients. Epidural analgesia is an effective pain relief method with minimal side effects; however, complications are common and nurses should be proficient in their ability to identify these and appropriately intervene.</p>	
<p>Wells, Pasero & McCaffery. “Improving the Quality of Care Through Pain Assessment and Management”</p>	<p>2008</p>	<p>Meta-analysis</p>	<p>N/A</p>	<p>80% of surgical patients experienced acute pain after surgery, and 86% of those had moderate to extreme pain. Of 1,308 outpatients with metastatic cancer from 54 cancer treatment centers, 67% reported pain. Of those who had pain, 42% did not receive adequate analgesia.</p>	<p>Research in this area needs to be directed toward effective strategies for eliminating bias thoughts and behaviors in order to achieve better pain management for patients.</p>

APPENDIX B– DNP Essentials

Essential I	Scientific Underpinnings for Practice	This doctoral project assessed the current epidural policy and compared it to the most current evidence-based practice epidural policy guidelines.
Essential II	Organizational and Systems Leadership for Quality Improvement and Systems Thinking	This doctoral project evaluated the hospital's current epidural policies and procedures to identify any needs for updates or revisions with an intention to enhance clinical practice within the organization and to increase postoperative pain relief in order to enhance quality of care provided to patients receiving epidural analgesia.
Essential III	Clinical Scholarship and Analytical Methods for Evidence-Based Practice	This doctoral project conducted a thorough literature review by using analytical methods to identify a clinical problem that needs improvement, to collect meaningful data, and to apply research findings into the clinical setting to perform a policy analysis and recommend evidence-based changes.
Essential IV	Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care	This doctoral project utilized technology to evaluate institutional epidural policies and procedures. This information was used to perform a SWOT analysis comparing the current epidural policy with evidence-based epidural policies.
Essential V	Health Care Policy for Advocacy in Health Care	This essential was met because the results of this policy analysis were presented to the key stakeholders of the institution.
Essential VI	Interprofessional Collaboration for Improving Patient and Population Health Outcomes	This essential was met by gathering input from anesthesia providers and nurses for the policy change.
Essential VII	Clinical Prevention and Population Health for Improving the Nation's Health	This essential was met because this policy analysis presented updated guidelines that may enhance postoperative pain relief.
Essential VIII	Advanced Nursing Practice	This essential was met because the policy analysis and recommended updates were based on evidence-based best practice guidelines.

APPENDIX C- Epidural Analgesia Key Facts Sheet

CONTINUOUS EPIDURAL ANALGESIA FOR POSTOPERATIVE PAIN MANAGEMENT: A POLICY ANALYSIS

Purpose:

- To perform a policy analysis of the epidural policy at a hospital in Mississippi.
- Policy will be compared to current evidence-based practice guidelines for delivering safe epidural analgesia.

Background

- The incidence of unresolved postoperative pain is approximately **80%** in all surgical patients
 - 86% of those report moderate to severe pain
 - The percentage of patients with a pain score greater than 6 out of 10 can range from **28-50%** at any given time.
- Epidural analgesia is a regional procedure that can greatly enhance postoperative pain relief with low incidence side effects.
- Epidural analgesia is an area that needs improvement because it has been linked to a **failure rate of 30% in clinical practice.**

It is essential to ensure safe and effective delivery of postoperative pain relief methods, and this assurance can be provided by having an institutional epidural policy that reflects best practice guidelines on epidural care.

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APPENDIX D– Epidural Analgesia Questionnaire

Your participation in this research study is voluntary. If you decide to participate in this research survey, you may withdraw at any time. To ensure your responses are completely anonymous, please do not provide any personally identifying information on this questionnaire

CONSENT: Please select your choice below.

Selecting "agree" below indicates that:

- you have read the above information
- you voluntarily agree to participate
- you are at least 18 years of age

- Agree
 Disagree

The following questions pertain to your opinions and/or suggestions after reviewing the policy analysis constructed from a comparison between this institution's epidural policy and the most current EBP guidelines.

1. Were you previously aware that in surgical patients receiving epidural analgesia for postoperative pain relief, there is a 30% failure rate to provide adequate analgesia?
 Yes
 No
2. Do you believe that having up-to-date, clear, and accessible policies outlining epidural care and management can improve the statistic mentioned above?
 Yes
 No
3. After reviewing the policy analysis, do you believe this institution's epidural policy demonstrates areas for improvement and need for revision?
 Yes
 No
4. If the epidural policy is revised to better reflect the most current EBP guidelines, do you feel that it will benefit this hospital? If answered "no" to question 3, choose NA.
 Yes
 No
 NA (Our policy already reflects the most current EBP guidelines)
5. Do you believe that this policy analysis properly and thoroughly addresses all discrepancies (if any) between this hospital's epidural policy and the most current EBP guidelines for epidural care?
 Yes
 No
 NA (Our policy already reflects the most current EBP guidelines)

Comments/Suggestions: _____

APPENDIX E- Letter of Support from the Facility

January 18, 2018

, BSN, RN, CCRN
Nurse Educator

Letter of Support for Madison Nowell:

I am the nurse educator in the cardiovascular intensive care unit at the . I am offering this letter of support to the DNAP student, Madison Nowell, in her DNP project entitled Continuous Epidural Analgesia for Postoperative Pain Management: A Policy Analysis.

I understand that Madison Nowell is a student in the Doctor of Nurse Anesthesia Program at The University of Southern Mississippi. I understand that the planned month for conducting her project is February 2018 after USM IRB approval is granted. I understand involvement to be voluntary and anonymous. There will be no compensation to those who choose to participate, and there will be no penalty to those who choose not to participate.

I understand that this project will be carried out following sound ethical principles and that participant involvement in this project is strictly voluntary and provides confidentiality of obtained data. Therefore, as a representative of I agree that Madison Nowell's project may be conducted at our institution.

Sincerely,

, BSN, RN, CCRN

APPENDIX F– IRB Approval Letter



THE UNIVERSITY OF
SOUTHERN MISSISSIPPI

INSTITUTIONAL REVIEW BOARD

118 College Drive #5147 | Hattiesburg, MS 39406-0001

Phone: 601.266.5997 | Fax: 601.266.4377 | www.usm.edu/research/institutional.review.board

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 18020101

PROJECT TITLE: Continuous Epidural Analgesia for Postoperative Pain Management: A Policy Analysis

PROJECT TYPE: New Project

RESEARCHER(S): Madison Nowell

COLLEGE/DIVISION: College of Nursing

DEPARTMENT: School of Leadership and Advanced Nursing Practice

FUNDING AGENCY/SPONSOR: N/A

IRB COMMITTEE ACTION: Expedited Review Approval

PERIOD OF APPROVAL: 02/21/2018 to 02/20/2019

Lawrence A. Hosman, Ph.D.

Institutional Review Board

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