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## The Effect of Pre-Procedural Opioid Video Education on Pediatric Patients Undergoing Orthopedic Surgery

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The Effect of Pre-Procedural Opioid Video Education on Pediatric Patients  
Undergoing Orthopedic Surgery

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Abstract

**Problem** The opioid epidemic is a continuing public health threat, growing amongst the pediatric population. Contributing to the issue are their accessibility within the community, and lack of education on safe storage and disposal of opioids.

**Methods** For this quality improvement (QI) project, a descriptive observational study design was used to identify the opioid storage and disposal habits of patients and their caregivers at home. The participant and caregiver dyads were shown a brief opioid educational video pre-operatively and were followed up with via emailed survey two weeks post-operatively. The survey contained questions pertaining to disposal and storage habits of opioids, in addition to participant demographics.

**Results** Seventy-six dyads met eligibility criteria and participated in the project. Of the 76 participants, nearly 20% (n=15) filled out the survey. Ninety-three percent of respondents keep their opioids secured and out of sight, and nearly 87% said they were disposing of extra opioids. One hundred percent of respondents correctly identified locations to appropriately dispose of opioids. Of note only 20% monitor and count their number of opioid pills and 27% of homes reported others having access to their opioid medication.

**Implications for Practice** Overall, the results of the QI project illustrated some promising results in regard to safe storage and opioid disposal habits within the community. Additionally, due to the ease of implementing the video-based education, health care settings should consider adopting this type of media for a number of reasons including cost and patient benefit.

The Effect of Pre-Procedural Opioid Video Education on Pediatric Patients Undergoing  
Orthopedic Surgery

The opioid epidemic is a continuing public health threat, especially within the pediatric population. Opioid misuse is a serious health concern because if not properly identified and treated, may lead to emergency room visits, hospital and intensive care unit admissions, and possibly death (Hudgins et al., 2019). According to the Substance Abuse and Mental Health Services Administration (SAMHSA), there were 11.4 million opioid misusers aged 12 or older within the United States in 2017. Of the 11.4 million, nearly 800,000 were youths aged 12 to 17 years old (SAMHSA, 2018). Of the opioids obtained for misuse, 53.1% were taken from a friend or a relative, and 34.6% were from a prescription obtained from a doctor (SAMHSA, 2018). Compounding the issue is the lack of education and instruction on appropriate methods for disposal of excess opioids (Merrill et al., 2019). These statistics illustrate how the pediatric population is a demographic at high risk for opioid misuse, and immediate intervention is necessary to reduce the number of children inappropriately administering and obtaining opioids. Luckily, education may play a large role in acute postoperative opioid consumption. A recent study showed that educating and engaging patients in their postoperative pain management results in lower opioid use (Yajnik et al., 2019).

Currently, there is no standardized approach for opioid safety education and large variability exists in regard to the information provided to patients and caregivers (Tait et al., 2008). Additionally, various levels of health literacy and types of learning styles may not be accommodated, as many teaching tools are done in a written format and beyond the literacy level of the general population. A study done by Kumar et al. (2020), found

that postoperative opioid education materials (PEM) are beyond the recommended 6<sup>th</sup> grade reading level and more than 2/3 of the academic institutions in the study were lacking in readable online PEMs. It is important to have educational tools that meet many levels of health literacy, as lower health literacy leads to more negative health behaviors in adolescents (Jahangard et al., 2019).

The clinical question of interest for this DNP project is: In pediatric orthopedic same day surgery patients, what is the impact of an opioid safety education video on self-reported habits on safe storage and disposal of opiates? The purpose of this project is to implement a video educational tool that delivers opioid safety information in a visual and auditory manner to accommodate various learning styles and optimize knowledge retention. The aim of this project is to have 25% of patients undergoing orthopedic surgery and his/her caregiver identify safe storage and disposal of opioids in the post-operative surgery period after viewing a pre-operative educational video. The outcome measures of this project are to identify the safe storage, and opioid disposal habits within the population of interest.

### **Literature Review**

For this project, both CINAHL and PubMed databases were utilized to search for relevant literature. The following phrases and terms were utilized for the literature review: “patient education opioid”, “video patient education”, “using education to improve opioid use”, “opioid use in postoperative pediatric patients”, “pediatric pain management education”, “pediatric orthopedic postoperative opioid use”, “pediatric opioid prescribing” and “optimizing pediatric patient education”. The search phrase “pediatric patient opioid safety education” elicited 49 results. When the filter of less than

15 years old was applied and abstracts and titles were removed that were not applicable, 14 articles remained and six were reviewed in this analysis. Exclusion criteria included single patient case studies, editorial articles, commentaries, abstracts of dissertations and books or chapters.

Pediatric pain management is a complex topic as children and adolescents are extremely unique compared to their adult counterparts. Varying opinions exist on best pharmacologic practices, optimal pain rating scales, and differences in provider prescribing habits. Complicating the issue of pediatric pain management is the rise of opioid misuse within this demographic. An area that may directly reduce child and adolescent exposure to opiates is limiting their availability in the community and accessibility from friends, peers or other family members. Education on storage and disposal of pain medications is not standardized, and there are many conflicting sources. Even though current literature is divided on best pharmacologic and non-pharmacologic ways to treat acute pediatric pain, there seems to be a consensus on the benefits of preoperative pain medication education. If a patient and his/her caregivers are educated and given the tools on how to safely secure and dispose of opioids and other prescription medications, it may be possible to decrease opioid exposure and prevent misuse from occurring later on.

Early opioid exposure has a large impact on misuse potential later on in life. A prospective study done in 2015 by Miech et al., analyzed the increased risk of long-term opioid use and possible misuse of opioids through adulthood. The panel data came from the Monitoring the Future Study, providing a sample of 6220 individuals. The sample consisted of individuals in 12<sup>th</sup> grade and were followed up through age 23 (Miech et al.,

2015). The study found that legitimate opioid use before high school graduation led to a 33% increased risk for opioid misuse after high school. More astounding is the fact that of the study sample, many of the individuals had no history of drug use and expressed strong disapproval of illegal drug use at baseline (Miech et al., 2015). A unique strength to this study is the utilization of study subjects that do not have a history of illegal drug use. Much of the literature focuses on longitudinal opioid utilization effects within high-risk populations that previously or currently use illegal substances. This illustrates that adolescent patients without prior exposure or substance misuse must also be identified as a potentially high risk for opioid misuse. Additionally, the study succeeds in alluding to the importance of early education in minimizing opioid and prescription drug misuse in later on in life.

Another issue potentially leading to the rise in adolescent opioid misuse may be the accessibility and availability of the medication. A retrospective cohort study by Harbaugh et al. (2018), sought to find if there was an increased incidence of prolonged prescription refills amongst adolescents after surgery versus non-surgical patients. The most common procedures identified amongst the surgical cohort that received opiate prescriptions were tonsillectomy and/or adenoidectomy, arthroscopic knee repair, and appendectomy (Harbaugh et al., 2018). The researchers found that 4.8% of adolescent patients with a legitimate opioid prescription continued to refill their prescription 90 to 180 days post operation (Harbaugh et al., 2018) illustrating a problem with provider prescribing habits and perhaps the patients understanding of pain associated with the procedure and potential risks of consuming opioids.

It is important to note that the most common surgeries identified in the Harbaugh et al. (2018) paper, i.e., the appendectomy and tonsil and adenoidectomy are not always prescribed opiates. This is most likely due to their controversial efficacy in pain management and large side effect profile (Friedman-Weiss, 2020; Sowder, 2016). This illustrates a dire need for improved opioid prescription safety all around, from healthcare providers to patients and their families. If pre-operative education included realistic postoperative pain management goals and the time frame in which opioids may be needed, continual prescription refilling may be decreased. Less prescription refills may directly result in less opioid availability for children and adolescents.

Currently, there is not a standardized approach for opioid education. A review done by Nascimento et al. (2019) sought out to evaluate the quality of evidence on parent's participation and ability in managing their child's postoperative pain at home, in hopes of identifying deficits in pain management. The review included 23 eligible studies, seven were clinical trials, six experimental, and one quasi experimental (Nascimento et al., 2019). Additionally, 15 were surveys and the remaining study had a qualitative approach (Nascimento et al., 2019). Three main themes were identified that prevent optimal pain management at home, including lack of informational sources, lack of postoperative pain medication education, and non-pharmacologic pain treatment approaches (Nascimento et al., 2019). The issues previously listed could be improved with pre-operative education that gives patients and their caregivers the knowledge and resources necessary to optimize their ability in managing a postoperative condition. A strength of this study, was the fact that it was the only review found in the literature search, illustrating a continuing need for pediatric focused studies in regard to pain



education.

Compounding the general lack of postoperative pain education, are the topics of safe storage and disposal of opioid medications. In 2019 a study done by Engster, Bogen & Molina, aimed to evaluate and describe the typical household management of controlled medications. This cross-sectional study, convenience sampled 243 adolescent-parent dyads, with adolescents ranging from 12-18 years old and were in the presence of one prescription medication at home (Engster et al., 2019). The dyads received a one-time electronic survey with questions about medication storage, parental monitoring of medications, and frequency and location of disposal. Results found that many families do not practice safe management of controlled medication and only 64.6% of families frequently dispose of unused medication. In regard to safe storage, 31.3% of parents did not lock up controlled medications and 9% of the adolescents had access to the medications (Engster et al. 2019). Limitations include a small-scale study done in a homogenous setting and may not be fully representative of the many children who go home across the country with opioid prescriptions. Most importantly, the results of these two articles, postulate that preoperative education efforts are needed for patients in order to maximize the overall safety of opioids.

Educational tools are important for patients because they provide a multitude of information from how to manage the condition, how to take medication, and signs and symptoms to report. Providing the educational tool in a format that is user friendly and improves one's understanding and knowledge empowers the patient and caregiver to confidently manage the diagnosis. A study by Syed et al., (2018) aimed to determine whether or not a preoperative opioid video-based education, reduced opioid consumption

postoperatively. The trial enrolled 140 patients, that were randomized into the control group who received the normal opioid education, or the study group who received a two-minute narrated video education and handout that contained information on risks of opioid overuse and misuse (Syed et al., 2018). Patients enrolled in the study completed questionnaires regarding their opioid consumption and pain, at their 2-week, 6-week and 3 month follow up. Those who received the preoperative intervention education consumed significantly less opioids and were more likely to discontinue opioid use by the end of follow up than participants in the control group (Syed et al., 2018).

Creating an educational tool which many types of learners can comprehend and benefit from can be a daunting task, especially when discussing complicated material such as medication administration and pain management. Creating approachable material for pediatric populations is difficult, as it spans many different developmental abilities. Younger generations have been exposed to technology at an earlier age and may respond and acquire knowledge better with video media versus written formats. Also, with advances in technology, video and application-based media have not only proven to be helpful in relaying information but easy to implement as a large proportion of the population owns an electronic device. Electronic information is unique in its ability to allow for continual retrieval versus its paper counterpart, and may improve knowledge and satisfaction. Also, written material is lost or misplaced, the patient and his/her caregiver may not be able to accurately recall the information, affecting their ability to safely and fully manage their medication and diagnosis. A study done by Chakravarthy et al., (2018) sought to determine whether or not an educational video intervention could achieve higher knowledge acquisition than the standard of care, composed of an

information sheet and verbal discharge instructions from the nurse. The randomized pilot trial was done at an emergency department in a large urban academic hospital (Chakravarthy et al., 2018). A convenience sample of 54 patients were enrolled and placed in either the control group who received the customary instructions, or the intervention group which received video education in addition to the standard of care. The intervention group had better knowledge scores on risks, proper usage and disposal of opiates at 82% versus the control group at 65% (Chakravarthy et al., 2018). Limitations of this study include the sample size and only ER patient enrollment along with variation in nursing instructions. However, the study does indicate that video instruction is to easy implement and provides flexibility for the patient and his/her caregiver to access the information at any time. This is extremely beneficial, because education provided in the hospital may not be given at the optimal time for knowledge acquisition or in a format that best suits the needs for the patient and his/her caregiver.

### **Evidence Based Practice Model**

The evidence-based practice model chosen for this project was the Iowa Model. The Iowa Model of Research Practice developed by clinicians at the University of Iowa Hospitals and Clinics, in effort to translate evidence-based research into clinical practice to improve quality of care (Titler et al., 1994). This evidence-based model is frequently utilized within the healthcare setting because nurses find it extremely user friendly. Additionally, the Iowa Model has been extremely successful due to the identification of issues by staff nurses at a unit level who are supported by advanced practice nurses, rather than initiated by top tier administrators who are unfamiliar with bedside nursing (Titler et al., 2014).

The model begins with the identification of clinical inquiry through problem and knowledge focused triggers (Titler et al., 2001). From there, it is determined whether or not the issue of interest is an organizational priority (Gawlinski & Rutledge, 2008). Next comes the team formation, which should include multiple disciplines in order to get a variety of perspectives (Gawlinski & Rutledge, 2008). The following steps of the Iowa Model are include gathering of evidence, critiquing and synthesizing current research, determining if there is sufficient evidence, a pilot change, determining if the change is appropriate for practice, implementation of the proposed intervention and dissemination of results (Gawlinski & Rutledge, 2008).

Preventing opioid misuse amongst the pediatric population has become a priority for communities and hospitals due to its costly nature if left untreated. Emergency care and hospital admissions are costly, not to mention the lifelong sequelae of addiction. Healthcare providers are aware of potential opioid misuse, yet there are extreme deficits in patient education in regard to safe opioid use and behaviors. The pre-study assessment indicated a need for better opioid education and disposal information so that postoperative pain management is optimized in regard to symptom reduction and safety. The nurses at the location of the study indicated a need for better education and a willingness to implement the study intervention. The Iowa Model was ideal for this project as it guided unit nurses through a quality improvement process that is intuitive. Also, the model assisted the interdisciplinary team in dismantling the current practice of opioid safety education and improved it with a more modern video-based approach.

## **Method**

### **Design**

The project was a descriptive observational design, which was appropriate for the project as it focused on behavioral habits of the sample of interest. Data was collected using an electronic survey (See Appendix A) after participants viewed the educational video, between February 1st of 2021 to April 30<sup>th</sup> of 2021.

### **Setting**

The QI project occurred at a surgery center and a large Midwestern hospital both affiliated with an academic institution. The surgery center and hospital performed over 6000 procedures a year combined in 2019-2020. The surgery center is located in a suburban community composed of 84.7% Caucasian, 1.7% African American, and 12.8% Asian, with median household income of \$178,000 (U.S. Census Bureau, 2019). The hospital is in an urban community composed of 48.1% Caucasian and 45.3% African American with median household income of \$43,896 (U.S. Census Bureau, 2019).

### **Sample**

Using a convenience sampling method, participant dyads who received education at their surgical site participated in the project. Inclusion criteria included pediatric patients ages five through 18 years old undergoing same day orthopedic surgery ages accompanied by a caregiver ages 18 and older. Exclusion criteria included non-English speaking patients, patients undergoing multiple procedures, patients not discharged with opioid prescriptions, those not undergoing orthopedic surgery, and patients unaccompanied by a caregiver. Those who met the inclusion criteria, were offered the

option to view the additional video opioid educational tool, in addition to receiving the standard of care for opioid safety education (See Appendix B).

### **Approval Processes**

Approval for this project was obtained by the Same Day Surgery unit manager, nurse practitioner lead and physician who oversee quality and safety. A doctoral committee, composed of a committee chair, and clinical expert who served as the QI project site liaison approved this project. The University of Missouri, St. Louis Internal Review Board (IRB) and Graduate School approval was obtained prior to starting the DNP Project. After review by the St. Louis Children's Hospital Quality, Safety & Practice Excellence Department, this quality improvement project was found to be exempt from review by their internal review board. The letter served both locations for the QI project, as there is one governing research committee that oversees projects and research. The potential risks were minimal, as the additional education to the institution's customary instructions and all patients was voluntary, and any surveys completed were de-identified.

### **Data Collection/Analysis**

All participants were between the ages of five to 18 years old and underwent orthopedic surgery. Data collection was conducted from February 1<sup>st</sup> of 2021 to May 14<sup>th</sup> 2021. Email addresses were collected, transferred into an excel spreadsheet, and secured using a password encrypted computer, upon viewing of the education video. Two weeks post-operatively, the email addresses were transferred into Qualtrics for survey distribution and collection. A Qualtrics electronic survey was the data collection tool (See Appendix D). Participants who gave their emails were emailed the Qualtrics survey,

which was prefaced with participant information on the project, the purpose, voluntary nature of project, and the overall intent from the data collected (See Appendix C). Once the participants began their survey all respondent information was de-identified and each participant was randomly assigned a number by the Qualtrics survey platform.

Demographics collected were patient and caregiver age, gender, and race. Additionally, highest education level of caregiver was collected. The data collected by the student PI from the survey platform was stored on a password protected computer. Using the Intellectus Statistics program, descriptive and inferential statistics were performed.

### **Procedures**

After a literature review and consultation with the research study liaison and clinical experts, the first step was to develop an interdisciplinary team of project champions composed of a student PI, advanced practice nurse, unit manager and physician that educated on the importance of a new educational tool and informed staff of the project. Next, an opioid safety video that included information on safe storage and appropriate disposal of opioid medication was created. Following the creation of the video, a brief questionnaire was developed in order to assess the effect of the additional education on the sample. Next, the questionnaire was placed into Qualtrics, an online survey platform for participant data collection. Prior to implementation, project information dissemination occurred informally at staff morning meetings.

Implementation involved showing the video preoperatively on a tablet device to the project population. The sample population that met inclusion criteria were asked if they would view an educational opioid video. If the participants consented, they viewed a two to three-minute video, followed by providing an email address for the follow up survey.

The sample population was emailed after the surgery date, and asked to fill out a the Qualtrics questionnaire (See Appendix A) two weeks post-operatively, pertaining to their opioid storage and disposal. The dyads worked together as a unit when filling out the questionnaire, as indicated in the email diction (See Appendix D). Review and examination of the data occurred one to three months after the video education. Self-reported habits on safe storage and disposal of opiates were the outcomes measured by the survey.

## **Results**

### **Demographics of the sample**

Seventy-six caregiver and patient dyads met eligibility criteria for QI project participation from February 8, 2021 to April 30, 2021. Of the 76, nearly 20% (n=15) surveys were returned from February 22, 2021 to May 14, 2021. The mean age of patients was  $14 \pm 3.56$  years of age. Of the patient participants, 40% were male and 60% were female and 100% were Caucasian. Of the caregiver participants, the mean age was slightly over  $45 \pm 6.48$  years and 94% were female and 100% Caucasian. Of the caregivers, 13% held a high school diploma, 13% had an Associate's degree, 40% had a Bachelor's degree and 33% had a graduate or professional degree. Demographic information is shown in Appendix E. Inferential statistics, specifically the Chi-Square and Fisher's exact test were performed using Intellectus Statistics, but due to lack of variation within the data, no statistical significance was found.

### **Survey results**

Ninety-three percent of the project participants who answered the survey, stated they keep their opioid medications secured and out of sight. One hundred percent of the



opioids are monitored, stored and dispensed by a parent, however, only 20% count and monitor their opioid pills. Twenty-seven percent of survey respondents reported other people within the home had access to their opioids. Eighty-six percent of the respondents were found to want to dispose of their extra opioids, versus 13% who stated they would keep their extra medication. One hundred percent of survey respondents reported knowing where to dispose of extra medication, with 33% indicating they will return to a pharmacy, 33% flushing down the toilet, 33% using a drop box at a police station or other community setting.

Review of descriptive statistics showed that caregivers are the main source handling and dispensing opioids. Additionally, 93% of caregivers stated they were successfully placing opioids in secure and out of sight locations. However, most respondents (80%) indicated that opioid pills are not counted and monitored, and others have access to the medication. These results suggest that educational efforts pertaining to safe opioid storage habits should be geared towards caregivers and emphasize the importance of minimizing access to opioids even if they are secured and out of sight.

Regarding opioid disposal, all respondents correctly identified potential places for opioid disposal. However, two respondents stated they intended to keep extra opioids. This suggests that the majority of survey respondents understood disposal of opioids is critical to minimize the accessibility of these medications within the community. Most survey respondents reported the pharmacy, police station, or flushing as the main source of opioid disposal, indicating knowledge of importance of community resources which exist such as frequent take back programs and easily accessible opioid drop boxes.

## Discussion

Limitations of this QI project was a 20% return rate of the surveys. One possible reason for this lower rate was the nature of the project. It was an external unincentivized survey sent two weeks after viewing the opioid education. Future PDSA cycles of the project should include survey distribution immediately after viewing the video education. Additionally, despite all participants giving the student PI an email address, it is unknown whether or not they received or were able to access to complete the survey after leaving the hospital. It is important to note that all survey respondents were 100% female and 100% Caucasian, indicating that other demographics and age groups were potentially missing from the survey response group.

Additionally, the number of surgeries meeting criteria were much lower than anticipated, affecting the total number of eligible participants. The COVID-19 pandemic has dramatically affected children's activities. Less children were active in situations which could result in orthopedic injury. And due to government mandated shutdowns, social distancing, and other COVID-19 precautions, less surgeries were scheduled in the first part of 2021 than in previous years at this surgery center. The next cycle of this QI project should be done when surgery facilities are up to typical capacity and children are more active outside.

In regard to the aim of this project, more than 25% of participants were successful in identifying places for opioid disposal, as a fill in the blank question was used to evaluate this task. However, determining whether or not opioids were safely stored was based upon a dichotomous yes or no question, illustrating a weakness in the survey. With a yes or no question, the patient is not able to fully illustrate their knowledge in regard to

where and how they store medications. Another problem with dichotomous questioning is the fact that one may not fully capture a respondent's true feelings as they may answer the question based upon how they think you want them to answer.

Lastly, future PDSA cycles of project should be focused on improving patient access to surveys in a more efficient manner, and potentially identifying dyad procedure location and access to electronic devices at home. This may help one better understand the dyad and the barriers they may encounter when it comes to receiving an emailed survey but also their ability to access electronic material from outside the hospital. From the results future education should include greater emphasis on monitoring and reducing accessibility of opioids as these areas may directly impact the number of opioids available for misuse. Another way to get a true idea of what the actual home habits of patients would be to use a follow up phone call.

### **Conclusion**

The QI project was relatively easy to implement. After instruction, a tablet was left with a patient and his/her caregiver for viewing of the video-based education. Because the education was on a tablet, the information could be paused or rewound if needed by the participant. Very importantly, the QI project did not cause any delays in operative room start times nor patient care. Patients and their caregivers voiced appreciation in the ease and delivery of a video based educational tool. Currently, this QI project is in the works to become a hospital wide educational tool. The video tool created for this project will be uploaded to patient televisions, so that it can be viewed in any unit, and at any time during the hospital stay. Future PDSA cycles of this project can then

be focused on improving the ability for participants to access their surveys in a more efficient manner.

Overall, the QI project was successful in identifying the habits of home storage and disposal of opioids within the demographic of interest. The results are promising as the majority of respondents identified safe storage practices and appropriate disposal locations for opioids. However, further education should emphasize the importance in minimizing access of opioids to others. Additionally, the results illustrated the multi-faceted strengths of video-based education. The education was easy and low cost to implement, the video education was brief, patient participation was involved, and the educational material was shown in a modernized way that accommodated multiple learning styles. In a world with everchanging technology, patient education must grow with the advances in order to maintain its pertinence and power in providing patients with the information needed to manage their health. The successful implementation and results of this QI project exhibited the strengths and importance of a doctoral prepared nurse. The Doctor of Nursing Practice (DNP) degree provides individuals the tools necessary to change the face of health and patient care. A DNP prepared nurse not only understands the intricacies of healthcare systems, the needs of the population, how to become a leader and initiate change, but also what it means to be a nurse and this sets it apart from any of its counterparts. A nurse recognizes areas and processes that can be improved, while a DNP can further the improvement initiative by evaluating current research and assimilating it into clinical practice.

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Appendix A

Qualtrics Generated Opioid Survey

**Default Question Block**

**Are your opioid medications secured and out of sight?**

YES  
 NO

**Do you count or monitor your number of opioid pills?**

YES  
 NO

**Who handles the dispensing and storing of the opioid medication?**

**Do other people have access to your opioid medication?**

YES  
 NO

**Will you be disposing your extra opioid medication?**

YES  
 NO

**Do you know where to dispose of them?**

YES  
 NO

**IF yes to Question 6, where or how will you be disposing your extra opioid medicine?**

**Patient's Age**

**Patient's Gender**

Male  
 Female  
 Non-binary / third gender  
 Prefer not to say

**Patient's Ethnicity**

Caucasian  
 Black or African American  
 Asian  
 Hispanic  
 Other

**Caregiver's Age**

---

**Caregiver's Gender**

---

Male  
 Female  
 Non-binary / third gender  
 Prefer not to say

**Caregiver's Ethnicity**

---

Caucasian  
 Black or African American  
 Asian  
 Hispanic  
 Other

**Highest Level of Caregiver Education**

---

High School Diploma  
 Associate's Degree  
 Bachelor's Degree  
 Graduate Degree  
 Professional Degree

---

Appendix B

Customary Opioid Discharge Instructions at St. Louis Children's Hospital

**Controlled Substances**


**CONTROLLED SUBSTANCES**  
*(such as pain medicines)*  
**SAFE STORAGE, RETURN AND DISPOSAL**

Prescription medicines are among the most misused substances in the U.S. and can lead to dependency, addiction and overdose. Drug overdose is the leading cause of accidental death in the U.S.

**SAFE STORAGE**

Medicine not stored correctly can lead to big problems like theft, abuse, damage to the medicine or accidental use.



- Store medicines in a locked cabinet or drawer, out of reach of children and pets.
- Store medicines in a cool, dry place. Medicines should not be stored in a bathroom because it is warm and humid.
- Keep your medicines in the original containers. The label contains important information.
- Do not share your medicines with other people.



**SAFE RETURN**

It is important to get rid of medicine that expired or is no longer needed. It is best to return your medicine instead of disposing of it yourself. Options for returning medicines include:

- local police station
- local pharmacy (if they participate in the take back of medicines)
- local waste management company
- local "drug take-back" events
- authorized Drug Enforcement Agency (DEA) sites, call 1-800-882-9539




**SAFE DISPOSAL**

If you cannot return expired or unwanted medicines, then you should dispose of them at home. Recommended steps:

1. Remove the medicine from bottle.
2. Use a bag or container that you can seal to mix the medicine with something undesirable like cat litter or coffee grounds. A margarine tub works well.
3. Cover or remove any personal information, including the Rx number, on the empty bottles.
4. Throw the drug mixture and the empty bottles in the trash.

*(If no other options are available, flushing your medicines down the toilet is an acceptable way to dispose of them. This is approved by the Food & Drug Administration.)*



You may wish to keep Narcan (Naloxone) on hand in case you, or someone around you, experience an opioid overdose. Naloxone is an opioid reversal agent that can prevent death from overdose. Ask your pharmacy for more information.

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Appendix C

Email Survey Information and Instructions

Dear Participant:

You are receiving this email because you viewed an Opioid Safety Education Video at your child's surgery center appointment. Our organization is working to deliver information about the safe storage and appropriate disposal of opioids in the most effective way and your feedback is important to us. At the end of this email, is a link to a brief survey. Completing the survey is voluntary, and you will not be asked for your name or any contact information. If possible, please try to complete the survey with your child. All information collected will be kept confidential. The information you provide in your survey responses will result in providing patients with better education on opioid safety.

Thank you for your time!



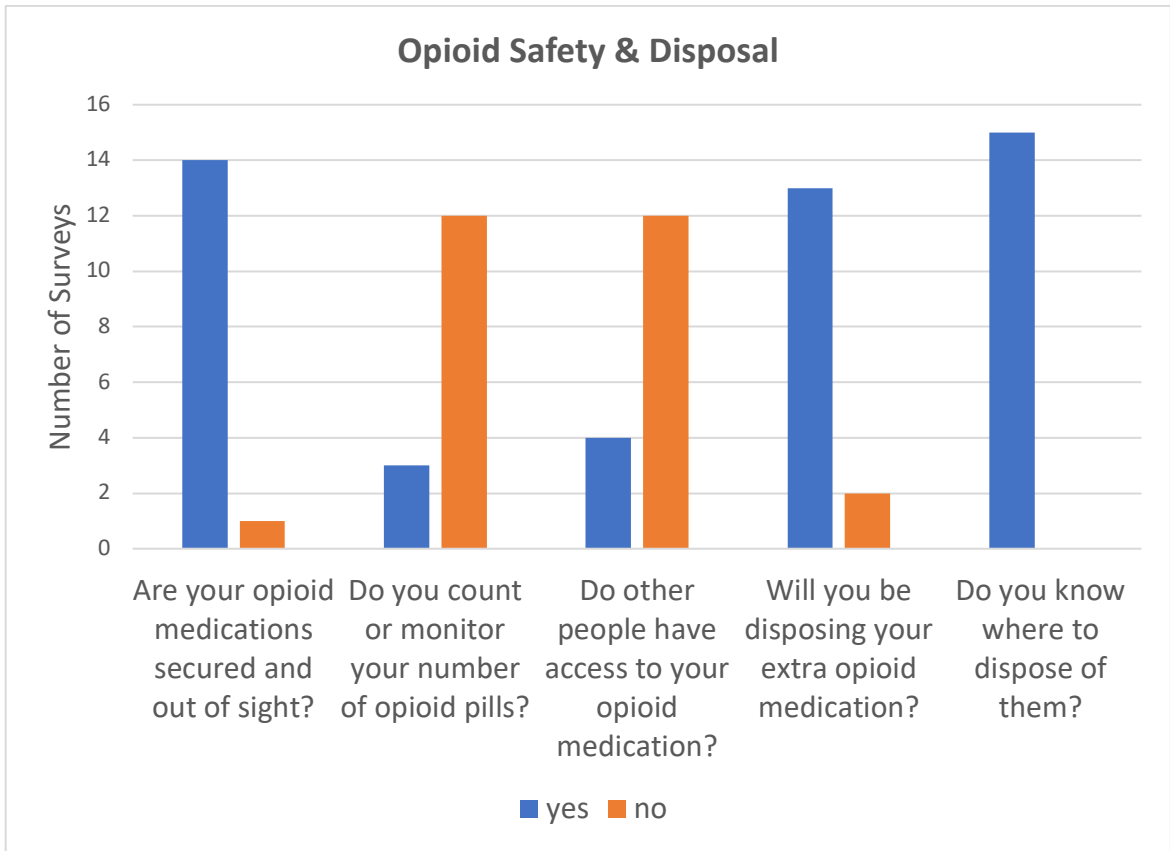
Appendix E

Demographic Data of Survey Respondents

	<b>N</b>	<b>Mean Age (years)</b>	<b>Standard Deviation</b>	
Patient Age	15	14	3.564939159	
Caregiver Age	15	44.5	6.477984695	
<b>Patient and Caregiver Gender</b>				
		Male	Female	
Patient Gender		40%	60%	
Caregiver Gender		0%	100%	
<b>Patient and Caregiver Ethnicity</b>				
	Caucasian	African American	Asian	Other
Patient Ethnicity	100%	0%	0%	0%
Caregiver Ethnicity	100%	0%	0%	0%
<b>Highest Caregiver Education Obtained</b>				
High School Diploma	Associate's Degree	Bachelor's Degree	Graduate or Professional Degree	
13%	13%	40%	33%	

Appendix F

Opioid Question Survey Data



Appendix G

Locations Survey Respondents Listed for Opioid Disposal

