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Does the Use of a Regional Nerve Block Decrease the Incidence of Post Operative Nausea and Vomiting, Decrease Pain Scores, or Decrease Discharge Time Compared to General Anesthesia Alone?

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DOES THE USE OF A REGIONAL NERVE BLOCK DECREASE THE
INCIDENCE OF POST OPERATIVE NAUSEA AND VOMITING, DECREASE
PAIN SCORES, OR DECREASE DISCHARGE TIME COMPARED
TO GENERAL ANESTHESIA ALONE?

by

Donald Lane Whitney

A Capstone Project
Submitted to the Graduate School
and the Department of Advanced 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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December 2015

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ABSTRACT

DOES THE USE OF A REGIONAL NERVE BLOCK DECREASE THE INCIDENCE OF POST OPERATIVE NAUSEA AND VOMITING, DECREASE PAIN SCORES, OR DECREASE DISCHARGE TIME COMPARED TO GENERAL ANESTHESIA ALONE?

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Problem Statement: The use of regional anesthesia in orthopedic surgeries has been shown to decrease the rate of postoperative nausea and vomiting (PONV), postoperative pain, and decrease postoperative discharge time. However, some healthcare facilities continue to provide anesthesia for these procedures without the use of regional anesthesia techniques.

Purpose: The purpose of this capstone project was to determine if the addition of a regional anesthetic technique would be beneficial to the patient and cost efficient to the healthcare facility.

Methods: A retrospective chart review was conducted and data collected on the population of interest. Inclusion criteria were patients undergoing orthopedic surgery of the upper extremity during January 2015 through August 2015, ages 35-65, and patient status classification I, II, or III. A total of 24 charts were reviewed with 12 charts in the general anesthesia group and 12 charts in the regional anesthesia group. PONV, postoperative pain, anesthesia time, and length of stay in the post anesthesia care unit (PACU) were compared between the groups.

Analysis: Unpaired t-tests were used to compare the anesthesia time, PACU length of stay, antiemetic medication requirements, and opioid medication dosage between the two groups. There were no significant differences found between the groups.

Conclusion: This retrospective chart review found no significant differences between the groups related to antiemetic medications, opioid medication dosages, or length of stay in PACU.

ACKNOWLEDGMENTS

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LIST OF ABBREVIATIONS

<i>ASA</i>	American Society of Anesthesiologists
<i>IM</i>	Intramuscular
<i>IV</i>	Intravenous
<i>KG</i>	Kilograms
<i>MCG</i>	Micrograms
<i>MG</i>	Milligrams
<i>PACU</i>	Post Anesthesia Care Unit
<i>PCA</i>	Patient Controlled Analgesia
<i>PONV</i>	Postoperative Nausea and Vomiting
<i>SC</i>	Subcutaneous

CHAPTER I

INTRODUCTION

Several different types of anesthetic plans are possible for specific orthopedic surgical procedures. The use of regional anesthesia, combined regional anesthesia and general anesthesia, or general anesthesia as the sole anesthetic are different types of anesthetic plans used for orthopedic surgeries. The choice of the anesthetic technique, whether incorporating regional anesthesia or general anesthesia alone, is dependent upon the provider administering the anesthetic, the comorbidities of the patient, and the common practice of the facility.

Facilities throughout this region are no different, some use general anesthesia only while some use a combination of regional and general. An example to highlight this point is that two facilities in which nurse anesthesia students rotate in the local area have vastly different anesthesia techniques for orthopedic procedures of the upper extremity. One facility utilizes peripheral nerve blockade in nearly 100% of the orthopedic procedures. Another facility rarely utilizes peripheral nerve blockade for orthopedic surgical procedures.

Research has demonstrated some of the advantages of regional anesthesia over using general anesthesia alone. Egol et al. (2012) found that patients who had regional anesthesia compared to general anesthesia and were undergoing surgery for distal radius fracture had a decrease in pain perception at 3 and 6 months, an increase in wrist and finger motion at 3, 6, and 12 months, and an increase in functional scores at 3 months follow up. The findings of this

study are similar to results of other research related to postoperative pain control and postoperative nausea and vomiting. In patients receiving outpatient knee arthroscopy, Hadzic et al. (2005a) found a PONV rate of 12% in those receiving regional anesthesia versus 62% in those receiving general anesthesia. From the mentioned research studies available, it is clear that regional anesthesia offers a superior profile in regards to PONV and postoperative pain control.

The Neuman systems model correlates well with this capstone project. The concepts within the Neuman systems model are human beings, environment, health, and nursing (Whetsell, Gonzalez, & Moreno-Fergusson, 2015). Since this model is a systems model, the concepts are interrelated within the system as a whole. Neuman suggested that variables of the person should also be considered which include physiological, psychological, sociocultural, developmental, and spiritual (Whetsell et al., 2015). Considering the variables within the Neuman systems model, the physiological aspect may be improved with regional anesthesia because of increased rehabilitation after the operation and a decrease in pain scores. The psychological, sociocultural, developmental, and spiritual components may be improved because of a faster return to baseline function.

CHAPTER II

REVIEW OF LITERATURE

Regional anesthesia techniques offer multiple advantages to patients and healthcare facilities. Patients benefit from a reduction in postoperative pain and PONV. Facilities benefit from the inclusion of regional anesthesia techniques by increasing economic benefits to the facility and the patient, decreasing PACU length of stay, and increasing patient satisfaction ratings.

Postoperative Nausea and Vomiting

Chan et al. (2001) compared patients receiving general anesthesia, patients receiving an axillary nerve block, and patients receiving intravenous bier block and found the PONV rate to be 62%, 12%, and 18% respectively. In patients receiving outpatient knee arthroscopy, Hadzic et al. (2005a) found a PONV rate of 12% in those receiving regional anesthesia versus 62% in those receiving general anesthesia. Yauger et al. (2010) performed a retrospective chart review comparing patients receiving general anesthesia to regional anesthesia for knee or shoulder arthroscopy and found the antiemetic dose to be 0.58 for the general anesthesia group compared to 0.04 for the regional anesthesia group. Lane, Blundell, Mills, and Charalambous, (2014) found that the PONV mean score was 2.4 rated on a 0-10 scale.

Postoperative Pain

Chan et al. (2001) compared patients receiving general anesthesia to patients having an axillary nerve block for hand surgery and found that 85% of patients receiving general anesthesia complained of pain in PACU compared to

43% of patients receiving an axillary nerve block. Hadzic et al. (2005a) found that 16% of patients receiving a peripheral nerve block for knee arthroscopy required pain medications in PACU compared to 32% of patients receiving general anesthesia for the same procedure. Yauger et al. (2010) found that patients receiving regional anesthesia for knee and shoulder arthroscopy received 15.1 mg of morphine equivalency dosing compared to 22.9 mg for patients receiving general anesthesia. Tandoc, Fan, Kolesnikov, Kruglov, & Nader (2011) found the administration of postoperative pain medication was significantly lower in patients receiving regional anesthesia compared to patients receiving general anesthesia. Lee et al. (2012) found that patient controlled analgesia (PCA) with suprascapular nerve block yielded better postoperative pain scores than PCA alone. Egol et al. (2012) found that patients who had regional anesthesia compared to general anesthesia and were undergoing surgery for distal radius fracture had a decrease in pain perception at 3 and 6 months, an increase in wrist and finger motion at 3, 6, and 12 months, and an increase in functional scores at 3 months. Lane et al. (2014) found that patients receiving a nerve block had a mean pain score of only 3.5 in the postoperative phase of care.

Although there is an overwhelming amount of research in support of peripheral nerve blocks for postoperative pain improvement, some research suggests that peripheral nerve blocks using a local anesthetic in conjunction with other medications will prolong the block by a significant margin. An example of this is research conducted by Conroy and Awad (2011) who found that

interscalene blocks to be effective from a median of 13.8 hours for local anesthetic only to a median of 24.3 hours by adding dexamethasone to the local anesthetic. Conroy and Awad, (2011), compared local anesthetic only to local anesthetic with dexamethasone 4 mg and dexamethasone 8 mg but found no significant difference between the low dose group and high dose group.

Economic Implications

Schuster, Gottschalk, Berger, and Standl (2005) found regional anesthesia to be more expensive to perform and had economic benefits only if the procedure was longer than 200 minutes. However, Chan et al. (2001) found that intravenous regional anesthesia was the cheapest anesthetic while peripheral regional anesthesia to be the most expensive but was not significantly different from general anesthesia. Since patient satisfaction may have implications for reimbursement rates, an increase in patient satisfaction should be viewed as an economic benefit. Lane et al. (2014) found that 88% of patients receiving regional anesthesia responded satisfied, very satisfied, or extremely satisfied.

There has been research completed that supports the belief that regional anesthesia is more time consuming upon initiation but has faster discharge times while general anesthesia has faster initiation times but slower discharge time. Yauger et al. (2010) studied patients in the same day surgery unit and found that regional anesthesia had a longer preparation time and shorter discharge time when compared to general anesthesia, but the overall length of stay was nearly identical for the two groups. A similar study conducted by Hadzic et al. (2005a)

found that patients who received an interscalene block for rotator cuff surgery were ready for discharge 2.5 hours sooner than patients receiving general anesthesia for the same operation. Pavlin et al. (1998) researched factors affecting discharge time in outpatient procedures and found that patient receiving general anesthesia had discharge times 2.5 times longer than patients who had received regional anesthesia. Although the initial cost to implement a regional nerve block is higher due to the higher salary of the anesthesia provider, this cost may be offset by a shorter length of stay during the postoperative period.

The use of ultrasound guided regional anesthesia shows promise in regards to increasing the rate of successful peripheral nerve blocks. Liu, Ngeow, and YaDeau (2009) found that ultrasound reduced block performance time, achieved adequate nerve block in fewer attempts, and nerve block had a faster onset time. McCartney, Lin, and Shastri (2010) also found that ultrasound guided nerve blocks yielded faster block time, faster block onset, and a lower failed block rate. A research review by Neal et al. (2010) found similar results in regards to ultrasound guided blocks resulting in faster onset time and a higher success rate, but also found a reduced amount of local anesthetic to achieve an adequate nerve block. The reduction of local anesthetic volume research was replicated by Koscielniak-Nielsen and Dahl (2012).

There are other factors to consider when comparing regional anesthesia to general anesthesia. One factor to consider is unplanned admission rates. In patients who were undergoing rotator cuff repair, Hadzic et al. (2005b) found a

16% rate of unplanned admissions after general anesthesia compared to 0% in the group receiving regional anesthesia.

There is a large amount of evidence in support of regional anesthesia techniques when applied in the anesthetic plan. Marhofer, Willschke, and Kettner (2010) reported that regional anesthesia would continue as an economic benefit to facilities and patients as long as efficiency and success is directed toward anesthesia workflow. The trend in the use of regional anesthesia techniques will likely continue and expand with improvements in ultrasound technology.

CHAPTER III

METHODOLOGY

After Institutional Review Board approval, a retrospective chart review was conducted to collect data on the population of interest. The chart reviews were conducted at a level II trauma center and an orthopedic specialty center, both located in the southeastern region of the United States. Inclusion criteria were patients undergoing orthopedic surgery of the upper extremity, ages 35-65, and met patient status classification I, II, or III. The first group was composed of patients who received an interscalene block, supraclavicular block, or axillary block for postoperative pain control. The peripheral nerve blocks of interest were accomplished by ultrasound guidance as well as the use of a nerve stimulator needle. The ultrasound is used to identify anatomy, decrease the occurrence of vascular insult, and to assess the adequacy of local anesthetic spread. The stimulator needle is used to accomplish fine adjustments in needle placement by obtaining the desired muscle group motor twitches. The local anesthetic used in the peripheral nerve blocks of interest is 20-30 milliliters of Ropivacaine 0.5%. The second group included patients who received general anesthesia only. Exclusion criteria from this chart review included multisystem trauma patients. The reason for this patient population being excluded was because of skewed data related to pain medication due to trauma related comorbidities. Patients who received a continuous nerve block by catheter were also excluded.

The patient status classification was derived from the American Society of Anesthesiologists physical status classification system as shown in Table 3.1. All

patients included in the chart review were ASA class I, II, or III. Patients who met the emergency classification were also included provided they met other inclusion criteria.

Table 3.1

ASA Patient Classification

ASA I	No organic, physiologic, biochemical, or psychiatric disturbance
ASA II	Mild to moderate systemic disease that is well controlled
ASA III	Severe systemic disease that limits activity
ASA IV	Severe systemic disease that is a constant threat to life
ASA V	Moribund patient undergoing surgery as a resuscitative effort. Not expected to survive without surgery.
ASA VI	Surgery being performed for organ harvest
ASA E	Emergency surgery is required

Adapted from Marley, Calabrese, and Thompson, 2014, table 19-15.

Postoperative pain data was obtained by comparing the morphine equivalency doses between the groups. Morphine equivalency doses were calculated from the doses listed in table 3.2 and converted to micrograms per kilogram. Postoperative pain data was obtained throughout the intraoperative and postoperative periods. Intraoperative data was included because many pain medications given intraoperatively have duration of action times that extend into the postoperative phase of care.

Table 3.2

Morphine Equivalency

Buprenorphine (IM/IV): 0.4	Hydromorphone (IV/IM/SC): 1.5	Morphine (IV/IM/SC): 10
Butorphanol (IM/IV): 2	Hydromorphone (PO): 7.5	Morphine (acute PO): 60
Codeine (IM/IV): 120	Levorphanol (acute PO): 4	Morphine (chronic PO): 30
Codeine (PO): 200	Levorphanol (PO): 1	Nalbuphine (IV/IM/SC): 10
Fentanyl (IM/IV): 0.1	Meperidine (IV/IM/SC): 75	Oxycodone (PO): 20
Fentanyl (Transdermal): 0.2	Meperidine (PO): 300	Oxymorphone (IV/IM/SC): 1
Hydrocodone (PO): 30	Methadone (acute IV): 5	Oxymorphone (PO): 10
	Methadone (acute PO): 10	Tapentadol (PO): 75-100

Adapted from McAuley, 2013

Postoperative nausea and vomiting rates were obtained by comparing the number of administration of antiemetic medications. The preoperative phase of care was included due to many surgical patients being administered antiemetics prophylactically.

Total anesthesia time was compared between the two sample groups to determine if the anesthetic technique cost was significantly different. As previously stated, some research suggests that regional anesthesia has a longer preparation time compared to general anesthesia alone. The anesthesia provider administering the regional anesthesia is also more costly compared to preoperative staff.

CHAPTER IV

ANALYSIS OF DATA

The comparison groups were composed of 24 patient charts, with 12 charts accounting for each group. The first group included patients that received a peripheral nerve block. The second group included those patients that received general anesthesia only.

Student t-tests were used to evaluate whether the regional anesthesia group had lower rates of PONV, decreased opioid medication administration, decreased length of stay in PACU, and to compare total anesthesia time between the two groups. The student *t* was used because two groups were being compared with a normal distribution and had similar standard deviations. A *p* value of ≤ 0.05 was considered to be of statistical significance.

GraphPad Prism software was used for all statistical calculations. The specific statistical figures calculated included the mean, stand deviation, and confidence interval. The GraphPad Prism website was used for data input.

The total anesthesia time of each group was first compared. The total anesthesia time for the regional group had a mean of 133.33 minutes while the general anesthesia group had a mean time of 128.83 minutes. Using the student *t* test to compare the two groups, there was no significant difference in total anesthesia time with *p* value = 0.84.

Pain medication administration was compared between the two groups using the morphine equivalency doses in Table 3.2. The medication dosage was converted to micrograms (mcg) per kilogram (kg). The mean of the regional

group was 210.85 mcg/kg while the mean for the general group was 256.18 mcg/kg. The student *t* test was used to compare the two groups. There was no significant difference in opioid administration between the groups with the *p* value = 0.31.

The number of antiemetic doses was compared between the two groups. The regional group had a mean of 1.75 doses while the general group had a mean of 1.33 doses. The student *t* test was used to compare the groups. The *p* value = 0.38 with no significant difference between the groups.

The time in PACU was then compared between the groups. The time from PACU admit until ready for discharge was used for comparison. The regional group had a mean of 37.5 minutes while the general group had a mean of 36.3 minutes. The student *t* test was used for comparison. With the *p* value = 0.79, there was no significant difference in PACU length of stay between the groups.

CHAPTER V

SUMMARY

This capstone project compared outcomes between two groups using a retrospective chart review. Outcomes that were compared include postoperative pain, PONV, total anesthesia time, and PACU discharge times. The first group was composed of patients who received regional anesthesia to include an interscalene, supraclavicular, or axillary peripheral nerve block. The second group was composed of patients who received general anesthesia only or a failed peripheral nerve block.

Inclusion criteria were patients 35-65 years old and undergoing orthopedic surgery of the upper extremity, patient classification I, II, or III. Patients who met emergency classification were included in chart review. Multisystem trauma patients were excluded from the review. Patients that received a continuous nerve block via indwelling catheter were also excluded.

Postoperative pain was assessed using morphine equivalency doses listed in Table 3.2 and converted to micrograms per kilogram. Postoperative nausea and vomiting was compared by antiemetic medication administration. PACU ready for discharge times were used to compare length of stay in PACU.

Conclusions

There were no significant differences found between the two groups with regard to postoperative pain, PONV, total anesthesia time, or PACU time. This chart review was limited to the immediate postoperative time only and did not compare outcomes beyond discharge from PACU. This finding has clinical

implications for the anesthesia provider, especially the provider in a rapid turnover environment such as ambulatory surgery centers.

In those patients who either refuse peripheral nerve block or cannot receive the nerve block due to contraindications, the length of stay in PACU will not be extended. Likewise, patients who are good candidates for regional anesthesia but are poor candidates for general anesthesia will have a similar length of stay in PACU.

Recommendations for Future Study

There are several recommendations for future studies to build on this retrospective chart review. This retrospective chart review was limited to the immediate postoperative period in the PACU. One recommendation for future study is to extend the review period beyond the immediate postoperative period. This may capture statistically significant differences in regards to postoperative pain management and PONV.

Extending the review period beyond PACU may show significant differences in relation to the economic impact as well. One reason for this is admitted patients in the general anesthesia group received a PCA pump upon transfer from the PACU. Comparing the cost of medication in the PCA pump to the medication used in the nerve block may be significantly different.

As this chart review demonstrated, there were no significant differences in total anesthesia time between groups. Some providers perceive the time taken to perform the nerve block as a deterrent. For the regional group in the chart review, the sum on the peripheral nerve block time and the general anesthesia

time was used to compare anesthesia times. A recommendation for future study is to gather data on the regional nerve block performance time. This may serve as further evidence that performing a peripheral nerve block does not significantly add time to the anesthesia plan.

APPENDIX A

LITERATURE REVIEW TABLE

Author/Year	Study Type	Sample	Data Collection	Key Findings
Chan, Peng, Kaszas, Middleton, Muni, Anastakis, & Graham, 2001	Prospective study	126 outpatients for elective hand surgery	126 patients assigned to 3 groups of IVRA, Axillary Block, or GA	-Postop pain: GA 85%, IVRA 51%, AB 43% -PONV: GA 62% IVRA 18%, AB 12%
Conroy & Awad, 2011	Systematic Review	40 citations in review	Systematic review of previous 12-18 months prior to publication	-Addition of dexamethasone may increase the duration of the interscalene block from median 13.8 to 24.3 hrs -Analgesic requirements are similar for open vs. arthroscopic shoulder procedures in the first 24-48 hrs using general anesthesia alone
Egol, Soojian, Walsh, Katz, Rosenberg, & Paksima, 2012	Retrospective review of Prospectively collected data	187 patients 122 in GA and 65 in RA	Follow up at 3, 6, and 12 months postop	-3&6 months, RA had lower pain scores -Wrist and Finger range of motion was greater in RA at all follow up points
Hadzic, Karaca, Hobeika, Unis,	Random Control Trial	50 patients for knee	Blinded research assistant phone	-Required pain medication GA 32% RA 16%

Dermksian, Yufa, Claudio, Vloka, Santos, & Thys, 2005		arthroscopy, PS I-III	interviews at 24, 48, and 72hrs.	-TTD GA 226 RA 162 -Antiemetic GA 60% RA 12%
Hadzic, Williams, Karaca, Hobeika, Unis, Dermksian, Yufa, Thys, & Santos, 2005	Random Control Trial	50 patients receiving shoulder surgery	25 in each group with data collection by blinded PACU nurses	-PACU bypass: GA 16%, RA 76% -Discharge: GA 286min RA 123min -Unplanned admission: GA 16% RA 0%
Koscielniak-Nielsen & Dahl, 2012	Research Review	33 research articles	Articles published within 18 months of review publication	-Ultrasound RA reduces amount of LA required
Lane, Blundell, Mills, & Charalambous, 2014	Convenience sampling	24 patients	Same day discharge with follow up postoperative day 1	-Pain score 0-10 mean was 3.5 -PONV score 0-10 mean was 2.4 -Patient satisfaction responded satisfied, very satisfied, or extremely satisfied was 88% of participants
Lee, Park, Nam, Han, Lee, Kwon, Ji, Choi, & Park, 2012	Non-randomized trial	61 patients	Participants assigned to 3 groups for outcome comparison of postoperative pain and PONV	-Nerves located in shoulder may be damaged during operation exerting pressure on nociceptors.

				-PCA with suprascapular and axillary nerve block would be better method than PCA alone or PCA with interscalene block -No significant difference in PONV
Liu, Ngeow, YaDeau, 2009	Systematic Review	23 studies	Medline search 1966-2007 Inclusion: RCT and Prospective case study with n >100	-Ultrasound reduced time or number of attempts to achieve block. -Ultrasound had faster onset of block.
Marhofer, Willschke, & Kettner, 2010	Research Review	15 research articles	Recent review of publications	-RA will remain economically sound if efficiency and success is directed toward anesthesia workflow
McCartney, Lin, & Shastri, 2010	Research Review	25 studies	PUBMED and EMBASE search between July 1991 and August 2009	-Ultrasound RA provided faster block performance, faster block onset, and greater block success
Neal, Brull, Chan, Grant, Horn, Liu, McCartney, Narouze, Perlas,	Research Review	25 studies	Standard electronic search between 1990 and 2009. Inclusion were RCT,	-Ultrasound guided RA results in faster onset of block, higher success rate of block,

Salinas, Sites, & Tsui, 2010.			systematic reviews, meta-analysis, comparative studies, or case series of at least 10 subjects.	and allows reduced amount of local anesthetic to achieve block.
Pavlin, Rapp, Polissar, Malmgren, Koerschgen, & Keyes, 1998	Prospective observational surveillance	1088 adult patients undergoing outpatient surgery	Prospective data recorded by anesthesia on preprinted form.	-No difference in discharge times
Tandoc, Fan, Kolesnikov, Kruglov, & Nader, 2011	Random Control Trial	86 participants	Randomly assigned to 3 groups to compare duration of analgesia and motor blockade	-Analgesia prolonged in low (21.6 ± 2.4 hours) and high (25.2 ± 1.9 hours) dose group compared to control group (13.3 ± 1 hours) -Motor blockade low group (36.7 ± 4.1 hours) high dose (39.2 ± 3.9 hours) and control (24.6 ± 3.3 hours) -Postoperative pain medication administration was lower than control group
Yauger, Bryngelson, Donohue, Lawhorn, Pitcher, Schoneboom, & Watts, 2010	Retrospective Chart Review	342 patient charts were included who had shoulder or knee arthroscopy	161 GA, 181 RA	-Total hospital time: GA 352.7min RA 347.5 min -Morphine Equivalents: GA 22.9mg RA 15.1mg

				-Pain Score: GA 1.1 RA 0.3 -Antiemetic Dose: GA 0.58 RA 0.04 -PONV: GA 15.5% RA 10%
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APPENDIX B

DOCTOR OF NURSING PRACTICE ESSENTIALS

I. Scientific underpinnings for practice	Using the latest evidence to prevent injury to patients while using regional or general anesthesia
II. Organizational and systems leadership for quality improvement and systems thinking	Implementing policies within the facility to improve outcomes of patients
III. Clinical scholarship and analytical methods for evidenced-based practice	Using paired t test to analyze data between two groups
IV. Information systems/technology and patient care technology for the improvement and transformation of health care	Utilizing latest ultrasound technology to apply peripheral nerve blocks to assure high rate of success of block
V. Health care policy for advocacy in health care	Implementing policies to improve patient outcomes
VI. Interprofessional collaboration for improving patient and population health outcomes	Collaboration with nursing staff and rehab services to assess effectiveness of regional anesthesia compared to general anesthesia
VII. Clinical prevention and population health for improving the nation's health	Minimizing PONV, postoperative pain, and length of stay after surgery
VIII. Advanced nursing practice	Utilizing clinical knowledge and evidence-based practice to maintain safety while providing anesthesia

APPENDIX C

INSTITUTIONAL REVIEW BOARD NOTICE OF COMMITTEE ACTION


INSTITUTIONAL REVIEW BOARD

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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: 15081104

PROJECT TITLE: Does the Use of a Regional Nerve Block Decrease the Incidence of Post Operative Nausea and Vomiting, Decrease Pain Scores, or Decrease Discharge Time Compared to General Anesthesia Alone?

PROJECT TYPE: New Project

RESEARCHER(S): Donald Lane Whitney

COLLEGE/DIVISION: College of Nursing

DEPARTMENT: Advanced Practice

FUNDING AGENCY/SPONSOR: N/A

IRB COMMITTEE ACTION: Expedited Review Approval

PERIOD OF APPROVAL: 08/14/2015 to 08/13/2016

Lawrence A. Hosman, Ph.D.

Institutional Review Board

REFERENCES

Chan, V.W.S., Peng, P.W.H., Kaszas, Z., Middleton, W.J., Muni, R., Anastakis,

- D.G., & Graham, B.A. (2001). A comparative study of general anesthesia, intravenous regional anesthesia, and axillary block for outpatient hand surgery: clinical outcome and cost analysis. *Anesthesia & Analgesia*, 93, 1181-1184
- Conroy, P.H., & Awad, I.T. (2011). Ultrasound-guided blocks for shoulder surgery. *Current Opinion in Anesthesiology*, 24, 638-643
- Egol, K.A., Soojian, M.G., Walsh, M., Katz, J., Rosenberg, A.D., & Paksima, N. (2012). Regional anesthesia improves outcome after distal radius fracture fixation over general anesthesia. *Journal of Orthopedic Trauma*, 26(9), 545-549
- Hadzic, A., Karaca, P.E., Hobeika, P., Unis, G., Dermksian, J., Yufa, M., Claudio, R., Vloka, J.D., Santos, A.C. & Thys, D.M. (2005a). Peripheral nerve blocks results in superior recovery profile compared with general anesthesia in outpatient knee arthroscopy. *Anesthesia & Analgesia*, 100, 976-981
- Hadzic, A., Williams, B.A., Karaca, P.E., Hobeika, P., Unis, G., Dermksian, J., Yufa, M., Thys, D.M., & Santos, A.C. (2005b). For outpatient rotator cuff surgery, nerve block anesthesia provides superior same-day recovery over general anesthesia. *Anesthesiology*, 102(5), 1001-1007
- Koscielniak-Nielsen, Z.J., & Dahl, J.B. (2012). Ultrasound-guided peripheral nerve blockade of the upper extremity. *Current Opinion in Anesthesiology*, 25, 253-259
- Lane, S., Blundell, C., Mills, S., & Charalambous, C.P. (2014). Same day

- discharge following interscalene block administration for arthroscopic shoulder surgery: implementing a change in practice. *Journal of Perioperative Practice*, 24(10), 232-234
- Lee, S.M., Park, S., Nam, Y., Han, S., Lee, K., Kwon, M., Ji, J., Choi, S., & Park, J. (2012). Analgesia effectiveness of nerve block in shoulder arthroscopy: comparison between interscalene, suprascapular and axillary nerve blocks. *Knee Surgery Sports Traumatol Arthroscopy*, 20, 2573-2578
- Liu, S.S., Ngeow, J.E., & YaDeau, J.T. (2009). Ultrasound guided regional anesthesia and analgesia a qualitative systematic review. *Regional Anesthesia and Pain Medicine*, 34(1), 47-59. doi: 10.1097/AAP.0b013e3181933ec3
- Marley, R.A., Calabrese, T., & Thompson, K.J. (2014). Preoperative evaluation and preparation of the patient. In J.J. Nagelhout & K.L. Plaus (Eds.), *Nurse Anesthesia, 5th Edition* (pp. 335-381). St. Louis, Missouri: Elsevier Saunders
- McAuley, D. (2013). Opioids- equianalgesic dosages. *Global RPh The Clinician's Ultimate Reference*. Retrieved from <http://www.globalrph.com/narcotic.htm>
- McCartney, C.J.L., Lin, L., & Shastri, U. (2010). Evidence basis for the use of ultrasound for upper-extremity blocks. *Regional Anesthesia and Pain Medicine*, 35(2), Supplement 1
- Marhofer, P. Willschke, H., & Kettner, S. (2010). Current concepts and future

- trends in ultrasound-guided regional anesthesia. *Current Opinion in Anesthesiology*, 23, 632-636
- Neal, J.M., Brull, R., Chan, V.W.S., Grant, S.A., Horn, J.L., Liu, S.S., McCartney, C.J.L., Narouze, S.N., Perlas, A., Salinas, F.V., Sites, B.D., & Tsui, B.C. (2010). The ASRA evidence-based medicine assessment of ultrasound-guided regional anesthesia and pain medicine. *Regional Anesthesia and Pain Medicine*, 35(5), Supplement 1
- Pavlin, D.J., Rapp, S.E., Polissar, N.L., Malmgren, J.A., Koerschgen, M., & Keyes, H. (1998). Factors affecting discharge time in adult outpatients. *Anesthesia & Analgesia*, 87, 816-826
- Schuster, M., Gottschalk, A., Berger, J., & Standl, T. (2005). A retrospective comparison of costs for regional and general anesthesia techniques. *Anesthesia & Analgesia*, 100, 786-794
- Tandoc, M.N., Fan, L., Kolesnikov, S., Kruglov, A., & Nader, N.D. (2011). Adjuvant dexamethasone with bupivacaine prolongs the duration of interscalene block: a prospective randomized trial. *Journal of Anesthesia*, 25, 704-709
- Whetsell, M.V., Gonzalez, Y.M., & Moreno-Fergusson, M.E. (2015). Models and theories focused on a systems approach. In J. B. Butts & K. L. Rich (Eds.), *Philosophies and Theories for Advanced Nursing Practice*, 2nd Edition (pp. 407-434). Burlington, MA: Jones & Bartlett Learning
- Yauger, Y.J., Bryngelson, J.A., Donahue, K., Lawhorn, L.A., Pitcher, B.M.,

Schoneboom, B.A., & Watts, D.D. (2010). Patient outcomes comparing crna administered peripheral nerve blocks and general anesthetics: a retrospective chart review in a U.S. Army same day surgery center. *AANA Journal*, 78(3), 215-220