Epidural Education for Parturients Using a Video Teaching Tool

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Abstract

Introduction: The use of epidural analgesia for labor pain is becoming more common across the United States. Laboring mothers report feeling under informed about epidural side effects and dissatisfaction with the timing of the information. Background: Providing appropriate and adequate education and informed consent for epidural analgesia can prove challenging, especially during labor. Nevertheless, it is important for women to understand the potential risks in order to make a fully informed decision. Purpose: The purpose of this Quality improvement project was to show evidence of the benefits for the use of an obstetric anesthesia video during the education process and to devise a plan for the implementation of video-assisted education during anesthesia consultation to help improve patient knowledge and satisfaction prior to labor and delivery. Method: Patients were provided a 36-week anesthesia consultation. During the consultation they were provided anesthesia education in the form of an educational video and verbal discussion. Pre and post epidural knowledge was assessed utilizing questionnaires given at the beginning of the consultation and again after watching the epidural video. Results: At the completion of the data collection period, 40 pre- and post-intervention surveys had been collected. A Paired T test comparing the means of the pre and post education survey found a significant difference (p<0.01) between correct responses indicating improved knowledge after the intervention. Additionally, mean patient satisfaction score was 3.63 (SD 0.42) on a one to four point scale indicating satisfaction with education process. Conclusion: Results from the QI project appear to support the use of an educational epidural video during the antenatal anesthesia consultation for epidural education as a means to improve patient knowledge and satisfaction.

Keywords: video-assisted, anesthesia, epidural, patient education
Epidural Education for Parturients Using a Video Teaching Tool

The use of epidural analgesia for labor pain is becoming more common across the United States (Attanasio, Kozhimannil, Jou, McPherson, & Camann, 2015). While an overwhelming number of laboring mothers report a positive epidural experience, many others report feeling under informed about epidural side effects and a dissatisfaction with the timing of the information provided (Attanasio et al., 2015). In fact, according to Attanasio et al. (2015) most negative perceptions are related to the consent processes and information about side effects and expectations. During painful labor the amount of information provided during informed consent may be altered or truncated (Black & Cyna, 2006). A survey of anesthesia providers revealed that 74% felt the consent process during labor is compromised because of insufficient information concerning risks of epidural analgesia provided to the parturient (Wada, Charland, & Bellingham, 2018). Additionally, 80% of anesthesia providers indicated they felt it was impossible to completely discuss the risks and benefits of epidural analgesia while a parturient is in labor (Wada et al., 2018). Consequently, patients should be informed in the antenatal period whenever possible (Black & Cyna, 2006). Anesthesia providers have the ability to improve these negative experiences by providing better education and communication to parturients during the antenatal period (Attanasio et al., 2015; Broaddus & Chandrasekhar, 2011). The purpose of this quality improvement (QI) project was to improve the epidural education process for our facility by using an obstetric anesthesia video during the anesthesia consultation with the goal of improving patient knowledge and satisfaction prior to labor and delivery.

Background

Childbirth can be a time of mixed emotions from excitement to despair. New mothers report feeling powerful and capable as well as frightened and overwhelmed (Declercq, Sakala,
Corry, & Applebaum, 2006). It has been reported that the pain experienced in childbirth is more intense than other acute or chronic pain and can potentially affect the ability to make decisions (Wada et al., 2018). According to a Listening to Mothers II report, as many as 76% of women reported utilizing epidural analgesia to relieve the pain of childbirth (Declercq et al., 2006).

Providing appropriate and adequate education and informed consent for epidural analgesia can prove challenging, especially during labor (Hoehner, 2003). More than half of the parturients surveyed by Jackson, Henry, Avery, VanDenKerhof, and Milne (2000) stated that they felt their ability to understand information during labor was decreased. Other studies have highlighted the poor recall results associated with the discussion of risk factors concerning epidural analgesia during labor (Affleck, Waisel, Cusick, & Decar, 1998; Cheng, Cyna, & Osborn, 2007). Nevertheless, sufficient disclosure of the risks and benefits associated with epidural analgesia are a necessary element of informed consent and the foundation for ethical practice (Hoehner, 2003). Unfortunately, all too often education concerning the risks and benefits of epidural analgesia is provided during labor immediately prior to the procedure (Jackson et al., 2000). While the safe use of epidural anesthesia has been well established, its use does come with a number of risks. It is important for women to understand these potential risks in order to make a fully informed decision (Wada et al., 2018).

According to Declercq et al. (2006) as many as 97% of laboring moms express a desire to know most if not all of the potential risks associated with epidural use. It is the anesthesia provider’s responsibility to offer appropriate and adequate information to parturients concerning epidural analgesia (Swan & Borshoff, 1994). Parturients also consistently express a desire to receive education concerning the risks and benefits of epidural analgesia during the antenatal period (Beilin, Rosenblatt, Bodian, Lagmay-Aroesty, & Bernstein, 1996; Jackson et al., 2000;
Pattee, Ballantyne, & Milne, 1997). Video-assisted education has been shown to improve patient knowledge and satisfaction while reducing patient anxiety (Lee, Chui, & Gin, 2003). Further, the use of a video to assist with patient education ensures consistent information in an easy to understand format (Agre, Kurtz, & Krauss, 1994).

**Problem Statement**

Parturients are consistently provided with inconsistent or incomplete information about epidural analgesia during the antenatal period as indicated by poor recall of the risks and benefits and poor satisfaction with the education process resulting in inadequate patient education for analgesia prior to labor and delivery. An issue identified in current practice is inconsistent or incomplete information about epidural analgesia in the parturient population during the antenatal period. Ideally, information should be provided prior to the onset of labor in a controlled setting allowing patients to fully understand the implications and ask questions. This QI project addresses this issue by ensuring all parturients were given the opportunity to meet with an anesthesia provider following their 36-week OB appointment to discuss epidural analgesia supplemented by a short epidural informational video.

**Organizational “Gap” Analysis of Project Site**

Typically, patient education and informed consent for epidural analgesia are obtained immediately prior to insertion resulting in the possibility of inconsistent or incomplete information provided to the patient due to the rushed nature of the situation (Black & Cyna, 2006). Additionally, the added distractions of severe labor pain, lack of sleep, lack of time to think about the information, and the emotional upheaval associated with childbirth can further reduce understanding and retention of knowledge (Frohlich, Tan, Walsh, & Carey, 2011).
Ideally, information should be provided prior to the onset of labor in a controlled setting allowing patients to fully understand the implications and ask questions (Black & Cyna, 2006). A pre-anesthetic consultation is one such forum that can be used for educating patients to increase knowledge and satisfaction (Lee et al., 2003). The project site hospital did not have a formal education consultation in place for parturients. This led to inconsistencies with how education was provided to parturients resulting in the possibility of incomplete information about epidural analgesia at the project site. Anesthesia providers needed to take a proactive role in providing parturients with epidural education. This was accomplished by providing a scheduled anesthesia consultation with the assistance of an educational video during the antenatal period to ensure parturients are fully informed and knowledgeable about the risks and benefits.

**Review of the Literature**

**Methods**

A comprehensive search was accomplished utilizing PUBMED, CINAHL, and Web of Science. Inclusion criteria for the search consisted of articles published between 2008 and 2019 in English. There were no exclusion criteria. The search strategy utilized relevant search terms in a variety of combinations. Search terms included obstetrical anesthesia, obstetrics, informed/anesthesia consent, video-assisted, anesthesia, labor, epidural, prenatal, patient education, knowledge comprehension, understanding, and interventions, parturients, and education. A total of 507 articles were identified in PUBMED, 66 Articles from CINAHL, and 305 articles from Web of Science for a total of 876 articles. Article titles and abstracts were used to identify articles that compared video-assisted patient education with verbal patient education to refine the number of relevant articles to 35 from PUBMED, 12 from CINAHL, and 46 from Web of Science. Of the 93 articles, 71 were duplicates and 2 were abstracts only resulting in 20
relevant articles. Reference lists were reviewed to identify an additional 4 articles for a total of 24 articles. After reading the remaining 24 articles in their entirety, two articles were excluded because their data were being reported as part of a systematic review in another article, two were excluded because they utilized a non-video multimedia approach in their study, and two were excluded because they were not relevant to the topic being examined. The resulting 18 articles included in this review consisted of two systemic reviews, 15 randomized controlled trials (RCT), and one quasi-experimental study. In summary, of 97 articles, 79 were eliminated, leaving 18 articles to be examined (Appendix A).

Articles were evaluated for level of evidence and quality utilizing an evaluation template from Johns Hopkins Hospital/University (Dearholt, Dang, & Sigma Theta Tau International, 2012). The two systematic reviews met Level IB evidence and included RCTs that also met Level I evidence with either A- or B-level quality data. (Dearholt et al., 2012). The systematic reviews were then further assessed utilizing the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Moher, Liberati, Tetzlaff, & Altman, 2009). Both reviews included 22 of the 27 items on the PRISMA checklist with one item not applicable. Items not included mostly pertained to risk bias. While both studies acknowledged the potential for risk bias for various reasons, neither review formally assessed or calculated the level of affect it had on data results. Both reviews omitted information related to funding.

Of the 16 remaining studies, 15 met Level IA or IB for evidence and quality while the remaining study met Level IIB (Dearholt et al., 2012). All studies reported randomization, but only nine reported appropriate methods for true randomization. One of the remaining seven studies was downgraded to a quasi-experimental study because a patient characteristic comparison revealed poor randomization. The remaining six studies showed adequate
randomization based on a patient characteristic comparison and were classified RCTs as reported.

**Results**

The two systematic reviews examined the results from a total of 19 RCTs comparing video educational material (intervention) with standard verbal education (control) on patient knowledge and satisfaction (Lee et al., 2003; Schenker, Fernandez, Sudore, & Schillinger, 2011). Ten of the studies dealt specifically with anesthesia education while the remaining nine studies consisted of education for a variety of procedures. The 15 RCTs and one quasi-experimental study compared outcomes from patient education consultations randomized into an intervention group consisting of video-assisted patient education and a control group consisting of the standard verbal patient education for a variety of procedures. Six RCTs compared patient knowledge (Agre et al., 1994; Armstrong et al., 2010; Mason, McEwan, Walker, Barrett, & James, 2003; Sonne et al., 2013; Tipotsch-Maca, Varsits, Ginzel, & Vecsei-Marlovits, 2016; Yeh, Chun, Terrones, & Huang, 2017), three RCTs compared patient satisfaction (Cakmak et al., 2018; Eley, Searles, Donovan, & Walters, 2013; Lin et al., 2016), and six RCTs plus the quasi-experimental study compared both knowledge and satisfaction (Baenninger et al., 2018; Bowers, Eisenberg, Montbriand, Jaskolka, & Roche-Nagle, 2017; Goldberger, Kruse, Kadish, Passman, & Bergner, 2011; Lattuca et al., 2018; Lin et al., 2018; Salzwedel et al., 2008; Zhang et al., 2017).

**Patient Knowledge.** Both systematic reviews found improved patient knowledge in the video intervention groups. Lee et al. (2003) found patients in the video groups displayed a significantly greater retention of knowledge related to anesthesia education in six of the seven RCTs reviewed. Schenker et al. (2011) found that 9 out of the 12 studies showed a significant
increase in patient knowledge for the intervention groups. In total, 15 of 19 RCTs reviewed in the systematic reviews found a significant increase in patient knowledge with the use of video-assisted education.

Of the 13 studies that compared patient knowledge, nine reported a significant increase in patient knowledge for the intervention groups (Agre et al., 1994; Armstrong et al., 2010; Bowers et al., 2017; Lattuca et al., 2018; Lin et al., 2018; Mason et al., 2003; Salzwedel et al., 2008; Tipotsch-Maca et al., 2016; Yeh et al., 2017). One study reported an increase in knowledge for the intervention group but the difference did not meet statistical significance (Zhang et al., 2017). The remaining three studies found no difference in patient knowledge for the intervention group (Baenninger et al., 2018; Goldberger et al., 2011; Sonne et al., 2013).

**Patient Satisfaction.** Patient satisfaction was reported in three of the studies evaluated in the systematic review by Lee et al. (2003) and one of the studies reviewed by Schenker et al. (2011). According to Lee et al. (2003), a greater number of patients in the intervention groups, felt satisfied that the video consent process helped them better understand the material being presented. The study that reported satisfaction in Schenker et al. (2011) found a significant increase in patient satisfaction scores for the intervention group. In six of the ten studies that reported patient satisfaction, satisfaction was significantly higher in the intervention groups (Bowers et al., 2017; Cakmak et al., 2018; Lattuca et al., 2018; Lin et al., 2016; Lin et al., 2018; Zhang et al., 2017).

Three of the RCTs and the quasi-experimental study that examined this outcome found no difference in patient satisfaction scores (Baenninger et al., 2018; Eley et al., 2013; Goldberger et al., 2011; Salzwedel et al., 2008). Eley et al. (2013) found significantly lower satisfaction levels with information presented to the control group patients but did not find a difference in
postoperative satisfaction levels between the two groups overall. Further, Goldberger et al. (2011) acknowledge that poor randomization could have effected satisfaction scores in their study; they did note that along with Baenninger et al. (2018) total consultation time was decreased without affecting patient satisfaction. Salzwedel et al. (2008) reported an overall high satisfaction score with the education process in all groups but did state that satisfaction levels in clinical trials tend to be high making it difficult to find differences between the groups.

Researchers in the two systematic reviews and 12 RCTs expressed their support for video assisted patient education and informed consent based on results from their research (Agre et al., 1994; Armstrong et al., 2010; Bowers et al., 2017; Cakmak et al., 2018; Lattuca et al., 2018; Lee et al., 2003; Lin et al., 2016; Lin et al., 2018; Mason et al., 2003; Salzwedel et al., 2008; Schenker et al., 2011; Tipotsch-Maca et al., 2016; Yeh et al., 2017; Zhang et al., 2017). While researchers in three of the RCTs and the quasi-experimental study did not find evidence to support the use of video assisted education, all four studies acknowledge the potential benefit video assisted patient education may provide in an easy to understand format (Baenninger et al., 2018; Eley et al., 2013; Goldberger et al., 2011; Sonne et al., 2013). Further, Baenninger et al. (2018) indicated that the use of video-assisted patient education and informed consent could lead to increased efficiency during the consultation period.

**Evidence Based Practice**

Evidence from the literature overwhelmingly supports the use of video-assisted patient education during the antenatal period to improve patient knowledge and satisfaction. Based on the literature, the DNP student devised a plan to ensure all parturients were provided anesthesia education for labor and delivery during the antenatal period with the assistance of an educational video.
Theoretical Framework

The Adult Learning Theory: Andragogical Model helped guide this project (Knowles, Holton, & Swanson, 2005). The andragogical model is a process by which methods and resources are made available to help guide learning as new information is acquired (Knowles et al., 2005). Further, the experience can be made more beneficial based on the “richness and accessibility” (Knowles et al., 2005, p. 119) of the information. Additionally, an interaction that is open, honest, respectful, and allows for questioning is important for the learning process of the adult learner (Knowles et al., 2005). The adult learner should feel that they are in control of their learning experience. The concepts of this model were implemented to fully engage the adult learner during the education process to ensure their perspectives and experiences were acknowledged and respected.

This theory holds 6 assumptions for the adult learner

- a need to know why they are learning what is being presented;
- adults have developed a self-concept that they are responsible for decisions in their lives and have a need to be seen and treated as capable of determining their own direction in life;
- the importance of experiences adult learners have developed over the years and that these experiences will help shape the learning process and should be taken in account and utilized;
- adults come ready to learn the things they see as important to their current situations so timing is important;
- adults are life-centered and are motivated to learn what they perceive will help them with tasks or deal with problems; and
adults respond well to internal motivations such as quality of life and personal satisfaction (Knowles et al., 2005).

**Methods**

**Project Design**

This was a QI project to increase patient knowledge and satisfaction with the anesthesia education process utilizing evidence based practice from the literature. The DNP student worked with the OB department and Anesthesia department to implement a plan for scheduling an anesthesia consultation in conjunction with the patient’s 36-week OB appointment. This ensured all patients met with an anesthesia provider following their 36-week OB appointment for anesthesia education via a face-to-face interaction supplemented with a short educational video. The initial step during the consultation was to explain the purpose of the DNP project and to administer a questionnaire survey assessing patient knowledge concerning epidural analgesia for labor and delivery. Following the initial survey, a short educational video was shown to the patients discussing epidural analgesia. The patients then took another short survey assessing their knowledge of epidural analgesia as well as patient satisfaction concerning the educational video. Patients then had a verbal discussion with an anesthesia provider concerning epidural analgesia for labor as well as other aspects related to OB anesthesia with the anesthesia provider. The anesthesia provider reviewed results from the post assessment survey to determine any gaps in knowledge. Any gaps in knowledge were addressed at the time of the consultation to ensure patients were fully informed during the consultation prior to leaving. A second post assessment was provided to the patient in a sealed envelope. The patient was asked to fill it out and return it to the DNP student during their 37-week obstetric appointment. Completed surveys were placed in a locked filing cabinet in the anesthesia office. The results from the pre and post
questionnaires were analyzed with statistical tests to determine improvement in retained knowledge and patient satisfaction. Participation in any part of the process was voluntary and all data collected was anonymous and did not contain any identifying patient information.

**Goals, Objectives, & Outcomes**

The purpose of this QI project was to ensure all parturients receive education concerning the risks and benefits of epidural analgesia prior to admission for labor. The goal was to ensure parturients were fully informed prior to administration of an epidural, so that they were truly part of the decision-making process. The primary outcome was an increase in baseline knowledge and understanding of epidural analgesia for labor and delivery prior to admission for labor. A secondary outcome was to ensure adequate parturient satisfaction with the content and timing of the education.

**Project Site and Population**

The site for implementation of this project was a small, community hospital. The anesthesia department consists of two Certified Registered Nurse Anesthetists and one Anesthesiologist. The obstetric department (OB) consists of two OB/GYN physicians. All anesthesia providers were available Monday through Friday from 0700 to 1600 and one provider was available on-call the remainder of the time. The hospital averages between 8-10 deliveries per month and approximately 90% of parturients receive epidural analgesia during labor and delivery. Patients are typically 20 to 40 years-old, healthy, and primigravida. All parturients planning a vaginal delivery at the hospital were included in this QI project. Patients planning on delivery by cesarean section were excluded.

**Implementation**
The Plan, Do, Study, Act (PDSA) model was used for this QI project to answer key questions for addressing the issue of inadequate patient education concerning epidural analgesia. This model provided a practical guide for identifying the desired outcomes and planning the steps for improvement (Joshi, Ransom, Nash, & Ransom, 2014).

**Plan.** The plan to address inconsistencies with the education process was to show parturients a five-minute educational video providing information about epidural analgesia at their 36-week appointment in addition to the standard verbal education.

**Do.** Patients were provided a 36-week anesthesia consultation. During the consultation they were provided anesthesia education in the form of an educational video and verbal discussion. Pre and post epidural knowledge was assessed utilizing questionnaires given at the beginning of the consultation and again after watching the epidural video. A second post assessment was provided to the patient in a sealed envelope and patients were asked to fill it out and return it to the DNP student during their 37-week OB appointment.

**Study.** The results from the questionnaires were analyzed with statistical tests to determine improvement in retained knowledge. Further, patient satisfaction results were evaluated concerning the education process to assess approval for the process. The results were shared with the anesthesia and obstetric team using appropriate QI reporting techniques. The DNP student has continued working with the anesthesia and obstetric teams as well as patients to continually improve the education process.

**Act.** Based on the results and patient satisfaction, the educational video and anesthesia consultation have been implemented on a permanent basis at our hospital.

**Measurement Instruments**
To measure the outcomes of this DNP Project a survey was developed by the DNP student assessing for patient knowledge and understanding of epidural analgesia for the labor and delivery process as well as patient satisfaction with the anesthesia consultation. The pre educational survey consisted of seven true/false questions and one multiple choice question requesting respondents to choose all that apply. The post educational survey contained an additional three questions assessing satisfaction on a Likert scale. Respondents were able to choose one of four options with strongly agree being coded as four and strongly disagree being coded as one. The survey was assessed for a possible of 13 correct answers as each option for the multiple choice question was considered independently. The survey was anonymous and optional. Surveys had random ID numbers assigned linking the pre and post surveys so that comparisons could be made between existing and gained/retained knowledge. Patient names were not collected and the random ID numbers were not linked to patient identifiers. The survey questions were developed using recommendations from the literature as well as recommendations from the American Association of Anesthesiologists. (Appendix B & C)

Data Analysis

Data results were analyzed using descriptive statistics to include frequencies, medians, means, and standard deviations. A comparison was made between mean scores from the pre and post education questionnaire using a Paired T-test. A Cohen’s d score for effect size was then calculated. Additionally, mean percentages were calculated for each question on both the pre and post survey. Those percentages were then used to calculate the mean percent improvement per question from the pre to post survey. Patient satisfaction was assessed using a Likert scale between one and four. A mean satisfaction score was calculated for each question individually and overall.
Success of the primary outcome was an increase in knowledge and understanding as indicated by improved scores on the post-assessment as compared to the pre-assessment survey. While there are no current benchmarks for the goal of increasing parturient knowledge prior to admission for labor and delivery, literature suggests that education should be provided during the antenatal period to all parturients (Wada et al., 2018). Additionally, studies have reported poor retention of knowledge when education is provided during labor for epidural analgesia. On average, studies report recall of risks to be less than 50% (Burkle, Olsen, Sviggum, & Jacob, 2017; Mahomed, Chin, & Drew, 2015). A reasonable initial benchmark was an improvement in patient knowledge from pre to post survey questionnaires with an overall correct response rate of at least 75% on the post survey questionnaire. Further, a successful outcome for patient satisfaction was considered an average of three or greater on patient satisfaction scores for the post assessment Likert scale.

**Ethical Considerations/Protection of Human Subjects**

The proposed project was reviewed by both the university’s institutional review board (IRB) and the local institution’s IRB and determined not meet the definition of human subjects research under federal regulations (Appendix D & E). All data collected from patients was protected in accordance with the rules and regulations outlined by Health Insurance Portability and Accountability Act (HIPAA) of 1996 as described below (HHS, n.d.). Data collected to evaluate the impact of this project was numerical data from patient responses along with demographic data for results comparison. Data collected was from an anonymous and completely voluntary survey that did not contain any identifying patient information. Specifically, demographic data included age, education level, prior deliveries, and prior epidural status. Data did not include any potential patient identifiers information or protected health
information. Survey data was collected and stored in a locked filing cabinet inside of a locked office. The data from the surveys was compiled onto an excel spreadsheet utilizing assigned numerical values for individual surveys; however, numerical values were not link to patient identifiers. Both the excel spreadsheet and the computer was password protected. At the conclusion of the data analysis, all documents pertaining to the project were shredded via an approved medical records shredder.

The risk to patients participating in this project was not different from the risks of patients receiving standard patient education without the involvement of a video. Additionally, patients who did not wish to complete the questionnaire were still afforded the opportunity to watch the video during the education consultation.

Cost Benefit Analysis

The total costs for this QI project were minimal and mainly associated with indirect costs. There were no capital investments for this QI project. Existing computer hardware and software were utilized as well as existing lockable cabinets to safeguard data collection results. The direct cost for implementation included survey supply costs and data analysis software.

- Paper: $4
- Printer ink: $120
- Data analysis software: $35
- Total Direct cost of implementation: $159

Indirect costs included time spent coordinating the project, data collection and analysis, and time spent during patient consultation. Potentially, time spent conducting patient education is an indirect cost, but there is evidence to support video assisted education may actually reduce consultation times. (Baenninger et al., 2018).
• Project Coordination: 1 Nurse Anesthetist at $100/hr x 5hr = $500
• Video creation: 1 Audio-Visual Technician at $27/hr x 10hr = $270
• Data Collection and analysis: 1 Nurse Anesthetist at $100/hr x 4hr = $400
• Consultation time (20 min): 30 consultations/month (20 minute x 30 consultations)/60 min = 10 hrs/month with 1 Nurse Anesthetist at $100/hr = $1000/month
• Total indirect costs of implementation: $2170
• Total monthly recurring indirect cost: $1000
• Total estimated cost for project implementation: $2329

Costs associated with project coordination and data collection and analysis reflect the cost of an anesthesia provider responsible for these tasks. For future implementation, project coordination and data collection can be conducted by a registered nurse or administrator resulting in lower costs for personnel hours. Video creation costs vary depending on the hospital’s capability to create a video locally or need for a third party to create it. The audio-visual department associated with the healthcare facility was able to create the video for the hospital resulting in decreased costs. Finally, the time for patient consultation is a revolving cost and will vary based on patient volume and is reflective of the current hospital.

The implementation site was a small, community hospital with word of mouth being a major contributing factor of patient perception. In a study conducted on the perceptions of quality and satisfaction of military hospitals of maternity patients, researchers found that less than half of the respondents surveyed would recommend a military hospital to their family and friends (Harriott, Williams, & Peterson, 2005). Factors that contributed to a respondent’s unwillingness to recommend a military hospital were involvement in the decision making
process and the amount of patient information and education provided to patients (Harriott et al., 2005).

One of the characteristics of quality and safety identified by the Picker Institute and incorporated into the Institute of Medicine’s six aims for improvement is the desire for “high-quality information and education for the patient and family (Barry & Edgman-Levitan, 2012).” This characteristic contributes to the aim of patient-centered care and is an important factor in achieving shared decision making (Barry & Edgman-Levitan, 2012). It was hoped that by increasing the parturients’ knowledge of labor analgesia they would feel more empowered to control their labor experience and participate in shared decision making, which may increase patient satisfaction. The value to the hospital is a better informed patient and a more positive patient interaction with providers resulting in improved perceptions of care and increased patient and community satisfaction. Additionally, the added benefit of the project aligns with the philosophy and mission of the hospital to provide quality, patient centered care (Appendix F).

Results

Setting, participants, and timeline

Project implementation started late September 2019 after proposal approval and IRB review from both the site and university governing bodies. Data collection began immediately after project approval and continued through the end of January 2020 (Appendix G). Data was collected over a 4 month period to obtain a sample size representative of our patient population. The project site was a small, 25-bed community hospital that averages between 100-120 births per year. Patients were scheduled for an anesthesia consultation following their 36-week OB appointment and escorted up to the anesthesia offices. A description of the project was given to
the patients and consent for participation was inferred based on their willingness to complete the pre and post video knowledge surveys. A total of 40 patients participated in the project.

**Data Synthesis**

Based on the number of deliveries at the institution, the expected number of participating patients was between 30 and 50. At the completion of the data collection period, 40 pre and post surveys had been collected. Only 9 post-secondary surveys had been returned at the end of the data collection period in January.

The average age of the patients who participated in this QI project was 30 year’s old. Approximately 50% of the participants were first time mothers who had never received epidural analgesia. On average, participants in this QI project had achieved some level college with nearly one-third having completed a bachelor’s degree (Table 1).

**Knowledge.** The primary outcome measure for this QI project was patient knowledge before and after epidural education. The mean number of correct answers on the pre-education survey was 7.73 out of 13 for an average correct percentage of 59.4%. The mean number of correct answers on the post-education survey was 11.5 for an average correct percentage of 88.5%. On average, patients improved by 61.7% from the pre-education survey to the post-education survey. A Paired T test comparing the means of the pre and post education survey found a significant difference (p<0.01) between correct responses. A Cohen’s D test was calculated resulting in a large effect size of 1.52 indicating a meaningful difference in the mean test scores (Table 2).
Table 1

*Parturient Demographic Data (n=40)*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal age in years, mean (SD)</td>
<td>30.55 (4.96)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-26</td>
<td>9</td>
<td>22.50</td>
<td></td>
</tr>
<tr>
<td>27-36</td>
<td>25</td>
<td>62.50</td>
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<tr>
<td>≥ 37</td>
<td>6</td>
<td>15.00</td>
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</tr>
<tr>
<td>Number of Previous Epidurals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>23</td>
<td>57.50</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>13</td>
<td>32.50</td>
<td></td>
</tr>
<tr>
<td>≥ 2</td>
<td>4</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Number of Previous Vaginal Deliveries</td>
<td></td>
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<td>0</td>
<td>23</td>
<td>57.50</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>12</td>
<td>30.00</td>
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</tr>
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<td>≥ 2</td>
<td>5</td>
<td>12.50</td>
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<tr>
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<td>Bachelor’s</td>
<td>13</td>
<td>32.00</td>
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<tr>
<td>Post Bachelor’s</td>
<td>9</td>
<td>22.00</td>
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As discussed above, a second post-education survey was sent home with patients to be filled out and returned at their 37-week OB appointments. Only 9 out of the 40 surveys were returned. The mean number of correct answers on the second post-education survey was 11.67 resulting in a similar mean percentage of correct answers as the primary post-education survey. However, when comparing the mean number of correct responses by participants between the primary and secondary post-education surveys, patients scored on average almost half a question worse on the secondary post-education survey indicating the possibility that patients didn’t retain all the information presented.

Comparisons were also made by each individual survey answer. On average, participants improved by 62% from pre to post education survey across all answers. The correct response rate increased for each answer from the pre to post education survey. Answer 5 showed the smallest improvement percentage of only 3% (90% to 93%); while answer 7 showed the largest improvement percentage of 153% (38% to 88%) (Table 3).

**Satisfaction.** Patient satisfaction for the education process and video were assessed utilizing three questions on the post education survey. Respondents indicated their answers by choosing one of four options on a Likert scale ranging from a score of 4 for strongly agree, to a score of one for strongly disagree. Mean patient satisfaction score was 3.63 (SD = 0.42) (Table 4).

<table>
<thead>
<tr>
<th>Pre Assessment Mean (SD)</th>
<th>Post Assessment Mean (SD)</th>
<th>t</th>
<th>p</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>59.4 (21)</td>
<td>88.5 (17)</td>
<td>-0.934</td>
<td>&lt;.001</td>
<td>1.52</td>
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Table 2

*Pre and Post Video Assessment Surveys Equality of Means, Percent Correct Score*
Table 3

*Mean Correct Percentage for Pre and Post Assessment with Percentage Improved*

<table>
<thead>
<tr>
<th>Answer</th>
<th>Pre-Assessment %</th>
<th>Post Assessment %</th>
<th>Improved %</th>
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<td>1</td>
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<td>2</td>
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<td>83</td>
<td>22</td>
</tr>
<tr>
<td>3</td>
<td>55</td>
<td>85</td>
<td>55</td>
</tr>
<tr>
<td>4</td>
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<tr>
<td>Mean</td>
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<td>62</td>
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Table 4

*Satisfaction with Video and Education Process, Mean Scores Across Three Questions*

<table>
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<th>Satisfaction Scores</th>
<th>Mean (SD)</th>
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<tr>
<td>Question 1</td>
<td>3.55 (.5)</td>
</tr>
<tr>
<td>Question 2</td>
<td>3.7 (.46)</td>
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<tr>
<td>Question 3</td>
<td>3.65 (.48)</td>
</tr>
<tr>
<td>Overall</td>
<td>3.63 (.42)</td>
</tr>
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</table>

**Discussion**

It has been reported that up to 80% of patients undergoing surgery have anxiety related to some aspect of the procedure including anesthesia (Cakmak et al., 2018; Lin et al., 2016). As reported by Lin et al. (2016), anxiety may result from a lack of information. Anxiety can lead to the inability to comprehend and retain provided information and result in lower patient satisfaction and negative patient experiences (Dias, Bialiarsing, Barnwal, Mogal, & Gujjar, 2016). Knowledge of potential complications with epidurals is widely variable and often the risks associated with epidural analgesia are underrepresented and misunderstood (Frohlich et al., 2011). The QI project attempted to relieve this potential anxiety by providing patient centered education prior to the onset of labor in a relaxed setting where parturients could focus on the risks of epidural analgesia without extraneous distractions.

Literature concerning patient knowledge during the education process appears to support the use of a video to aid in the education process. Results from the two systemic reviews overwhelmingly report an increase in patient knowledge for the video intervention groups (Lee et al., 2003; Schenker et al., 2011). Of the 13 remaining studies that compared patient knowledge, only three studies did not find an increase in patient knowledge (Baenninger et al.,
Goldberger et al. (2011) noted that baseline anxiety scores were significantly higher in the control group resulting from poor randomization and possibly skewing the results for all outcomes. While Baenninger et al. (2018) did not find a difference in knowledge between groups, they did highlight a decrease in total consultation times with the intervention group indicating that time to educate could be reduced while maintaining patient knowledge. Finally, while Sonne et al. (2013) did not find an increase in patient knowledge for the intervention groups, 78.7% of the subjects in the intervention group expressed a preference for the video format and 96.7% felt it increased their understanding of the information.

Results from the QI project appear to follow the findings from the literature review for the use of video assisted anesthesia education. Patients showed a significant increase in mean scores as determined by a Paired T-test between the pre and post education survey (7.73 vs. 11.5, p < 0.01). Additionally, the few secondary post education surveys that were returned showed patients were able to retain the knowledge attained from the education consultation with a mean correct response rate of 11.67. On average patients were able to improve their response rate by over 60% from the pre and post education survey. Of note, a few of the responses on the pre education survey were only answered correctly between 30-40% of the time (Q1 -33%, Q7-38%, Q8 -38%), while the overall mean correct response rate on the pre education survey was 59%. Interestingly, mean correct responses for answers seven and eight improved on the post education survey and both met or exceeded the average correct response rate of 88% (Q7 – 95%, Q8 – 88%). Question 1, while having an overall mean percent increase of 115% from the pre to post education survey, still averaged the lowest correct response rate on both the pre and post
survey. Additionally, it failed to meet the mean correct response rate for either survey indicating a possible problem with the wording or understanding of the question.

Literature concerning patient satisfaction levels during the education process also appears to support the use of video to aid in the education process. The studies that reported satisfaction levels in the systematic reviews found increased satisfaction when an educational video was part of the patient education process (Lee et al., 2003; Schenker et al., 2011). Additionally, patients randomized into the video assisted education groups in six out of the 10 RCTs expressed significantly greater satisfaction levels (Bowers et al., 2017; Cakmak et al., 2018; Lattuca et al., 2018; Lin et al., 2016; Lin et al., 2018; Zhang et al., 2017). While three of the RCTs and the quasi-experimental study that examined this outcome found no difference in patient satisfaction scores those results can be attributed to various factors possibly affecting the results (Baenninger et al., 2018; Eley et al., 2013; Goldberger et al., 2011; Salzwedel et al., 2008).

Based on the literature, a mean score of < 3 was considered low satisfaction and a mean score ≥ 3 was considered overall satisfied with the education process. The mean satisfaction score for the three questions was 3.63 (SD .42), indicating patients were satisfied with the overall education process and use of a video to provide epidural information. The first satisfaction question asked if patients felt like the epidural video better helped them understand the risks of epidural analgesia. The mean response was 3.55 (SD = .5) with a mode and median of 4. The second satisfaction question asked about overall satisfaction with the education process. The mean response score for question 2 was 3.7 (SD = .46) with a mode and median of 4. Finally, the third satisfaction question asked if patients would recommend the video to others. The mean response for question three was 3.65 (SD = .48) with a mode and median of 4. Anecdotally, patients regularly expressed how helpful the video was with helping them visualize the process
and what to expect. While some researchers do not report evidence to support the use of video assisted education, they do acknowledge the potential benefit video assisted patient education may provide in an easy to understand format (Baenninger et al., 2018; Eley et al., 2013; Goldberger et al., 2011; Sonne et al., 2013). Further, Baenninger et al. (2018) has indicated that the use of video-assisted patient education and informed consent could lead to increased efficiency during the consultation period.

As discussed above, the general tenets found in the Adult Learning Theory were applied to this project. The most important point for the adult learner is their experience (Knowles et al., 2005). Parturients come with a wide range of previous knowledge, education, and experiences. Important to ensuring the learning process is helping adult learners realize the difference between what they know and what they need to know to further enhance their own experiences (Knowles et al., 2005). While patients expressed a satisfaction with the video as a means for education, they also appreciated the ability to talk through their past experiences and knowledge and how those experiences might apply to the current situation. This model considers all of these aspects when providing patient education while still allowing the pertinent, necessary information to be provided to the patient to ensure true shared decision making will occur.

**Setting facilitators and barriers.** Potential barriers to implementation of the DNP project would have been mainly from staff members’ unwillingness to assist with the coordination of consultation and administration of assessment surveys and anesthesia video. Prior to implementation, the DNP project was discussed with stakeholders and all expressed a willingness to assist for successful implementation. The DNP student facilitated all other needs to ensure successful implementation.

**Conclusion**
Results from the QI project appear to support the use of an educational epidural video during the antenatal anesthesia consultation for epidural education as a means to improve patient knowledge and satisfaction. Patient education for epidural analgesia has traditionally occurred during labor immediately prior to the epidural administration. This practice may result in patients being under informed concerning the risks and benefits of epidural analgesia. Additionally, knowledge pertaining to epidural analgesia can be variable and misunderstood. Dissatisfaction with the timing and content of information provided for epidural analgesia by parturients has been reported. Hence it is the anesthesia provider’s responsibility to correct this problem and figure out ways to provide adequate information to parturients prior to epidural analgesia.

One such method is to develop a plan for an anesthesia antenatal consultation with the use of an educational video to assist with the education process. While some of the studies reviewed did not find an increase in patient knowledge and satisfaction, researchers in these studies did acknowledge the potential benefit for the use of a video to assist with patient education. To address issues of providing inadequate information to parturients during the education process, parturients were provided a consultation with an anesthesia provider during the antenatal period to discuss epidural analgesia. Along with verbal education, an educational video was used to assist with the educational process. Parturients who participated in the pre and post survey questionnaire displayed an increase in new and retained knowledge as well as positive satisfaction with the educational method and content.

Stakeholders for the QI project included the anesthesia providers, members of the OB department, and patients. All of whom reported a positive review of the new educational process. At the completion of the QI project, the formal video-assisted anesthesia consultation continues and has been implemented as a permanent addition to the labor and delivery educational process.
at our hospital. Formal dissemination of results will be in the form of both a power point presentation to the combined medical and nursing committee at the hospital as well as a poster board presentation as part of the hospitals QI project dissemination program.

As discussed in the Nursing Alliance for Quality Care, (2013) patient engagement is paramount for achieving patient centered care. Future QI projects concerning this issue to improve the process should involve collecting both quantitative and qualitative data to ensure patient’s voices are heard and their concerns or wants are met. Additionally, a better plan for assessing retained knowledge needs to be designed to help anesthesia providers better gauge what their patients remember and how best to improve that recall. Additionally, as mentioned in the discussion section, survey questions need to be reviewed to ensure questions are clear and address the pertinent information concerning parturients. The pursuit of evidence based practice is an ongoing endeavor that requires commitment and change. At our hospital, we are committed this pursuit and will continue to strive toward that goal.
References


informed consent before elective inpatient coronary angiography: A randomized trial.

*American Heart Journal, 200*, 67-74. doi.org/10.1016/j.ahj.2018.03.006


doi:10.1097/EJA.0000000000000307


doi:S1470032803039417


Appendix A

PRISMA Flow Diagram

Records identified through database searching (n = 876)

Additional records identified through other sources (n = 4)

After evaluation of titles & abstracts (n = 93)

Duplicates removed (n = 26)  Records excluded (n = 2)

Full-text articles assessed for eligibility (n = 24)  Full-text articles excluded (n = 6)

Studies Included (n = 18)
Appendix B

Labor Epidural Survey

Pre-Video Epidural Survey

Age: _____

**Highest Level of Education (please circle):**

- Elementary School
- Middle School
- High School
- Some College
- College Degree (Bachelor’s)
- Post-Bachelors (Masters, Doctorate)

**Previous vaginal deliveries?**  Yes  No  
**# of previous vaginal deliveries:** _____

**Previous cesarean deliveries?**  Yes  No  
**# of previous cesarean deliveries:** _____

**Have you have an epidural previously?**  Yes  No  
**# of previous epidurals:** _____

1. An epidural can only be placed during very specific times while in labor?
   a. True
   b. False
   c. I don’t know

2. An epidural with will take away all the sensations of labor pain?
   a. True
   b. False
   c. I don’t know

3. An epidural is a one-time dose of medication and can wear off.
   a. True
   b. False
   c. I don’t know

4. An epidural will provide immediate pain relieve once it has been placed?
   a. True
   b. False
   c. I don’t know

5. Side effects of an epidural include (circle all that apply)
   a. Leg weakness
b. Itchiness

c. Low blood pressure

d. Headaches

e. Inability to urinate

f. Nerve sensations in the legs

6. If you require a cesarean section for delivery, your epidural can be used to keep you comfortable during surgery?

   a. True
   b. False
   c. I don’t know

7. Sitting with your back pushed out will assist with placing your epidural?

   a. True
   b. False
   c. I don’t know

8. After the placement of the epidural, you will be able to walk around your room?

   a. True
   b. False
   c. I don’t know
Appendix C

Labor Epidural Survey

Post-Video Epidural Survey

1. An epidural can only be placed during very specific times while in labor?
   a. True
   b. False
   c. I don’t know

2. An epidural will take away all the sensations of labor pain?
   a. True
   b. False
   c. I don’t know

3. An epidural is a one-time dose of medication and can wear off.
   a. True
   b. False
   c. I don’t know

4. An epidural will provide immediate pain relieve once it has been placed?
   a. True
   b. False
   c. I don’t know

5. Side effects of an epidural include (circle all that apply)
   a. Leg weakness
   b. Itchiness
   c. Low blood pressure
   d. Headaches
   e. Inability to urinate
   f. Nerve sensations in the legs
6. If you require a cesarean section for delivery, your epidural can be used to keep you comfortable during surgery?
   a. True
   b. False
   c. I don’t know

7. Sitting with your back pushed out will assist with placing your epidural?
   a. True
   b. False
   c. I don’t know

8. After the placement of the epidural, you will be able to walk around your room?
   a. True
   b. False
   c. I don’t know

9. The epidural video helped me better understand the risks and benefits of getting an epidural. (circle one)
   Strongly Agree   Agree   Disagree   Strongly Disagree

10. I am satisfied with the anesthesia education process for labor and delivery. (circle one)
    Strongly Agree   Agree   Disagree   Strongly Disagree

11. I would recommend the epidural video to other pregnant women interested in getting an epidural. (circle one)
    Strongly Agree   Agree   Disagree   Strongly Disagree
Appendix D

IRB Waiver, UMASS

UMassAmherst
Human Research Protection Office

Memorandum – Not Human Subjects Research Determination

Date: September 17, 2019

To: Matthew Moore, College of Nursing

Project Title: Epidural Education for Parturients Using a Video Teaching Tool

IRB Determination Number: 19-152

The Human Research Protection Office (HRPO) has evaluated the above named project and has made the following determination based on the information provided to our office:

☐ The proposed project does not involve research that obtains information about living individuals [45 CFR 46.102(d)].

☐ The proposed project does not involve intervention or interaction with individuals OR does not use identifiable private information [45 CFR 46.102(f)(1), (2)].

☒ The proposed project does not meet the definition of human subject research under federal regulations [45 CFR 46.102(d)].

Submission of an Application to UMass Amherst IRB is not required.

Note: This determination applies only to the activities described in the submission. If there are changes to the activities described in this submission, please submit a new determination form to the HRPO prior to initiating any changes.

A project determined as “Not Human Subjects Research,” must still be conducted in accordance with the ethical principles outlined in the Belmont Report: respect for persons, beneficence, and justice. Researchers must also comply with all applicable federal, state and local regulations as well as UMass Amherst Policies and procedures which may include obtaining approval of your activities from other institutions or entities.

Please do not hesitate to call us at 413-545-3428 or email humansubjects@ora.umass.edu if you have any questions.

Iris L Jenkins, Assistant Director
Human Research Protection Office
Appendix E

IRB Waiver, NMCP

Clinical Investigation Department, Naval Medical Center Portsmouth
620 John Paul Jones Circle, Portsmouth, VA 23708 (757) 953-5939 Fax (757) 953-5298, DSN 377-5939

09 May 2019

From: Deputy, Clinical Investigation Department
To: LCDR Matthew Moore, NC, USN

SUBJ: LETTER OF WAIVER OF IRB REVIEW FOR PROGRAM EVALUATION/QUALITY IMPROVEMENT PROJECT

1. Your project titled, “NMCP.2019.0074: Epidural Education for Parturients Using a Video Teaching Tool” does not require IRB review. Navy policy states that these types of program evaluation projects are exempt from IRB review.

2. Projects that do not require IRB approval are not eligible for Clinical Investigation Department travel funds.

3. You will still need to obtain publication approval for the project which is required for all works presented or published outside of NMCP.

4. I remain available and may be reached at (757)953-5939.

Kersten Wheeler
K. N. WHEELER

"FIRST AND FINEST IN RESEARCH SUPPORT"
Appendix F

Cost Table

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<th>Item</th>
<th>Cost</th>
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<tr>
<td><strong>Direct Costs</strong></td>
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</tr>
<tr>
<td>Office supplies (printer ink, paper)</td>
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<td>Data analysis Software (SPSS)</td>
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<td><strong>Indirect costs</strong></td>
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<tr>
<td>Project coordination</td>
<td>1 Nurse Anesthetist at $100/hr x 5hr = $500</td>
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<tr>
<td>Video creation</td>
<td>1 Audio-Visual Technician at $27/hr x 10hr = $270</td>
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<tr>
<td>Data Collection and analysis</td>
<td>1 Nurse Anesthetist at $100/hr x 4hr = $400</td>
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<tr>
<td>Consultation time (20 min)</td>
<td>30 consultations/month (20 minute x 30 consultations)/60 min = 10 hrs/month with 1 Nurse Anesthetist at $100/hr = $1000/month</td>
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<td>Computers and Printers, storage cabinets</td>
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**Benefits**

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<th>Increased Patient Knowledge</th>
<th>Increased Patient Satisfaction</th>
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<tr>
<td>Positive Community Perception</td>
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**Total estimated cost for project implementation**  

$2329
Appendix G

Timeline

*Project Timeline*

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