Complementary Therapy for Post-Surgical Patients in the Transitional Care Unit

Mary G. Herhusky Sayler
St. Catherine University

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Complementary Therapy for Post-Surgical Patients in the Transitional Care Unit

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St. Catherine University
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Mary G. Herhusky Sayler

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Dedication

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Abstract

**Purpose:** The cost of pain to society is high, not only in dollars, but in physical and emotional suffering. Undertreated pain in the older population can lead to functional impairments and a diminished quality of life. One of the greatest health care challenges today is meeting the growing and increasingly diverse needs of an aging population. Providing effective pain management to seniors is the right thing to do.

**Problem:** A transitional care unit (TCU) serving post-surgical patients described several problems related to their pain management program. In this facility, pain scores exceed state and national averages and staff believe limited pain management options contribute to these higher rates.

**Approach:** A Clinical Scholar team of university faculty and students, and staff members from the facility developed a quality improvement project to examine the feasibility of integrating complementary therapies into clinical practice. The interprofessional team made incremental changes throughout the implementation phase of the project through a rapid cycle change process.

**Results:** The team integrated three relevant, evidence-based complementary therapies consisting of guided imagery, music, and progressive muscle relaxation into staff workflow with minimal interruption. Staff expressed satisfaction with an expanded menu of pain management options and reported several benefits, including increased time spent with patients and the provision of enhanced care. Patients reported benefits beyond pain relief, including relaxation, stress reduction, and improved sleep.

**Conclusion:** Patients and staff accept the complementary therapies as meaningful ways to facilitate pain control.
Complementary Therapy for Post-Surgical Patients in the Transitional Care Unit

Effective pain management is a widespread problem in health care. Pain management in the senior population is complicated for many reasons. Pain is often under-recognized and under-treated in this group, exacerbating cognition problems and leading to impaired physical function (Herman, Johnson, Ritchie, & Parmelee, 2009). In response to this issue, an Interprofessional Evidence-Based Practice Clinical Scholar (IEBP CS) team engaged in a quality improvement project to address pain management in a transitional care unit (TCU), serving post-surgical patients with an average age of 70 years. The team successfully integrated complementary therapy into the facility’s current pain management program. The purpose of this article is to describe the project and outcomes that led to improved management of pain.

Background

One of the greatest challenges facing America today is providing health care to a growing and increasingly diverse aging population. The segment of the U. S. population aged 65 and over is expected to double by 2030 and will make up nearly 20% of the population (Dilworth-Anderson, 2012). Gaskin and Richard (2012) estimate that the societal cost of pain is approximately $560-635 billion annually. The cost of pain to society is high, not only in dollars but in individual suffering and poor quality of life.

Another challenge is that pain assessment and treatment in older adults is complex related to factors such as physiological changes, cognitive impairment, and co-morbidities. There are changes in the nerve endings sensitive to pain as well as changes in cognition in the older adult, confounding pain management (Varrassi, Fusco, Coaccioli, & Paladini, 2014). In addition, many geriatric patients do not use the term ‘pain’, but instead describe this sensation as ‘discomfort’ or ‘ache’ that complicates the assessment process (Klassen, Liu, & Warren, 2009). Failure to
manage pain adequately in the older adult can lead to functional impairments, delirium, depression, decreased mobility, and a decline in health (Chodash et al., 2014; Herr, 2010; Malcolm, 2015; Takai, Yamamoto-Mitani, Abe, & Suzuki, 2014). Promoting health in the aging population is essential, so older individuals can continue to be contributing members of society; the alternative is that debilitating illness will create costs that as a society we will bear (Estes & Wallace, 2013).

Faculty from a private Midwestern university formed a partnership with a senior residence system to examine high levels of self-reported pain at one of their TCU facilities. The Centers for Medicare and Medicaid (CMS) collects data on quality indicators in residence facilities to inform the public and providers regarding the quality of care given to patients. One of the measures is the Minimum Data Set (MDS) score for self-reported moderate to severe pain in TCU patients. The community partner reported higher MDS pain levels (26.6%) compared to like facilities in the state of Minnesota (22.7%) and nationally (16.9) (CMS, 2016). This finding inspired the organization to address their pain management approach and devise a possible solution.

The IEBP CS team, comprised of university faculty and students from nursing, occupational therapy, exercise science, and interprofessional education, as well as staff members, organized at the site to develop an evidence-based approach focused on improving pain management within the organization. The purpose of an IEBP CS team is to address pertinent health care issues using interprofessional perspective and knowledge to develop a change in clinical practice. The IEBP CS team met regularly for a year to explore a broad range of aspects affecting pain management, investigate options, and plan the quality improvement (QI) project. The members from the facility described that despite using available options for pain
management (pain medications, repositioning, and application of warm or cold packs), their patients were still experiencing pain (personal communication S. Carder and E. Steiner, October 21, 2016). The staff related that they did not have adequate options for managing pain, especially with post-surgical patients.

**Purpose Statement**

The purpose of this project was to examine the existing pain management program and build on existing strategies by recommending additional evidence-based complementary pain options. The clinical question or PICO (Population, Intervention, Comparison, Outcome) developed for the problem of pain management at the facility is:

For post-surgical transitional care unit residents, what is the effect of complementary pain management strategies as an adjunct to pharmacologic pain interventions on the residents’ self-report of pain compared to usual care (pain medications, repositioning, and application of heat or cold)?

As the PICO question states, patients participating in this QI project continued to receive pain medications per standard of care and when desired, additional complementary strategies were supplementary. An expected outcome was to expand the menu of pain control options to facilitate individual patient choice and offer staff access to strategies beyond existing options. A second outcome of the project was to determine how to integrate the additional means for pain management into the workflow of the staff. The project addressed both the pain management and workflow integration aspects.

**Theoretical Framework**

Theories provide a framework to understand complex phenomenon, focus on various aspects of the findings, and provide a structure to analyze and evaluate outcomes (Reeves,
Albert, Kuper, & Hodges, 2008). Barbara Dossey’s (2008) Theory of Integral Nursing is a grand nursing theory that blends both the science and art of nursing. Many nursing theories inform this theory and include the work of Florence Nightingale, Jean Watson, Margaret Newman, as well as philosophies from the social sciences (Dossey, 2008). This theory encompasses a holistic approach to nursing practice where the client is at the center of the relationship to promote healing (see Appendix A).

The purpose of the theory is to empower nurses to participate in integrative practices while caring for patients. These practices help caregivers reach clients on a deeper level as well as raise the nurses’ ability to provide self-care, leading to improved health, modeling of health, and developing a better understanding of the healing process (Dossey, 2008). The core concept of the theory is healing, which Dossey defines as “the innate natural phenomenon that comes from within a person and describes the indivisible wholeness, the interconnectedness of all people, all things” (p. E53). Dossey relates this definition to Florence Nightingale, whose worldview consisted of basic human needs in relation to the environment.

The theory maintains that the care of the client needs to be interprofessional (Dossey, 2008). Viewing the health care problem through an interprofessional team approach helps members see the issue through the unique lens of another discipline and identify not only differences but similarities as well (Dossey, 2008).

The Theory of Integral Nursing frames the project by viewing patients holistically and centering the relationship on the healing of their pain through the addition of complementary therapies. The theory also speaks to the relationship of the interprofessional team concept as a valued model of caregiving (Dossey, 2008). The IEBP CS team approach to interprofessional evidence-based practice provides meaningful collaboration and is beneficial by tapping into
multiple perspectives, expertise, and skills to examine the problem of high prevalence of pain at the facility.

**Literature Review**

The IEBP CS team conducted a literature review using CINAHL, MEDLINE/PubMed, Pedro, National Guideline Clearinghouse, and Cochrane databases. The team conducted the search in three phases. The first search consisted of using broad terms from the PICO question using a combination of general terms: pain, pain management, elderly/aged, complementary therapy, integrative therapy, nonpharmacological therapy, nursing home patients, and/or transitional care patients. Following Phase 1, content was organized into predominant themes including massage, meditation/mindfulness, movement, music, and relaxation techniques. The team conducted a second search using the themes in conjunction with pain, pain management, elderly/aged, nursing home patients, and transitional care patients. The IEBP CS team identified multiple evidence-based complementary therapy techniques relevant to pain management for the post-surgical older adult. The team presented the complementary therapy strategies to TCU staff and administration and it was determined that the options of guided imagery, music, and progressive muscle relaxation were most feasible in terms of cost, staff involvement, alignment with the organization’s vision, and project scope. Once the IEBP CS team had agreement from the organization, we conducted a more in-depth literature search on the three complementary therapies.

**Literature Appraisal**

The IEBP CS team used the Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) rating scale (see Appendix B) to rate the evidence (Johns Hopkins Medicine, n. d.). The
JHNEBP appraisal tools for research and non-research articles assisted the IEBP CS team in the appraisal process (Johns Hopkins Medicine, n. d.).

The team appraised 51 articles on the three complementary therapies, of which we chose 15 for this paper for their relevance to the PICO question and findings for decreasing pain in the postsurgical older adult. There are five in each of the categories of guided imagery, music, and progressive muscle relaxation (see Appendix C).

**Guided Imagery**

Mindfulness activities are useful in decreasing pain in the older population (Field, 2010; Morone, Greco, & Weiner, 2007; Nahin, Boineau, Khalsa, Stussman, & Weber, 2016; Reiner, Tibi, & Lipsitz, 2013). Mindfulness is the practice of being present while attending to maintaining attention on a single focus, such as breathing or being open to feelings without judgment or elaboration (Reiner, Tibi, & Lipsitz, 2013). Guided imagery is one form of mindfulness and has shown positive outcomes for decreasing pain in the older population (Forward, Greuter, Crisall, & Lester, 2015; Lim, Yogas, & Chen, 2014; Antall & Kresevic, 2004). Guided imagery consists of focused visualization of images through the senses (sight and sound) to create a relaxed state. The participant listens to music and voice to guide feelings of empowerment to rise above the pain and feel comfortable (Antall & Kresevic, 2004).

Three randomized control trials (RCTs) and two quasi-experimental studies demonstrate the effectiveness of guided imagery in relieving pain in the postsurgical population (see Appendix C). Antall and Kresevic (2004) and Tracy (2010) conducted guided imagery research with older individuals based on the work of Naperstek, “an internationally recognized expert on guided imagery” (Antall & Kresevic, 2004, p. 337). Although guided imagery varied depending on the amount of time and number of sessions in each study, research suggests this intervention...
is effective in reducing pain in this population (see Appendix C). For example, Lin (2011) achieved statistically significant results using the minimum number of time (20 minutes) and sessions (once daily). Limitations with research on guided imagery include small sample size, and direct involvement of the investigator in the patients’ self-report of pain before and after the intervention, which could lead to bias as the patient may want to please the researcher (Antall & Kresevic, 2004; Forward et al., 2015).

**Music**

Music is another complementary strategy shown to be effective in reducing pain in post-surgical patients (Allred, Byers, & Sole, 2010; Lin, Lin, Huang, & Lin, 2010; McCaffrey & Locsin, 2006). Music therapy is designed to consider an individual’s preferences and the therapist tailors the session considering the beat, rhythm, timbre, instruments, and melody for a carefully planned music experience that benefits the patient (Lee, 2016; Musceri, 2016). In consultation with a music therapist we learned that providing music to our patient population was not music therapy, as this is only accomplished by a certified music therapist. Music medicine, on the other hand is when patients listen to pre-recorded music provided by health care staff (Lee, 2016; Musceri, 2016). According a meta-analysis by Bradt, Dileo, Magill, & Tiege (2016) both music therapy and music medicine demonstrate reduction in pain. For the purposes of our project, we used the term ‘music’ to describe this portion of the intervention.

McCaffrey (2008) studied the effects of music in creating a healing environment and states that a person’s response to music affects both the body and the mind. The physiological changes of decreased blood pressure, heart rate, and cortisol levels and psychological responses of reduced anxiety and stress are some of the other positive effects of music (Lee, 2016; McCaffrey, 2008). Three RCTs, two quasi-experimental studies, and one meta-analysis illustrate
the effectiveness of music on pain relief (see Appendix C). Tracy (2010) used both guided imagery and music in her study, both of which improved pain levels of the geriatric post-joint surgery patients. Lee (2016) completed a meta-analysis on RCTs using both music therapy (10) and music medicine (84) between 1995 and 2014, demonstrating that music significantly reduced pain, opioid and non-opioid use, and emotional distress, along with improved vital signs such as heart rate, blood pressure, and respirations. Several studies recommended music between 60-80 beats per minute as well as using music of participant’s choice as being most effective (Lee, 2016). The dosage varied among the studies (see Appendix C). Limitations include small sample size and high percentage of female patients (Lin, Lin, Huang, Hsu, & Lin, 2010; Hook et al., 2008). While it was comprehensive, Lee’s meta-analysis was limited to databases in English and Korean and due to time constraints, the practice of double-extraction was not carried out, leaving the data subject to potential bias.

**Progressive Muscle Relaxation**

Progressive muscle relaxation (PMR) is a technique that coordinates breathing with systematically tensing and relaxing muscle groups (Kwekkeboom & Gretarsdottir, 2006). Researchers believe this technique stimulates the release of endorphins in the brain, the effects of which can last up to an hour (Büyükylimaz & Turkinaz, 2013). PMR significantly decreases post-operative pain (Buyukylimaz & Turkinaz, 2013; Kwekkeboom & Gretarsdottir, 2006; Roykulcharoan & Good, 2004; Seers, Crichton, Tutton, Smith, & Saunders, 2008).

The four RCTs and one cross-sectional crossover study included in this paper demonstrate that PMR significantly decreases pain in postsurgical patients (see Appendix C). Roykulcharoan and Good (2004) compared PMR to usual care as a recovery method after activity in the postsurgical patient, with participants reporting significant reduction in pain and
increased sense of control. A systematic review by Kwekkeboom and Gretarsdottir (2004) found that relaxation techniques decreased pain in postsurgical patients; however, this review is limited by methodological weaknesses in the included studies. The dosage varied among the studies; the control groups rested quietly for the same amount of time as the intervention group practiced the exercises in two of them (Roykulcharoen & Good, 2006; Seers et al., 2008). Limitations of the studies included a homogeneous sample with primarily women (Roykulcharoen & Good, 2006) and difficulty in recruiting participants so the study was underpowered (Seers et al., 2008).

Topku and Findik (2012) taught the exercises once at two hours postoperative with no follow-up to ensure the participants were doing them correctly during the four days postoperative.

**Synthesis**

The IEBP CS team completed a synthesis of the relevant articles for each therapy. The synthesis and recommendations tool came from the JHNEBP toolkit (Johns Hopkins Medicine, n. d.). Appendix D outlines the numbers and strength of evidence, synthesis of the findings, and recommendations for guided imagery, music, and progressive muscle relaxation. Given the results of the synthesis and strength of evidence, cost for equipment and supplies, staff involvement required, and alignment with the organization’s vision, the three therapies noted above were recommended for this project.

**Project Implementation**

The IEBP CS team members delivered staff education in live presentations to therapy and nursing staff to prepare them for their role in the project and included two different sessions to encourage staff attendance. The majority of therapy staff attended ($17 = 94\%$), however only four nurses attended ($20\%$). In an attempt to deliver content to staff members unable to attend in person, the team created a read and sign version of the presentation.
The framework guiding the project’s implementation was a rapid cycle change process, called Plan, Do, Study, Act (PDSA) (Institute for Healthcare Improvement [IHI], 2018). The PDSA method allows for continuous improvement when executing a strategy, permitting incremental changes throughout implementation while testing the change in clinical practice (IHI, 2018).

Two nurses on the unit recruited patients into this QI project according to pre-determined inclusion criteria (e.g., post-surgical status, cognitively intact) and based on their professional judgment. Acute pain is common in post-surgical patients, and it made sense to target this population, mainly because MDS scores target moderate to severe pain. In addition, several aspects of the project required intact cognition (e.g., informed consent, pain log completion, equipment use). The IEBP CS team wanted patients to be independent using the complementary therapies, lessening the burden on the staff; therefore, during enrollment nurses taught the patients to use the CD player, headphones, and CDs. In addition, the team wanted patients to have access to therapies at any time and not have to wait for equipment. Each patient enrolled in the project received a basket that contained a CD player, headphones, the three CDs, a pain log, and a pen to keep in their room.

The team carried out three PDSA cycles. The overall goal for the cycles was to help determine if these complementary therapies were feasible to add to the pain management program at the facility. Patients enrolled in the project for a week, listened to the therapies and recorded their pre and post-pain scores as well as which therapy they used. After that week, staff collected pain logs, but equipment remained with patients to allow continuation of use as desired until discharge. The IEBP CS team met in between each cycle to analyze the feedback and institute changes for the next cycle.
Cycle 1

The first cycle examined the usability of the equipment (CD player, CDs, headphones) and pain log, as well as acceptability of complementary therapies to senior patients. The IEBP CS team wanted to determine whether patients could operate the CD player and if they were receptive to using the three therapies offered. Open-ended questions were asked, such as “Describe any issues you had with the CD player, headphones, or CDs, or filling out the pain logs and how did you resolve the issues?” This cycle’s intent was to identify barriers, such as the acceptability of complementary therapies and accessibility of equipment.

Cycle 2

The second cycle explored the possibility of incorporating complementary therapies into the existing pain management program from the staff perspective. Questions queried staff about the practicality of this pain management approach and the amount of disruption it would cause to their workflow. “How much time are you spending with the patients helping them with the therapies? How does this affect your workflow? Are you noticing any issues with patients and their ability to complete therapies, such as rehabilitation therapy schedules or interruptions while they are doing them?” We also wanted their perspective on the therapies and input into the use of them. “What are benefits and challenges of this project? What feedback or any adjustments do you think should be made regarding the activities?” Since staff are the ones who would be introducing and offering the therapies to the patients, it was crucial to obtain their feedback.

Cycle 3

The third cycle posed several questions to staff and patients about adding complementary pain strategies to the existing process, including satisfaction. We asked patients “How satisfied
are you with using the complementary therapies to manage your pain? Would you recommend these therapies to others to help manage their pain? Why or why not?” We wanted to determine if the senior population accepted the use of these therapies as a means to manage pain.

The IEBP CS team was interested in understanding differences between pre and post-pain scores and asked patients to record this information on a provided pain log. We also wanted to determine preference for selected therapies and patterns of use. If patients did not select one approach (e.g., progressive muscle relaxation) as an option, it would not make sense to recommend offering this therapy going forward. The team wanted the patients’ insight into the use of the therapies, so we asked them “What recommendations do you have about the complementary therapies and how do you think they affected your pain experience?”

The IEBP CS team asked questions of staff and management about their experience in participating in the project, as well as their perspective of integrating the therapies into their pain management program. “From your perspective, based on resource utilization (cost, staff), is the integration of complementary therapies feasible for this organization? What challenges do you envision if this project includes all TCU patients as a component of their pain management program? What resources are necessary if full-scale implementation is to occur?”

Ethical Considerations

The TCU patients are a vulnerable population because of their age and residence in an institutional setting. To protect human subjects from potential harm, we received approval for implementation of the project from the University’s Institutional Review Board (IRB). Both patients and staff signed written informed consent before implementation of the project and collection of data.
Discussion

Eleven patients enrolled in the cycles. Two patients chose not to participate and a third listened to podcasts on her own, so eight patients in total participated in all three cycles. As mentioned earlier, patients continued to receive usual care along with the complementary therapies.

Cycle 1: Usability of Equipment

One problem identified during Cycle 1 was a lack of communication between staff and the IEBP CS team about which patients were participating in the project. We intended to have the therapies self-managed by the patients and not place a burden on staff time. However, feedback from staff indicated they wanted to be more involved, know which patients enrolled, and assist patients with project activities. To facilitate increased staff involvement, the nurses shared names of enrolled patients at shift huddles, change of shift, and on assignment sheets.

Feedback from patients indicated they could use the equipment with some help from staff. Staff reported that patients used the therapies more than documented because they found the logs too involved and difficult to complete. The IEBP CS team made changes to simplify the log for the next cycle. One new patient enrolled to try the new pain log prior to the start of Cycle 2 and continued in the project as a participant in the second cycle.

Cycle 2: Impact on Staff Workflow

In Cycle 2, we found that patients were more agreeable about log completion and described it as easy to use. The staff engaged with the patients while completing therapies and feedback from staff surveys revealed that there was minimal disruption to their workflow with the addition of the complementary therapies. We learned the importance of using this
intervention as a teaching opportunity about managing pain between staff and patients. The team made no changes for Cycle 3.

**Cycle 3: Outcomes Analysis for Feasibility**

In Cycle 3, the IEBP CS team kept the study open an extra five weeks in an attempt to enroll more patients. This extended enrollment period did not result in additional participants due to other confounding variables, such as low census and few post-surgical patients on the unit. Patients completed surveys on their satisfaction and willingness to recommend the therapies for pain management. Nursing and therapy managers answered questions on the feasibility and sustainability of the use of the complementary therapies in the facility. Qualitative and quantitative findings from the surveys and the cycles are discussed in the next section.

**Analysis Methods**

The IEBP CS team examined quantitative data related to the pre/post-pain scores, and analyzed each therapy based on frequency of use. A paired t-test compared the mean pre-pain and mean post-pain scores for the patients participating in the study. Since there were no extreme outliers in the data, the t-test was suitable to compare the patients’ pain scores.

Members of the team completed qualitative data analysis by examining the comments and feedback from patients, staff, and management. We wanted to gain insight into their experience while using the complementary therapies. Feedback from patients came from the comment section on their log, interview questions after the first week’s use of the therapy, and a survey of the participants in the third cycle. The team combined staff and management feedback; going forward, staff is the term that will signify these findings. Feedback from staff came from comment boxes in the nursing and therapy departments and interview questions asked
after each cycle. The following section discusses the themes that emerged through analysis of the data.

**Quantitative Results**

The project did not intend to determine the effectiveness of complementary therapies in reducing pain - research has already shown this to be true. However, when analyzing the data for the pre and post-pain scores, we found that there was a difference between the scores. The IEBP CS team performed a paired sample t-test to compare the mean pre-pain scores and post-pain scores. There was a statistically significant difference in the pre-pain (M = 3.85, SD = 2.32) and post-pain (M = 2.79, SD = 2.18); t(7) = 4.97, p = 0.002. The results suggest that pain levels decreased following the use of the therapies, which is consistent with the literature.

The frequency of selection of each complementary therapy was nearly the same, supporting the individuality of comfort and importance of choice. Statistical analysis demonstrated that guided imagery and progressive muscle relaxation represented 30.5% of use and the rate of music was a bit higher at 39%. The qualitative data indicated that the therapy chosen related to individual patient preference.

**Qualitative Results**

**Analysis of patient feedback.** Patients shared twenty comments, fifteen of which were positive and five of which referred to challenges in the use of the therapies. Four themes emerged from patient feedback: 1) benefit received beyond pain relief; 2) patient choice of adjuvant therapy; 3) patient preference of complementary therapy; 4) challenges surrounding use of the therapies.

**Benefit received beyond pain relief.** When using the complementary therapies, patients reported feeling less stress, improved sleep, and relaxation beyond the relief of pain with the use
of complementary therapies. While our focus for the project was reduction of pain, these additional findings show the correlation between pain and other variables which contribute to pain on some level. One patient stated, “It certainly helped my pain and makes my muscles relax” (a note by the nurse indicated this patient struggled with muscle spasms). Another patient remarked feeling “quite satisfied because it put me to sleep.” According to Starkweather (2017), the response to pain involves multiple physiological and psychological facets and from a holistic perspective, helps explain the interrelatedness between pain and other variables.

**Patient choice of adjuvant therapy.** The complementary therapies in this QI project represent additional pain options with the intent of supplementing previous approaches, such as the use of pharmaceuticals. Patients reported using complementary therapies along with other methods to promote pain relief. One patient stated that the use of music with “ice on shoulders as well” was effective. Another noted that guided imagery along with “prayer” reduced their pain. A third patient remarked, “It worked well with the pain meds.” These findings are consistent with the literature that using a variety of methods to achieve pain control is effective (Malcolm, 2015).

**Patient preference of complementary therapy.** The therapy chosen by patients was individual preference. Most patients tried all three therapies, and some found one therapy more helpful than the other two therapies. One patient stated “Music not as effective as guided imagery. Will continue with guided imagery.” While another remarked about progressive muscle relaxation “I liked it better than the music.” A third patient preferred using the music option stating, “Pretty much diminished my pain.” The feedback indicates that having a variety of options for patients in their pain management regimen is beneficial.
**Challenges surrounding use of the therapies.** Several challenges related to the use of the therapies included difficulty hearing, boredom with music, too painful for PMR after surgery, and one patient indicated it did not change their pain. While one patient found the music boring, it is important to note that the person continued to use both GI and PMR with reported decrease in pain. The person who found progressive muscle relaxation too difficult after a painful surgery continued with using guided imagery and music with reported decreased pain scores. The patient who indicated it did not change their pain stated the “therapy did relax me.”

**Analysis of staff feedback.** Staff provided 52 comments for analysis, 49 of which were positive and three described challenges to using the therapies. There were seven themes that surfaced from analysis of the staff comments: 1) Overall pain management; 2) Benefits received beyond pain relief; 3) Benefits/expanded care options; 4) Benefits for other patient population; 5) Staff education; 6) Challenge related to using the therapies; 7) Staff support of widespread implementation.

**Overall pain management.** The staff gave feedback about overall pain management with the use of the therapies. The benefits of helping relieve their patients’ pain included the ability to reduce the use of pain medications, which can have adverse side effects. The nurses stated, “Some patients want to use as little pain medication as they can so it is ideal if we can treat them with other complementary therapies if we have the time and resources to do it” and “I have noticed a decrease in the amount of pain meds used.” The staff recognize the importance of relieving pain in this population and know their role in doing so is vital as indicated by the comments “being proactive about managing pain is important” and “improving pain management is always a positive thing as is increasing awareness in different tools that can be used.”
Benefits received beyond pain relief. Recognition of benefits beyond pain relief by staff echoed that of the patients. The nurses and therapists described seeing decreased anxiety, improved sleep, and overall relaxation in the patients using the complementary therapies. Another important finding relates to the comment about the benefit of the therapies: “To get to know residents more, communicate any issues.” This comment indicates the staff viewed the therapies as an opportunity to engage in therapeutic communication with a patient and allow for meaningful conversation about issues the patient may be experiencing. Improved job satisfaction may be an outcome from use of the therapies.

Benefits/expanded care options. The staff described the complementary therapies as a means to expand the pain management options for them to offer patients. One staff member stated the complementary therapy “Gives patients a more of a variety of alternative therapies to pick from to help decrease pain.” The staff want to be able to help control the patients’ pain and see these therapies as a means to do so. One nurse engaged in thinking of long-term outcomes as indicated by the comment: “I think that when pain is well controlled it can lead to better outcomes, a sooner discharge, and less complications. For example a patient that is in a lot of pain is unable to participate fully in therapy and their discharge date might get pushed back.” Staff members recognize that when pain is better controlled, the patient outcomes are more likely to be positive.

Benefits for other patient population. During Cycle 2, on their own, the nursing staff used the therapy on four additional post-surgical patients with confusion or dementia. We could not include these patients in the study, but we did receive IRB approval to incorporate this data in our findings. The nurses continued to use usual care along with the complementary therapies and noted diminished agitation, better cooperation with cares, and improved ability to sleep. A
nurse told the story of using music with one confused patient. “Patient admitted after fall with hip fx [fracture]. Has hx [history] of dementia with noted behaviors including yelling out, screaming, and arguing with staff. Using the music therapy to calm patient instead of narcotic, which can increase confusion in this patient. The therapy would often put the patient to sleep and staff noted decreased agitation after listening to the music. Patient was often thankful to staff for giving her music to listen to. It is hard to say if this therapy decreased pain, but it calmed the patient and offered calm distraction.” This account is a powerful testimony of how having various options available can empower the nurse to help a difficult situation and benefit a patient.

**Staff education.** Feedback from staff about the education regarding the complementary therapies and preparation for their role in the implementation phase of the project was overall positive. Besides the education provided through face-to-face educational sessions and the Read and Sign process, flyers, as well as a Frequently Asked Questions form, prepared staff for their role in the project.

**Challenges related to using the therapies.** Staff identified challenges related to the therapies through three comments. Two of the statements reported patients not remembering to use the therapies or fill out the pain log. This issue was remedied through modification of the log. The third statement described the perception of time involved in giving a pain medication as compared to setting up the patient with complementary therapy. The nurse remarked, “One challenge to the implementation of the therapy is time. Sometimes I think it is easier to just give a pain medication.” Effective management of pain is not a matter of either/or, but rather how one intervention can help augment the other’s pain relief effectiveness.

**Staff support of widespread implementation.** Overall staff feedback indicated there were no issues with the equipment and patients could use them without interruption. The time spent
helping patients with the therapies was 5-15 minutes daily, which the staff perceived as being minimal to no interruption to their workflow. One staff member stated the therapies were “Very feasible for this organization to utilize the complementary therapies. The cost was very low and the CD players and CDs can be used over and over after being cleaned. They are easy for the staff to use and we found them to be very effective with the patients.” The staff gave input as to what is needed in order to fully implement the therapies, which included adding more equipment and CDs as well as education about pain to help with better understanding about the need to help manage pain. Insight from one staff member included, “There needs to be more staff education on pain in general. I think that if the aides were educated on our pain scores, they would realize that we need to do more for our patients and we would have more buy in from them to use the therapy.”

Limitations

Limitations include the small sample size and narrow demographic as well as limiting inclusion criteria to cognitively intact patients. The statistical significance of the pre- and post-pain mean scores should be interpreted with caution due to the small sample size. Future research could explore the relationship between complementary therapy and pain.

The additional time in Cycle 3 did not increase the number of patients in the study but helped ensure we were making every effort to obtain sufficient data for the project. The nurses on the unit helped to show that the use of the therapies for patients who are cognitively impaired was effective.

The IEBP CS team provided instrumental piano music, and while there were three music options to which to listen, all were the same instrument. Patients could provide their own music to listen to but offering them a variety from the start may have been helpful.
Live education of the staff before implementation occurred with most of the therapy staff attending the presentation, but only four nurses attending. All nursing staff completed a read and sign education method, though it is difficult to know how well the nurses understood this version. With this said, feedback from staff showed that they felt well prepared for their role in the project implementation from the education provided.

Staff turnover was another limitation. The facility’s nurse on our team took on a different role in the organization, making it difficult for her to be fully involved in the implementation, so another nurse joined the team at that phase. The nurse required extra education and training to participate with enrolling patients and monitoring the implementation process. Close communication with both nurses occurred throughout implementation to address any issues.

**Recommendations**

This final discussion focuses on recommendations for continuing the project going forward, with special emphasis on financial support, expansion of education offerings, use of the electronic health record as a means to insert practices into daily workflow processes, and identification of unit champions for continuation of the pain management program. Each of these tactics will support the sustainability of the project and facilitate embedding the complementary therapies into the culture of the facility’s pain management program.

Administrative support in securing financial commitment for the necessary equipment and supplies as well as allocating funds for adequate education and training of staff are vital. The cost of supplies for this project was minimal, but additional supplies of headphones and CD players will allow project implementation facility-wide and throughout the organizational system. The administration would also need to purchase supplies to replace lost or damaged equipment.
Staff report needing continued education focusing on pain and effective pain management. Expansion of the project requires facility-wide education on pain in the older adult, best practices for pain management, and training specific to the complementary therapies in the project. Increasing access to educational opportunities is an important consideration, especially considering barriers such as shift work, varied scheduling, and time away from work.

Revision of the electronic health record (EHR) to update the pain management field by listing the available interventions of the evidence-based complementary therapies will facilitate a visual cue to staff to offer the therapies. The staff can use the EHR to document which pain management option they use. Documented data will support evaluation of pain management at the facility.

Use of unit champions is an evidence-based means to embed a practice change into the culture of a unit (Howell & Shea, 2006). Shaw et al. (2012) describe the role of a unit champion as helping to create enthusiasm for an upcoming change, acting as a liaison between various stakeholders in the organization, and serving as a point person to help drive quality improvement efforts. Identification of a unit champion on pain at the facility is a means to help sustain the practice change through training others and continuous improvement of the management of pain. Recruitment and retention of staff is an ongoing issue for many organizations and unit champions are helpful in maintaining consistency and sustainability of a practice change.

**Future Implications**

There is a need for continued research about using complementary therapy for pain management. For example, while this project focused on a specific demographic, expanded research has the potential to provide additional insight into managing pain with other patient populations. A number of other complementary therapies have demonstrated effectiveness in
reducing pain, such as yoga, massage or aromatherapy (Cino, 2014; Field, 2011; Nahin et al., 2016), however introducing these interventions into the TCU environment needs further study to validate feasibility of integrating them into staff workflow.

Other worthwhile research might include comparative studies examining the effect of complementary therapies on the ability of patients to participate in rehabilitation therapies, and their effect on length of stay or readmission rates. Each of these issues has a direct impact on the cost to the patient as well as to the facility involved. The impact of complementary therapies on pharmaceutical use would be another area for further study. Some of the nurses participating in this project noticed less use of pain medication from some of the patients in the study. A study examining narcotic or other pain medication use, especially considering the current opioid epidemic in the country, is another example of noteworthy research. Since the motivation for this project started with concern about high MDS pain scores, a future question to address might be how the use of complementary therapies influences MDS scores.

**Conclusion**

This QI study offers insight into improved pain management. An interprofessional team approach to quality improvement provides meaningful collaboration and is beneficial by tapping into multiple perspectives, expertise, and skill. A rapid cycle change process provides a means for making changes throughout the implementation phase. Results of the study support complementary therapy in the form of guided imagery, music, and progressive muscle relaxation to improve pain management for post-surgical patients in a TCU setting, giving them benefits beyond pain control such as improved sleep, and reduced anxiety. The integration of complementary therapies into the workflow of staff was neither burdensome nor resource
intensive. It is the right thing to do to provide more choices and options for successful pain management in these patients.
References


Thomas, K. M. & Sethares, K. A. (2010). Is guided imagery effective in reducing pain and
anxiety in the postoperative total joint arthroplasty patient? Orthopaedic Nursing, 29(6), 393-399. doi:10.1097/NOR.0b0181f837f0


Appendix A

**Theory of Integral Nursing**

Barbara Dossey, PhD, RN, AHN-BC, FAAN © 2007

Figure 1.1a. Healing

Figure 1.1b. Healing and Meta-Paradigms of Nursing
(Nurse, Person(s), Health, Environment)

Figure 1.1c. Healing and Patterns of Knowing in Nursing
(Personal, Aesthetic, Empiric, Ethics, Not Knowing, Socio-Political)
Adapted from B. Casper (1978)

Figure 1.1d. Healing and Four Quanderns
(I, We, It, In)
Adapted from K. Wilber (2000)

Figure 1.1e. Healing and AQAL
(All Quadrants, All Levels)
Adapted from K. Wilber (2000)

Figure 1.1f. Theory of Integral Nursing
(Healing, Meta-Paradigms, Patterns of Knowing in Nursing, Four Quadrants and AQAL)

Integral and Holistic Nursing: Local to Global.
In B. M. Dossey & L. Kegan.
*Holistic Nursing: A Handbook for Practice* (5th ed.)
Sudbury, MA: Jones & Bartlett.
**Appendix B**

**JHNEBP Evidence Rating Scales**

<table>
<thead>
<tr>
<th>STRENGTH of the Evidence</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level I</td>
<td>Experimental study/randomized controlled trial (RCT) or meta-analysis of RCT</td>
</tr>
<tr>
<td>Level II</td>
<td>Quasi-experimental study</td>
</tr>
<tr>
<td>Level III</td>
<td>Non-experimental study, qualitative study, or meta-synthesis.</td>
</tr>
<tr>
<td>Level IV</td>
<td>Opinion of nationally recognized experts based on research evidence or expert consensus panel (systematic review, clinical practice guidelines)</td>
</tr>
<tr>
<td>Level V</td>
<td>Opinion of individual expert based on non-research evidence, (includes case studies, literature review, organizational experience e.g., quality improvement and financial data, clinical expertise, or personal experience)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>QUALITY of the Evidence</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A High Research</td>
<td>Consistent results with sufficient sample size, adequate control, and definitive conclusions; Consistent recommendations based on extensive literature review that includes thoughtful reference to scientific evidence.</td>
</tr>
<tr>
<td>Summative reviews</td>
<td>Well-defined, reproducible search strategies; consistent results with sufficient numbers of well defined studies; criteria-based evaluation of overall scientific strength and quality of included studies; definitive conclusions.</td>
</tr>
<tr>
<td>Organizational</td>
<td>Well-defined methods using a rigorous approach; consistent results with sufficient sample size; use of reliable and valid measures.</td>
</tr>
<tr>
<td>Expert Opinion</td>
<td>Expertise is clearly evident</td>
</tr>
</tbody>
</table>

| B Good Research         | Reasonably consistent results, sufficient sample size, some control, with fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence. |
| Summative reviews       | Reasonably thorough and appropriate search; reasonably consistent results with sufficient numbers of well defined studies; evaluation of strengths and limitations of included studies; fairly definitive conclusions. |
| Organizational          | Well-defined methods; reasonably consistent results with sufficient numbers; use of reliable and valid measures; reasonably consistent recommendations. |
| Expert Opinion          | Expertise appears to be credible. |

| C Low quality or major flaws Research | Little evidence with inconsistent results, insufficient sample size, conclusions cannot be drawn |
| Summative reviews         | Undefined, poorly defined, or limited search strategies; insufficient evidence with inconsistent results; conclusions cannot be drawn |
| Organizational            | Undefined, or poorly defined methods; insufficient sample size; inconsistent results; undefined, poorly defined or measures that lack adequate reliability or validity |
| Expert Opinion            | Expertise is not discernable or is dubious. |

* A study rated an A would be of high quality, whereas, a study rated a C would have major flaws that raise serious questions about the believability of the findings and should be automatically eliminated from consideration.

Appendix C

Studies with post-surgical interventions of guided imagery, music, and muscle relaxation

<table>
<thead>
<tr>
<th>Study</th>
<th>Population</th>
<th>N*</th>
<th>Design</th>
<th>Intervention</th>
<th>Results</th>
<th>JHNEBP Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Guided Imagery</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antall &amp; Kresevic</td>
<td>Age 55 and older post-joint surgery</td>
<td>13</td>
<td>2 group experimental</td>
<td>BellaRuth Naperstek guided imagery tape</td>
<td>Less overall pain (no stat sig reported)</td>
<td>1C</td>
</tr>
<tr>
<td></td>
<td>All male veterans, mean age 67.85</td>
<td></td>
<td>assigned to guided</td>
<td>20 min 2x daily</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>imagery or usual</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>care (Pilot)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forward et al.</td>
<td>Age 18 and older post-joint surgery</td>
<td>225</td>
<td>3 group RCT- massage,</td>
<td>Diane Tusek GI tape</td>
<td>Stat sig reduced pain p &lt; 0.05</td>
<td>1A</td>
</tr>
<tr>
<td>(2015)</td>
<td>81% white</td>
<td></td>
<td>GI, usual care</td>
<td>4 times in first 2 PODs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lin (2011)</td>
<td>Thai patients post joint surgery. Mean age 71</td>
<td>93</td>
<td>2 group RCT- GI or</td>
<td>20 min GI tape daily to POD 3.</td>
<td>Stat sig reduced pain on DOS and POD 1</td>
<td>1B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>usual care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thomas &amp; Sethares</td>
<td>Post-joint surgery 69% female</td>
<td>121</td>
<td>2 group quasi-experimental GI or usual care</td>
<td>16 min GI tape 2x daily 5 days preop and postop</td>
<td>Mean pain levels lower in GI group, not stat sig</td>
<td>2B</td>
</tr>
<tr>
<td>(2010)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tracy (2010)</td>
<td>Post-joint surgery 67.4% female, 98% white, 2% black, mean age 70.4</td>
<td>46</td>
<td>1 group pre-experimental</td>
<td>Intervention information given pre-op (video and pamphlet) Pt teaching done according to pt coping mechanisms.</td>
<td>Knowledge and attitude improved sig (p &lt; 0.01) Satisfaction of pain level and intention to continue using them reported.</td>
<td>2B</td>
</tr>
<tr>
<td><strong>Music</strong></td>
<td></td>
<td></td>
<td>Pre-test/post-test given</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good et al. (2010)</td>
<td>Post-abdominal surgery, ages 18-75</td>
<td>517</td>
<td>4 group RCT pre-test/post-test. PT, RM, PTRM &amp; Control</td>
<td>Intervention groups listened to tapes pre and postop for 20-60 min</td>
<td>Groups with RM or PTRM had sig less pain than other groups at most data points</td>
<td>1A</td>
</tr>
<tr>
<td>Hook et al. (2008)</td>
<td>Post surgical- all women</td>
<td>102</td>
<td>2 group RCT pre-test/post-test. 8- 30 min sessions of 12 selections of music</td>
<td>Intervention group had decreased postop pain &amp; anxiety</td>
<td></td>
<td>1B</td>
</tr>
<tr>
<td>Study</td>
<td>Population</td>
<td>N*</td>
<td>Design</td>
<td>Intervention</td>
<td>Results</td>
<td>JHNEBP</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------------------------------------------------</td>
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<td>----------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Lee (2016)</td>
<td>RCT studies on music &amp; pain-population varied</td>
<td>97</td>
<td>Meta-analysis from 1995-2014</td>
<td>Stat sig effects in reducing pain opioid intake, DBP and HR</td>
<td></td>
<td>1A</td>
</tr>
<tr>
<td>Lin et al. (2011)</td>
<td>Post-spinal surgery, Chinese</td>
<td>60</td>
<td>2 group quasi-experimental</td>
<td>Stat sig reduction in pain, anxiety SBP, HR</td>
<td></td>
<td>2A</td>
</tr>
<tr>
<td>McCaffrey &amp; Locsin (2006)</td>
<td>Post-hip or knee surgery mean age 76, all &gt;65 75% women</td>
<td>124</td>
<td>2 group RCT- music and control</td>
<td>Stat sig reduction in pain meds taken and pain reported postop,</td>
<td></td>
<td>1A</td>
</tr>
<tr>
<td><strong>Muscle Relaxation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Büyükyılmaz &amp; Asti (2013)</td>
<td>Post-joint replacement mean age 58, 70% women</td>
<td>60</td>
<td>2 group RCT- rhythmic respirations, muscle relaxation exercises, music and massage</td>
<td>Stat sig reduced pain intensity, anxiety, and vital signs</td>
<td></td>
<td>1B</td>
</tr>
<tr>
<td>Kwekkeboom &amp; Gretarsdottir (2006)</td>
<td>5 of 15 studies relevant to postop population</td>
<td>15</td>
<td>Systematic Review</td>
<td>PMR was most supported technique for relieving pain</td>
<td></td>
<td>1B</td>
</tr>
<tr>
<td>Roykulcharoen &amp; Good (2004)</td>
<td>Post abdominal surgery age 18-65, mean age 42 82% female</td>
<td>102</td>
<td>2 group RCT- PMR and control</td>
<td>Stat sig decreased pain sensation and distress of pain</td>
<td></td>
<td>1B</td>
</tr>
<tr>
<td>Seers et al. (2008)</td>
<td>Post orthopedic surgery mean age 65.6 years, 43% male in UK</td>
<td>118</td>
<td>4 group RCT- PMR, jaw relaxation, attention control, and usual care</td>
<td>Stat sig reduction in pain in the three intervention groups</td>
<td></td>
<td>1B</td>
</tr>
<tr>
<td>Topcu &amp; Fındik (2012)</td>
<td>Post upper abdominal surgery, mean age 48 52% male, Turkish</td>
<td>60</td>
<td>Cross-sectional and crossover study</td>
<td>Stat sig reduction in pain after relaxation exercises</td>
<td></td>
<td>2B</td>
</tr>
</tbody>
</table>

N*-number of participants; stat sig-significance; RCT-random controlled trial; GI-Guided Imagery; POD-post-operative day; DOS-day of surgery; PT-patient teaching; RM-relaxation music; PTRM-both patient teaching and relaxation music; DBP-diastolic blood pressure; HR-heart rate; SBP-systolic blood pressure; PMR-progressive muscle relaxation
Appendix D

Synthesis of Evidence on Complementary Therapies

<table>
<thead>
<tr>
<th>Category (level type)</th>
<th>Number of sources per level</th>
<th>Overall quality rating</th>
<th>Synthesis of findings- Evidence that answers the EBP question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guided Imagery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 1-</td>
<td>3</td>
<td>A (1)</td>
<td>Statistically significant improvement in pain levels compared to usual care. Greater satisfaction compared to usual care. Decreased anxiety in studies measuring anxiety levels.</td>
</tr>
<tr>
<td></td>
<td>B (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 2-</td>
<td>1</td>
<td>B (1)</td>
<td>Participants were eager to use the technique. Satisfaction scores increased as stay went on. Use of technique increased each day. Mean pain levels were lower, not statistically significant.</td>
</tr>
<tr>
<td>Level 5-</td>
<td>2</td>
<td>B (2)</td>
<td>Improved pain statistically significant. Improved sleep and decreased sadness.</td>
</tr>
</tbody>
</table>

**Recommendations:** There is good and consistent evidence to show that guided imagery can reduce pain scores in post-surgical patients. The IPE team recommends that guided imagery be implemented in the quality improvement (QI) project because of the positive outcomes in the research related to pain, mobility, and anxiety.

| Music                  |                             |                        |                                                           |
| Level 1-              | 4                           | A (3)                  | Statistically significant findings support music as a complementary based intervention to decrease pain, anxiety, and medication usage. |
|                       | B (1)                       |                        |                                                           |
| Level 2-              | 3                           | A (1)                  | Music is a viable means to complement pain management. Improved satisfaction of care achieved using music therapy. |
|                       | B (1)                       |                        |                                                           |
|                       | C (1)                       |                        |                                                           |

**Recommendations:** A review of music and its effects on postoperative pain in the general population suggests this method may provide positive results in the postsurgical pain of the study population. The meta-analysis of 97 studies by Lee offers strong evidence music is an effective means to improve pain in postsurgical patients. The IPE team recommends the music be implemented in the QI project.
| Level  |  |  |  |
|--------|--------|------------------|
| 1      | 8      | A (1) B (7)      |
|        |        | Statistically significant reduction in pain levels in geriatric postsurgical patients using PMR. Improvement in anxiety, mobility, and decreased opioid use also demonstrated. |
| 2      | 1      | B (1)            |
|        |        | Statistically significant reduction in pain after relaxation exercises for post-abdominal surgical patients. |
| 5      | 2      | B (2)            |
|        |        | In conjunction with aromatherapy, music and body awareness techniques showed significant decrease in sadness and trend toward less pain. Participants felt a sense of belonging to the group was important. |

**Recommendations:** Review of relaxation techniques in general show these complementary strategies could be of benefit to the post-surgical population for the relief of acute and chronic pain as well as anxiety. Progressive muscle relaxation (PMR) in particular shows strong evidence in relieving pain in the postsurgical population. The IPE team recommends PMR be implemented in the QI project.

**Level 1:** Experimental, RCT, Systematic review of RCT with or without meta-analysis  
**Level 2:** Quasi-experimental study, Systematic review or RCTs with quasi-experimental studies with or without meta-analysis  
**Level 5:** Evidence obtained from literature reviews, quality improvement, program evaluation, financial evaluation, case reports, opinion of nationally recognized expert(s) based on experimental evidence