Utilization of a Block Excellence Specialty Team is B.E.S.T

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Utilization of a Block Excellence Specialty Team is B.E.S.T.

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NURS-641-K10 Quality Improvement and Patient Safety in the Microsystem

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Abstract

Perioperative registered nurses and anesthesiologists that rely on a process for placing regional anesthesia (R.A.) blocks on the correct side for surgical patients consistently provide high-quality, safe care. Infrequently anesthesiologists place the wrong side peripheral nerve blocks (P.N.B.). Due to the sensitive nature of sentinel events, the frequency of its occurrence at this quality improvement (Q.I.) project site is unavailable. Therefore, a report by Harris et al. (2021) was referenced for the incidence of wrong side blocks (W.S.B.), which were recorded in worldwide, national, and multihospital health care system cohorts as 3.63/10,000, 1.6/10,000, and 1.28/10,000 respectively. The PreOp/PACU nursing staff and the block anesthesiologists reported that doing a pre-procedural time-out with both care providers and maintaining a 1 RN:1 patient ratio makes the procedure safer for patients. These are essential safety measures to protect patients from harm. Before October 2021, adherence to these steps was unrecorded. Potential repercussions of wrong side blocks (W.S.B.) include loss of revenue from payer organizations, defamation of institutional reputation, loss of public trust, and litigation. The goal of this Q.I. project was to maintain a rate of zero W.S.B. in 2022, which is an outcome improvement of 100 percent.

Introduction

A safety priority for this medical center's perioperative department is placing every peripheral nerve block (P.N.B.) on the correct side. The entire health care organization is committed to eliminating medical errors, which decrease the value of care and increases morbidity and mortality rates. According to the New England Journal of Medicine Catalyst (2017), measuring health outcomes against the cost of delivering the results defines value-based healthcare. Poor patient outcomes led The Joint Commission to create a Sentinel Event Policy in 1996 (T.J.C., 2021). "A patient safety event (not primarily related to the natural course of the patient's illness or underlying condition) that reaches a patient and results in
any of the following: death, permanent harm, or severe temporary harm” defines a sentinel event (T.J.C., 2021). Additional events that do not meet the criteria, including "surgeries or other invasive procedures performed at the wrong site, on the wrong patient, or that are the wrong (unintended) procedure for a patient" are sentinel events (T.J.C., 2021). In 2002, The Joint Commission responded to public concern that the medical community was not doing enough to prevent wrong-site surgery. The Joint Commission declared no reason for additional wrong-site errors (Relias Media, 2004). The need for a standardized process to reduce the mistakes made when patients undergo surgery was glaring. J.A.C.H.O. hosted a summit in 2003 and developed the Universal Protocol to eliminate wrong-site, wrong-procedure, and wrong-person surgery (Relias Media, 2004). Adherence to the Universal Protocol improves the process of placing a regional anesthesia block on the patient’s correct side.

Placing a peripheral nerve block on the correct side is an example of providing high-quality care. The medical center is committed to improving the quality of care for its members. The Institute of Medicine (I.O.M.) is a nonprofit organization that conducts research and provides evidence-based recommendations to policy makers and the public. In 1999, its first report, *To Err is Human: Building a Safer Health System*, was published. This groundbreaking report was critical in identifying medical errors as a leading cause of death. It also asserted that capable people working in inadequate systems lead to these fatal outcomes. In 2001 the I.O.M. released a second report, *Crossing the Quality Chasm: A new health system for the 21st century*, that established six aims for improvement: safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity. Each aim includes additional attributes. For example, patient-centered care includes eight essential features: “access; respect for patients’ values and preferences; coordination of care; information, communication, and education; physical comfort; emotional support; involvement of friends and family; and preparation for discharge and transitions in care” (Balik et al., 2011). Hallmarks of patient-centered care for the perioperative patient include physical comfort with adequate pain control and a smooth expeditious recovery. It has been well
documented that multimodal pain management, including regional anesthesia (R.A.), provides better pain control, lowers the incidence of post-operative nausea/vomiting, and reduces costs related to Post Anesthesia Care Unit (P.A.C.U) length of stays (Steinriede, 2010; T.J.C., 2022). Karam et al. (2021) published An Update on Multimodal Pain Management After Total Joint Arthroplasty that notes multimodal analgesia is the standard of care for total joint arthroplasty. The authors promote initiating pain control in the Pre-Operative (PreOp) unit that continues throughout the patients' perioperative experience and extends beyond discharge. Administering a combination of systemic medications, local anesthetics, and regional anesthesia controls pain best (Karam, 2021). Peripheral nerve blocks reduce a patient's need for narcotics. Patients recover from anesthesia more quickly and can go home sooner. Surgical repair followed by adequate pain control results in higher patient satisfaction. This positive patient outcome, coupled with a shorter stay in recovery, increases the patient's value-care. Regional anesthesia prolongs pain relief, reduces narcotics consumption after discharge, and taking fewer narcotics after release reduces complications such as nausea and fall risk. However, P.N.B.s are not risk-free. Wrong site surgery ranked third among sentinel events reported to The T.J.C. in 2018 (The Sullivan Group, 2022). A wrong side block (W.S.B) is rarely life-threatening but may be an indicator of poor compliance with safety checks across the organization (Pandit & Danbury, 2018). Highly trained professionals make errors not because they are unqualified but because they are human. High-risk procedures must depend not upon people but on solid processes. Undoubtedly, W.S.B.s are serious, preventable patient safety incidents that should never occur. The National Quality Forum (N.Q.F.) refers to "serious reportable events deemed preventable" as "never events" (The Sullivan Group, 2022).

A Northern California Medical Center identified an opportunity to improve the R.A. procedure process and implemented an evidence-based change of practice.
Problem Description

Across clinical settings and national healthcare delivery systems, anesthesiologists unintentionally place wrong side blocks. These errors are not unique to one hospital, ambulatory surgery center, or medical center. A data summary of sentinel events reviewed by The Joint Commission (2021) revealed a trend of increasing wrong site events from 2019 to 2021. Metrics that matter includes maintaining a rate of zero "never events." The occurrence of a W.S.B. does not align with the guiding mission of many organizations; to provide high-quality, affordable health care services and improve members' health. Perioperative services at this C.N.L. student’s facility recognized two potential ways to improve the process. First, an R.N. and an anesthesiologist would perform a time-out at the point of care. The anesthesiologist performs the P.N.B., but the licensed professionals are all responsible for the patients’ care. Teamwork increases safe patient outcomes. Second, reducing a 1 RN:2 patient assignment to 1 RN:1 patient for the duration of the block procedure improves patient monitoring. These changes were logical given that placement of one W.S.B. is too many. Thus, the goal of zero W.S.B. is the primary aim for both short-term and long-term interventions.

Available Knowledge

Developing a population, intervention, and outcome (PICOT) question guided the literature search. At a Northern California Medical Center, perioperative patients who consent to a peripheral nerve block (P) will have the block team (I) conduct a time-out that is recorded in the patient’s electronic medical record and maintain a 1 RN:1 patient ratio for the duration of the procedure (C) compared to relieving the primary nurse from the care of a second patient, placing 100% of peripheral nerve blocks on the correct side (O) by July 1, 2022 (T).

Literature Search

Based on the PICOT question, the C.N.L. student conducted an electronic data search in C.I.N.A.H.L. and PubMed databases. For all inquiries, the C.N.L. student applied peer review, research
articles, and English-only filters for 2016-2022. In C.I.N.A.H.L., the term block nurs* returned 26 articles. A search with (peripheral nerve block OR regional anesthesia) AND team yielded 21 results. A final inquiry with anestheti* AND (peripheral nerve block OR regional anesthesia) AND nurs* delivered 29 articles. In PubMed, searching peripheral nerve block nurses yielded 118 results. Applying a 5-year filter paired the results down to 34. Twenty-two articles met the search criteria, and five papers were selected for the literature review (see Appendix A for the evaluation table). The C.N.L. student used the Johns Hopkins Evidence-Based Practice (J.H.E.B.P.) research evidence appraisal tool to evaluate the selected articles (Johns Hopkins Medicine, n.d.).

There are five levels of evidence outlined in the J.H.E.B.P. tool. Experimental studies and randomized controlled trials (R.C.T.) with or without meta-analysis are classified as Level I. Meta-analysis uses quantitative methods to synthesize and summarize results. Level I is the highest level in the hierarchy of evidence (Jensen, 2022). Level II is for quasi-experimental studies. These are systematic reviews of a combination of R.C.T.s and quasi-experimental, or quasi-experimental studies only, with or without meta-analysis. Level III is sanctioned for non-experimental qualitative studies or systematic reviews with or without a meta-synthesis. Level IV evidence includes the opinion of respected authorities and/or nationally recognized expert committees/consensus panels based on scientific evidence. Level IV includes clinical practice guidelines. Experiential and non-research is Level V evidence, including literature reviews, quality improvement projects, case reports, and the opinion of nationally recognized experts(s) based on experiential evidence (Johns Hopkins Medicine, n.d.). A synopsis of the evidence included a Level V rating for two selected articles, Level IV for two, and Level III for the chosen articles (see Appendix A).

Synthesis of Literature

W.S.B. literature is abundant. Improper performance of anesthesia procedures is the second most common anesthesia claim (Ranum, 2020). The financial impact is scarce despite wrong-site surgery
being the error that elicited the most successful litigation, 89% of cases, in England’s orthopedic theaters from 1995-2010 (Harrison et al., 2015). Tools and checklists have been studied and are recommended at the point of care to reduce the potential for wrong side nerve blocks (Vandebergh et al., 2021).

Discussion of block nurse training and the use of a block team is scarce; the C.N.L. student reviewed two articles specific to block nursing.

Rationale

A root cause analysis (R.C.A.) is a standard process used by medical centers to learn how and why an error occurred. R.C.A.s are now known as RCA2, emphasizing that action must follow the analysis. "The purpose of a RCA2 review is to identify system vulnerabilities so that they can be eliminated or mitigated; the review is not to be used to focus on or address individual performance since individual performance is a symptom of larger systems-based issues" (see Appendix B) (I.H.I., n.d.). At this medical center, a sentinel event would immediately activate a Situation Management Team (S.M.T.) after notifying the Risk Department. Interviews with the team and additional staff on duty would commence by gathering details about the incident and their relative roles and overall involvement in the event (see Appendix C). An initial Comprehensive System Analysis (C.S.A.) would be scheduled for attendance by the pre-established, trained core team to identify causal factors. This team of local leadership, the Assistant Physician in Chief, the Risk Director, and key department stakeholders provide critical insights. The initial C.S.A. causal factor meeting identifies the actual workflow that led to the event and proposes a modified workflow. The goal is to identify gaps between the two workflows (see Appendix D). The RCA2 process may uncover a genuine system issue following a robust C.S.A. discussion between the involved staff and the Situation Management Team.

A System’s Approach

A systems approach to healthcare recognizes that people, processes, equipment/technologies, and institutions are interdependent components of other complex systems (Royal Academy of
Engineering, 2017). Assessment of the whole system's operations is necessary to identify opportunities for improvement. Komashie et al. (2021, p.1) concluded that more research is required; however, "there is evidence that a systems approach to healthcare design and delivery results in a statistically significant improvement to both patient and service outcomes." A systematic approach combines quality improvement methods and implementation science to achieve desired outcomes. (Johnson & Sollecito, 2020).

**Conceptual Framework/Model.**

Performance improvement teams use The Model for Improvement framework to accelerate improvement by asking, "what are we trying to accomplish, how do we know that a change is an improvement, and what change can we make that will result in improvement?" (I.H.I., 2022). Conducting small tests of a change via the plan-do-study-act (P.D.S.A.) method answers the third question.

**Project Aims**

With this Q.I. project, the C.N.L. student aimed to develop a process and instill a culture that delivers safer, higher quality, and more efficient care for surgical patients receiving regional anesthesia within 1-3 years.

**Specific Aim**

The project specifically aimed to achieve 100% compliance with the preprocedural time-out, maintain a 1 RN:1 patient ratio for the duration of the procedure, and place every R.A. block on the correct side in PreOp/PACU by July 15, 2022.

**Context**

This Clinical Nurse Leader (C.N.L.) graduate student discussed the results of the microsystem assessment tool (see Appendix E) with the Quality Area Leader, who agreed with the visible trends. PreOp/PACU consists of autonomous, high-performing, professional individuals that function as a team to achieve mutual patient care, department, and organizational goals.
The regional anesthesia Q.I. project involved the PreOp/PACU nursing staff and the M.D. anesthesiologists responsible for multimodal pain management for surgical patients at a 340-bed Northern California Medical Center with ten operating suites. The R.A. work group proposed utilizing a dedicated Block R.N. to close existing R.A. procedural gaps. The work group put together an ideal future state for R.A. blocks in the perioperative space (see Appendix F). A strengths, weaknesses, opportunities, threats (S.W.O.T) analysis was conducted during the QI project planning phase (see Appendix G). This C.N.L. graduate student invited interested, qualified R.N.s to join the block team. Eligible R.N.s were working in 0.5-1.0 FTE positions with shifts beginning at 0645, 0800, or 0900. A description of the Block R.N. role was provided to the participants (see Appendix H). These volunteer participants attended an 8-hour live Block Nursing webinar presented by an M.D. anesthesiologist and a practicing Block R.N. (see Appendix I). Block R.N.s also received 24 hours of on-site clinical orientation with a P.N.B. anesthesiologist. Block Nursing LLC granted permission to distribute their copyrighted Block Nurse Checklists among the Block R.N.s (see Appendix J). The checklists are invaluable safety tools that also standardize the Block R.N. role. Additional training included viewing February 11, 2022, ultrasound interpretation webinar and completing the medical center's 2021 Universal Protocol, the June 2021 Nursing Grand Rounds: Regional Blocks & Spinals, and the Conscious Sedation online education modules. Viewing the patient total knee replacement anesthesia education was required to ensure familiarity with the education provided before the day of surgery. The block M.D. anesthesiologists established Block R.N. competency criteria (see Appendix K). Perioperative leadership piloted a block team from February 7, 2022, to February 18, 2022.

Interventions

A substitution test identified the following needs: requirements of the Universal Protocol, an R.N. led procedural time-out, instructions for documenting a time-out in the E.M.R. flowsheet, Speak Up
tools for patient advocacy (ANA, 2001), a standardized block process, and an escalation plan to reduce a 1 R.N.: 2 patient assignment to 1 RN:1 patient for the R.A. procedure.

Teaching/Learning Methods and Activities

Historically medical doctors were the authority on patient care. According to Sutcliffe et al. (2004), hierarchy, whether between professional roles or over occupational tenure, can inhibit the assertive communication necessary to protect patients and prevent errors. While an order among healthcare providers still exists, R.N.s are encouraged to partner with physicians to provide optimal patient-centered care. One hundred percent of the PreOp/PACU RNs received training on the Universal Protocol to empower them to initiate the time-out with the anesthesiologist before regional block placement. In 2003, to reduce the human factors that contribute to surgical/procedural errors, The Joint Commission described the Universal Protocol as a three-step process including: "(1) conducting a pre-procedure verification process to confirm the correct patient, the correct procedure, and the correct site; (2) marking the procedure site before surgery; and (3) conducting a time-out before starting the procedure to confirm both (1) and (2)" (The Sullivan Group, 2022). Perioperative leadership reinforced the expectation that an R.N. lead time out would be done with the M.D. anesthesia provider at the bedside, involving the patient when possible, utilizing the time-out checklist. The primary recommendation from the Institute of Medicine report *To Err is Human: Building a Safer Health System* (2000, p.6) is to create "safety systems inside the health care organization system through the implementation of safe practices at the delivery level."

Robust discussions revealed that nurses were not documenting the performed time-outs. Many nurses were unaware of the procedure navigator needed to enter a time-out done in PreOp/PACU. Using the navigator preserves the Intra-Operative flowsheet for documenting the required surgical time-out done in the operating room. This C.N.L. graduate student rounded on each R.N. to introduce the procedure navigator and demonstrated where to enter an R.A. time-out. Having the time-out tool and
utilizing it before the administration of R.A. is a safeguard for catching errors before they reach the patient and preventing a "never event" from happening. Staff training also focused on developing our *Speak Up* culture using audio-visual materials. The Perioperative Educator introduced the CUS tool which stands for Concerned, Uncomfortable, Safety. It is a communication tool for nurses used to convey to physicians important changes in the health status of patients in a professional and supportive manner. Frontline staff further cultivate our *Speak Up* culture through the *Good Catch* campaign, an electronic reporting system that captures near misses. *Good Catch* is another tool used to identify system issues before harm reaches a patient. Fatigue and complacency increased during the novel coronavirus SARS-CoV2 (COVID) pandemic when resources were excessively strained. To address these barriers and improve situation monitoring, routine completion of the I’M SAFE checklist (illness, medication, stress, alcohol & drugs, fatigue, eating & elimination) was encouraged (see Appendix L). To sustain the improvements in nurse knowledge, onboarding PACU nurses must complete the 2021 Universal Protocol and the June 2021 Nursing Grand Rounds: Regional Blocks & Spinals education modules before the end of their orientation. TeamSTEPP tools are included in orientation packets and modeled by preceptors.

weekend shifts, when a Block R.N. is unavailable, the PreOp or PACU RN caring for two patients must escalate to the charge R.N. the need for another R.N. to assist the anesthesiologist throughout an R.A. procedure. If 1:1 R.N. to patient care is unavailable, then the anesthesiologist must seek assistance from another anesthesia provider.

**Conceptual Framework/Change Model.**

Membership of the block work group included two block anesthesia providers, the PACU ANM, the PACU Manager, the OR Manager, the Anesthesia Director, the Perioperative Director, the Block RNs, a Project Manager, a Quality Leader RN, a Clinical Educator, and a Senior Finance Manager. The Anesthesia Chief, the Physician Operating Room Director, the Perioperative Director, and the Assistant Physician in Chief sponsored the project. In October 2021, the aim to have all R.A. blocks placed on the correct side for every patient was identified. Quantitative measures were established. In November 2021, the anesthesia department began conducting fifteen monthly audits to evaluate the completion of five time-out components with each block. The team verified the patient’s name and medical record number (M.R.N.) with the surgical consent; the team confirmed the side and nerve block by verifying the surgical site and site marking with initials; the team reviewed the patient’s allergies and anticoagulation status. The patient participated in the time-out, and the proceduralist asked, "do we all agree?". The second audit monitored if 1 RN:1 patient monitoring was maintained for the duration of the procedure.

The educator created a fifteen-minute Universal Protocol/ CUS tool audio-visual presentation (Northern California Medical Center, personal communication, September 10, 2019). PreOp/PACU department leaders encouraged frontline staff to Speak Up using the CUS tool to express concern, convey discomfort, and, if necessary, stop the line. This tool is a part of TeamSTEPPS, an established evidence-based safety practice from the Agency for Healthcare Research and Quality (AHRQ). Teams use CUS to understand the issue and the severity of the situation. All R.N.S. were educated to perform and document a time-out for every block procedure. Next, a block team was developed and set out to use
the Plan-Do-Study-Act (P.D.S.A.) cycle scientific method. After educating seven R.N.s about the Block Nurse role, a block team pilot program began in PreOp/PACU on February 7, 2022. The P.D.S.A. method afforded small tests of change within a complex system to continually improve the delivery of quality patient care (I.H.I., 2022). One systematic review of the P.D.S.A. method revealed that users omit one or more of the four stages designed to simulate the scientific method (Point of Care Foundation, n.d.). This lack of rigor compromises the tool as a method for quality improvement (Taylor et al., 2013). Adherence to each stage of the P.D.S.A. preserved the Q.I. project rigor. A systems approach incorporating P.D.S.A. cycles was used (see Appendix M). One P.D.S.A resulted in the block placement workflow.

The perioperative mesosystem also experienced benefits from this standardized P.N.B. workflow in PreOp/PACU. Patients blocked in PreOp were transferred to the operation table with minor discomfort, and anesthesiologists did fewer blocks in the operating room. In May, the R.A. block workgroup conducted a final P.D.S.A. The R.A. workgroup plans to offer the Block R.N. training to more interested R.N.s. The organization's ambulatory surgery center may implement B.E.S.T. after the original block team meets target measures for four consecutive months. Bringing B.E.S.T. to the Emergency Department and Labor & Delivery will bring safer, higher-quality pain management to the medical center's mesosystem. The team's process for doing R.A. blocks aligns with the organization's Integrated Quality Services Leadership team's goal to "shape operations and culture around a journey to zero harm (J. Strinden, personal communication, March 2022).

**Measures**

The outcome measure for this Q.I. project is maintaining zero W.S.N.B./sentinel events in PreOp/PACU. The two processing measures were compliance with all components of the preprocedural time-out and supporting a 1 RN:1 patient assignment for the duration of the procedure. The 15 monthly audits will continue until the PreOp/PACU maintains 100% compliance on both processing measures for four consecutive months. Without baseline data, it was hard to set up conditions to measure
Utilization of a Block Team

Improvement success. Reaching 90% compliance with the process measures may be more realistic and satisfactory. Balancing measures included monitoring Block R.N. downtime and tracking the number of patients that waited for a P.N.B. due to R.N. staffing. The goal was to maintain zero placement of a wrong site nerve block in PreOp/PACU.

Evaluation of Education Plan

The Block R.N. pilot group took an R.N. demographic survey (see Appendix N) and a self-assessment pre-test. A self-assessment post-test was needed to evaluate the acquisition of new knowledge and skills. Qualitatively, both Block R.N.s and the block anesthesiologists reported increased job satisfaction. The procedure time-out was always done in the initial four months of auditing. Implementing a block team increased adherence to 1 RN:1 patient care throughout the procedure by 20%. Zero wrong side blocks quantify an increase in safe practice. The C.N.L. student is planning a celebration to honor the team's Q.I. project success.

Ethical considerations

The formation of B.E.S.T. was approved as a Q.I. project by facility using an evidence-based change of practice project checklist; it did not meet the criteria to be a research project (see Appendix O). The project met exemption criteria for Institutional Review Board (I.R.B.) approval. The C.N.L. Project: Statement of Non-Research Determination form was submitted to and approved by the Master of Science Nursing, Clinical Nurse Leader faculty advisor (see Appendix P). The B.E.S.T. program aligns with provision six of the American Nurses Association code of ethics; "the nurse participates in establishing, maintaining and improving healthcare environments and conditions of employment conducive to the provision of quality health care and consistent with the values of the profession through individual and collective action" (2001, p.7). By auditing the block procedure time-outs and maintaining 1:1 care throughout the procedure, perioperative services demonstrated their commitment to improving the safety of the R.A. procedure. Block nurses and anesthesiologists reported increased job
satisfaction. This quality improvement (Q.I.) project introduced a subset of frontline PreOp/PACU nurses to new evidence-based knowledge, skills, and attitudes required for continuous improvement work that increases the safe delivery of patient care (Tschannen et al., 2021).

Historically, nurses are fierce advocates of providing safe, high-quality patient care. Providing Q.I. tools to frontline nurses is necessary to improve their ability to close quality gaps (Tschannen et al., 2021). The block team also reflects the Jesuit value of contemplative action. St. Ignatius Loyola believed that prayer and reflection should guide our choices and actions in our private and professional lives. Reflecting on how patients receive healthcare and ways to improve delivery is critical to quality improvement for the individual and the patient population. Nurses care for the whole person, mind, body, and soul. Nurses are witnesses to "the sacredness of all life" (U.S.F., n.d.). In addition to reflecting for spiritual growth, the University of San Francisco believes reflection promotes intellectual inquiry. Nurses commit to being lifelong learners in alignment with Jesuit values. The C.N.L. role models the need to acquire evidence-based knowledge to guide practice in an evolving healthcare system (King et al., 2019).

**Outcome Measure Results**

Following the implementation of B.E.S.T., there have been zero W.S.B. in perioperative services, which was an expected outcome. It is difficult to extract data to drive improvement projects if it is not recorded in a usable format. Before initiating this Q.I. project, the anesthesiologist wrote a note in the E.M.R. to document the completion of a procedural time-out. The R.N.s now record completion of the time-out checklist in the procedural flowsheet, which is extractable data for outcome measurements. Over seven months, an anesthesia provider conducted fifteen monthly audits on patients who received a regional block in PreOp/PACU. The data showed increasing compliance with the two-provider procedural time-out and maintenance of the 1:1 R.N. to patient care for the duration of the R.A. procedure. The anesthesiologists placed all R.A. blocks on the correct side. A run chart (see Appendix Q)
shows that 6 out of 7 months, the procedural time-out was completed for 100% of P.N.B. patients. The evidence shows communication gaps were closed. The run chart also indicates that 1:1 R.N. to patient monitoring throughout the R.A. procedure has steadily increased from 65-85% of cases. Monthly results were reviewed and discussed by the workgroup and Risk Management and Patient Safety Committee. Errantly the C.N.L. did not share the audit results with the block team. When leadership shares performance data with the frontline staff, they become a fully functional participant and drive improvement work. In retrospect, discussions with the Block R.N.s could have generated additional P.D.S.A. suggestions. The aim of daily visual management (D.V.M.) is to drive continuous improvement. At the outset of this improvement project, D.V.M. was not a tool used by the organization. With the arrival of D.V.M. and learning how to make it impactful, the Block R.N.s receive run charts via a monthly email. Every four weeks, the block team meets with the workgroup, which encourages robust conversations that drive continuous improvement to maintain our zero W.S.B. goal.

The team accomplished its process goals of performing a time-out before each R.A. block and maintaining 1 RN:1 patient care for the duration of the procedure. While the adherence rates are showing positive results since the project implementation, work is still required to achieve 100% compliance with both process measures. The audits will continue until the block team sustains 100% compliance for a minimum of four consecutive months; the estimation was July 1, 2022. An additional benefit that followed the development and implementation of the block team was the increase in job satisfaction reported by 100% of staff R.N.s, block R.N.s, and block M.D. anesthesiologists. Patient involvement in their surgical education and their medical care is an anticipated benefit.

Summary

This evidence-based hospital Q.I. project enhanced safety for patients undergoing an R.A. procedure. An organizational-level interdisciplinary change team was formed in October 2021. The team developed reliable safeguards to prevent W.S.B.s, improving the quality of patient-centered surgical
care. In the perioperative microsystem, B.E.S.T. generated positive, measurable R.A. clinical outcomes. This block team modeled and encouraged a Speak Up culture (AHRQ TeamSTEPPS®, 2019). The workgroup accomplished these goals by building trusting relationships with block team participants, fostering an openness to test new ideas, and formulating a clear plan of action for the pilot project aimed at mitigating wrong site blocks.

Lessons Learned

This project's learning will help when introducing a block team into another microsystem. Brainstorm all educational needs. If in-person training is unavailable, a webinar is an excellent option for educating R.N.s on the specialized block role. If an I.T. resource is unavailable, identify someone with solid technical skills. With their assistance, perform a complete rehearsal before the day of the webinar. Have all R.N.s download the TEAMS application and PING/Global Protect. Participants must open TEAMS meetings in google chrome, not safari. For R.N.s attending while on duty, a designated space with computers equipped with cameras and speakers will improve participation. Rather than sending a meeting invitation via TEAMS, send from Outlook, and a dial-in option will appear in addition to the meeting link. The TEAMS meeting organizer can mute all at the start of the session. Record webinars from PowerPoint versus TEAMS to store content; uploading the recording to DropBox or One Cloud is avoidable. To increase compliance, administer a pre-test and an R.N. survey on the day of Block R.N. training. Issue the post-training test before the participants are dismissed from the training session to capture responses from 100% of the students. Following the didactic presentation, this Q.I. team recognized the need for and added a 24-hour on-site clinical orientation with an M.D. regional anesthesia provider before nurses assumed the role of Block R.N. Identify tools to measure the results of interventions.
Conclusions

This patient-centered Q.I. project focused on using a specialized block team to complete the Universal Protocol at the point of care, relying on a process to maintain placement of zero wrong side blocks in PreOp and PACU. The improved system-based process was implemented to avoid human error (The Sullivan Group, 2022) while administering R.A. to increase patients' physical comfort. Additional benefits associated with this Q.I. project included catching an aspirin allergy during the time-out. Going home with a post-surgical continuous lidocaine infusion via pump was no longer an option. Discharged patients resuming their usual medications, including their blood thinning aspirin, would have an increased risk of bleeding into their thigh with catheter removal. The anesthesiologist decided to use bupivacaine, a longer-acting nerve blocking agent in PreOp. Bupivacaine sustains post-operative pain relief sans placement of an infusion catheter. Having B.E.S.T. available enabled a one-day post-operative patient to receive a block for uncontrolled pain, minimizing the need for high dosages of narcotics.

Implications for Practice

Harris et al. (2018, p. 131) affirm that C.N.L.s have knowledge of gaps in care in their microsystems, and "they are positioned to lead interdisciplinary efforts to improve outcomes using evidence-based practices to manage risk." Tools used in quality improvement, like root cause analysis, are also common to risk management. The clinical nurse leader (C.N.L.) graduate student was a risk anticipator, evaluating the risk of placing a W.S.B. in the absence of an R.A. administration process. The C.N.L. added value by conducting a literature review, sharing best practices with the workgroup, and building trust via frequent communication with members of the block work group. With direction from the Risk Management and Patient Safety Committee, this C.N.L. student educated staff about the Universal Protocol and time-out documentation. Lastly, the C.N.L. student fulfilled the outcomes manager role (Capella, 2019, Chapter 13, p.155). Performance improvement occurred after providing Universal Protocol education, utilizing the time-out checklist in the E.M.R., and maintaining a 1 RN:1
patient ratio throughout the block procedure as recommended by the American Society of PeriAnesthesia Nurses (A.S.P.A.N., 2019). Selecting a dedicated group of R.N.s to train as block nurses with specialized regional block education (Russell et al., 2013) and standardizing the R.A. procedure (Mulroy et al., 2014) derived from evidence and best practices has maximized procedural safety.

**Sustainability**

Moving forward, the education department assigns the Universal Protocol and June 2021 Nursing Grand Rounds: Regional Blocks & Spinals education to all onboarding PreOp/PACU nurses. The C.N.L. graduate student created a regional block reference binder kept at the PACU nursing station to access by all staff. The C.N.L. graduate student continues to monitor the R.A. administration process and seeks feedback for continuous team improvement.

**Potential for Spread.**

Anesthesiologists provided P.N.B. in other microsystems, namely the Emergency Department and Labor and Delivery. A standardized process for R.A. procedures done in microsystems throughout the medical center improves the quality and safety for the mesosystem. Performing R.A. blocks in PreOp instead of PACU appears to decrease PACU length of stay by 45 minutes. Nearly 50 patients receive R.A. blocks weekly in this surgical department. Magnet criteria include high job satisfaction, attracting and retaining R.N.s, demonstrating high productivity, and delivering quality patient care. This Q.I. project quantitively increased job satisfaction, PreOp/PACU RNs expressed a desire to train to work as a Block R.N., and the 1 RN:1 patient monitoring elevates the quality of R.A. procedures. B.E.S.T. is forging the road to excellence.
References


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New York School of Regional Anesthesia. (2020, October 27). *How important the perioperative nurses and nerve block nurse really is?* [Video]. YouTube.
https://www.youtube.com/watch?v=E_A3_qTQ6ls


https://www.thedoctors.com/articles/anesthesiology-closed-claims-study/


University of San Francisco (n.d.).

https://usfca.instructure.com/courses/1606457/discussion_topics/8063054
Table 1 Johns Hopkins Research Evidence Appraisal Tool

<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Sample</th>
<th>Outcome/Feasibility</th>
<th>Evidence Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russell, R. A., Burke, K., &amp; Gattis, K. (2013, February).</td>
<td>Retrospective data review</td>
<td>Orthopedic surgery service; 1640 cases. Level 1 trauma center with a 70-bed PACU. Periop population averages 180 patients/day.</td>
<td>No wrong-sided blocks. Implementation of the block nurse team Increased periop efficiency for ortho service by 26%. Increased service productivity by 12%. OR on-time starts increased 7%, which allowed the addition of more cases. More ortho pts received preop RA blocks.</td>
<td>JHNREBP Level IV</td>
</tr>
<tr>
<td><strong>Hirsch et. al</strong></td>
<td>El-Boghdady, K., Nair, G., Pawa, A., &amp; Onwochei, D. N. (2020, July 22).</td>
<td>Systematic review and meta-analysis following PRISMA recommendations.</td>
<td>15 studies involving 8888 patients met eligibility criteria; 3364 of the patients received care using a parallel processing model.</td>
<td>Parallel processing in regional anesthesia appears to reduce the anesthesia-controlled time (ACT), turnover time (TOT), PACU time and improved OR throughput when compared with serial processing.</td>
</tr>
</tbody>
</table>

Appendix B

Figure 1 Taxonomy of System Failure Modes

Taxonomy of System Failure Modes

Structure (S)
- Inadequate Structure
  - Inadequate Job Function
  - Resource Allocation
  - Collaboration Mechanisms
- High Reliability Environment
- Competency
- Communication
- Critical Thinking
- Compliance

Culture (C)
- Inadequate Vision or Mission
- Inadequate Leadership
- Knowledge in Environment
- Consciousness
- Inadequate Checks

Process (P)
- Omitted Actions
- Excessive Actions
- Poorly Sequenced
- Inadequate Interface
- Inadequate Checks

Policy & Protocol (D)
- Lacking or Informal

Technology & Environment (I)
- Input/Output
- Human Capability
- Arrangement
- Environment

System & Management Failure Modes

Individual Failure Modes

Inappropriate Act
Appendix C

Figure 2 Taxonomy of Individual Failure Modes
Appendix D

Figure 3 Root Cause Analysis Tool

**CASUAL FACTOR**

**Case Review**

- Workflow *expected* (normal)

- Workflow *achieved* (actual)

**Gaps**

**Guidelines:**
- Identify Gaps in workflow
- Align gaps with Failure Modes (individual/System)
### Appendix E

#### Table 2 PACU Profile

**A. Purpose:**
- Why does your unit exist?

**Est. Age Distribution of Pat:**
- 19-20 years: 1%
- 21-24 years: 2%
- 25-44 years: 5%
- 45-69 years: 3%
- 70+ years: 5%

**% Females:**
- Living Situation:
  - Married: 4%
  - Domestic Partner: 3%
  - Live Alone: 2%
  - Live with Others: 1%
  - Skilled Nursing Facility: 5%
  - Homeless: 2%
  - Patient Type LOS avg. Range:
    - Medical: 4
    - Surgical: 2
    - Mortality Rate: 1

**B. Know Your Patients:**
- Take a close look into your unit, create a high-level picture of the patient population that you serve. Who are they? What resources do they use? How do the patients view the care they receive?

**Patient Satisfaction Scores:**
- % Always
- % Sometimes
- % No

**Pt Population Census:** Do these numbers change by season? (Y/N)
- PI Census by Hour: Y/N
- PI Census by Day: PI Census by Week
- PI Census by Month: Y/N
- Pt Census by Year: Y/N
- 30 Day Readmit Rate: Y/N
- Our patients in Other Units: Y/N
- Off Service Patients on Our Unit: Y/N
- Frequency of Inability to Admit Pt: Y/N

**Complete “Through the Eyes of Your Patient”, pg 8**

**C. Know Your Professionals:**
- Use the following template to create a comprehensive picture of your unit. Who does what and when? Is the right person doing the right activity? Are roles being optimized? Are all roles contributing to the patient experience based?

**D. Know Your Processes:**
- How do things get done in the microsystem? Who does what? What are the step-by-step processes? How long does the process take? Where are the delays? What are the gaps? What are the “between” microsystems hand-offs?

**E. Know Your Patterns:**
- What patterns are present but not acknowledged in your microsystem? What is the leadership and social pattern? How often does the microsystem meet to discuss patient care? Are patients and families involved? What are your results and outcomes?

**Complete “Metrics that Matter”, pgs 20 & 21**

---

**Acknowledgment:**
- Adapted from the original version, Dartmouth-Hitchcock, Version 2, February 2005.
Appendix F

Figure 4 Ideal Future State for Regional Anesthesia Blocks in PreOp/PACU

Patient Needs Block for Surgery
- Patient Consents to Block

Surgeon or ANS provider
- Marks the surgical site.

RN Provider arrives at bedside
- Educate the Patient
- Gather Supplies
- Place Patient on Monitors
- Position the patient

ANS Provider arrives at bedside
- Time Out completed with 2 licensed providers present
- RN assists with block placement

RN Monitors for L.A.S.T. for 15 mins

Appendix G

Figure 5 SWOT Analysis

**Strengths**
- Commitment
- Lifelong Learners
- In-House Advocates

**Weaknesses**
- Training
- Universal Protocol
- Education
- Staffing
- High Hospital Census

**Threats**
- Hospital Compare
- Litigation
- Medicare
- Short-term Thinking

**Opportunities**
- Block Nursing Webinar
- Block Nursing LLC Materials
- Infusystem CADD training

Note: Created by author February, 2022.
Appendix H

Figure 6 Roles and Responsibilities of the Block Nurse

Prerequisite Education
1. View 8-hour lecture, Block Nurse Webinar from 2-4-22 and any additional prerequisite video education added subsequently
2. View Ultrasound Interpretation Webinar from 2-11-22
3. Complete the Regional Blocks & Spinals June 2021 Grand Rounds module
4. Complete the Conscious Sedation module
5. On-site 24-hour clinical orientation with PNB MD anesthesiologist
6. View before surgery Total Knee Replacement anesthesia education via link provided to patients

Typical Block Nurse Responsibilities
• Assist the anesthesiologist responsible for nerve blocks to complete the shared comprehensive tasks of an excellent, efficient, and safe regional anesthesia clinical service including:

Between Blocks
• Help formulate a game plan with Regional Anesthesia Team (RAT) for all blocks for the day, both scheduled and PRN rescue
• Help MD complete standard follow-up and troubleshooting calls with catheter & Exparel patients from prior business day to ensure patient safety and satisfaction, communicating any issues encountered to MD on RAT
• Help MD add perineural catheter and Exparel patients’ names/MR#s to master spreadsheet
• Coordinate with RAT, anesthesia technicians, and pharmacy to ensure all block supplies remain adequately stocked in block cart at the start of the day and as needed throughout the day
• Help MD ensure ultrasounds remain clean and plugged-in charging between cases

Before Blocks
• Assess baseline vital signs, pain score, and RASS
• Assess patient, medical history, and current laboratory results for any interscalene nerve block risk factors or contraindications
• Assess patient for pre-existing nerve damage in target block site/side
• Assess patient’s knowledge of the nerve block and post-operative expectations
• Ensure completion of prerequisite paperwork such as signed consent and nursing assessment
• Review patient’s medical diagnosis, operative procedure to be performed, and indications for a continuous catheter or single shot interscalene block
• Present any identified risk factors or contraindications to planned block to RAT if identified (example: severe COPD with planned interscalene block or paravertebral block with current anticoagulation)
• Participate with RAT to establish patient’s nerve block procedure plan
• Complete patient and family education
• Assist in drawing up and properly labeling necessary medications into appropriate syringes; including local anesthetics +/- additives such as preservative-free dexamethasone, and sedation medications such as versed & fentanyl, as ordered by MD
• Set up block room/bedspace, equipment including ultrasound +/- nerve stimulator, and block table/tray for planned single shot or continuous catheter block
• Attach standard ASA monitors to patient before nerve block including 5-lead EKG, pulse oximeter, blood pressure cuff, and oxygen mask or nasal cannula if O2 ordered
• Assist with positioning patient for the nerve block
• Assist with proper documentation for specific nerve block

During Block
• Block Nurse led time-out with RAT
• Block Nurse documents time-out in EMR using Procedure Navigator-IntraOp-Time-Out
• Assure sterile masks, caps, gowns (epidural) and sterile or nonsterile gloves (as needed) are worn by all RAT participants during the block procedure
• Confirm IV-line patency and continue IV fluids as ordered
• Apply oxygen via facemask vs. nasal cannula as ordered per MD preference
• Administer IV sedation medication (versed, fentanyl) per MD orders. Annual completion of Conscious Sedation module required
• Monitor blood pressure, pulse oximeter reading, heart rate, and respiration during procedure
• Reassess sedation level throughout procedure with additional PRN sedation medication as needed per MD order
• Reposition patient as needed
• Adjust nerve stimulator settings as directed (if applicable)
• Adjust ultrasound machine settings as directed (if applicable)
• Aspirate and slowly inject local anesthetics as ordered
• Hold ultrasound transducer at times during procedure as directed by MD when third hand is needed for safety/efficacy while maintaining proper sterility throughout procedure
• If increased resistance is encountered or patient reports pain during injection stop injection immediately and provide feedback to block provider
• Monitor patient for signs and symptoms of local anesthesia systemic toxicity (L.A.S.T)
• Implement proper modified ACLS measures if signs/symptoms of L.A.S.T are noted
• Assist with catheter tip placement confirmation with test dose injection as needed
• Assist with completion of perineural catheter dressing and infusion pump priming/programming/connecting if applicable
• Return patient to baseline supine head elevated position upon completion of block procedure
• Maintain any necessary nursing documentation

After Block
• Evaluate sedation level immediately after procedure, repeating intermittently until patient is taken to operating room or until baseline RASS score returns
• Evaluate patient’s comfort level
• Evaluate the post-block sensory and motor blockade when applicable
• Maintain any necessary documentation
• Monitor patient’s respiratory status for signs of hypopnea and/or airway obstruction
• Monitor patient’s anxiety & comfort related to side effects or changes secondary to the block such as shortness of breath after interscalene block, supporting and educating the patient as needed
• Continue to monitor patient for signs and symptoms of L.A.S.T with peak plasma concentrations of local anesthetics occurring up to 30 minutes after the nerve block
• Be prepared to administer reversal agents, naloxone and/or flumazenil as needed after conscious sedation

Note: Document created by J. Winchester, MD anesthesiologist, 2022.
Table 3 Block Nursing Webinar Curriculum

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to Ultrasound-Guided Regional Anesthesia and the Role of the Block Nurse</td>
</tr>
<tr>
<td>2</td>
<td>Upper Extremity Blocks - Interscalene Supraclavicular, Infraclavicular, Axillary</td>
</tr>
<tr>
<td>3</td>
<td>Nursing Implications for Upper Extremity Blocks</td>
</tr>
<tr>
<td>4</td>
<td>Lower Extremity Blocks - Adductor Canal/Saphenous Blocks, Popliteal Blocks, PENG Blocks</td>
</tr>
<tr>
<td>5</td>
<td>Nursing Implications for Lower Extremity Blocks</td>
</tr>
<tr>
<td>6</td>
<td>Fascial Plane Blocks - Transversus Abdominis Plane (TAP), Quadratus Lumborum (QL), Paravertebral (PVB)</td>
</tr>
<tr>
<td>7</td>
<td>Nursing Implications or Fascial Plane Blocks</td>
</tr>
<tr>
<td>8</td>
<td>Keeping your patient safe and comfortable: Pharmacology of local anesthetics, additives, lipid rescue, and moderate sedation</td>
</tr>
</tbody>
</table>

Note: Block Nursing curriculum created by J. Winchester, MD anesthesiologist, February 2022.
Appendix J

Table 4 Block Nurse Checklist Femoral Block

<table>
<thead>
<tr>
<th>Block Nurse Checklist: Femoral Block</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ assess baseline vital signs, pain score, and RASS</td>
</tr>
<tr>
<td>□ Assess patient, medical history, and current laboratory results for any femoral nerve block risk factors or contraindications</td>
</tr>
<tr>
<td>□ Assess patient for pre-existing operative side lower extremity nerve damage</td>
</tr>
<tr>
<td>□ Assess accessibility to the patient’s groin</td>
</tr>
<tr>
<td>□ Assess patient’s knowledge of the nerve block and postoperative expectations</td>
</tr>
<tr>
<td>□ Complete required paperwork</td>
</tr>
<tr>
<td>□ Review patient's medical diagnosis, operative procedure to be performed, and indications for a continuous catheter or single shot femoral block</td>
</tr>
<tr>
<td>□ Present identified risk factors or contraindications to a femoral block to Regional Anesthesia Team</td>
</tr>
<tr>
<td>□ Participate with Regional Anesthesia Team to establish patient’s nerve block procedure plan</td>
</tr>
<tr>
<td>□ Complete patient and family education</td>
</tr>
<tr>
<td>□ Set up block room, equipment, and block table</td>
</tr>
<tr>
<td>□ Attach monitors to patient</td>
</tr>
<tr>
<td>□ Position patient in a supine position, with the arm on the procedural side stationed out of the sterile field</td>
</tr>
<tr>
<td>□ If gown accessibility is limited, retract papas as needed</td>
</tr>
<tr>
<td>□ Complete documentation, specific to the femoral block</td>
</tr>
<tr>
<td>□ Perform Time-out procedure with Regional Anesthesia Team</td>
</tr>
<tr>
<td>□ Ensure sterile masks, caps, gowns (as needed), and sterile or nonsterile gloves (as needed) are worn by all during the block procedure</td>
</tr>
<tr>
<td>□ Confirm IV line patency and continue IV fluids as ordered</td>
</tr>
<tr>
<td>□ Apply oxygen via partial rebreather mask</td>
</tr>
<tr>
<td>□ Administer IV sedation medication</td>
</tr>
<tr>
<td>□ Monitor blood pressure, pulse oximeter reading, and heart rate during procedure</td>
</tr>
<tr>
<td>□ Reassess sedation level throughout procedure</td>
</tr>
<tr>
<td>□ Reposition patient as needed</td>
</tr>
<tr>
<td>□ Adjust nerve stimulator settings as directed (if applicable)</td>
</tr>
<tr>
<td>□ Adjust ultrasound machine settings as directed (if applicable)</td>
</tr>
<tr>
<td>□ Administer additional sedation medications as ordered</td>
</tr>
<tr>
<td>□ Aspirate and inject local anesthetics as ordered</td>
</tr>
<tr>
<td>□ Monitor patient for signs and symptoms of local anesthesia toxicity</td>
</tr>
<tr>
<td>□ Implement proper measures if local anesthesia toxicity is noted</td>
</tr>
<tr>
<td>□ Assist with catheter dressing, if applicable</td>
</tr>
<tr>
<td>□ Assist with needle placement confirmation test(s) as needed</td>
</tr>
<tr>
<td>□ Reposition patient upon completion of block procedure</td>
</tr>
<tr>
<td>□ Maintain documentation</td>
</tr>
<tr>
<td>□ Evaluate sedation level immediately after procedure, repeating intermittently until patient is taken to operating room, or until baseline RASS score returns</td>
</tr>
<tr>
<td>□ Evaluate patient’s comfort level</td>
</tr>
<tr>
<td>□ Evaluate the sensory and motor blocks of the lower extremity</td>
</tr>
<tr>
<td>□ Maintain documentation of evaluation questions and patient’s responses</td>
</tr>
<tr>
<td>□ Reinforce preblock patient education related to the risk of falls</td>
</tr>
<tr>
<td>□ Maintain postblock documentation, and confirm preblock and block documentation is complete</td>
</tr>
</tbody>
</table>

Note: Block nursing checklist created by and reprinted with permission from BlockNursing LLC., Copyright 2011.
Appendix K

Figure 7 Block Nurse Competency Criteria

The innovative role of the Block Nurse requires proficiency in the following areas:

Communication

- Communicate with the medical team and the Regional Anesthesia Team to organize a safe and efficient regional anesthesia block procedure.
- Communicate with the patient and family during the pre-block assessment, eliciting any contraindications to a regional anesthesia block that may be present.
- Communicate with the patient and family, providing pre-block and postoperative education and answers to questions and concerns.

Knowledge

- Identify and apply knowledge of the anatomy of upper extremity blocks.
- Identify and apply knowledge of the anatomy of lower extremity blocks.
- Identify and apply knowledge of the anatomy of neuraxial blocks.
- Describe rationale for the type of pre-block sedation medication ordered for the patient.
- Describe rationale for the type of local anesthetic ordered for specific types of blocks in relation to block site, continuous catheter infusion versus single shot, and postoperative plan.
- Identify and describe signs and symptoms of potential complications to regional anesthesia blocks.
- Identify and describe reversal agents to be administered to patients as needed for certain complications related to regional anesthesia blocks.
- Demonstrate willingness for independent study of Regional Anesthesia and the Block Nurse role.
- Demonstrate willingness for continuing education in the progressive field of Regional Anesthesia and Block Nursing.

Performance

- Perform an assessment of the regional anesthesia patient, including laboratory results, baseline nerve and musculoskeletal status, and contraindications to regional anesthesia, prior to administering sedation medication.
- Maintain pre-block documentation and ensure all pre-operative forms are completed prior to the block procedure.
- Facilitate a timely pre-block family visit.
Demonstrate the ability to plan, facilitate, and organize a safe and efficient regional anesthesia block procedure.
Set up the block room, as needed, for the specific nerve block to be performed.
Position the patient for the specific regional anesthesia block procedure to be performed.
Administer sedation medications as ordered by the anesthesia provider to achieve desired level of sedation prior to the block procedure.
Demonstrate the ability to advocate for the safety of the sedated patient.
Initiate and document block room time-outs as required.
Demonstrate knowledge of nerve stimulation and adjust the nerve stimulator settings as ordered by the anesthesia provider.
Demonstrate knowledge of the ultrasound machine and adjust settings and features as ordered by the anesthesia provider.
Maintain sterility in all block procedures and demonstrate the ability to assist in the setup of the sterile field.
Demonstrate the ability to properly administer local anesthetic medications as ordered by the anesthesia provider and communicate verbally during the injection to the entire Regional Anesthesia Team.
Demonstrate the ability to monitor the patient and the patient's tolerance during the block procedure.
Demonstrate the ability to administer reversal agents properly if needed.
Dispose of sharps and clean the sterile field and ultrasound equipment as needed throughout the block procedure.
Maintain thorough and timely documentation.
Document medications administered as needed.
Monitor patient after the block procedure until patient is taken to the operating room.
Demonstrate the ability to see the "big picture" in the block room and facilitate efficiency of the regional anesthesia block procedure.

Expectations

- Maintain current Advanced Cardiac Life Support (ACLS), Basic Life Support (BLS), and Pediatric Advanced Life Support (PALS) certifications.
- Complete individual facility moderate sedation training program.
- Review the Block Nurse's State Board of Nursing and the American Nurses Association position statements regarding the role of the registered nurse in the management of patients receiving moderate sedation.

Note: Block nursing competency criteria created by and reprinted with permission from BlockNursing LLC., Copyright 2011.
## Appendix L

### Table 5 I’M SAFE Checklist

<table>
<thead>
<tr>
<th>Checklist Item</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I</strong>llness</td>
<td>Do I have any symptoms?</td>
</tr>
<tr>
<td><strong>M</strong>edication</td>
<td>Have I been taking prescription or over-the-counter drugs?</td>
</tr>
<tr>
<td><strong>S</strong>tress</td>
<td>Am I under psychological pressure from the job? Worried about financial matters, health problems, or family discord?</td>
</tr>
<tr>
<td><strong>A</strong>lcohol</td>
<td>Have I been drinking within 8 hours? Within 24 hours?</td>
</tr>
<tr>
<td><strong>F</strong>atigue</td>
<td>Am I tired and not adequately rested?</td>
</tr>
<tr>
<td><strong>E</strong>motion</td>
<td>Am I emotionally upset?</td>
</tr>
</tbody>
</table>

Note: Checklist from Aviation Instructor’s Handbook (FAA-H-8083-9).
Appendix M

Figure 8 Plan-Do-Study-Act Model

Note: Figure created by author, January 2022.
Appendix N

Figure 9 Regional Anesthesia Block RN Demographic Survey

1. How long have you been a nurse?

2. How long have you worked in PreOp/PACU?

3. Currently, how often do you assist with the block procedure? (ex. daily, weekly, monthly)

4. When assisting with blocks are you:
   a. Documenting VS pre-procedure, intra-procedure, and post-procedure?
   b. Documenting the time-out performed in the procedure navigator?
   c. Monitoring post procedure until hand-off?

5. Currently, rate your job satisfaction when participating with regional ANS placement.

<table>
<thead>
<tr>
<th>Very Unsatisfied</th>
<th>Unsatisfied</th>
<th>Neutral</th>
<th>Satisfied</th>
<th>Very Satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Note: Survey created by author, February 2022.
### Table 6 Evidence-Based Change of Practice Project Checklist

<table>
<thead>
<tr>
<th>Project Title: Block Excellence Specialty Team (B.E.S.T)</th>
<th>YES/NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>The aim of the project is to improve the process or delivery of care with established/accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.</td>
<td>x</td>
</tr>
<tr>
<td>The specific aim is to improve performance on a specific service or program and is a part of usual care. ALL participants will receive standard of care.</td>
<td>x</td>
</tr>
<tr>
<td>The project is NOT designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control. The project does NOT follow a protocol that overrides clinical decision-making.</td>
<td>x</td>
</tr>
<tr>
<td>The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does NOT develop paradigms or untested methods or new untested standards.</td>
<td>x</td>
</tr>
<tr>
<td>The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does NOT seek to test an intervention that is beyond current science and experience.</td>
<td>x</td>
</tr>
<tr>
<td>The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.</td>
<td>x</td>
</tr>
<tr>
<td>The project has NO funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.</td>
<td>x</td>
</tr>
<tr>
<td>The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., not a personal research project that is dependent upon the voluntary participation of colleagues, students and/or patients.</td>
<td>x</td>
</tr>
<tr>
<td>If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: &quot;This project was undertaken as an Evidence-based change of practice project at Kaiser Roseville Medical Center and as such was not formally supervised by the Institutional Review Board.&quot;</td>
<td>x</td>
</tr>
</tbody>
</table>

**Instructions:** Answer YES or NO to each of the following statements:

**ANSWER KEY:** If the answer to ALL of these items is yes, the project can be considered an Evidence-based activity that does NOT meet the definition of research. **IRB review is not required. Keep a copy of this checklist in your files.** If the answer to ANY of these questions is NO, you must submit for IRB approval.

*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.

**STUDENT NAME (Please print):** Lauren Elizabeth Pittman

**Signature of Student:**

__________________________________________

**DATE:** 3/28/22
SUPERVISING FACULTY MEMBER NAME (Please print): Dr. Cathy Coleman

Signature of Supervising Faculty Member: ________________________________
DATE ___3/28/22________
Appendix P

Figure 10 Clinical Nurse Leader Project: Statement of Non-Research Determination Form

Student Name: Lauren Elizabeth Pittman

**Title of Project:**

Utilization of a Block Excellence Specialty Team is (B.E.S.T)

Improving the process for Regional Block Procedures in PreOp/PACU

**Brief Description of Project:**

Increase knowledge, skills, and abilities of the RN providing patient education and care for the patient receiving regional anesthesia in PreOp/PACU.

**Aim Statement:**

By July 1st, 2022, all perioperative patients who are candidates for and consent to a peripheral nerve block, will have the block team conduct a time-out that is recorded in the patient’s electronic medical record and maintain a 1:1 RN/Patient ration for the duration of the procedure, placing 100% of peripheral nerve blocks on the correct side at a Northern California Medical Center.

1. **Description of Intervention:**

   All PreOp/PACU RNs will receive education on the Universal Protocol & Speak Up Culture.

   All PreOp/PACU RNs will load the Procedure Navigator and use KPHC to document their participation in the peripheral nerve block time-out.

   Block RNs will receive four hours of block nursing education; 8 lecture webinars from 2-4-22 (live or on-demand) and any additional prerequisite video education subsequently added.

1. Ultrasound demonstration 2-11-22

2. June 2021 Nursing Grand Rounds: Regional Blocks & Spinals

3. Conscious Sedation HealthStream module

   24 hour on-site clinical orientation with PNB MD anesthesiologist
Block RN will accompany block ANS provider to plan, oversee, & document the professional nursing care of the surgical patient who will undergo a regional anesthesia procedure.

Design a process/workflow for the block RN caring for patients receiving regional anesthesia, to ensure 1:1 care during the time-out and the procedure until the patient is “handed-off” to the primary RN.

1. How will this intervention change practice?

All PreOp/PACU RNs will receive education & support to cultivate a speak up culture. An interdisciplinary team comprised of a dedicated block nurse and an anesthesiologist will improve the safety of regional block procedures in the perioperative space.

A time-out will be led by the block RN with the regional anesthesia team. RN to patient ratio will be 1:1 (instead of 1:2) from the time-out to the end of the procedure. Additional education pre/post block will be provided to the patient by the block RN.

A block RN assignment provides patient-centered care. The quality of the peripheral nerve block placement is improved. The patient experience is enhanced. Staff satisfaction improves.

1. Outcome measurements:

100% of peripheral nerve blocks are placed on the correct procedural side.

100% of PreOp/PACU RNs are educated/trained on Universal Protocol; policy reviewed.

Procedural time-out documented on 100% of patients receiving a regional block in PreOp/PACU RNs become more skilled and knowledgeable about peripheral nerve blocks.

Increase in RN and anesthesiologist/CRNA job satisfaction.

Measure the number of annual peripheral nerve blocks done in 2020, 2021, and 2022 while noting the number of surgeries done in the same years. Are more patients able to get a PNB? Does the number of rescue blocks decrease?

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: (http://answers.hhs.gov/ohrp/categories/1569)

☐ This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Student may proceed with implementation.
☐ This project involves research with human subjects and must be submitted for IRB approval before project activity can commence.

Comments:
Appendix Q

Figure 11 Run Chart of Outcome Measures

Regional Blocks: Time Out Elements and RN to Patient Care Ratios
PreOp/PACU
November 2021 - May 2022

Note: Chart created by author, June 2022.
### Appendix R

Table 7 Block RN Program Start Up Budget

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Note: Chart created by author, June 2022.