Ketamine Administration as a Pain Control Intervention For Burn Patients During Dressing Changes

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Abstract

This project explored a new method of pain control during burn dressing changes. Ketamine administration was introduced for daily burn dressing changes in ventilated patients with significant burn injuries at the Midwest Regional Burn Center. This new method emerged from the desire for decreased use of opioids for pain control during daily burn dressing changes, and the need to discontinue opioid continuous infusions sooner as opposed to maintaining a fixed, increased rate of the infusion. This method had not yet been used at the Midwest Regional Burn Center. This project provided education and information about the benefits of low-dose ketamine usage for procedural pain control, and identified the need for better pain control during daily burn dressing changes. It also identified the need to educate the nursing staff at the Midwest Regional Burn Center on ketamine administration during daily burn dressing changes.

Chapter I: Introduction

Background and Significance

Chapter I

Pain control is a significant problem in the burn patient population. According to Walid, Donahue, Darmohray, Hyer and Robinson (2008), pain should be viewed as the fifth vital sign in order to decrease physical and psychological consequences in patients and decrease health care costs. As a way to control pain for the burn patient population, there is a consistent process that will be put into place utilizing ketamine for the treatment of acute pain during dressing changes in adult burn unit critical care patients. The goal of this procedure change will allow staff to effectively control of pain during dressing changes, decrease time spent intubated, and decrease the length of stay in the hospital.

Background and Significance

In patients with substantial burn injuries (> 20% total body surface area), adequate anesthesia and pain control are difficult to obtain during dressing changes. Current practices include the use of benzodiazepines, NSAIDS, and narcotics for pain control during dressing changes. The administration of these medications has been sub-par in controlling pain for patients who require large total body surface area dressing changes. Thus, there is a need for a change in practice.

Pain does not just elicit a physical response, but an emotional response as well. Evaluating pain, and keeping it at an acceptable level, is a requirement of proper patient care that is just as important and basic as the assessment and management of temperature, blood pressure, respiratory rate, and heart rate (Walid et al., 2008; Griggs, Goverman, Bitner, & Levi, 2017; James & Jowza, 2017; Kurdi, Theerth, & Deva, 2014; MacPherson, Woods, & Penfold, 2008). Pain is known as the fifth vital sign, because it is just as important as monitoring all other aspects of the patients physical, mental, and emotional well-being. If a patient's pain is controlled, there are fewer psychological side effects, which can decrease the patient's length of stay (Walid et al.,

2008). If there is a decrease in the length of stay, there will in turn be a decrease in the overall cost for the patient and the hospital (Walid et al., 2008).

Problem Statement

The staff at a Midwest Regional Burn Center found that there was not adequate pain control during burn dressing changes for intubated patients with significant burns (> 20% total body surface area). When pain is not controlled, there are multiple physical, mental, and emotional side effects that can hinder the healing process for intensive care burn patients (James & Jowza, 2017). Consistent increases in opioids over long periods of time also leads to tolerance and addiction. With the new ketamine administration procedure in place, there will be an improved intervention available to nurses for pain control (Midwest Regional Burn Center, 2017).

Project Aim(s)

The first aim of this project was to assess the learning needs of clinical nurses regarding intravenous ketamine administration. Baseline ketamine administration knowledge was assessed via a pre-simulation survey. The second aim was to properly educate nursing staff on the administration of ketamine for burn dressing change pain control. Ketamine administration education was conducted as a clinical scenario simulation activity. Post simulation ketamine administration knowledge was assessed using a post-survey. The final aim of this project was to meet with content experts to identify main concepts related to policy and procedure development of an intravenous ketamine administration protocol for burn dressing change.

PICO

How does ketamine administration affect the control of pain during burn dressing changes for intubated patients with significant burns in comparison to opiate and benzodiazepine administration? Due to a nation-wide shortage of Ketamine, the implementation of the use of

Ketamine during burn dressing changes was not possible during the timeframe of this project. This will be pursued in the future, once the Ketamine supply is restored. The population studied will be intubated burn patients with a total body surface area greater than 20%. The intervention will be intravenous ketamine infusion for the treatment of acute pain during dressing changes with the comparison being intravenous opiates and benzodiazepines. The outcome measured will be patient's pain response using the behavioral pain scale.

Congruence of Organizations' Strategic Plan

At the Midwest Regional Burn Center there is a specific mission, vision, and set of values that all employees are expected to uphold. The mission is to improve the health of the people and communities we serve. The vision is to be a national leader for excellence in patient care. Finally, the values include: service to humanity, excellence in performance, respect for the individual, value of the employees, integrity in relationships, community responsibility, and equal access to health care (Board of Directors, 2017). The ketamine administration protocol proposal perfectly aligns with the Burn Center's mission, vision, and values. It supports the mission of improving the health of the people we serve through better pain control. With the use of evidenced based practice, the ketamine administration protocol proposal will help the Burn Center continue to be a national leader for excellence in patient care.

The Burn Center has a list of strategies to achieve their goals of great patient outcomes, great place to work, great partner for physicians, great regional presence, and great financial stewardship. The strategies include: increase value through improved patient experience, clinical, and financial performance; leverage data to improve performance; improve workforce capacity and employee capabilities; strengthen their state university partnership; strengthen local clinic partnership; expand value-added affiliations, individually and through the Barnes Jewish collaborative; reduce overall cost structure to compete at rates declining towards Medicare rates;

increase participation in risk-based payment models (Board of Directors, 2017). The ketamine administration protocol proposal connects directly with the Burn Center's strategy to improve workforce capacity and employee capabilities. The ketamine administration simulation educates employees on the best evidence based practice available for pain control in burn patients during dressing changes.

Review of Literature

The search process included the use of the CINAHL and ELSEVIER databases along with the key words: "burn pain", "pain management", "sedation", "ketamine", and "burn dressing change". A total of 12 articles were found, however, only nine of them were deemed worthy to be included in this synthesis of evidence. All nine articles were reviewed and synthesized.

Pain is a personal experience for patients, as there are varying thresholds, coping abilities, and even psychological responses to the burn injury. This pain response varies and fluctuates widely over the span of recovery for the burn patient (Griggs, Goverman, Bittner, & Levi, 2017). Burn patients often show an altered pharmacodynamics and pharmacokinetic drug response, requiring an individualized approach to pain management (Myers, Lozenski, Wyatt, Peña, Northrop, Bhavsar, & Kovac, 2017). Pain control in burn patients' during dressing changes is a continuously evolving process that involves interprofessional collaboration in order to produce the best practices. Pain management is an important aspect of burn management (Yang, Hur, Kwak, Yim, Suk Cho,…Chun, 2013). Zor, Ozturk, Bilgin, Isik, and Cosar (2010), affirmed that pain management during burn dressing changes is a critical part of treatment in burn patients, and even though multiple treatment options have been recommended, it is still a challenge in the hospital setting. Routine pain assessment allows the practitioner to reevaluate the best plan of care that works specifically for each patient. For example, Yang et al. (2013), stated that after

each dressing change, the burn specific nurses and burn therapists check the numeric pain scale of procedural pain. Reassessing pain allows the interdisciplinary team to develop a pain control protocol that can improve pain management for hospitalized patients (Yang et al., 2013).

According to James and Jowza (2017), in the immediate post-burn injury period, tissue injury causes the release of inflammatory mediators, which sensitize the nociceptors at the site of injury causing the site of injury to be sensitized to all stimuli. This is called burn hyperalgesia. These stimuli may include touch with dressing changes, and application of topical agents on the site of injury. Griggs et al. (2017), described the nociceptive pain as being followed by and potentially exacerbated by procedural pain during burn dressing changes. During dressing changes, evoked and procedural pain occurs where the pain is short-lived, but high in intensity (James & Jowza, 2017). Zor et al. (2010) described hyperalgesia as 'wind-up' pain that is exacerbated by mechanical stimulation that occurs as a result of dressing changes. Myers et al. (2017), said that there comes a period of time during the burn healing process in which hyperalgesia develops which requires additional medications for the same dressing changes.

Ketamine can be used to combat primary and secondary hyperalgesia, and it alleviates wind-up pain as well (Zor et al., 2010). It has been used extensively in burn patients, and their dressing changes, for more than 40 years, and is the most common deep sedative (Kurdi, Theerth, & Deva ., 2014; Myers et al., 2017; Zor et al., 2010). It works by blocking the pain transmission pathway implicated in the development of central sensitization. Ketamine is useful in intensive dressing changes at the bedside, removal of hundreds of staples, or procedures requiring conscious sedation (Griggs et al., 2017). Ketamine has a major advantage in burn patients that is unlike other pain medications, it usually preserves the airway in addition to providing analgesia. Also, ketamine in combination with midazolam and dexmedetomidine provides pain control and analgesia without causing any significant adverse reactions (Kurdi et

al., 2014). According to Zor et al. (2010), ketamine combined with different analgesics has been reported to improve pain management during dressing changes for the burn patient. In combination with midazolam, the adverse effects of ketamine can be prevented; such as an increase in heart rate, systolic blood pressure, and hallucinations (Zor et al., 2010). Ketamine is more effective for burn patients due to its rapid onset and prolonged recovery time (Zor et al., 2010).

Ketamine, at lower doses (0.1-0.5 mg/kg or as an infusion 0.1-0.5g/kg/hour), offers analgesic benefits, with decreased psychiatric side effects. It has been widely used in perioperative pain management to improve analgesia, decrease opioid requirement, and prevent opioid tolerance (Kurdi et al., 2014). In recent studies, ketamine has been shown to significantly reduce pain and anxiety, as well as decrease respiratory depression, hemodynamic impact, and overall opiate consumption (Myers et al., 2017). In addition, Kurdi et al. (2014) reported that the effects of ketamine included sedation, catalepsy, somatic analgesia, bronchodilation, and sympathetic nervous system stimulation. Currently, at this study organization, opioids are used as the primary treatment for pain control in burn patients. With the continuous use of opioid medications for pain control, significant opioid dose escalation was necessary to control pain in burn patients with extended hospital stays, patients requiring frequent procedures or dressing changes, or for those with a history of prior opioid use or abuse (James & Jowza, 2017). With the increase in opioid dosing, there is a decrease in the analgesic response to opioids, and tolerance and addiction can occur (James & Jowza, 2017). In a study involving ABA Burn Center nurses and physicians, oxycodone was identified as the most common oral opioid premedication for burn dressing changes, and the next drug of choice was a combination of either hydrocodone or oxycodone, along with acetaminophen (Myers et al., 2017). According to James and Jowza

(2017), the use of multiple analgesics is an effective method for pain control in burn patients, and can reduce the risk of side effects.

Zor et al. (2010), found that the administration of 1mg/kg of tramadol, followed 30 minutes later with dexmedetomidine and 2mg/kg of ketamine had better outcomes for pain management during burn dressing changes. Furthermore, MacPherson, Woods, and Penfold (2008), discussed the success of a ketamine/midazolam combination delivered through a patient controlled-analgesia (PCA) pump during the burn dressing change procedure. The goal of this treatment was to optimize pain control through the combination of medications, and to combat potential ketamine-induced hallucinations. With the lower dosage of ketamine and the administration of benzodiazepines, there was a lower risk of hallucinations. According to MacPherson et al. (2008), the use of ketamine/midazolam PCA increased the range of dressing changes that could be performed within burn units, and reduced the number of patients that needed operating room time and general anesthesia for their procedure. This approach was well accepted by both staff and patients in association with high levels of patient and staff satisfaction (MacPherson et al., 2008).

In contrast, Ravipati et al. (2014) stated that the use of dexmedetomidine as an analgesic medication could reduce the amount of ketamine and propofol and therefore reduce the potential for adverse reactions to the medications. The researchers discussed how ketamine has been a safe and useful anesthetic medication for burn dressings with limitations that included delayed recovery, emergence phenomenon, and nausea and vomiting (Ravipati et al., 2014). However, the results of this study showed that, “dexmedetomidine is a good anesthetic adjuvant that decreases the requirement of propofol and ketamine during burn debridement and dressings and maintains stable intraoperative hemodynamics and adequate duration of analgesia” (p. 141). Kurdi et al. (2014) discussed the warnings and limitations of ketamine which were important to

know when administering the drug to burn patients. These included increase in muscle tone, contraindications in conditions like hypertension and schizophrenia, emergence reactions, dreams, hallucinations, and long-term psychotomimetic effects, and the potential to cause addiction.

Conceptual or Theoretical Framework

Lewin's Change Theory is described as an unfreeze-change-refreeze model where a dynamic balance of forces is working in opposing directions (Petiprin, 2016). Unfreezing, when change is needed, is the process of finding a method of making it possible for people to let go of an old pattern that was somehow counterproductive (Mitchell, 2012; Petiprin, 2016). At the Midwest regional burn center, the use of narcotics and benzodiazepines is the current pattern that is somewhat counterproductive. The next stage is change or moving to a new level, when change is needed (Mitchell, 2012). For this project, the change step was to include the implementation of ketamine administration for pain control in burn dressing changes. The final, refreezing stage, when equilibrium is obtained, establishes the change as the new habit for practice or "standard operating procedure" (Mitchell, 2012; Petiprin, 2016).

Methods

Needs Assessment. The need for more adequate pain control during burn dressing changes was the phenomenon of interest worth exploring for the burn patient population. Currently, the need for better pain control during burn dressing changes is the greatest need for intubated patients with significant burn injuries. According to the SWOT analysis, the strengths of the Midwest Burn Center include that it offers the most efficient and effective burn care in central and southern Illinois. There are two teams of physicians that collaborate for the best possible burn care for patients on the burn unit. These two teams include the Trauma or General Surgery physicians and the Plastic Surgery physicians. The Trauma team takes over primary care

for burn patients, which includes ordering the medications necessary for burn dressing changes. The plastic surgery team directs burn care for the patients. The advantage of the burn center is that the burn care is a multidisciplinary approach that includes state of the art treatment and technology in treating burn patients (Midwest Regional Burn Center, 2017). The weakness includes inadequate pain control for burn patients during daily dressing changes. This is where the regional burn center has found a gap between the set treatment goals and how well the pain medication or analgesics were treating pain. The opportunity available to the staff at the Regional Burn Center, is the trend of administering ketamine as an analgesic for pain control in burn dressing changes. The current threats to this practice initiative are lack of physician approval, lack of knowledge for the nursing staff, and fear of the unknown for the nursing staff.

Project plan. In order to address this need, an evidence-based practice initiative involving ketamine infusions for burn dressing changes was put into practice. According to the evidence listed, low doses of ketamine help with pain control in burn patients during dressing changes (Zor et al., 2010). The project plan included a pre-simulation survey (see Appendix B) a scenario for the staff of ketamine administration at the bedside (see Appendix C), the ketamine administration order set (see Appendix D), and finally a post-simulation survey (see Appendix B) to reevaluate the knowledge of ketamine infusions for burn dressing changes at the bedside. The goal of the project was to increase nurses' understanding of ketamine and to decrease their fear of the unknown concerning ketamine and its use for pain control. Furthermore, after the initial education and simulation activities, the plan was to make the ketamine administration protocol available in an acute care hospital setting at the Midwest regional burn unit consisting of nine beds. This setting was chosen based on the original need for improved pain control for burn patients during dressing changes. The initial survey was formulated through SurveyMonkey, and sent out to the nursing staff at the regional burn center. Permission to send

the pre survey link to participants was obtained from the hospital's Nursing Outcomes Improvement Facilitator (see Appendix E). Following the survey, the nurses were required to attend a simulated scenario of ketamine administration at the bedside. The resources required for this portion of the project were provided by the Center for Learning located on the campus of the Midwest hospital. Participants were asked to complete the post-survey upon completion of the simulation.

For the educational segment of the project, the population included critical care nurses who were employed at the Midwest acute care hospital in the regional burn center intensive care unit. For the implementation of the ketamine administration, the population would have included burn patients who were on a mechanical ventilator with significant burns that required daily or twice a day dressing changes. In order to evaluate the impact of the simulated education, the results of the pre- and post-simulation surveys were analyzed to identify any additional education needs for the nursing staff.

Based on the SMART objectives, the specific end point of this project was to enhance the nursing staff's knowledge of ketamine and the ketamine administration process in order to improve pain control in burn patients that were mechanically ventilated with significant burn injuries. The measurable features of this project included the results of the pre- and post-simulation surveys taken by the nursing staff. This project is relevant to the business's broader goals which include great patient experiences and improving patient outcomes. The plan to analyze the data included reviewing the results of the surveys taken by the nursing staff to evaluate the effectiveness of teaching the ketamine administration protocol.

Procedures for data collection included data collection performed by the Bradley DNP-FNP graduate student through pre-data collection, pre-simulation survey results, simulation education, and post-simulation survey results. Pre-data collection was taken from fiscal year

2018. The Pre-Data Collection Tool (see Appendix A) was utilized for each patient to evaluate the behavioral pain scale scores before and during the dressing changes, if intravenous pushes of opioid medication were used during or after the dressing changes, if the continuous opioid infusion rate was increased before or during dressing changes, and if the continuous sedation infusion rate was increased before or during dressing changes. The nursing staff at the Midwest Regional Burn Center was sent the simulation survey before the simulation and again after the simulation. The results were formulated through Survey Monkey and evaluated by the Bradley DNP-FNP graduate student.

After the initiation of ketamine administration for burn dressing changes, the Bradley DNP-FNP graduate student will use the Pre-Data Collection Tool as a Post-Data Collection tool to evaluate the amount of opioid usage after the launch of ketamine for pain control in daily burn dressing changes. The ketamine administration simulation will be done during orientation for new nurses orienting to the Midwest Regional Burn Center.

The full timeline of this project was from March 2018 until April 2019 (See Appendix F). The pre-survey was formulated and sent out to the nursing staff in March 2018, and results of the pre-simulation survey were reviewed in April 2018. The Ketamine Simulation training occurred in July and August 2018. The post-simulation survey was sent to the nursing staff at the Midwest Regional Burn Center in October 2018. In November and December 2018, the pre- and post-simulation survey results were compared and contrasted. After final reviews and revisions of the DNP Scholarly Project Paper, the Bradley DNP-FNP graduate student will present the findings in April 2019.

Data Analysis. To evaluate the knowledge of the nursing staff the pre- and post-simulation survey results were analyzed. The survey was sent out to the nursing staff at the Midwest Regional Burn Center before and after the ketamine administration simulation. Data were reported as percentages of participants choosing each answer choice for each multiple

choice question and the text submitted for each short answer question via Survey Monkey (see Appendix B). The DNP-FNP graduate student evaluated the results of the surveys and gathered the information to compare the results between the pre- and post-simulation surveys.

The results of the surveys were quantified into graphical data showing how many of the nurses answered a, b, c, or d to each of the questions. The post-simulation results of each question were then quantitatively compared to the pre-simulation results of each question. The results were reviewed to evaluate whether the simulation adequately trained the nursing staff at the Midwest Regional Burn Center on the administration of ketamine at the bedside for daily burn dressing changes in patients with significant burn injuries.

Ethical issues. It was determined by the Springfield Committee for Research Involving Human Subjects (SCRIHS) that this project does not fall under the purview of the Institutional Review Board as research involving human subjects according to 45 CFR 46.101 and 45 CFR 46.102. Therefore, SCRIHS approval was not necessary. As submitted, the principal investigator may proceed with this project without SCRIHS oversight (see Appendix G).

Organizational Assessment & Cost Effectiveness Analysis

The Midwest Regional Burn Center is a learning hospital where allied health, nursing, and medical students are all trained. The hospital's vision is to be a national leader for excellence in patient care, and the mission is to improve the health of the people and communities we serve (Midwest Regional Burn Center, 2017). The organization's readiness for change is all based on how well we improve the health of the people we serve. Therefore, the project proposal for ketamine to improve pain control is an example of improving health for the patients in the burn center.

With every change in the medical system there are risks for barriers to the implementation of the change in practice. The barriers for this project included lack of

knowledge of the nursing staff, fear of the unknown for the nursing staff, and the risk that the physicians would not approve it. The knowledge and fear of the unknown for the nursing staff was addressed through the pre-simulation survey, and with the simulation itself. Also, the risk of the physicians not approving the project was addressed through discussing the proposal at physician meetings in order to provide the physicians with updates throughout the proposal process and initiation process of the project. The facilitators of this project included the pharmacists, nurse manager, physicians, and nursing staff administering the ketamine at the bedside. All of these facilitators collaborated for the expedition of the ketamine administration project. After the barriers were addressed, the potential risks of the project were to be attended to as well. The adverse effects of ketamine were some of the risks related to this project which can include decreased blood pressure, under or over sedation, and prolonged ventilation time.

With the initiation of the ketamine administration project, the goal will be to decrease the amount of pain medication used for patients who are mechanically ventilated that have sustained significant burn injuries. The second goal of this project will include decreased time on the ventilator which can also decrease intensive care days, and decrease the overall cost of the patient's stay. There was no specific budget or business plan in place for this project.

Results

The pre-assessment data was collected from November 2017 through December 2018, with five patients meeting the criteria for data assessment. The criteria included ventilated patients with substantial burn injuries (greater than 20% total body surface area). For each of the five patients, three dates were randomly chosen to assess the amount of opioid usage before, during, and after dressing changes, along with the pain scale ratings before, during, and after dressing changes. For every dressing change (100%), there was an increase in the continuous opioid infusion, and in five out of the twenty-two dressing changes (22.7%) an additional

intravenous push of opioid medication was given before, during, or after the dressing change. In addition, after the dressing changes, the continuous opioid infusions were decreased, but still remained at a significant level that increased the patient's risk of developing tolerance. This data was recorded in the Pre-Data Collection Tool (See Appendix A), and used to evaluate the amount of opioid use during each dressing change.

In March 2018, the nurses at the Midwest Regional Burn Center were sent a pre-simulation survey in order to evaluate their knowledge of ketamine administration at the bedside for burn dressing changes. Eleven nurses completed the pre-simulation survey. These results were reviewed by the DNP-FNP graduate student in April of 2018 (see Appendix H). Question 1 asked "What is Ketamine used for?" (select all that apply), eight nurses (72.23%) selected sedation and pain control, two nurses (18.18%) selected amnesic, and one nurse (9.09%) selected dissociative. Question 2 asked, "In your experience, how much pain do patients with burns experience during dressing changes?" Nine nurses (81.82%) answered Severe (8-10 on pain scale), two nurses (18.18%) answered Moderate (4-7 on pain scale), and none answered minimal (1-3 on pain scale) or no pain (0 on pain scale). In Question 3, "When changing burn dressing in intubated patients, how often do you feel the patient has adequate pain control," two nurses (18.18%) answered Most of the time (75%), seven nurses (63.63%) answered Sometimes (50%), two nurses (18.18%) answered Seldom (25%), and none (0%) answered Never (0%). Question 4 asked, "In your experience, what route of medication administration controls pain best when changing burn dressings in intubated patients?" Nine nurses (81.82%) answered IV Continuous Drip, two nurses (18.18%) answered IV Push, and none (0%) answered Intramuscular (IM) or Other (please specify). Question 5 asked, "In your experience, how frequent is the need to give additional IV push pain medication to an intubated patient already on a continuous opioid drip, during a burn dressing change?" None (0%) answered Always, seven nurses (63.63%) answered

Most of the time, three nurses (27.27%) answered Often, one nurse (9.09%) answered Seldom, and none answered Never (0%). Question 6 (short answer question), "How do you determine the level of pain in intubated patients with significant burns?" Nine nurses (81.82%) answered in some variation that they determined this by the patient's vital signs or vital sign changes and five nurses (45.45%) answered the behavioral pain scale is how they determined their patient's level of pain. Question 7 (short answer) asked, "What pain medications do you commonly see given to intubated patients prior to or during burn dressing changes?" Eleven nurses (100%) listed Fentanyl, three nurses (27.27%) listed Morphine, Dilaudid, or Norco/Hycet two nurses (18.18%) listed Versed and one nurse (9.09%) listed Ativan. Question 8 asked, "Have you ever cared for a patient who received Ketamine IV for pain control?" Nine nurses (81.82%) answered No, and two nurses (18.18%) answered Yes. Question 9 then followed up with, "If you responded yes to question 8, did you have any adverse effects and/or events from the Ketamine administration?" Both of the nurses who had previously given ketamine answered "No," that their patient did not have any adverse effects and/or events to the ketamine administration.

After the pre-simulation survey results were reviewed, the next step was the Ketamine Simulation which was conducted during July through August 2018. All eleven of the nurses who took the pre-simulation survey attended the Ketamine Simulation. The post-simulation survey was then sent out to the nurses at the Midwest Regional Burn Center. Unfortunately, only five of the original eleven nurses who participated in the pre-simulation survey and Ketamine simulation followed up by completing the post-simulation survey. The other six nurses had either left the Midwest Regional Burn Center for other employment opportunities, had finished graduate school and were starting a different career path, or were no longer employed with the Midwest Regional Burn Center for other reasons. The post-simulation survey was sent in October 2018 to the remaining participating nurses.

Five nurses completed the post-simulation survey. These results were reviewed by the DNP-FNP graduate student in November and December of 2018 (see Appendix H). Question 1 asked "What is Ketamine used for?" (select all that apply). Two nurses (40%) selected sedation, five nurses (100%) selected pain control, and one nurse selected Amnesiac. Question 2 asked "How much pain do patients with burns experience during dressing changes?" Four nurses (80%) answered Severe (8-10 on pain scale) and one nurse (20%) answered Moderate (4-7 on pain scale). Question 3 asked "When changing burn dressing in intubated patients, how often do you feel the patient has adequate pain control?" One nurse (20%) answered Most of the time, three nurses (60%) answered Sometimes, and one nurse (20%) answered Seldom. Question 4 asked, "In your experience, what route of medication administration controls pain best when changing burn dressings in intubated patients?" Three nurses (60%), answered IV Continuous Drip and two nurses (40%) answered IV Push. Question 5 asked, "In your experience, how frequent is the need to give additional IV push pain medication to an intubated patient already on a continuous opioid drip, during a burn dressing change?" One nurse (20%) answered Most of the time, three nurses (60%) answered Often, and one nurse (20%) answered Seldom. Question 6 (short answer question) asked, "How do you determine the level of pain in intubated patients with significant burns?" Two nurses (40%) answered with vital signs or a change in vital signs, two nurses (40%) answered behavioral pain scale (BPS), and one nurse (20%) answered "depends on level of consciousness. We can ask…nonverbals…crying, wincing." Question 7 (short answer) asked, "What pain medications do you commonly see given to intubated patients prior to or during burn dressing changes?" Three nurses (60%) listed Fentanyl four nurses (80%) listed Morphine, and one nurse (20%) listed Versed, Ativan, Dilaudid, and Norco. Question 8 asked, "Have you ever cared for a patient who received Ketamine IV for pain control?" One nurse (20%) answered Yes and four nurses (80%) answered No. Question 9 asked "If you

responded yes to question 8, did you have any adverse effects and/or events from the Ketamine administration?" One nurse (100%) answered yes. The one nurse who answered yes to having side effects and/or events from the ketamine administration did not follow-up in question 10 about what the side effects may have been.

Discussion

The results of both the pre- and post-simulation surveys essentially showed the same results. However, the results of the post-simulation survey showed that 100% of the participants that responded believed that ketamine could be used for pain which represented a 27% increase from the pre-simulation survey results. Eighty percent of the participants in both surveys answered that their patients experienced severe pain during burn dressing changes, and 60% of the participants in both surveys felt that their patients receive adequate pain control during burn dressing changes only sometimes. The post-simulation survey results also showed a 20% increase in participants answering that IV Push pain medication is best for controlling pain during burn dressing changes at the bedside.

The education simulation was meant to address the nurses' knowledge of how to monitor their intubated patients pain response while administering ketamine at the bedside for burn dressing changes. Participants in both surveys identified that they monitored their patients' pain response through the behavioral pain scale, changes in vital signs, agitation, and extremity movement.

According to the SMART objectives, nurses' knowledge regarding the use of ketamine during burn dressing changes would increase after participating in the ketamine administration simulation. Results showed that this objective was met in two areas (use of ketamine for pain control & use of IVP meds during dressing changes). The business's broader goals included great patient experiences and improving patient outcomes. The ketamine education of the staff at

the Midwest Regional Burn Center allows for improved patient outcomes by providing the nursing staff a better way to advocate for their patients to receive better pain control during burn dressing changes. If the patient has a better experience during their dressing changes, they in turn, will have improved outcomes.

There are multiple identified limitations to this project. First, there is a small sample size due to the 9-bed Midwest Regional Burn Center, there were only five patients within the 2018 fiscal year that met the criteria for pre-data collection of opioid use during daily burn dressing changes. Second, there has been a nation-wide shortage of ketamine. Therefore, the ketamine administration protocol has not been officially put into practice. Without the ability to initiate the protocol, there is no current data to collect to compare and contrast with the pre-collection data regarding opioid use in burn dressing changes. However, once the Midwest Regional Burn Center acquires ketamine, the Bradley DNP-FNP graduate student will set up the ketamine protocol for the nurses to use for daily burn dressing changes.

The implications for practice change in education related to ketamine administration at the bedside for daily burn dressing changes include an increase in nursing knowledge of ketamine and, in turn, an increase in better patient outcomes with the future use of ketamine for burn dressing changes. Procedural or evoked pain occurs during daily burn dressing changes, it is generally short-lived but high in intensity (James & Jowza, 2017). Currently, the practice on the Midwest Regional Burn Center is the use of opioids for pain control. Despite increased risk of side effects, significant opioid dose escalation may be required for burn patients with extended hospital stays undergoing multiple procedures at the bedside including dressing changes (James & Jowza, 2017). Also, with prolonged opioid use, changes in central nervous system occur, leading to a tolerance that can result in dose escalation for adequate pain control (James & Jowza, 2017). The potential project implementation modifications to improve future practice

would be to evaluate the nurses' knowledge of daily use of ketamine at the bedside for dressing changes and to assess if dose escalation of opioid pain continuous infusion was necessary while using ketamine for procedural pain control. Weaning the ventilator while maintaining appropriate pain control is one of the most challenging aspects of burn care (Griggs et al., 2017). Future research would be required in order to examine the results of ketamine used for procedural pain at the bedside. This would require interdisciplinary collaboration with the nursing staff, pharmacist, general surgery team, and plastic surgery team. The plan is to begin this research when there is no longer a shortage of ketamine within the Midwest hospital. The nursing staff at the Midwest Regional Burn Center will help initiate this project implementation.

This project is significant to nurses through provision 2 and provision 7 of the Code of Ethics for Nurses (American Nurses Association, 2015). Provision 2 states that the nurse's primary commitment is to the patient (American Nurses Association, 2015). Primacy of the patient's interests is the main focus of this project through better pain control during burn dressing changes. Provision 7 states the nurse advances the profession through research and scholarly inquiry, professional standards development, and the generation of both nursing and health policy (American Nurses Association, 2015). According to American Nurses Association (2019), nurses have been contributing to care coordination through care plans guided by patients' needs and preferences, educating patients and their families at discharge, doing their best to facilitate continuity of care for patients across settings and among providers. This project contributes to care coordination through a new care plan for intubated burn patients during daily dressing changes in order to address the patients' needs and preferences.

Conclusion

Adequate pain management can be accomplished by a continuous and thorough effort through pain monitoring systems and constant revision and improvement using creative ideas

and approaches (Yang et al., 2013). Ketamine administration at the bedside for pain control in daily burn dressing changes is a new approach at the Midwest Regional Burn Center to improve pain management and help improve patient outcomes. According to Zor et al. (2010), ketamine is a good alternative for pain management of major burn patients. Ketamine education for the nursing staff at the Midwest Regional Burn Center is essential for the nurses to put the patients and their pain management first, to improving patient outcomes, and to creating the potential for useful practice change to health care. The ketamine education aligns with DNP Essential VIII: Advanced Nursing Practice. Essential VIII discusses increased knowledge and sophistication of healthcare has resulted in the growth of specialization in nursing in order to ensure competence in these highly complex areas of practice (American Association of Colleges of Nursing, 2017). Burn Nursing is a specialized nursing capacity. According to the American Association of Colleges of Nursing (2017), the reality of the growth of specialization in nursing practice is that no individual can master all advanced roles. Education is an ongoing and lifelong experience, and there will always be areas of learning and improvement. The plan to present this project and improve upon the continued education of nurses includes a poster presentation with the Midwest Hospital where the Midwest Regional Burn Center is located. This project has helped the DNP student achieve one of her personal and professional goals of presenting her research and findings to her fellow colleagues and mentors. The DNP student was raised by a strong, hardworking researcher who took pride in her continued research to better improve healthcare and the education of the people involved in the healthcare field. The DNP student has always hoped to continue her mother's love of research.

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Appendix A

Pre-Data Collection Table

FIN # _____

Dressing Change	**DATE** **TIME**
Pain Scale before Dressing change	
Pain Scale during dressing change	
Pain Scale after dressing change	
Opioids IVP (BEFORE)	**YES** **NO**
Opioids IVP (DURING)	**YES** **NO**
Opioid IV Drip Rate Increased (BEFORE)	**YES** **NO**
Opioid IV Drip Rate Increased (DURING)	**YES** **NO**
Sedative IV Drip Rate Increased (BEFORE)	**YES** **NO**
Sedative IV Drip Rate Increased (DURING)	**YES** **NO**

Appendix B

Pre- and Post-Simulation Survey

1. What is Ketamine used for? Select all that apply.
    a. Sedation
    b. Pain Control
    c. Amnesic
    d. Dissassociative
    e. Schizophrenia
2. In your experience, how much pain do patients with burns experience during dressing changes?
    a. Severe (8-10 on pain scales)
    b. Moderate (4-7 on pain scales)
    c. Minimal (1-3 on pain scales)
    d. No pain (0 on pain scales)
3. When changing burn dressings in intubated patients, how often do you feel the patient has adequate pain control?
    a. All the time (100%)
    b. Most of the time (75%)
    c. Sometimes (50%)
    d. Seldom (25%)
    e. Never (0%)
4. In your experience, what route of medication administration controls pain best when changing burn dressings in intubated patients?
    a. IV Continuous Drip
    b. IV Push
    c. Intramuscular (IM)
    d. Other (please specify) _____
5. In your experience, how frequent is the need to give additional IV push pain medication to an intubated burn patient, already on a continuous opioid drip, during a burn dressing change?
    a. All the time (100%)
    b. Most of the time (75%)
    c. Often (50%)
    d. Seldom (25%)
    e. Never (0%)
6. How do you determine the level of pain in intubated patients with significant burns?

7. What pain medications do you commonly see given to intubated patients prior to or during burn dressing changes?

8. Have you ever cared for a patient who received Ketamine IV for pain control?

    a. Yes
    b. No
9. If you responded yes to question 8, did you have any adverse effects and/or events from the Ketamine administration?
    a. Yes
    b. No
10. If the patient did experience adverse effects from Ketamine, please describe.

Appendix C

Simulation Scenario

T.C. 21 year old male. TBSA 30% bilateral arms trunk and back with 2nd and 3rd degree burns from house fire. He is three days post burn and is intubated and ventilated. Patient weighs 80 kg.

V.S. B/P 120/78, HR 92, RR 20, Temp 37.6 C., SpO2 98%, RASS -2, BPS 0

Ventilator settings: ACVC+ rate 16, TV 400 mL, FiO2 60, PEEP 8 cm

Current IV infusions:

Fentanyl 2500 mcg/250 mL @ 100 mcg/hour

Propofol 1000 mg/100 mL @ 30 mcg/kg/min

Current RASS is -2 with a goal of -2 to -3

Dressing changes daily with xeroform and bacitracin.

You are preparing to change dressings on this patient and are aware from prior shift that he is difficult to sedate and required an increase in fentanyl drip in addition to IV push fentanyl prior to the procedure. The trauma team is rounding

1. Discuss the dressing change and pain situation with the team and suggest using the ketamine protocol.

Ketamine has been approved by the trauma team for the dressing change.

2. Initiate the order set
3. Administer premedication
4. Set NIBP to appropriate setting

What should be done with the continuous infusions?

Administer Ketamine as ordered

B/P 100/68, HR 85, RR 16

5. Begin dressing change

After 45 minutes the patient is agitated and needs a second dose of ketamine

B/P 136/88, HR 100, RR 24, BPS 6, RASS +1

6. Administer 2nd dose

B/P 88/46, HR 106, RR 16, BPS 0, RASS -3. Fentanyl drip is at 75 mcg/min and Propofol is at 30 mcg/kg/min

B/P 112/76, HR 88, RR 16 BPS 0 and RASS -3

7. Post dressing change V/S are stable. If patient still comfortable leave drips as they are

Debrief: 1. What went well?

2. What would you do differently?

Appendix D

TRAUMA Burn Dressing Change Medication Order Set

(3-hour duration on all orders)

Personnel

- Ordered by the TRAUMA ICU Team
- Procedure performed by Burn Unit RN

Indications

- Burn dressing changes in intubated patients with burn injuries on the Burn Unit

Contraindications

- Hypersensitivity to Ketamine
- History or presence of schizophrenia
- Pregnancy

Vital signs- ketamine dressing change- Q15MIN during dressing change then Q15MIN x 1H after last dose of ketamine

Sedation Assessment Q15MIN during dressing change then Q15MIN x 1H after last dose of Ketamine. Assess RASS and pain.

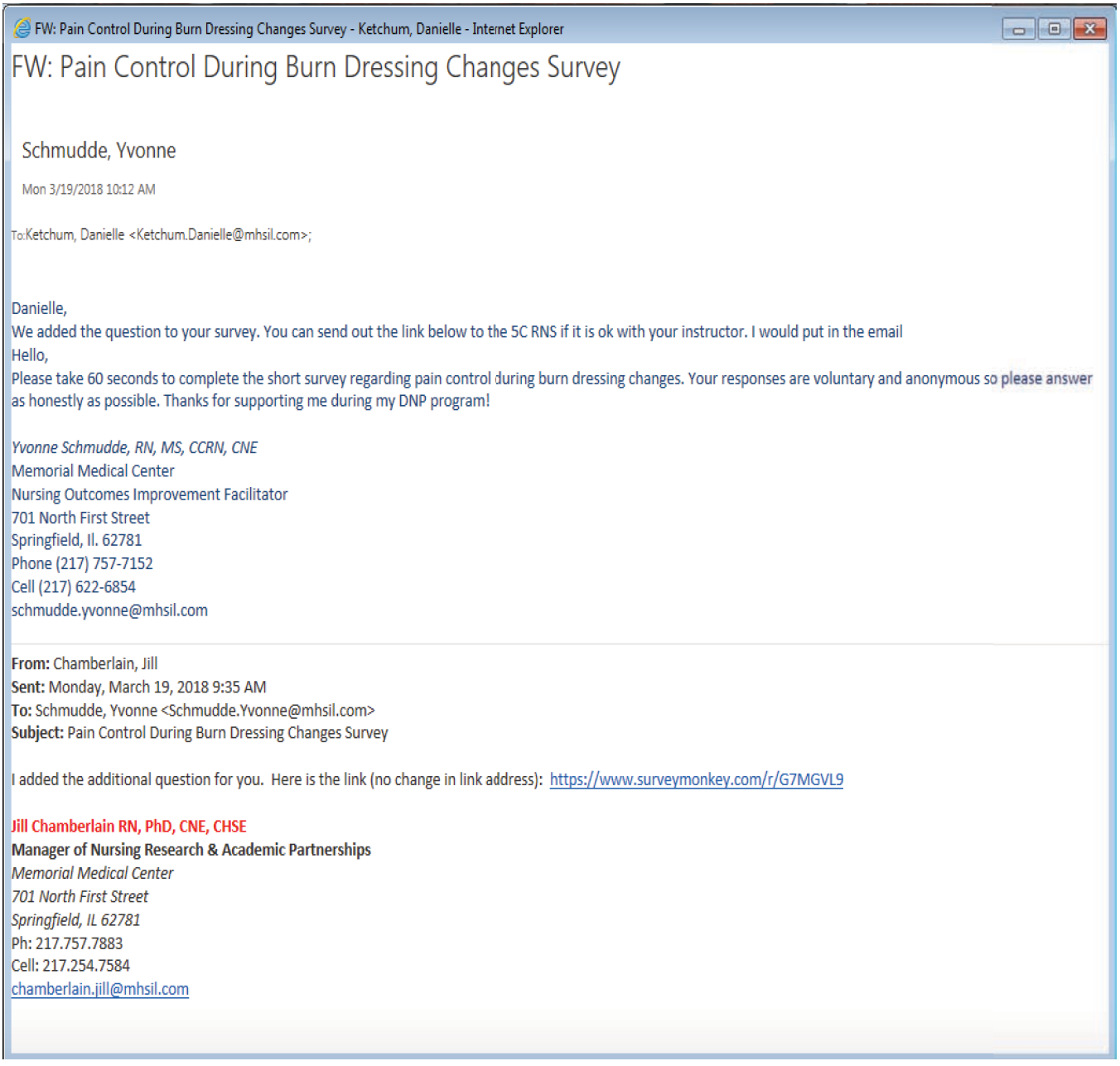
Notify Provider- Notify ordering provider if ketamine ineffective

Medication

Midazolam 1mg IV Push 5MIN prior to dressing change, ONE TIME
Ondansetron 4mg IV Push 30MIN prior to dressing change, ONE TIME
Ketamine 0.3mg/kg IV Push over 5 minutes immediately prior to dressing changes. May repeat in 30MIN x 1 dose. Max dose = 50mg.

Appendix E

Confirmation Email for Pre- and Post-Simulation Survey



FW: Pain Control During Burn Dressing Changes Survey - Ketchum, Danielle - Internet Explorer

FW: Pain Control During Burn Dressing Changes Survey

Schmudde, Yvonne

Mon 3/19/2018 10:12 AM

To:Ketchum, Danielle <Ketchum.Danielle@mhsil.com>;

Danielle,
We added the question to your survey. You can send out the link below to the 5C RNS if it is ok with your instructor. I would put in the email
Hello,
Please take 60 seconds to complete the short survey regarding pain control during burn dressing changes. Your responses are voluntary and anonymous so please answer as honestly as possible. Thanks for supporting me during my DNP program!

Yvonne Schmudde, RN, MS, CCRN, CNE
Memorial Medical Center
Nursing Outcomes Improvement Facilitator
701 North First Street
Springfield, Il. 62781
Phone (217) 757-7152
Cell (217) 622-6854
schmudde.yvonne@mhsil.com

From: Chamberlain, Jill
Sent: Monday, March 19, 2018 9:35 AM
To: Schmudde, Yvonne <Schmudde.Yvonne@mhsil.com>
Subject: Pain Control During Burn Dressing Changes Survey

I added the additional question for you. Here is the link (no change in link address): https://www.surveymonkey.com/r/G7MGVL9

Jill Chamberlain RN, PhD, CNE, CHSE
Manager of Nursing Research & Academic Partnerships
Memorial Medical Center
701 North First Street
Springfield, IL 62781
Ph: 217.757.7883
Cell: 217.254.7584
chamberlain.jill@mhsil.com

Appendix F

Project Timeline

Appendix G

Springfield Committee for Research Involving Human Subjects (SCRIHS)

201 E. Madison Street
P.O. Box 19664
Springfield, IL 62794-9664

Determination of Non-Human Subjects Research Notification

DATE: May 15, 2018

To: Danielle Ketchum, RN, BSN

From: SCRIHS

Study Title: 18-222: *Impact of Burn Dressing Change Protocol* (Burn Dressing Study)

Reference Number: 016070

Submission Type: Submission Correction for Initial Review Submission Packet

Review Type: Process Administratively

Submission Outcome Date: 05/15/2018

Outcome:

Thank you for submitting the above referenced project. It was determined that this project does not fall under the purview of the IRB as research involving human subjects according to 45 CFR 46.101 and 45 CFR 46.102.

SCRIHS approval is not necessary; however, be aware that the principal investigator is not absolved from complying with other institutional, departmental, or hospital policies or procedures.

As submitted, you may proceed with this project without SCRIHS oversight.

Please be aware

- *SIU School of Medicine utilizes iRIS for IRB submission and review. iRIS is a closed system compliant with FDA 21 CFR Part 11 (Electronic Records; Electronic Signatures). The SCRIHS Chair/Designee applies Administrative Sign-off on all submissions. SCRIHS submission outcome letters issued via iRIS are not signed by the SCRIHS Chair/Vice-Chair.*
- *If you need assistance or have questions, please contact the SCRIHS office at 217-545-7602.*
- *Thank you for your cooperation with the Committee's deliberations. It is greatly appreciated.*

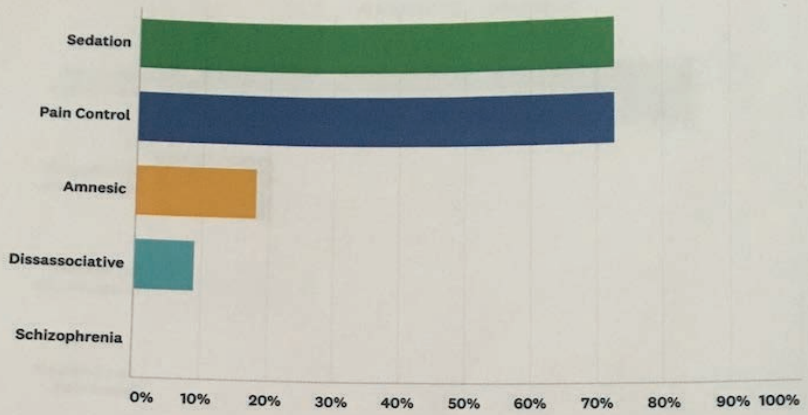
Appendix H - Pre-Simulation Survey Results

SurveyMonkey

Pain Control During Burn Dressing Changes

Q1 What is Ketamine used for? Please select all that apply.

Answered: 11 Skipped: 0



ANSWER CHOICES	RESPONSES		
Sedation	PRE: 72.73%	POST: 40% (2)	8
Pain Control	72.73%	100 (5)	8
Amnesic	18.18%	20 (1)	2
Dissassociative	9.09%	0%	1
Schizophrenia	0.00%	0%	0
Total Respondents: 11			

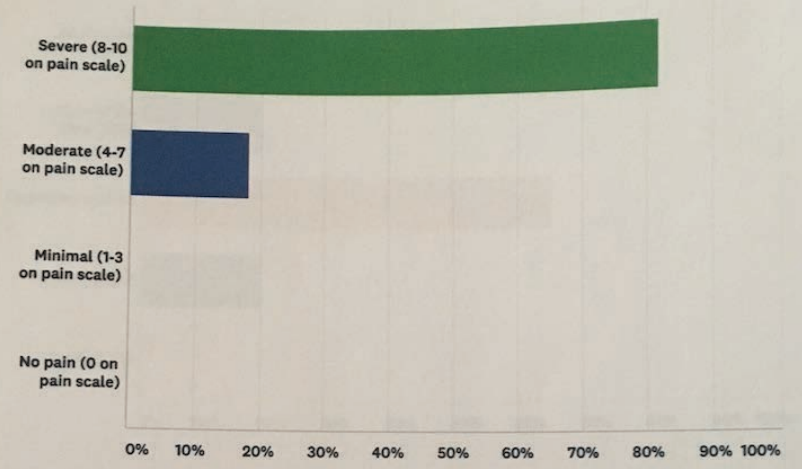
16
23

SurveyMonkey

Pain Control During Burn Dressing Changes

Q2 In your experience, how much pain do patients with burns experience during dressing changes?

Answered: 11 Skipped: 0



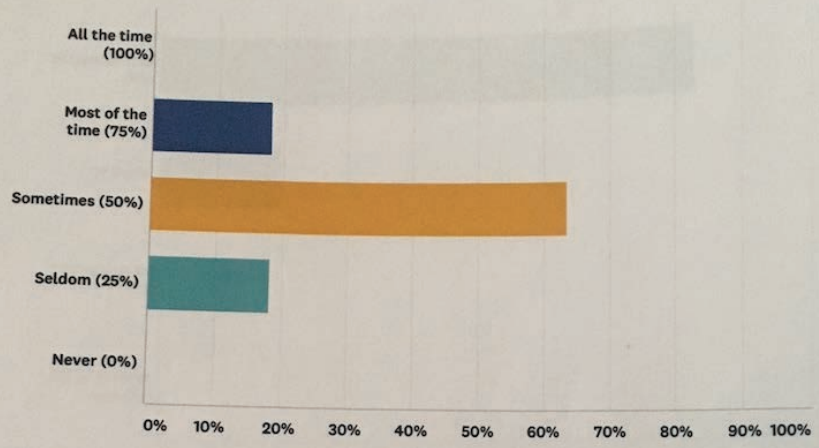
ANSWER CHOICES	RESPONSES		
Severe (8-10 on pain scale)	PRE: 81.82%	POST: 80 (4)	9
Moderate (4-7 on pain scale)	18.18%	20 (1)	2
Minimal (1-3 on pain scale)	0.00%	0	0
No pain (0 on pain scale)	0.00%	0	0
TOTAL			11

SurveyMonkey

Pain Control During Burn Dressing Changes

Q3 When changing burn dressings in intubated patients, how often do you feel the patient has adequate pain control?

Answered: 11 Skipped: 0



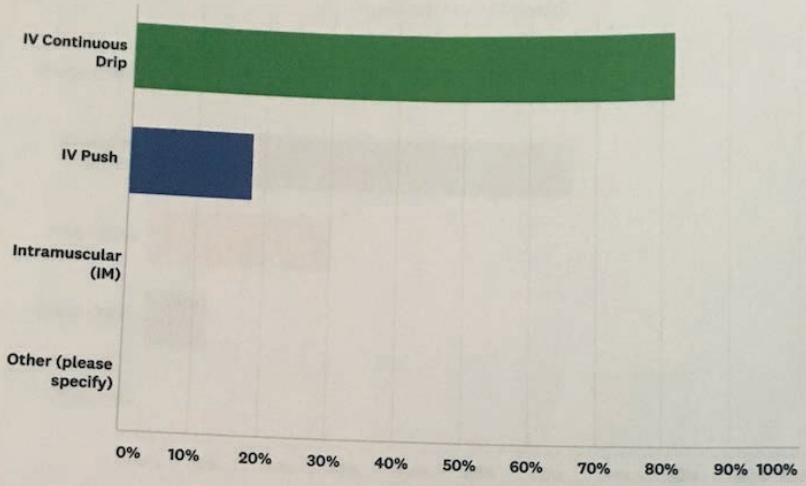
ANSWER CHOICES	RESPONSES		
All the time (100%)	0.00%	PRE: POST: 0 (0)	0
Most of the time (75%)	18.18%	20 (1)	2
Sometimes (50%)	63.64%	60 (3)	7
Seldom (25%)	18.18%	20 (1)	2
Never (0%)	0.00%	0 (0)	0
TOTAL			11

Scale document up

Pain Control During Burn Dressing Changes SurveyMonkey

Q4 In your experience, what route of medication administration controls pain best when changing burn dressings in intubated patients?

Answered: 11 Skipped: 0



ANSWER CHOICES	RESPONSES		
IV Continuous Drip	81.82%	PRE: POST: 60 (3)	9
IV Push	18.18%	40 (2)	2
Intramuscular (IM)	0.00%	0	0
Other (please specify)	0.00%	0	0
TOTAL			11

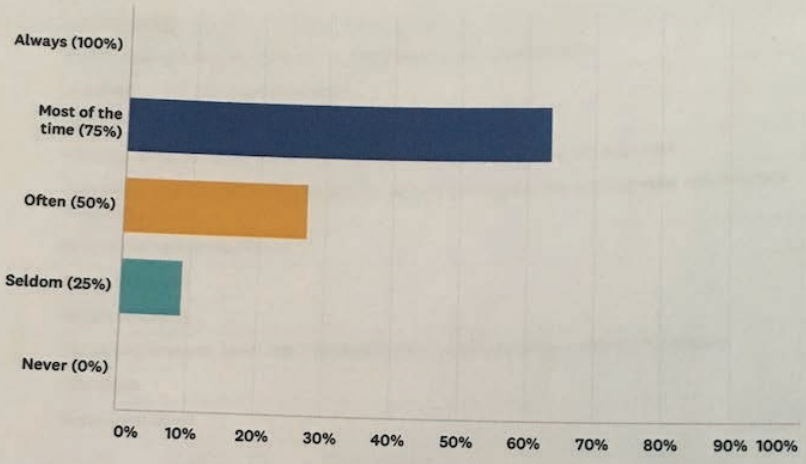
OTHER (PLEASE SPECIFY)	DATE
There are no responses.	

Pain Control During Burn Dressing Changes

SurveyMonkey

Q5 In your experience, how frequent is the need to give additional IV push pain medication to an intubated patient already on a continuous opioid drip, during a burn dressing change?

Answered: 11 Skipped: 0



ANSWER CHOICES	RESPONSES		
Always (100%)	0.00%	PRE: POST: 0 (0)	0
Most of the time (75%)	63.64%	20 (1)	7
Often (50%)	27.27%	60 (3)	3
Seldom (25%)	9.09%	20 (1)	1
Never (0%)	0.00%	0	0
TOTAL			11

Pain Control During Burn Dressing Changes SurveyMonkey

Q6 How do you determine the level of pain in intubated patients with significant burns?

Answered: 11 Skipped: 0

PRE:

#	RESPONSES	DATE
1	RASS, asking if they are able to nod head yes/no, vital sign changes	4/4/2018 12:50 PM
2	pt behavior, VS, nursing judgement	4/2/2018 1:32 AM
3	Agitation and vital signs	3/31/2018 1:39 PM
4	increase in hr, bp, facial expressions, patient movements; increased resp. rate	3/31/2018 7:29 AM
5	Behavioral scale-increased heart rate, increased blood pressure, restlessness, and frequent ventilator alarms.	3/28/2018 3:33 PM
6	Behavioral pain scale, vitals	3/28/2018 2:28 PM
7	behavioral scale	3/27/2018 7:56 PM
8	RASS and BPS	3/27/2018 12:10 PM
9	Facial expressions, heart rate, respiratory rate, blood pressure, extremity movement	3/27/2018 3:30 AM
10	vital signs	3/26/2018 7:37 PM
11	Behavioral Scale	3/26/2018 6:16 PM

VS=9 BPS=5 Agitation/Behavior=5 ~~RASS~~

POST:

1 - Depends on LOC. we can ask... nonverbals... crying, wincing
2 - BPS
3 - ↑HR, RR, + BP; pt. fighting vent; freq. movement of ext.
4 - Vital signs and agitation.
5 - BPS

Pain Control During Burn Dressing Changes SurveyMonkey

Q7 What pain medications do you commonly see given to intubated patients prior to or during burn dressing changes?

Answered: 11 Skipped: 0

PRE:

#	RESPONSES	DATE
1	fentanyl	4/4/2018 12:50 PM
2	fentynal	4/2/2018 1:32 AM
3	fentanyl and/or dilaudid	3/31/2018 1:39 PM
4	fentanyl; morphine	3/31/2018 7:29 AM
5	Fentanyl drip, Midazolam I.V push, propofol drip, Norco tablets.	3/28/2018 3:33 PM
6	Fentanyl	3/28/2018 2:28 PM
7	versed, fentanyl, morphine	3/27/2018 7:56 PM
8	Fentanyl or Morphine	3/27/2018 12:10 PM
9	Fentanyl, Dilaudid, Hycet, Morphine	3/27/2018 3:30 AM
10	fentanyl	3/26/2018 7:37 PM
11	Hycet, Ativan, Dilaudid, fentanyl	3/26/2018 6:16 PM

Morphine=3 NORCO=3 Versed=2

Dilaudid=3 Ativan=1

POST:

1 – We used to give large doses of Morphine IVP frequently throughout drsg. Δ.

2 – Morphine, Norco

3 – Fent, Morphine, Versed, Ativan, Dilaudid, + Norco.

4 – Fent.

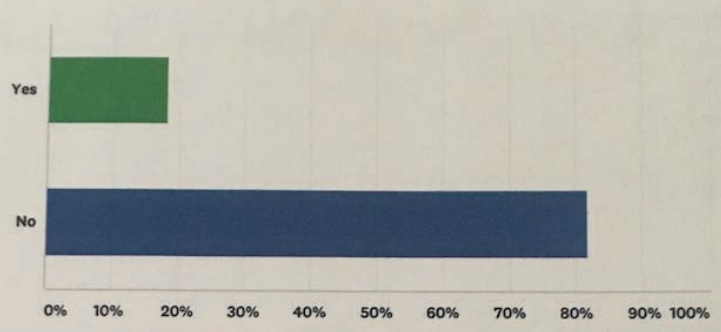
5 – Fent, Morphine

Pain Control During Burn Dressing Changes

SurveyMonkey

Q8 Have you ever cared for a patient who received Ketamine IV for pain control?

Answered: 11 Skipped: 0



ANSWER CHOICES	RESPONSES		
Yes	18.18%	PRE: POST: 20 (1)	2
No	81.82%	80 (4)	9
TOTAL			11

Pain Control During Burn Dressing Changes

SurveyMonkey

Q9 If you responded yes to question 7, did you have any adverse effects and/or events from the Ketamine administration?

Answered: 5 Skipped: 6

#	RESPONSES	DATE
1	n/a	4/4/2018 12:50 PM
2	no	4/2/2018 1:32 AM
3	N/A	3/28/2018 3:33 PM
4	NA	3/27/2018 7:56 PM
5	no.	3/27/2018 12:10 PM

ST:

Q9 - If you answered YES to ?8, did the pt. have adverse effects?

Yes 20% (1)

No 0% (0)

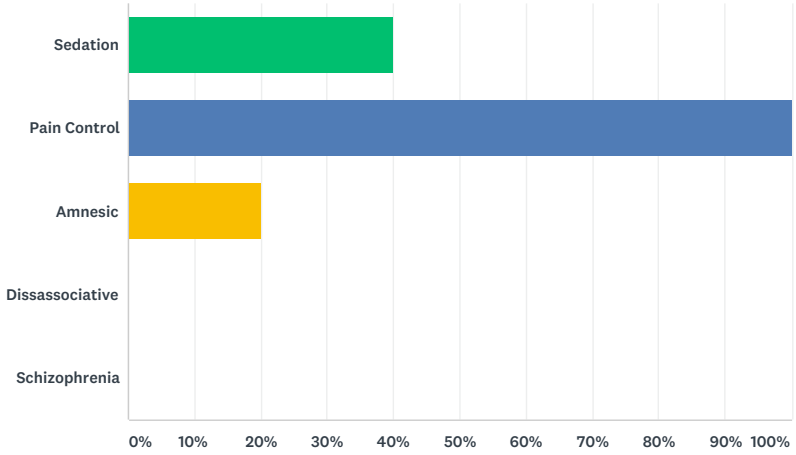
NA 80% (4)

Appendix I - Post-Simulation Survey Results

Pain Control During Burn Dressing Changes SurveyMonkey

Q1 What is Ketamine used for? Please select all that apply.

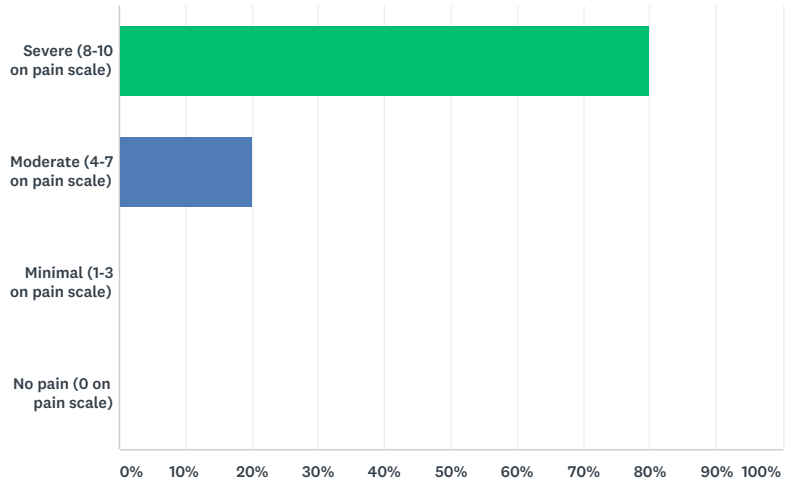
Answered: 5 Skipped: 0



ANSWER CHOICES	RESPONSES	
Sedation	40.00%	2
Pain Control	100.00%	5
Amnesic	20.00%	1
Dissassociative	0.00%	0
Schizophrenia	0.00%	0
Total Respondents: 5		

Q2 In your experience, how much pain do patients with burns experience during dressing changes?

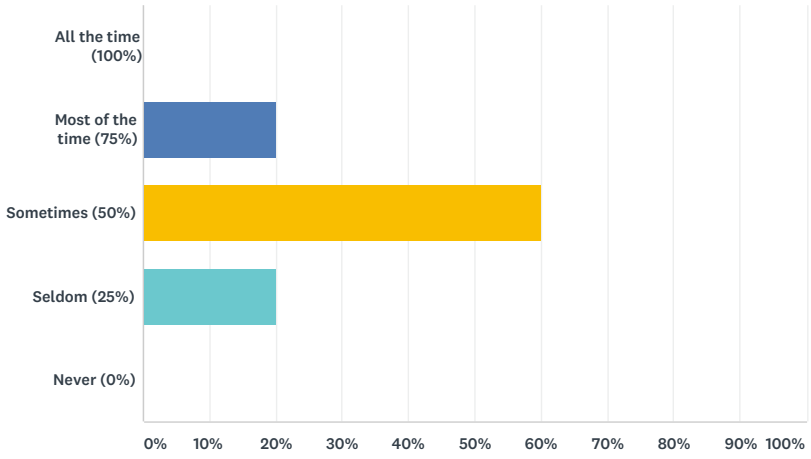
Answered: 5 Skipped: 0



ANSWER CHOICES	RESPONSES	
Severe (8-10 on pain scale)	80.00%	4
Moderate (4-7 on pain scale)	20.00%	1
Minimal (1-3 on pain scale)	0.00%	0
No pain (0 on pain scale)	0.00%	0
TOTAL		5

Q3 When changing burn dressings in intubated patients, how often do you feel the patient has adequate pain control?

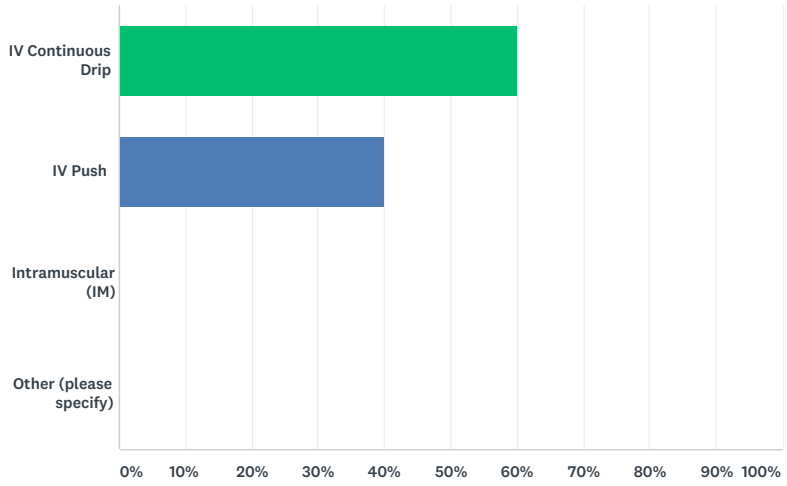
Answered: 5 Skipped: 0



ANSWER CHOICES	RESPONSES	
All the time (100%)	0.00%	0
Most of the time (75%)	20.00%	1
Sometimes (50%)	60.00%	3
Seldom (25%)	20.00%	1
Never (0%)	0.00%	0
TOTAL		5

Q4 In your experience, what route of medication administration controls pain best when changing burn dressings in intubated patients?

Answered: 5 Skipped: 0

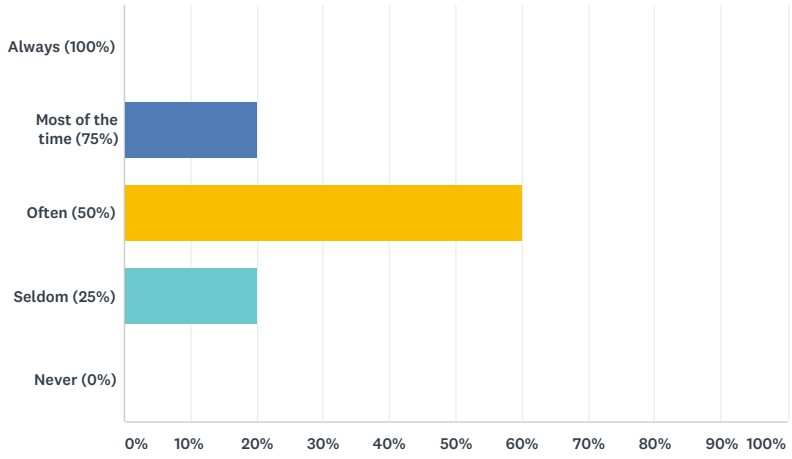


ANSWER CHOICES	RESPONSES	
IV Continuous Drip	60.00%	3
IV Push	40.00%	2
Intramuscular (IM)	0.00%	0
Other (please specify)	0.00%	0
TOTAL		5

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

Q5 In your experience, how frequent is the need to give additional IV push pain medication to an intubated patient already on a continuous opioid drip, during a burn dressing change?

Answered: 5 Skipped: 0



ANSWER CHOICES	RESPONSES	
Always (100%)	0.00%	0
Most of the time (75%)	20.00%	1
Often (50%)	60.00%	3
Seldom (25%)	20.00%	1
Never (0%)	0.00%	0
TOTAL		5

Q6 How do you determine the level of pain in intubated patients with significant burns?

Answered: 5 Skipped: 0

#	RESPONSES	DATE
1	depends on level of responsiveness. we can ask... or look for nonverbals... crying, wincing, ...	1/23/2019 9:50 AM
2	behavior scale	1/14/2019 12:50 AM
3	Increased heart rate, respiratory rate, and blood pressure, patient fighting the ventilator, and frequent movement of extremities.	1/10/2019 2:51 PM
4	Vital signs and agitation	10/17/2018 7:25 AM
5	behavioral scale	10/16/2018 12:20 AM

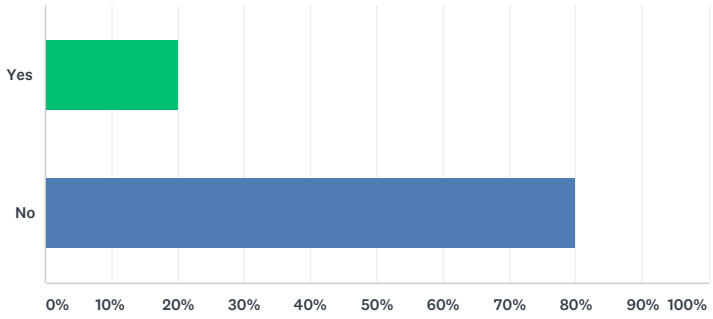
Q7 What pain medications do you commonly see given to intubated patients prior to or during burn dressing changes?

Answered: 5 Skipped: 0

#	RESPONSES	DATE
1	we use to give large doses of morphine IVP frequently through out dressing change.	1/23/2019 9:50 AM
2	morphine, norco	1/14/2019 12:50 AM
3	Fentanyl, Morphine, Versed, Ativan, Dilaudid, and Norco.	1/10/2019 2:51 PM
4	Fentanyl	10/17/2018 7:25 AM
5	fentanyl, morphine	10/16/2018 12:20 AM

Q8 Have you ever cared for a patient who received Ketamine IV for pain control?

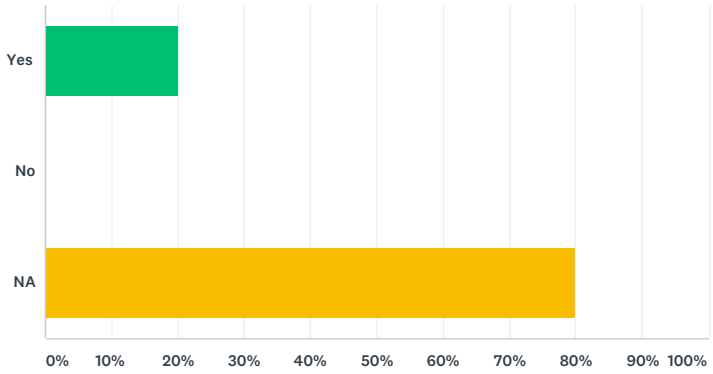
Answered: 5 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	20.00%	1
No	80.00%	4
TOTAL		5

Q9 If you answered yes to question 8, did the patient have adverse effects?

Answered: 5 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	20.00%	1
No	0.00%	0
NA	80.00%	4
TOTAL		5

Q10 If the patient did experience adverse effects from Ketamine, please describe.

Answered: 2 Skipped: 3

#	RESPONSES	DATE
1	N/A	1/10/2019 2:51 PM
2	Na	10/17/2018 7:25 AM