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Preoperative Pain Management Education and Narcotic Use: A Quality Improvement Project

Sarah Scheller
Sacred Heart University

Preoperative Pain Management Education and Narcotic Use: A Quality Improvement Project

Sarah Scheller, BSN, RN, CNOR

A DNP project submitted in partial fulfillment of the requirements for the degree of

Doctor of Nursing Practice

Sylvie Rosenbloom, DNP, APRN, FNP-BC, CDCES, CME: DNP Project Chair

John Daigneault, MD: Practice Mentor

Sacred Heart University Davis & Henley College of Nursing

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This is to certify that the DNP Project Final Report by

Sarah Scheller

has been approved by the DNP Project Team on

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DNP Project Faculty Advisor: Sylvie Rosenbloom, DNP, APRN, FNP-BC, CDCES, CME

Practice Mentor: John Daigneault, MD

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Abstract

Introduction: Comprehensive preoperative education is an important aspect of pain management and helps empower patients prior to their surgery. Evidence supports the use of a combination of the teach-back method, videos, and pamphlets to educate patients prior to their surgery. A quality improvement project was initiated for patients having total shoulder arthroplasty surgery with an orthopedic surgeon in Connecticut.

Methods: An educational video and handout were created, and preoperative education sessions using the teach-back methods were performed. Postoperative phone calls were placed at 24 and 72 hours to assess the patient's use of narcotic pain medication, alternative pain management medication and techniques, and their satisfaction with their pain management education. Three Plan-Do-Study-Act (PDSA) cycles were used to modify and improve the education during the project's implementation.

Results: 16 patients were educated, and postoperative phone calls were completed on 14 patients. All patients reported that they were satisfied or very satisfied with their pain management and knowledge about pain management, with pain levels ranging from zero to three on a one to ten scale. Patients reported their pain was well managed with the number of narcotic pain medication doses they were taking and reported feeling well prepared for their surgery.

Conclusion: Overall the patients, the orthopedic surgeon and their staff all were very satisfied with the new educational materials, and they will continue to use the new methods for future patient education.

Keywords: Teach-back, surgery, education, pain management, video

Problem Identification and Evidence Review

Background and Significance of Problem

Total joint arthroplasties are one of the largest growing segments of orthopedic surgery cases (Boddu et al., 2018). For all patients, adequate preoperative education and pain management are important aspects of pre and postoperative patient care (Boddu et al., 2018). Inadequate education can lead to increased confusion for patients and decreased satisfaction (Elhage et al., 2021; Ilyas, 2021). Additionally, the lack of knowledge about non-narcotic pain management can lead to increased narcotic usage for patients (Cheesman, 2020; Goree, 2021). The current opioid epidemic affects all age ranges, although it is rarely discussed when managing older adults (Green, 2017). The amount and quality of education that a patient receives on narcotic usage has been shown to reduce their narcotic usage for pain management (Rucinski & Cook, 2020; Waszak, 2018). It has also been shown to increase patient satisfaction (Elhage et al., 2021).

There are many ways of providing preoperative education, including verbal, written, using video and teach-back. An evidence search showed that both the teach-back method and video presentations are successful methods for providing preoperative education (Rucinski & Cook, 2020; Waszak, 2018). Across nursing, the teach-back method has been shown to be best for providing patient education and ensuring understanding (Shersher, 2021).

Description of Local Problem

Total shoulder replacement patients have a preoperative visit two to three weeks prior to their scheduled surgery. Prior to project implementation patients were given a written handout to take home. They were then given approximately 10 to 15 minutes to read the handout before the medical assistant (MA) went into the exam room, repeated the education listed on the handout,

and allowed the patient time to ask questions. During an observed preoperative visit using the current educational methods, the patient had several questions. At the end of the visit, the patient was given the medical assistant's (MA) phone number and was encouraged to call with any questions.

The surgeon and MA both stated that the previous method of education has led to patient confusion and multiple calls asking for additional information. Patients reported that they felt the education received was thorough. The office did have a discussion with patients preoperatively about narcotic use but did not screen for potential misuse. The office did not ask the patients postoperatively about their narcotic usage but did ask in the postoperative phone call how well their pain is being managed.

Organizational Priority

This project was a priority for this office. The surgeon hoped to develop an educational video for his patients. He stated that patients would often call with questions and due to the average age of his total shoulder replacement patients, a written handout was not effective for these patients. He agreed that the combination of the teach-back method with a video for patients to watch at home might be beneficial to his patients. This project was a high priority for him and his office.

Focused Search Question

For adult patients undergoing total shoulder replacement surgery (P), how does a combination teach-back method, preoperative education video and pamphlet (I) compared to verbal education alone (C) affect postoperative pain intensity and postoperative narcotic use (O)?

Levels of Evidence

The levels of evidence that will best answer this question are levels one, two, and three. Level four evidence will be searched and used if found.

Evidence Search

A search of the following databases was conducted: CINAHL, MEDLINE, and the Cochrane Central Register of Controlled Trials (Appendix A). The key words searched were opioid education, surgery pain education, preoperative education, teach-back education, patient satisfaction. Limits/filters for all searches included: English language, adults (age 18 and over) and published between 2015 – 2022. Inclusion criteria for article selection were use of preoperative education and evaluation of pain management. Tables one through three display the database, search terms and results of search. The Rapid Critical Appraisal Tools (Melnyk & Fineout-Overholt, 2019) were used to appraise each of the keeper articles.

Internal Evidence. The surgeon and MA were asked about current practices for preoperative education. A preoperative visit was observed to understand current practices. Prior to project implementation patients were given an education handout outlining postoperative expectations, preoperative instructions, and information on prescriptions the patients will receive. There was minimal education on non-narcotic postoperative pain management. Patients frequently call with questions about the education both before and after surgery. Preliminary responses from the surgeon and MA suggest that additional patient education was needed.

Evidence Appraisal, Summary, and Recommendations

Of the eight articles relevant to this project, there are several consistent recommendations (Appendix B and C). Cheeseman et al. (2020) found that their two-minute video presentation and take-home pamphlet created by the Centers for Disease Control and Prevention (CDC), shown in Appendix D, decreased opioid use, opioid dependence and the number of opioid

prescriptions filled. Both Elhage et al. (2021) and Goree et al. (2021) found that preoperative patient education increased patient knowledge and decreased opioid use. The authors used different methods of education, with Elhage et al. (2021) using verbal education and a pamphlet, and Goree et al. (2021) using a five-minute video presentation. Similarly, both Ilyas et al. (2021) and Rucinski & Cook (2020) found that their preoperative education decreased opioid use and the number of prescriptions filled, despite using different types of education. Ilyas et al. (2021) used a multi-media presentation and Rucinski & Cook (2020) used a combination method of a video, a pamphlet and verbal education. Finally, Shersher et al. (2021) found the teach-back method as the most effective way of educating patients, ensuring that patients felt well educated and that their level of knowledge increased after their education. Together, the evidence presented in these articles supports the use of the teach-back method, a supplemental video, and a pamphlet.

Project Plan

Project Goals

1. To identify best practices for educating preoperative patients on pain management and opioid use
2. To develop a preoperative education video for patients undergoing total shoulder arthroplasty
3. To develop an educational pamphlet for patients undergoing total shoulder arthroplasty
4. To implement a preoperative education plan using teach-back method, video, and pamphlet during preoperative office appointments for patient's undergoing total shoulder arthroplasty

Context

The orthopedic surgeon works for a large orthopedic practice located in Connecitcut. The project setting is three of the orthopedic surgeon's office locations. Participants are his patients undergoing total shoulder replacement, both anatomical and reverse.

Project Team Members and Roles

The orthopedic surgeon has the role of practice mentor and offered final approval of the education materials as well as offering guidance throughout the project. His MA offered day to day support for this project and provided information on the scheduling of preoperative appointments. Dr. Sylvie Rosenbloom is the academic partner at Sacred Heart University and DNP project chair.

Key Stakeholders and Buy-in

Stakeholders for this project is the orthopedic surgeon, the staff and patient's undergoing total shoulder replacement at the orthopedic surgeon's office.

Framework

The methodology for this project is based upon the evidence-based practice process outlined by Melnyk & Fineout-Overholt (2019). This process revealed the teach-back method and educational video as a supplement to the educational pamphlet the surgeon and his office is currently using. The Plan-Do-Study-Act (PDSA) framework was used to guide the change and address project goals two, three and four.

Plan phase. The DNP project lead met with stakeholders to determine patient education needs. Previous preoperative education was observed to learn the method. Video and updated teach-back education materials were created and presented to the orthopedic surgeon for final review (Appendix E). Postoperative phone call questionnaire was created and presented to the orthopedic surgeon for final review (Appendix F).

Do phase. The DNP project lead created a 45-minute preoperative education sessions for total shoulder replacement patients. Patients were first shown the educational video, then the DNP project lead reviewed the material using the teach-back method.

Study phase. Postoperative phone calls were placed at 24 and 72 hours after the patient's scheduled surgery. These phone calls included a standard set of questions to determine the patient's pain management, using a 1-10 scale with faces and a mild to moderate description and the amount of postoperative narcotics used.

Act phase. The DNP project lead modified the educational process as needed based on the results of the PDSA cycle.

Barriers to Implementation

Barriers to implementation included the time required to show patients the video and time required of staff scheduling the education at the surgeon's office.

Data Collection

Data was collected from the postoperative phone calls, as well as informal feedback from the surgeon and his staff. This data was collected in an excel spreadsheet, organized by the date of the patient's preoperative education session. Phone calls included a standard set of questions to determine the patient's pain management, satisfaction with their preoperative education, and narcotic use. A pain scale was used to determine postoperative pain level, both numerically and descriptively (mild, modertate or severe). Data was analyzed periodically throughout the project to support the PDSA cycle. Final data analysis, including average pain level, average number of narcotics used, and patient satisfaction, was presented using bar graphs and run charts. The type of total shoulder replacement, reverse or anatomical, was also recorded and data was analyzed

both independently by type of surgery and together. No patient personal information, demographics or identifiers were collected or reported.

Sustainment

Once the initial motivation and support for the project fades, the risk of the project failing to be maintained becomes a concern (Berta et al., 2019). While the initial interest and effort on the part of all stakeholders may be high, the motivation must not be allowed to fade completely, as that would increase the likelihood that the project will fail long term (Berta et al., 2019). Because of this, efforts must be made to ensure the sustainability of the project and a plan is in place to ensure the long-term success of the project.

During the initial implementation of the practice change, one method that was used to maintain engagement is frequent short meetings among stakeholders. These meetings were informal and were used to initially present the video and teach-back education plan. They served as a forum where an open discussion about the project could occur. One important aspect of sustainability is the need for a constant and transparent feedback system, and these meetings were used as a method of ensuring that feedback is a constant aspect of the project from start to finish (IHI, 2008). To close the feedback loop, weekly reports of the postoperative calls were presented to stakeholders, to ensure that every participant stays educated and engaged about the status of the project.

Dissemination

There are three major goals when disseminating the results of research: To increase the reach to a variety of audiences, to increase interest in the evidence through champions and to increase the ability to use and apply evidence (AHRQ, 2013). The goal when disseminating the results of this project is to achieve these three goals, and to spread the new knowledge widely.

The most effective way of achieving this is to use a variety of strategies to address a combination of reach, ability, and motivation (AHRQ, 2013). It is important to maintain the understanding that the evidence and project results are constantly moving on a continuum, and the dissemination strategies must also change and adapt.

For effective dissemination of the project to occur, constant communication must already be in place. This started during the implementation phase of the project, with regular stakeholder meetings and requests for feedback. This dissemination continued throughout the project, and the data was clearly presented in regular status update emails. Disseminating the data widely, allows for other providers and offices to potentially model this project. It also allows for an increased amount of feedback and can lead to improvements that otherwise would not have been made.

The final method of dissemination to the public will be via Powerpoint and poster presentation at Sacred Heart University in the spring of 2023. Public dissemination of knowledge and project results are important, to ensure that other individuals and facilities can also implement changes in their own practice setting (AHRQ, 2013). This will help the project team raise awareness and knowledge about the practice change, with the goal of sparking discussions about the current and continued results (AHRQ, 2013). Such sharing and building upon knowledge are a crucial aspect of evidence-based practice.

Project Timeline

January 2022 – Project Proposal to the orthopedic surgeon

March 2022 – Meet with the orthopedic surgeon to discuss video and teach-back education components

April 2022 – DNP project oral presentation

April to May 2022 – Develop and present video

June to October 2022 – Project implementation

October 2022 – Complete postoperative phone calls

December 2022 – Data analysis

Spring 2023 – Final project dissemination

(Appendix G)

Resources

Resources needed were the time and technical equipment needed to create the educational video. Time was also spent doing one to three 45-minute preoperative education sessions a week.

Review for Ethical Considerations

This project did not require Sacred Heart University Institutional Review Board approval because it is a quality improvement project (see Appendix H). The approval to implement the project has been received from the orthopedic surgeon.

Project Implementation

The project was implemented over five months from June to October 2022. Over the course of implementation, sixteen patients were educated, and fifteen patients had their surgery as scheduled. The implementation took longer than planned due to vacation schedules and the inability to attend all scheduled preoperative appointments. Additionally, the MA who was originally going to aid in coordination left the practice in June 2022, and a new MA was hired to replace her. This delayed several initial preoperative education sessions as the new MA needed to learn her duties in addition to coordinating appointments. This was a temporary challenge to

implementation, but ultimately the project was very beneficial to the office as it lightened the workload of the MA while she got acclimated to the job.

After the development and initial approval of the educational materials, patient education sessions started. At each session, the patient was shown the video and given an educational handout, a copy of the CDC pamphlet and a copy of the Pain Scale (Appendix I). Initially, four patients were educated. As these patients had their surgery, it became clear during the postoperative phone calls and in-office visits that several changes needed to be made to the educational materials. Prior to the project implementation, patients had been having difficulty with the shoulder immobilizers given at the time of discharge. The first postoperative phone call made it clear that this was still an issue, and the first change to the education was clarifying how to place the shoulder immobilizer. Additionally, more pictures were added to the video so that the patients could see how the immobilizer should look when being worn properly. The initial version of the video used a stock image with a generic immobilizer, which was replaced with an unidentifiable picture of a patient of the orthopedic surgeon wearing the exact immobilizer given to patients at the time of discharge.

The next five patients were educated with the second version of the video. These patients remarked that the section on the shoulder immobilizer was clear and easy to understand. However, while performing the educational sessions in the office, it became clear that some of the patients were having difficulty hearing the audio on the video. While the information was clarified during the teach-back portion of the visit, the audio was modified to make it easier for patients to understand. At this time, the educational handout was also modified to include a link of the video on YouTube. This was due to several patients asking if it would be possible for them to rewatch the video, as they were concerned that they would forget some of the

information. While all patients went home with a handout that contained detailed information covered during the visit, some patients commented that they felt that the verbal education from the video and in-person teach-back session was easier for them to understand. At this time, the office also started emailing patients prior to their visit, asking them to watch the video prior to their preoperative appointment. Only one patient confirmed that they had watched it prior to coming to the office, so no changes were made to the in-office educational sessions.

The next change in the education plan occurred after a phone call with one of the patient educators from the hospital where the patients were having their surgery. After some patients' comments during the postoperative phone calls, it became clear that some of the education being provided in the office did not match the education that was being provided by the hospital. All patients go to a preoperative educational class provided by the hospital and are visited by an educator after their surgery, prior to being discharged. One of the educators is in constant contact with the orthopedic surgeon and his office, which helped identify the initial confusion that patients were having about their shoulder immobilizers. Via phone call, it was determined with the educator that the education on the shoulder immobilizer had improved, but there was still confusion on preoperative nothing by mouth (NPO) status and the use of non-pharmacological pain management while in the hospital. Most patients receive a cooling machine for use after surgery, and some patients were bringing this machine to the hospital. The next update of the educational materials clarified when the patient should stop drinking clear fluids prior to surgery, and that they should leave their cooling machine at home as they will not be able to use it in the hospital. The remaining seven patients were educated using this final version of the educational video and handout.

Throughout the implementation phase of the project, patients received two postoperative phone calls. These calls were placed at 24 hours and 72 hours. Due to most of the patients spending the night in the hospital after their surgery, some of the patients had just gotten home when the 24-hour phone call was made. Additionally, not all patients answered the phone. If the phone call went unanswered, a generic voicemail was left informing the patient that the DNP student they had met before their surgery was calling, and that they should expect another phone call later that day. No patient names, surgeon name or other identifiers were left on the voicemail.

Project Results

Process Measures

Of the 16 patients that were educated in the office, 15 had their surgery as scheduled. One patient was admitted to the hospital for a suspected pulmonary embolism 36-hours after their surgery, and only their 24-hour postoperative phone call was made. Data was analyzed and reported for 15 patients at 24 hours postoperatively and 14 patients at 72 hours postoperatively. Of the 15 patients, 14 had a reverse total shoulder replacement, and one had an anatomical shoulder replacement. The first four patients were educated with the initial version of the educational materials, the next five patients were educated with the second version of the educational materials and the last seven patients were educated with the final version of the educational materials.

Outcome Measures

As shown in Appendix J, at 24-hours postoperatively, all of the patients reported their pain level as mild, varying from zero to three on a one to ten pain scale. Eight of the patients reported a pain level of zero, of which seven reported their nerve block was still in effect and

they had not taken any pain medication yet. One patient reported that their pain level was a zero, but they had taken one dose of Tramadol due to the nerve block starting to wear off. Four patients reported a pain level of two and reported taking two to four doses of narcotic pain medication, including Dilaudid, alternating Dilaudid and Tylenol, and Tylenol with Codeine.

These patients all reported that they were satisfied or very satisfied with their pain management and knowledge about pain management at this point. Three patients reported a pain level of three and reported taking three to five doses of narcotic pain medication, including Dilaudid and alternating Dilaudid and Tylenol. The patient that received an anatomical shoulder replacement was one of the patients reporting a pain level of three and reported taking three doses of Dilaudid. Four patients reported feeling good overall, while eight reported feeling very good and three reported feeling excellent.

Three patient's reported that they were unable to receive an ice-machine, but that they were rotating ice packs from their freezer. Eleven patients reported that they were using their ice machine successfully, and that they felt the ice machine was helping reduce swelling. One patient reported that they had tried to use their ice machine, but they got frustrated with the tubing and had stopped using it. They were encouraged to try again and were re-educated over the phone about the importance of the ice machine for reduction of swelling and the benefits of multi-modal pain management.

At 72-hours postoperatively, patients reported their pain level varying from one to three. Thirteen patients reported their pain as being mild, while one patient reported that they felt the scale was inaccurate and their pain was moderate at a level three. Three of the patients reported a pain level of one, of which one reported taking eight doses of narcotic pain medication, alternating Dilaudid and Tylenol. Another reported taking two doses of narcotic pain

medication, alternating Tramadol and Tylenol, but primarily using Tylenol. The third reported taking three doses of narcotic pain medication but was currently only taking Tylenol with good relief. Nine patients reported a pain level of two and reported taking one to 12 doses of narcotic pain medication, including Dilaudid, alternating Dilaudid and Tylenol, alternating Tramadol and Tylenol, and Tylenol with Codeine. One reported that she had been taking narcotic pain management but was currently only taking Tylenol.

These patients all reported that they were satisfied or very satisfied with their pain management and knowledge about pain management at this point. Two patients reported a pain level of three and reported taking three to four doses of narcotic pain medication, alternating Dilaudid and Tylenol. The patient who received an anatomical shoulder replacement was one of the patients reporting a pain level of two and reported taking seven doses of Dilaudid. Two patients reported feeling good overall, while 12 reported feeling very good. No patient's reported any issues with their dressing or fever at either postoperative phone call.

The 12 patients who received ice machines all reported that they were still using them. Ten reported that they had been using the ice machine consistently and felt that it reduced their swelling and pain. One patient reported that they had been using the ice machine consistently, but now only used it while sleeping because it was too cumbersome to use during the day. The patient that reported frustration with the ice machine at the 24-hour postoperative phone call reported that they tried using it again, but remained frustrated and stopped using it the previous evening.

The first PDSA cycle patients reported their pain as two to three at 24 hours and one to two at 72 hours. All these patients took either Dilaudid or alternated Dilaudid and Tylenol. The second PDSA cycle's patients reported their pain as zero to three at 24 hours and two to three at

72 hours. For four of them, their nerve block was still in effect at 24 hours, and the fifth took three doses of Dilaudid. At 72 hours, three were alternating between Dilaudid and Tylenol, and one was taking only Tylenol. The fifth had been admitted to the hospital for a suspected pulmonary embolism, and their 72-hour phone call was unable to be placed. The last PDSA cycle's patients reported their pain as zero to two at 24 hours, with three of them reporting their nerve block was still in effect, one taking tramadol, one taking Tylenol with codeine and one alternating between Dilaudid and Tylenol. The final patient had their surgery rescheduled, and no postoperative phone calls were able to be made. At 72 hours they reported their pain as one to three, with two alternating between Dilaudid and Tylenol, two alternating between Tramadol and Tylenol, one taking Tylenol only and one taking Tylenol with Codeine.

While no differences were seen in the pain level or number of narcotic pain medication doses patients were taking with each cycle of the PDSA, patient and staff feedback was very positive. All patients were satisfied or very satisfied with both their knowledge of pain management and their pain level at both postoperative phone calls. Numerous patients expressed the fact that they felt well prepared for their surgery. While unable to assessed whether the education affected the patient's pain medication usage, it was clear that the patients felt better informed and more impowered to manage their own care once discharged from the hospital.

Return on Investment

PowerPoint software provided by Sacred Heart was used to create the preoperative educational video. The DNP project lead spent 60 hours editing the educational handout and originally creating the preoperative video. Five hours were spent editing the educational handout and video based on patient feedback as part of the PDSA cycle. The student spent 15.5 hours doing preoperative education sessions and 8 hours doing postoperative phone calls. Total time

invested was 88.5 hours at a cost of $48 an hour, for a total of $4248. Return on investment was unable to be calculated due to not tracking time savings in the office and the inability to quantify patient satisfaction.

Barriers Encountered During Implementation

The first barrier encountered during implementation was the hiring of a new MA prior to the implementation period. Because she was not part of the project proposal or development, she required education on the project goal and how it was going to be implemented. Additionally, she had several suggestions about how to schedule the education sessions. She also required education about the teach-back method at the beginning of the project with a refresher at the end of the project. An additional barrier was the time needed to learn how to create a video using PowerPoint software, and how to edit the video once it had been created to improve audio quality.

Key Lessons Learned

Several key lessons were learned during this project that must also be taken into consideration during the dissemination for successful sustainability. One lesson is that each office setting is different, and the staff must be fully engaged in order for change to be successful. During the planning process, the initial MA was not fully engaged in the process despite the orthopedic surgeon giving their full support. However, the surgon does not do the majority of the preoperative education. Because the MA was not fully on-board with the project, this could have been a barrier for long term success of the implemented changes. However, the new MA hired as the implementation phase began was very engaged in the process. Because of this, she was very open to giving sugesstions and making sure that new education was a process that she would be able to successfully continue after the implementation phase ended.

Another lesson learned was to listen to the patient's during both their intitial education sessions and during their postoperative phone calls. Every patient encountered was very interested in the project and willing to give feedback on their experience. This information was all informally collected as part of the PDSA cycle during the implementation phase, and helped improve the experience for future patients. While the primary goal of the project was to improve the patient's education and ability to manage their pain postoperatively, several other changes were able to be made due to the feedback given by the patients. These changes were incorporated into the PDSA cycles, and the surgeon's office embraced these changes as they happened. The office and the DNP project lead were in constant communication with each other to ensure that the feedback was being received by everyone, which helped ensure that the changes were being implemented consistently. While data was not collected on patient's who's education was not performed by the DNP project lead, the office updated their education along with the PDSA cycle changes to ensure consistency.

Sustainability

The results of this project have been very relevant to the practice setting. The goals of this project were to improve pain management for patients, in addition to finding a more efficient and effective manner of educating patients preoperatively. Throughout the implementation process, patients and office staff commented on how smoothly they felt the process was working. The DNP project lead was not able to attend all preoperative appointments, so education was also being performed by office staff during the implementation time period, with no data being collected on those patients. The office staff reported that they were saving time and staying on schedule better than they had been using the previous education methods. The orthopedic

surgeon and staff have expressed a desire to create additional educational videos for other surgical patients, and use the teach-back method with all patients in the future.

The practice results can also be applied to the patient's of other surgeons. The orthopedic surgeon is part of a very large practice with other orthopedic surgeons serving a large population of patient's in Connecticut. With the results from this project, other surgeons and MAs may decide that the combination of an educational video and the teach-back method may benefit their patients and practice as well.

In order to ensure the sustainability of this project, the office has the originals for all education materials. They will continue to update materials as needed in order to ensure that the information is up to date and accurate. They will continue to collect information on pain management at their postoperative phone calls, which will only be done at 24 hours. Due to the time requirements, the 72 hour phone calls will not be continued. However, they will continue to ask patients for their feedback, and will use that to continue informal PDSA cycles with constantly evolving and improving education. This will allow the education methods to stay relevant and useful for patients, the surgeon and the office staff.

Dissemination

This project will be disseminated using an executive summary (Appendix K) and poster presentation at Sacred Heart (Appendix L). The organization does not have a poster presentation day, but the poster will be presented at the surgeons affiliated hospital if approved.

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Appendix A

Description of Evidence Search

A search of the following databases was conducted: CINAHL, MEDLINE, and the Cochrane Central Register of Controlled Trials. The key words searched were opioid education, surgery pain education, preoperative education, teach-back education, patient satisfaction. Limits/filters for all searches included: English language, adults (age 18 and over) and published between 2015 – 2021. Inclusion criteria for article selection were use of preoperative education and evaluation of pain management. Tables 1 through 3 display the database, search terms and results of search.

PICO Question

For adult patients undergoing total shoulder replacement surgery (P), how does a combination teach-back method, preoperative education video and pamphlet (I) compared to verbal education alone (C) affect postoperative pain intensity and postoperative narcotic use (O)?

Table 1.

CINAHL Complete Search Terms and Search Results

Search Terms	Number of hits	Number of articles reviewed	Duplicates	Number of articles selected
Opioid Education	433	6		3
Opioid Education and Surgery	62	5	4	2
Surgery Education	4634	8	3	2
Surgery Education and Pain	182	3	1	1
Preoperative Education	1943	4	1	3
Preoperative Education and Opioid	35	2	1	1
Preoperative Education and Pain	392	4	2	1
Teach Back Method	136	2		2
Patient Education Methods	6563	12	1	3

Table 2.

Medline Search Terms and Search Results

Search Terms	Number of hits	Number of articles reviewed	Duplicates	Number of articles selected
Opioid Education	645	6		1
Opioid Education and Surgery	179	3		2
Surgery Education	9518	8	2	4
Surgery Education and Pain	744	5	2	2
Preoperative Education	940	4		2
Preoperative Education and Opioid	67	7	2	3
Preoperative Education and Pain	283	4	2	1
Teach Back Method	126	6		3
Patient Education Methods	552	4	2	1

Table 3.

Cochrane Central Register of Controlled Trials Search Terms and Search Results

Search Terms	Number of hits	Number of articles reviewed	Duplicates	Number of articles selected
Opioid Education	744	4		2
Opioid Education and Surgery	220	3	2	1
Surgery Education	10508	11	2	4
Surgery Education and Pain	1003	6	3	3
Preoperative Education	1361	4	1	2
Preoperative Education and Opioid	106	3	2	1
Preoperative Education and Pain	452	6	2	3
Teach Back Method	194	3	1	1
Patient Education Methods	1053	4		2

Appendix B

Search Question in PICO format: For adult patients undergoing total shoulder replacement surgery (P), how does a combination teach-back method, preoperative education video and pamphlet (I) compared to verbal education alone (C) effect postoperative pain intensity and postoperative narcotic use (O)?

Citation	Conceptual Framework	Design/ Method	Sample/Setting	Major Variables Studied and Their Definitions	Outcome Measurement	Data Analysis	Findings	Level of Evidence/ Quality	Quality of Evidence: Critical Worth to Practice
Article 1									
Cheesman, et al., 2020 The effect of preoperative education on opioid consumption in patients undergoing arthroscopic rotator cuff repair: a prospective, randomized clinical trial – 2-year follow-up	N/A	prospective, randomized, single blind clinical trial	Sample; 140 arthroscopic rotator cuff repair patients **Inclusion criteria:** Rotator cuff repair patients with 7 orthopedic surgeons at a single institution between August 2015 and December 2019 **Exclusion criteria:** Irreparable rotator cuff tears, patients with a history of a GI	IV1= preoperative education using a 2-minute video and a paper outline vs. standard preoperative education with no education on opioid use Dependent variables = Opioid dependence	To determine if preoperative opioid education reduces the risk of opioid dependence at a 2-year follow-up Overall rate of opioid dependence, risk factors for dependence and patient-reported outcomes using the Visual analog scale (VAS) pain	Priori power analysis was performed to detect a difference in opioid dependence. A bivariate logistic regression was run to determine ant independent factors and to evaluate the effect of patient education	Overall, 72.9% of patient used opioids acutely in the post op period, 8.6% of patients showed moderate opioid use, and 18.6% of patients showed opioid dependence. In the study group, 11.4% of patients showed opioid dependence, compared to 25.7% in the control group	Level II/Good quality	Strengths include the comparison of the SANE and VAS scores, the sample size and the 2-year follow up to the original study. Limitations include the fact that the prescription monitoring program only identifies which prescriptions are filled and does not identify use. Patient history of opioid use was also not identified, and patient self-reported use of opioids which was lower than the number of prescriptions filled This study is relevant to my practice setting and provides good data to guide my practice change.

			disease, allergies to the study medications, previous rotator cuff injury, and presence of glenohumeral arthritis		score and SANE score				
Article 2									
Elhage, et al., 2021. Preoperative patient opioid education, standardization of prescriptions, and their impact on overall patient satisfaction	N/A	Quality improvement project that implemented a preoperative education sheet discussing postoperative pain management, including narcotic and nonnarcotic multimodal regimens. The education was reviewed with the patient by a trained staff member	Sample: 223 patients participated in the education, with 198 returning the postoperative survey **Inclusion Criteria:** Patient's 18 or older scheduled for a general surgery procedure presenting at an ambulatory clinic between May2019 and January 2020 **Exclusion criteria:** Patient's unable to answer the survey themselves, patient's	IV: Preoperative pain management education DV1: Patient satisfaction DV2: Pain Control DV3: Narcotic utilization DV4: Patient understanding of the use of pain medication DV5: Prescriber Compliance	N/A	Descriptive statistics were reported as means with standard deviations for continuous variables and percentages for categorical variables	90% of narcotic prescriptions were within guidelines. 5% of patient's elected not to get a narcotic prescription, 23% only used non-narcotic methods. 96% agreed or strongly agreed that they had adequate pain control, and 97% agreed or strongly agreed that they were well educated on their pain control.	Level III/Good quality	Strength: this QI project was well described and easy to implement in this setting. While the surgical service is different, the concept is transferrable to orthopedic surgery. It could potentially be feasible in my practice setting. Limitations: There is a significant staffing requirement for education, which is a limitation. Additionally, the inability to compare results to patient satisfaction before the study period is a limitation

			whose surgery got cancelled						
Article 3									
Goree et al., 2021. Video-Based, Patient-Focused Opioid Education in the Perioperative Period Increases Self-Perceived Opioid-Related Knowledge: A Pilot Study	N/A	prospective, two-arm, randomized controlled pilot study	Sample: 110 patients that underwent ambulatory surgery **Inclusion criteria:** Patient's with no reported opioid use within the past 30 days undergoing ambulatory surgery for which opioids will be prescribed **Exclusion criteria**: Patient's with reported opioid usage within the past 30 days, non-English speaking, legally deaf or blind, scheduled for postoperative hospital	IV: postoperative or preoperative opioid education DV1: self-rated opioid use DV2: Self rated knowledge of opioids	N/A	To evaluate the subjective patient outcomes, the mean, median, and standard deviation for each group were calculated for each question of the survey. Two-tailed t-tests were conducted to determine differences between groups.	The knowledge questionnaire administered during the day 7 post-surgical call showed knowledge of opioid after surgery on a scale of 1–10 to be 9.364±1.183 in the intervention group and 8.319±2.529 in the control group ($p < 0.05$). Differences in knowledge of opioids before and after surgery were 1.182±2.060 in the intervention group and 0.553±1.230 in the control group ($p=0.092$). The Arkansas PDMP data revealed 47 (89%) patients in the control arm and 38 (76%) patients in the intervention arm were dispensed a prescription for opioids in the first 30 days post-surgery. This showed a trend, but	Level II/Good quality	This study is very relevant and produced strong data. While the surgical service is different, the concept is transferrable to orthopedic surgery. It could potentially be feasible in my practice setting. Limitations: Limitations include the fact that this was a pilot study, the limited sample size due to missing follow-up call data for patients. The difference in education from the individual surgical teams also affected the level of education between patients in both the control and study arms.

			admission, unable to operate a telephone, non-resident of Arkansas				was not statistically significant		
Article 4									
Ilyas, et al., 2021. The Effect of Preoperative Opioid Education on Opioid Consumption After Outpatient Orthopedic Surgery: A Prospective Randomized Trial	N/A	Prospective Randomized Study	Sample e; 237 patients undergoing outpatient orthopedic surgery Setting: multiple participating outpatient surgical centers affiliated with a single academic center. **Inclusion criteria:** Patients undergoing shoulder, elbow, wrist, knee, foot, and/ or ankle surgery **Exclusion criteria:** age younger than 18 years, inpatient procedures, surgeries distal to the	IV= Preoperative opioid education DV1 = number of pills taken DV2 = Daily VAS pain score DV3 = attitude towards the pain experience	N/A	cases were analyzed in aggregate and stratified by anatomic location of surgery. When data were normally distributed (as measured by skewness and kurtosis less than 2 and 12, respectively), Student's t test was performed to compare continuous variables between groups. Means and standard deviations were used for	237 patients were available for analysis, consisting of 107 randomized to receive preoperative education and 130 to not receive preoperative education. The preoperative opioid education group consumed significantly fewer prescription opioid pills (mean, 6 pills; range, 2-16.5 pills) when compared with the group not receiving education (mean, 12 pills; range, 4-24.8 pills) (P<.05). The preoperative education group consumed significantly fewer total MEQ (mean, 45 MEQ; range, 15-120 MEQ) than the non-educated group (mean, 83.8 MEQ; range, 30.0-178 MEQ) (P<.05). Visual analog scale pain scores recorded on the day of surgery through postoperative day 5 did not differ significantly	Level II/Good Quality	This study is very relevant and produced strong data. It could potentially be feasible in my practice setting. The education performed was done using a multimedia presentation on a tablet in the preoperative area immediately prior to surgery. Limitations: Limitations include the difference in education from the individual surgical teams also affected the level of education between patients in both the control and study arms.

			wrist, and surgeries under local anesthesia only			descriptive statistics in such cases. In continuous, non-normally distributed datasets, medians, and quartiles were reported, and the Mann–Whitney U test was used to compare groups. Chi-square analysis was used for categorical data. P<.05 was considered statistically significant.	between the groups. Multimodal pain regimens using nonopioids were used by 71% of educated patients and 77% of non-educated patients (P=.38).		
Article 5									
Rucinski & Cook, 2020. Effects of preoperative opioid education on postoperati	N/A	Systematic Review	Sample: 11 articles about opioid use and preoperative education **Inclusion criteria:** Narcotics or opioids and	IV1: Preoperative Education DV1: Postoperative opioid use	N/A	Descriptive statistics were used to compare the studies	3 studies used written and verbal education, with 2 citing lowered opioid use. Two used verbal education only, and both cited lowered opioid use. One used written and video education and cited	Level I/Good Quality	Strengths: The systematic review shows most of the studies it found showed reduced opioid usage with preoperative education. Limitations: This systematic review was limited by the number of available peer reviewed publications focusing on preoperative education

ve opioid use and pain management in orthopaedics: A systematic review			preoperative education	DV2: Patient outcome			lowered opioid use. One used video education only and cited lowered opioid use. One used written education only and did not cite lowered opioid use.		
Article 6									
Shersher, et al. 2021 Definitions and use of the teach-back method in healthcare consultations with patients: A systematic review and thematic synthesis	N/A	Systematic review	Sample: 66 articles **Inclusion criteria**: "communication style" [OR] "communication technique*" [OR] "communication aid" [OR] "non-verbal communication" [OR] "verbal communication" [OR] "communication strateg*" [OR] "communication repair" [OR] "communication training" [OR] "conversation analysis" [AND] medical [OR]	IV: Type of education DV1: Patient knowledge	N/A	Descriptive statistics were used to describe each included article	The teach-back method was reported to benefit a wide range of patient populations. Teach-back was also reported to improve knowledge outcomes for patients with cognitive impairment who could orient to time and place. The majority of studies that assessed patient perceptions of receiving the teach-back method in a healthcare consultation showed satisfaction with the interaction.	Level I/Good Quality	Strengths: The systematic review included a large number of studies and discussed the teach-back method at length. While none of the studies are related to orthopedic surgery or opioids, it is broad enough that the discussion is still relevant Limitations: The study was limited by the quality of the studies comprising the review and synthesis. Many studies focused on patient populations or healthcare settings associated with low health literacy, education and socio-economic back- grounds, potentially resulting in researcher and publication bias in the selection of populations in their studies to achieve expected results.

			health [OR] consultation [OR] rehabilitation **Exclusion criteria:** They excluded studies that examined communication through third parties (e.g. interpreters or family members), inter-professional communication (e.g. nurse-to-nurse interactions), profound com-munication disabilities (e.g. aphasia), use of specialized techno-logical aids (i.e. iPads), non-interpersonal health communication (i.e. awareness campaigns, brochures, radio or television),						

			com- munication approaches (e.g. patient-centered), specialized fields (e.g. palliative care) and papers published over 10 years ago (i.e. prior to 2008).						
Article 7									
Bloom, et al. 2021 Preoperative Opioid Education has No Effect on Opioid Use in Patients Undergoing Arthroscopic Rotator Cuff Repair: A Prospective, Randomized Clinical Trial	N/A	Prospective Randomized Clinical Trial	Sample: 130 Patients undergoing arthroscopic rotator cuff surgery **Inclusion criteria**: Initial rotator cuff repair, between August 2018 and May 2019, opioid naïve, 18 years or older **Exclusion criteria:** Previous rotator cuff repair, previous opioid usage	IV: Type of preoperative education DV1: Patient opioid use	N/A	This study used an independent-samples t-test to compare continuous variables between the two groups. A chi-squared test was used to compare difference between categorical variables. Statistical significance was defined as P , 0.05	No statistically notable differences were found between the two groups regarding patient demographics or preoperative parameters	Level II/Good Quality	Strengths: strengths including the randomized design and inclusion of variety of surgeons with different practice patterns and patient profiles, which makes it more generalizable to the orthopaedic community. Our analysis of intraoperative pathology and concomitant procedures is an additional strength. Furthermore, the use of two separate systems (medical center EMR and statewide database) to verify narcotic medication prescriptions (and refills) further strengthens the reliability of the presented data, although it is possible that patients received opioids from other sources Limitations: The authors were reliant on self-reported narcotic consumption

									data because the study focused on an outpatient cohort: despite frequent patient contact, this introduces the possibility of patient reporting error. Although this was a randomized controlled trial, patients were not blinded to the purpose of the study, which may have introduced bias to our results. However, this bias likely had a limited role in determining the outcome of the study because both groups were equally exposed to this bias. In addition, although all patients were residents of New York (a state with a centralized prescribing database), it is possible patients obtained additional opioids from other sources. In this vein, although patients were verbally and electronically screened regarding their previous opioid use, it is possible that these data were somewhat clouded by patient deception.
Article 8									
Waszak, et al. 2018 A Quality improvement project to improve education provided by nurses to ED patients prescribed	N/A	Quality improvement project	Sample: 53 patients **Inclusion criteria**: Patients undergoing breast surgery for breast cancer between 2018-2019	IV: Type of education – used teach-back approach DV1: Patient education level DV2: Nurse education level	N/A	Descriptive statistics and a paired t-test were run, using SPSS version 24 to evaluate the pretest and post-test items	Percentage of correct answers in the post education test increased compared to the pre-education test. Patients agreed that the understood how to take, store and dispose of their medications	Level III/Good Quality	Strengths: The use of standardized questionnaires, and the RN education prior to initiating the education of patients were both strengths Limitations: Patient identification was not tracked, so patients could not be followed up. 32.6% of patients reported that they had received the same pain medication handout

opioid analgesics at discharge			**Exclusion criteria:** Exclusion criteria was not defined			and determine the knowledge gained by the nurses who underwent the face-to-face, 15-minute training. The patient survey results were analyzed using descriptive statistics			from this emergency department in the past few months. If this is a true reflection of repeat patients of this education intervention, it is unclear how many unique patients were represented by the 52 patient surveys received. The sample of patients was small and did not include patients younger than 18 years of age. Also, the project only included 1 location/unit.

Appendix C

Table 1

Level of Evidence Synthesis Table

Article Number	1	2	3	4	5	6	7	8
Level I: Systematic review or meta-analysis					x	x		
Level II: Randomized controlled trial	X		X	x			x	
Level III: Controlled trial without randomization		x						
Level IV: Case-control or cohort study								
Level V: Systematic review of qualitative or descriptive studies								
Level VI: Qualitative or descriptive study, CPG, Lit Review, QI or EBP project								x
Level VII: Expert opinion								

Table 2.

Outcomes Synthesis Table

Article Number	1	2	3	4	5	6	7	8
Patient Knowledge	NE	↑	↑	NE	NE	↑	NE	↑
Patient Satisfaction	NE	↑	NE	ND	ND	↑	↑	↑
VAS Pain Score	NE	NE	NE	ND	NE	NE	NE	NE
Opioid Use	↓	↓	↓	↓	↓	NE	↓	NE
Opioid Dependence	↓	NE	NE	NE	NE	NE	NE	NE
Opioid Prescriptions Filled	↓	↓	ND	↓	↓	NE	NE	NE
Type of Education	2-Minute Video Pamphlet	Verbal Pamphlet	5-Minute Video	Multi-media presentation	Video Pamphlet Verbal	Teach-Back	Video	Verbal Written Teach-Back

NE, not evaluated; ND, no statistically significant difference

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Appendix D

PRESCRIPTION OPIOIDS: WHAT YOU NEED TO KNOW

Prescription opioids can be used to help relieve moderate-to-severe pain and are often prescribed following a surgery or injury, or for certain health conditions. These medications can be an important part of treatment but also come with serious risks. It is important to work with your health care provider to make sure you are getting the safest, most effective care.

WHAT ARE THE RISKS AND SIDE EFFECTS OF OPIOID USE?

Prescription opioids carry serious risks of addiction and overdose, especially with prolonged use. An opioid overdose, often marked by slowed breathing, can cause sudden death. The use of prescription opioids can have a number of side effects as well, even when taken as directed:

- Tolerance—meaning you might need to take more of a medication for the same pain relief
- Physical dependence—meaning you have symptoms of withdrawal when a medication is stopped
- Increased sensitivity to pain
- Constipation
- Nausea, vomiting, and dry mouth
- Sleepiness and dizziness
- Confusion
- Depression
- Low levels of testosterone that can result in lower sex drive, energy, and strength
- Itching and sweating

receiving prescription opioids long term in a primary care setting struggles with addiction.

* Findings from one study

RISKS ARE GREATER WITH:

- History of drug misuse, substance use disorder, or overdose
- Mental health conditions (such as depression or anxiety)
- Sleep apnea
- Older age (65 years or older)
- Pregnancy

Avoid alcohol while taking prescription opioids. Also, unless specifically advised by your health care provider, medications to avoid include:

- Benzodiazepines (such as Xanax or Valium)
- Muscle relaxants (such as Soma or Flexeril)
- Hypnotics (such as Ambien or Lunesta)
- Other prescription opioids

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

American Hospital Association®

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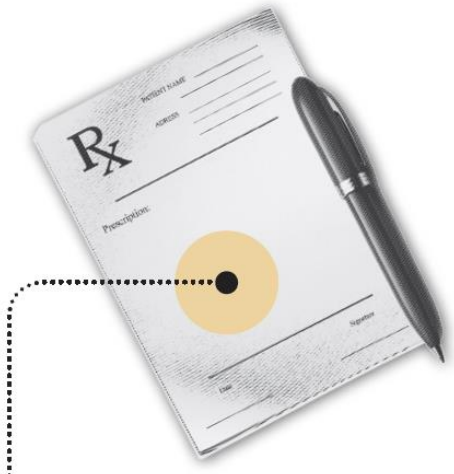
KNOW YOUR OPTIONS

Talk to your health care provider about ways to manage your pain that don't involve prescription opioids. Some of these options **may actually work better** and have fewer risks and side effects. Options may include:

- Pain relievers such as acetaminophen, ibuprofen, and naproxen
- Some medications that are also used for depression or seizures
- Physical therapy and exercise
- Cognitive behavioral therapy, a psychological, goal-directed approach, in which patients learn how to modify physical, behavioral, and emotional triggers of pain and stress.



Be Informed!

Make sure you know the name of your medication, how much and how often to take it, and its potential risks & side effects.

IF YOU ARE PRESCRIBED OPIOIDS FOR PAIN:

- Never take opioids in greater amounts or more often than prescribed.
- Follow up with your primary health care provider within ___ days.
  - Work together to create a plan on how to manage your pain.
  - Talk about ways to help manage your pain that don't involve prescription opioids.
  - Talk about any and all concerns and side effects.
- Help prevent misuse and abuse.
  - Never sell or share prescription opioids.
  - Never use another person's prescription opioids.
- Store prescription opioids in a secure place and out of reach of others (this may include visitors, children, friends, and family).
- Safely dispose of unused prescription opioids: Find your community drug take-back program or your pharmacy mail-back program, or flush them down the toilet, following guidance from the Food and Drug Administration (www.fda.gov/Drugs/ResourcesForYou).
- Visit www.cdc.gov/drugoverdose to learn about the risks of opioid abuse and overdose.
- If you believe you may be struggling with addiction, tell your health care provider and ask for guidance or call SAMHSA's National Helpline at 1-800-662-HELP.

LEARN MORE | www.cdc.gov/drugoverdose/prescribing/guideline.html

Appendix E

Preoperative Education Handout

Total Joint Replacement Surgery

Medications before your surgery

- Over-the-counter blood thinners (Aspirin 81mg) and supplements should be stopped 7-10 days before surgery.
- Your primary care doctor will review whether you should stop prescription medications at your preoperative appointment.
- You may take **Arthritis Strength** TYLENOL for pain management until your surgery date.

Before your Surgery

- The ice machine company will call you before your surgery for you to get your ice machine and show you how to use it. It will be programmed to cycle for 60 mins on and 30 mins off.
- Pick up your prescriptions up from the pharmacy before your surgery.

Day before Surgery

- If you have been given Chlorhexidine wash, shower with half the bottle the night before your surgery and the remainder of the bottle the morning before you leave for the hospital
- If you have been given Chlorhexidine wipes, shower with antibacterial soap the night before your surgery, then use the wipes the night before and the morning of your surgery. Let your skin air dry after using the wipes.
- Do not shave your armpit for 5 days prior to surgery and do not use deodorant, lotion, or powder on the surgical side before leaving for hospital.

Day of Surgery

- You will get a call from the hospital or surgical center the day before with your arrival time.
- You will need someone to drive you home from the hospital or surgical center.
- You will need to get covid tested approximately 3 days prior to procedure.
- Do not eat or drink anything after midnight the night before your surgery
    - If you are having your surgery at Midstate, you can have 12oz. of a Gatorade (regular or sugar free) up to 1 hour before your scheduled arrival time.
    - Unless you've been told not to take some of your medications, you can take your medications with a sip of water the morning of your surgery
- As part of your anesthesia, you will be given a nerve block to numb your arm, which can last 24-48 hours after your surgery.

After your Surgery

- Use your ice machine around the clock especially when you sleep. You will be shown how to place the cooling pad under the sling (not directly against your skin) prior to your discharge.
- Use the ice machine as soon as you get home even if you are not in any pain. It will significantly help with inflammation as well as pain management.
- If you need to get up, unclip the hoses at the back of the machine leaving the pad in place

- If you are not getting an ice machine, you may use ice packs 30 mins on and 30 mins off. Have several available in the freezer to rotate.
- You should plan on sleeping in a recliner or upright in bed for the first few weeks following surgery. You should not be sleeping on your side.
- You will have a sling or shoulder immobilizer after your surgery, which you will wear for 4-6 weeks. You may not drive until you are out of the sling or immobilizer.
- You may use your arm from elbow to hand in a hinge movement as soon as the nerve block wears off, meaning you can feed yourself, brush your teeth, use a keyboard, text, write, play video games etc. **Do NOT move your upper arm away from your body**
- You must begin your **circle** exercises on the third day following your surgery.
    - Remove your arm from the sling, hold onto something stable and bend at your waist (or sit) and gently lower your arm. Make 3" wide circles as though you are stirring a cup of coffee. Do 30 clockwise and 30 counterclockwise circles, repeating this 5x a day. Continue these exercises until your first formal physical therapy appointment (for most patients this will be 5 weeks). You will get a physical therapy prescription at your first appointment after your surgery.
- **These exercises are important to avoid frozen shoulder.**

PLEASE ONLY DO THESE EXERCISES NOT THE ONES IN THE HOSPITAL DISCHARGE INSTRUCTIONS.

- You may remove your outer bandage and shower 4 days after your surgery. Take your arm out of your sling and hold it across your stomach while in the shower. You will have steri-strips covering the incision, which can get wet. Do not scrub your incision site.
    - To wash your armpit, bend at the waist and gently lower your arm (like you do with circle exercises)
- After your shower, pat your incision site dry.
- Isopropyl alcohol can be used to remove any purple marker residue and baby oil to remove any surgery adhesive.
- To dress, you use the same method of lowering your arm and putting the surgical arm in the sleeve first then come up with the arm and sleeve and pull the neck opening over your head and put the "good" arm in last. To undress, remove the sleeve from the "good" arm come over your head with shirt, bend lower surgical arm and remove.
- Bruising and hand/finger swelling is normal. You can use a stress ball, rotate your wrist of flex your elbow to increase circulation.

Call the office if the swelling gets worse and you experience *redness, heat, and pain*

<u>Medications after surgery</u>

- You will be prescribed pain medication to help control your postoperative pain. This medication is effective to treat pain when taken for a short period of time but has side effects and serious risks (addiction and overdose) if taken for too long or at high doses. It is important that you stop this medication as soon as your pain allows.
- Don't take this medication with other medications that make you drowsy, such as sleeping aids, alcohol, illegal drugs, muscle relaxants and anti-anxiety medication
- When your nerve block starts to wear off, you will feel a tingling sensation in your hand and arm, which may last for several hours. When you first feel pain, take your prescribed pain medication. Do not take your pain pills on an empty stomach.
- You can supplement your prescribed medication with Tylenol, Ibuprofen or Aleve

- You will be prescribed an anti-nausea medication for you to take if needed
- Take one baby aspirin (81mg) twice a day (morning and night) for 4 weeks after your surgery, unless you are told not to by your primary care doctor, cardiologist, or other specialist
- You will need to take antibiotics prior to dental procedures, colonoscopies, and invasive gynecological procedures for the rest of your life. Our office can prescribe these for you.

Appendix F

Postoperative Phone Call Template

Overall, how have you been feeling since you had your surgery?

What is your current pain level, using the 0-10 (green to red) scale we discussed preoperatively?

What types of pain medication have you taken since you got home?

How many pain pills have you taken (number and frequency)?

What other methods are you currently using to manage your pain (i.e., ice machine)?

On a scale of 1-10, with 1 being completely unsatisfied, and 10 being very satisfied:
Rate your current satisfaction with your pain management?
Rate your current satisfaction with your knowledge of pain management

Since having your surgery, have you had a fever or chills?

How does your dressing look? Is it warm, red, swollen, or wet?

Do you have any other questions?

Appendix G

Table #. *Implementation Timeline for DNP Project:*

PICOT Question: Search Question in PICO format: For adult patients undergoing total shoulder replacement surgery (P), how does a combination teach-back method, preoperative education video and pamphlet (I) compared to verbal education alone (C) affect postoperative pain intensity and postoperative narcotic use (O)?
Team Leader: Sarah Scheller
Team Members: Orthopedic Surgeon, Office Staff, Sylvie Rosenbloom
Pilot site: Orthopedic Surgeon's Offices

Pre-Implementation	**Topic**	**Notes**	**Actions**	**Outcome/Status**
A	Finalize Education handout			May 2022
B	Create educational video			May 2022
C	Finalize postoperative questionnaire			June 2022
Implementation				
A	Preoperative education sessions			June – October 2022
B	Postoperative phone calls			June – October 2022

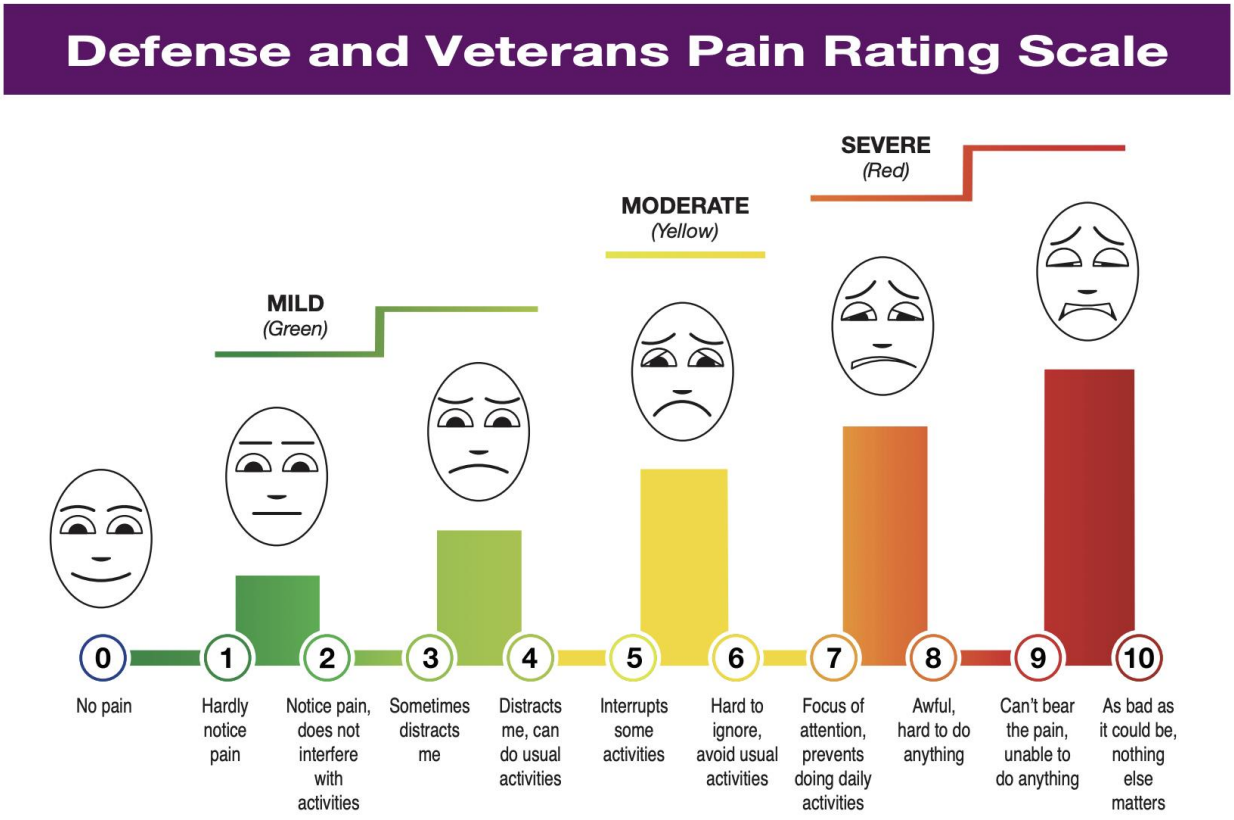
Appendix H

Differentiating Quality Improvement and Research Activities Tool

Question	Yes	No
1. Is the project designed to bring about immediate improvement in patient care?	X	
2. Is the purpose of the project to bring new knowledge to daily practice?	X	
3. Is the project designed to sustain the improvement?	X	
4. Is the purpose to measure the effect of a process change on delivery of care?	X	
5. Are findings specific to this hospital?	X	
6. Are all patients who participate in the project expected to benefit?	X	
7. Is the intervention at least as safe as routine care?	X	
8. Will all participants receive at least usual care?	X	
9. Do you intend to gather just enough data to learn and complete the cycle?	X	
10. Do you intend to limit the time for data collection in order to accelerate the rate of improvement?	X	
11. Is the project intended to test a novel hypothesis or replicate one?		X
12. Does the project involve withholding any usual care?		X
13. Does the project involve testing interventions/practices that are not usual or standard of care?		X
14. Will any of the 18 identifiers according to the HIPAA Privacy Rule be included?		X

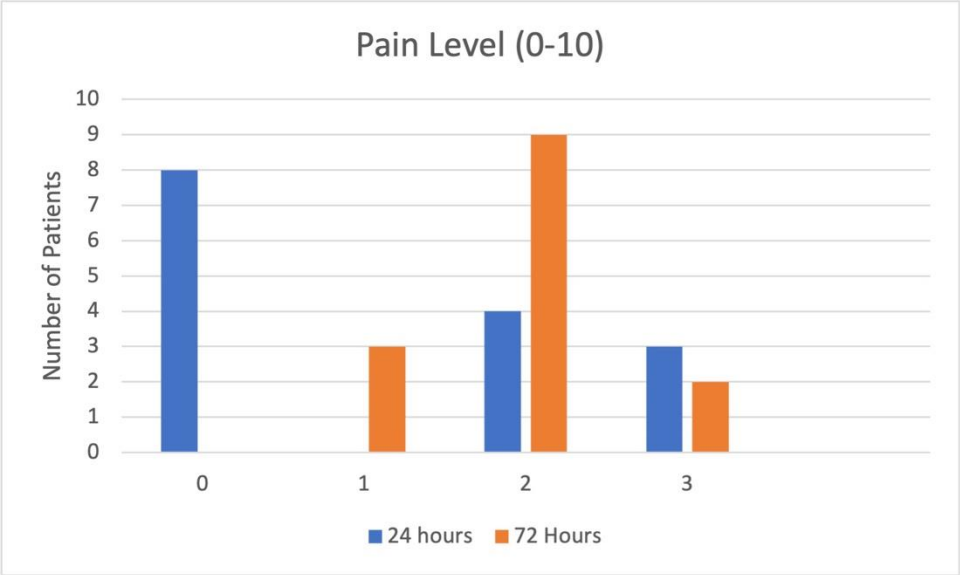
Adapted from Foster, J. (2013). Differentiating quality improvement and research activities. Clinical Nurse Specialist, 27(1), 10–3. https://doi.org/10.1097/NUR.0b013e3182776db5

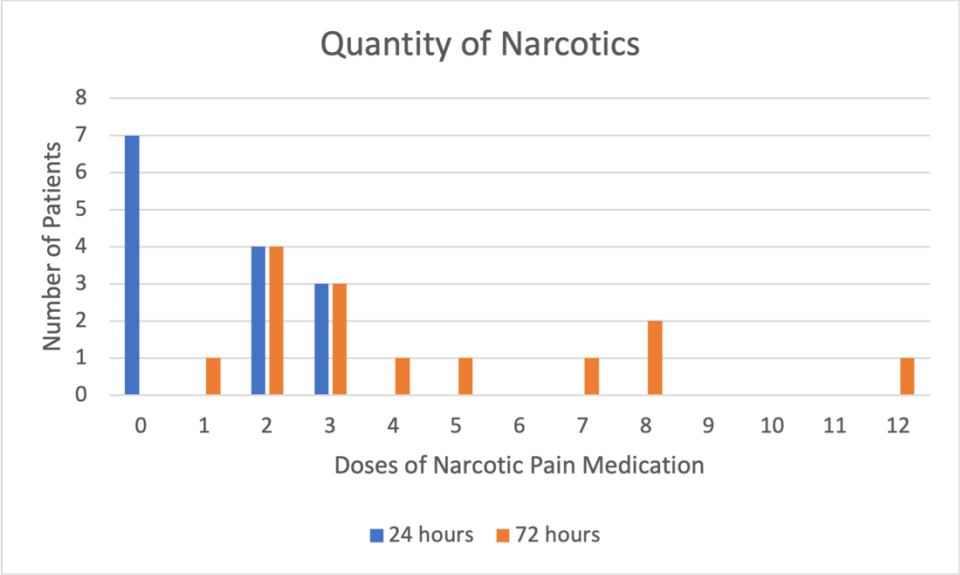
Appendix I

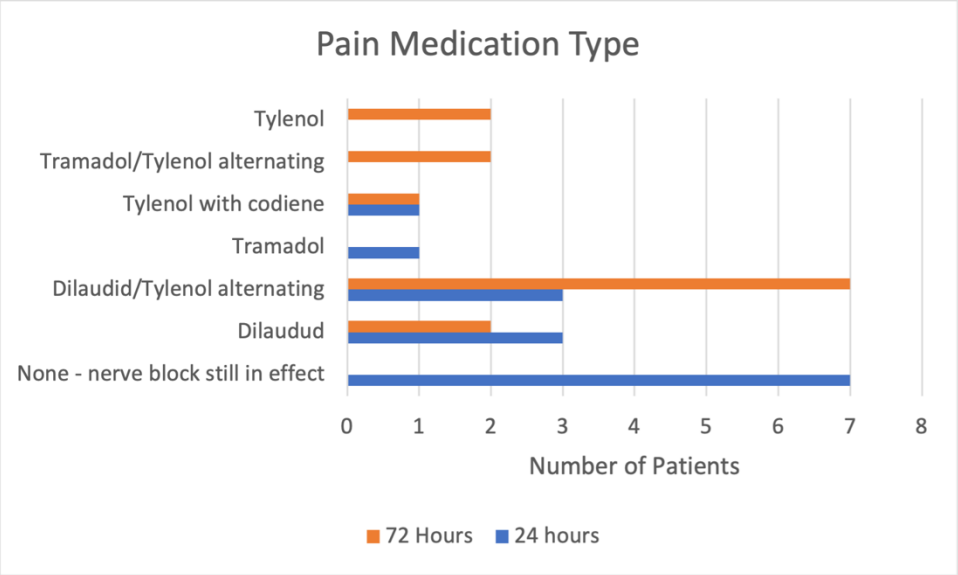

Defense and Veterans Pain Rating Scale
MILD
(Green)
MODERATE
(Yellow)
SEVERE
(Red)
0
No pain
1
Hardly notice pain
2
Notice pain, does not interfere with activities
3
Sometimes distracts me
4
Distracts me, can do usual activities
5
Interrupts some activities
6
Hard to ignore, avoid usual activities
7
Focus of attention, prevents doing daily activities
8
Awful, hard to do anything
9
Can't bear the pain, unable to do anything
10
As bad as it could be, nothing else matters

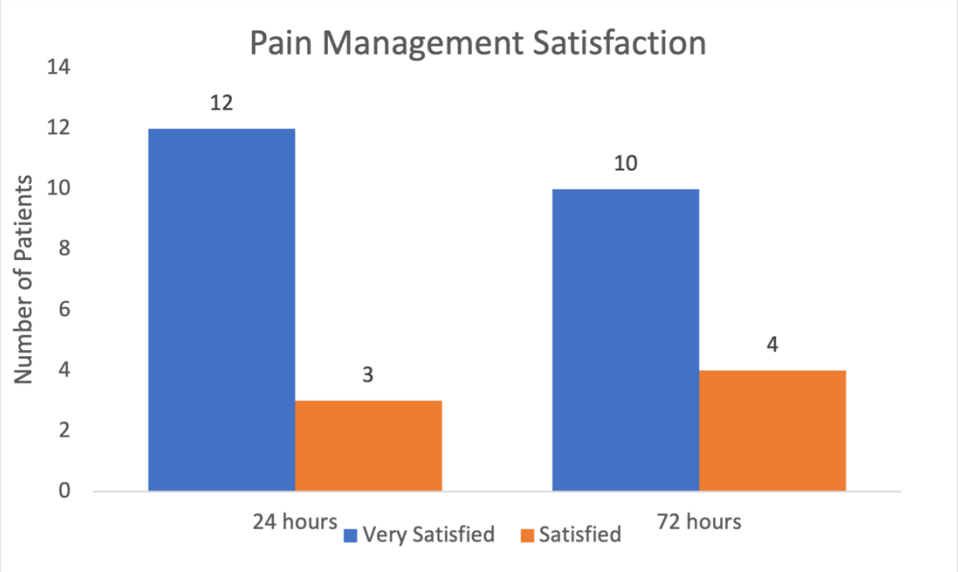
Appendix J

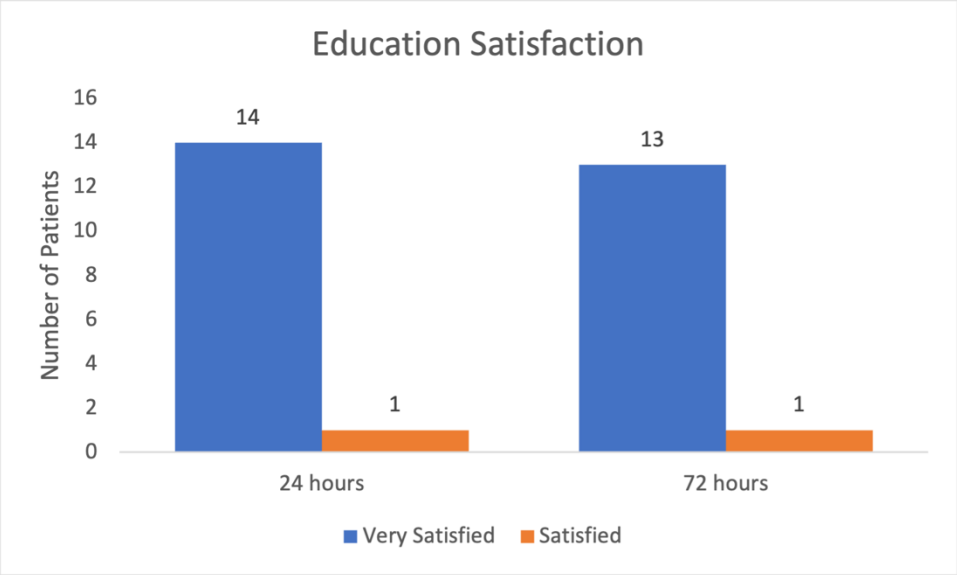
Results






Pain Medication Type
Tylenol
Tramadol/Tylenol alternating
Tylenol with codiene
Tramadol
Dilaudid/Tylenol alternating
Dilaudud
None - nerve block still in effect
0
1
2
3
4
5
6
7
8
Number of Patients
72 Hours
24 hours


Pain Management Satisfaction
14
12
10
8
6
4
2
0
Number of Patients
12
3
10
4
24 hours
72 hours
Very Satisfied
Satisfied


Education Satisfaction
Number of Patients
16
14
12
10
8
6
4
2
0
14
1
13
1
24 hours
72 hours
Very Satisfied
Satisfied

Appendix K
Executive Summary

Total joint arthroplasties are one of the largest growing segments of orthopedic surgery cases, and adequate preoperative education and pain management is an important part of pre and postoperative patient care. Inadequate education can lead to increased confusion for patients and decreased satisfaction. Evidence supports the use of a combination of the teach-back method, videos, and pamphlets to educate patients prior to their surgery.

A quality improvement project was initiated for patients having total shoulder arthroplasty surgery with an orthopedic surgeon in Connecticut. The current educational methods were observed, and feedback was received from the surgeon and his staff on how they felt the education was working. An educational video and handout were then created, and preoperative education sessions using the teach-back method were performed. Postoperative phone calls were placed at 24 and 72 hours to assess the patient's use of narcotic pain medication, alternative pain management medication and techniques, and their satisfaction with their pain management education. The Plan-Do-Study-Act (PDSA) method was used to modify and improve the education during the project's implementation, with 3 cycles being completed throughout the project.

After 4 months of implementation, 16 patients had been educated and 15 had received their surgery. One patient was admitted to the hospital on post-operative day two, resulting in postoperative phone calls being completed on 14 patients. All patients reported that they were satisfied or very satisfied with their pain management and knowledge about pain management, with pain levels ranging from zero to three on a one to ten scale. Patients reported their pain was

well managed with the number of narcotic pain medication doses they were taking and reported feeling well prepared for their surgery.

Several barriers to implementation were encountered, including the hiring of a new MA prior to the implementation period and the time needed to learn how to create a video using PowerPoint software. Several key lessons learned include that each office setting is different, and the staff must be fully engaged in order for change to be successful. The staff at this office was very engaged during implementation, ensuring that they will be able to successfully continue using the new education methods in the future. Another lesson learned was to listen to patient feedback during their initial education sessions and postoperative phone calls, in order to utilize the PDSA cycle. Ultimately, the results of this project have been very relevant to the practice setting. The orthopedic surgeon and staff have expressed a desire to create additional educational videos for other surgical patients, and use the teach-back method with all patients in the future. The office has the originals for all education materials, which they will continue to update materials as needed and use informal PDSA cycles to keep the education methods relevant and useful for patients, the surgeon and the office staff.

Overall the patients, the orthopedic surgeon and their staff all were very satisfied with the new educational materials, and they will continue to use the new methods for future patient education.

Appendix L

Poster

DR. SUSAN L. DAVIS, R.N., & RICHARD J. HENLEY COLLEGE OF NURSING
Sacred Heart University

Perioperative Pain Management Education and Narcotic Use: A Quality Improvement Project

Sarah Scheller, BSN, RN, CNOR; Sylvie Rosenbloom, DNP, APRN, FNP-BC, CDCES, CME; John Daigneault, MD

Rationale

- The current opioid epidemic affects all ages, although it is rarely discussed when managing older adults
- Total joint arthroplasties are one of the largest growing segments of orthopedic surgery cases
  - Adequate preoperative education and pain management is an important part of pre and postoperative patient care
  - Inadequate education can lead to increased confusion for patients and decreased satisfaction
  - Preoperative education can reduce patient narcotic usage postoperatively

Background

Internal Data

- DNP project lead meet with stakeholders to determine patient education needs
- Current pre-operative education was observed
- Current education includes verbal education with a written handout for patients to take home

External Data

- CINAHL, MEDLINE, and Cochrane Central Register of Controlled Trials were searched
- Key words were opioid education, surgery pain education, preoperative education, teach-back education, patient satisfaction
- Inclusion criteria use of preoperative education and evaluation of pain management
- 8 relevant articles were found
- 4 included a video
- 2 used teach-back method
- 4 used verbal & a pamphlet

Outcomes Synthesis Table

Article Number	1	2	3	4	5	6	7	8
Patient Knowledge	NE	↑	↑	NE	NE	↑	NE	↑
Patient Satisfaction	NE	↑	NE	ND	ND	↑	↑	↑
VAS Pain Score	NE	NE	NE	ND	NE	NE	NE	NE
Opioid Use	↓	↓	↓	↓	↓	NE	↓	NE
Opioid Dependence	↓	NE	NE	NE	NE	NE	NE	NE
Opioid Prescriptions Filled	↓	↓	ND	↓	↓	NE	NE	NE
Type of Education	2-Minute Video Pamphlet	Verbal Pamphlet	5-Minute Video	Multi-media presentation	Video Pamphlet Verbal	Teach-Back	Video	Verbal Written Teach-Back

NE, not evaluated; ND, no statistically significant difference

PICO Question

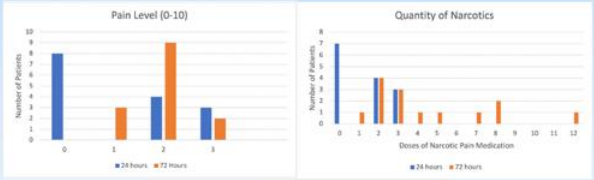
For adult patients undergoing total shoulder replacement surgery (P), how does a combination teach back method, pre-operative education video and pamphlet (I) compared to verbal education alone (C) affect post operative pain intensity and postoperative narcotic use (O)?

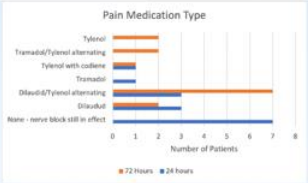
Project Goals

- To identify best practices for educating preoperative patients on pain management and opioid use
- To develop a preoperative education video for patients undergoing total shoulder arthroplasty
- To develop an educational pamphlet for patients undergoing total shoulder arthroplasty
- To implement a preoperative education plan using teach-back method, video and pamphlet during preoperative office appointments for patient's undergoing total shoulder arthroplasty.

Results

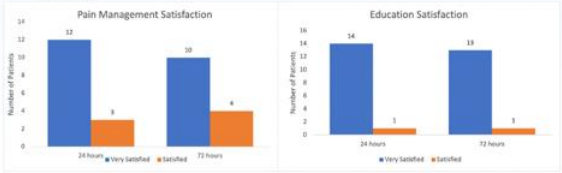
- 16 patients were educated, 15 had their surgery
- 1 patient was admitted to the hospital 36 hours postoperatively and only their 24-hour phone call was completed
- Data was analyzed for 15 patients at 24 hours and 14 patients at 72 hours
- 14 patients had a reverse total shoulder arthroplasty and 1 had an anatomical total shoulder arthroplasty





Outcomes

All patients reported being satisfied or very satisfied with their pain management and education



Implementation Plan

The project setting was Dr. Daigneault's offices in Hamden, Branford, Orange and Wallingford, CT. Participants were his patients undergoing total shoulder replacement

A Plan-Do-Study-Act cycle was used to modify the educational materials

- **Plan**: Video and updated teach-back education materials were created
- **Do**: DNP project lead performed 1-3 pre-operative education sessions a week
- **Study**: Post-operative phone calls were placed 24 and 72 hours after surgery
- **Act**: The DNP project lead modified the educational process as needed

Data collection

- Phone calls included questions to determine the patient's pain management, satisfaction with their pre-operative education, and narcotic use
- A 1-10 pain scale with faces was used to determine post operative pain level
- Data was collected via Excel spreadsheet

Sustainability Plan

- The office has original versions of the video and educational handout and will continue to update materials as needed
- Phone calls will only be placed at 24 hours due to staffing and office policy

Lessons Learned

- Each office setting is different
- Staff must be engaged
- Constant communication
- Listen to patients and incorporate their feedback
  - Feedback was used to generate changes with each PDSA cycle

Relevance

- Patients and staff commented on how smoothly the process was working
- Office staff performed the education when the DNP project lead was unavailable
- Staff reported that they were saving time
- Surgeon and staff have expressed a desire to create additional videos and use the teach-back method in the future

Contact: Sarah Scheller, BSN, RN, CNOR sfmaley@gmail.com

Appendix M

CITI Module Certificates

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Sarah Scheller (ID: 11121580)
- **Institution Affiliation:** Sacred Heart University, Inc. (ID: 2025)
- **Institution Email:** schellers@mail.sacredheart.edu
- **Institution Unit:** College of Nursing

- **Curriculum Group:** CITI Health Information Privacy and Security (HIPS)
- **Course Learner Group:** Information Privacy and Security (IPS)
- **Stage:** Stage 1 - Basic Course
- **Description:** This course for **Clinicians** will satisfy the mandate for basic training in the HIPAA. In addition other modules on keeping your computers, passwords and electronic media safe and secure are included.

- **Record ID:** 48502040
- **Completion Date:** 16-Apr-2022
- **Expiration Date:** N/A
- **Minimum Passing:** 80
- **Reported Score*:** 95

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
FERPA: An Introduction (ID: 17407)	16-Apr-2022	4/5 (80%)
Basics of Health Privacy (ID: 1417)	16-Apr-2022	5/5 (100%)
Health Privacy Issues for Clinicians (ID: 1418)	16-Apr-2022	4/5 (80%)
Basics of Information Security, Part 1 (ID: 1423)	16-Apr-2022	5/5 (100%)
Basics of Information Security, Part 2 (ID: 1424)	16-Apr-2022	5/5 (100%)
Safer Emailing and Messaging, Part 1 (ID: 1429)	16-Apr-2022	5/5 (100%)
Safer Emailing and Messaging, Part 2 (ID: 1430)	16-Apr-2022	4/5 (80%)
Protecting Your Computer (ID: 1425)	16-Apr-2022	5/5 (100%)
Picking and Protecting Passwords (ID: 1449)	16-Apr-2022	5/5 (100%)
Protecting Your Portable Devices (ID: 1427)	16-Apr-2022	5/5 (100%)
Protecting Your Identity (ID: 1428)	16-Apr-2022	5/5 (100%)
Safer Web Surfing (ID: 1431)	16-Apr-2022	5/5 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/?ke7061d5c-2b5e-41af-b85f-f1c31eae0e20-48502040

Collaborative Institutional Training Initiative (CITI Program)
101 NE 3rd Avenue
Suite 320
Fort Lauderdale, FL 33301 US

Email: support@citiprogram.org
Phone: 888-529-5929
Web: https://www.citiprogram.org

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

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- **Institution Affiliation:** Sacred Heart University, Inc. (ID: 2025)
- **Institution Email:** schellers@mail.sacredheart.edu
- **Institution Unit:** College of Nursing

- **Curriculum Group:** Conflict of Interest mini-course
- **Course Learner Group:** Conflict of Interest
- **Stage:** Stage 1 - Stage 1

- **Record ID:** 48502196
- **Completion Date:** 16-Apr-2022
- **Expiration Date:** 15-Apr-2026
- **Minimum Passing:** 80
- **Reported Score*:** 87

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Financial Conflicts of Interest: Overview, Investigator Responsibilities, and COI Rules (COI-Basic) (ID: 15070)	16-Apr-2022	5/5 (100%)
Institutional Responsibilities as They Affect Investigators (COI-Basic) (ID: 15072)	16-Apr-2022	4/5 (80%)
Conflicts of Commitment and Conscience (COI-Basic) (ID: 15073)	16-Apr-2022	4/5 (80%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

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COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Sarah Scheller (ID: 11121580)
- **Institution Affiliation:** Sacred Heart University, Inc. (ID: 2025)
- **Institution Email:** schellers@mail.sacredheart.edu
- **Institution Unit:** College of Nursing

- **Curriculum Group:** Responsible Conduct of Research (RCR)
- **Course Learner Group:** Same as Curriculum Group
- **Stage:** Stage 1 - RCR
- **Description:** This course is for investigators, staff and students with an interest or focus in **Biomedical Research**. This course contains text, embedded case studies AND quizzes.

- **Record ID:** 48502194
- **Completion Date:** 16-Apr-2022
- **Expiration Date:** 15-Apr-2025
- **Minimum Passing:** 80
- **Reported Score*:** 96

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Using Animal Subjects in Research (RCR-Basic) (ID: 13301)	16-Apr-2022	5/5 (100%)
Research Involving Human Subjects (RCR-Basic) (ID: 13566)	16-Apr-2022	5/5 (100%)
Authorship (RCR-Basic) (ID: 16597)	16-Apr-2022	5/5 (100%)
Collaborative Research (RCR-Basic) (ID: 16598)	16-Apr-2022	4/5 (80%)
Conflicts of Interest and Commitment (RCR-Basic) (ID: 16599)	16-Apr-2022	5/5 (100%)
Data Management (RCR-Basic) (ID: 16600)	16-Apr-2022	4/5 (80%)
Mentoring (RCR-Basic) (ID: 16602)	16-Apr-2022	5/5 (100%)
Peer Review (RCR-Basic) (ID: 16603)	16-Apr-2022	5/5 (100%)
Research Misconduct (RCR-Basic) (ID: 16604)	16-Apr-2022	5/5 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/?k73501a82-5bfc-4a04-961a-8ea76b167b21-48502194

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COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

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- **Institution Affiliation:** Sacred Heart University, Inc. (ID: 2025)
- **Institution Email:** schellers@mail.sacredheart.edu
- **Institution Unit:** College of Nursing

- **Curriculum Group:** Students conducting no more than minimal risk research
- **Course Learner Group:** Students - Class projects
- **Stage:** Stage 1 - Basic Course
- **Description:** This course is appropriate for students doing class projects that qualify as "No More Than Minimal Risk" human subjects research.

- **Record ID:** 48502193
- **Completion Date:** 16-Apr-2022
- **Expiration Date:** 15-Apr-2025
- **Minimum Passing:** 80
- **Reported Score*:** 88

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Belmont Report and Its Principles (ID: 1127)	16-Apr-2022	3/3 (100%)
Students in Research (ID: 1321)	16-Apr-2022	4/5 (80%)

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Suite 320
Fort Lauderdale, FL 33301 US

Email: support@citiprogram.org
Phone: 888-529-5929
Web: https://www.citiprogram.org

Appendix N

IRB Approval

T

Taber, Prof. Christopher B.

To: Scheller, Sarah M. Fri 5/20/2022 10:39 AM

Cc: Londo, Madeline C. **+2 others**

Dear Applicant,
Thank you for your submission to the IRB requesting exempt review. Based on the application submitted, the IRB is pleased to approve your submission and we wish you great success in your research.

Sincerely,
Christopher Taber
Chair, IRB

Christopher B. Taber, PhD, CSCS, USAW2, EP-C, PES
Director, Exercise and Sport Science M.S. Program
Associate Professor
College of Health Professions
Sacred Heart University
(203) 396-6342