Give Love with Lovenox: Reducing Pulmonary Embolism Risk in the Postpartum Unit Through Lovenox Prophylaxis Nursing Education

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Give Love with Lovenox:

Reducing Pulmonary Embolism Risk in the Postpartum Unit Through Lovenox

Prophylaxis Nursing Education

Guadalupe Arroyo, RN

University of San Francisco School of Nursing and Health Professions

NURS653-07: Quality Improvement Internship

Nicole Beamish, DNP, APRN, PHN, CNL

December 15, 2023
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Give Love with Lovenox

Abstract

Problem: This quality improvement project aims to improve nurse education on Lovenox prophylaxis to reduce pulmonary embolism occurrence post-discharge amongst high-risk postpartum women who underwent vaginal/cesarean deliveries and to increase patient medication compliance in the Family Baby Unit (FBU) at Hospital X.

Context: The quality improvement project occurred on the Family Baby Unit (FBU) at Hospital X. This 25-bed unit has recently had an increased rate of pulmonary embolisms post-discharge due to poor Lovenox medication adherence amongst patients and lack of education among nurses.

Intervention: Data was collected in the microsystem. This data was collected through questionnaires to assess nurses' knowledge of Lovenox prophylaxis. Surveys were administered before and after nurses received education on Lovenox prophylaxis.

Measures: The quality improvement project began with a microsystem needs assessment using the 5Ps. Assorted candy was offered as an incentive to encourage nurse participation. We assessed the nurse's knowledge through a Lovenox prophylaxis questionnaire (see Appendix G and H). The outcome measure would be to decrease pulmonary embolism post-discharge and increase medication adherence amongst patients due to nurses being adequately educated on Lovenox prophylaxis.

Results: The results were a mix of quantitative and qualitative data. The survey responses allowed us to understand the nurses' knowledge before receiving any Lovenox prophylaxis education. The presurvey questionnaire revealed a need for more Lovenox prophylaxis
education; most nurses reported not receiving anticoagulant education since nursing school (see Appendix K).

**Conclusions:** Patients who do not adhere to the postpartum Lovenox regimen post-discharge are at an increased risk for Pulmonary Embolism (PE), Deep Vein Thrombosis (DVT), and Venous Thromboembolism (VTE) because of a lack of teaching and poor comprehension of the self-admin education. Per Hospital X policy, nurses must only witness patient self-administration once before discharge. However, research shows that nurses who see patient self-administration more than twice have higher medication compliance rates and decreased pulmonary embolism (Elmaghraby et al., 2022). By providing Lovenox prophylaxis education to nurses, we hope to see an increase in understanding of Lovenox prevention and a decrease in rates of pulmonary embolism post-discharge through increased medication compliance amongst patients and an increase in knowledge among nurses.
Introduction

During the postpartum period, several complications could arise, including Pulmonary Embolisms (PE). Pulmonary embolisms during the postpartum period are classified as a medical emergency as they can result in death. The postpartum period begins after childbirth and lasts up to 6 weeks. During this period, women are at an increased risk of developing blood clots, which contribute to pulmonary embolisms. Pulmonary embolisms occur when the formed clot travels to the heart. An estimated two-thirds of maternal deaths are a direct result of pulmonary embolisms, a problem that is preventable with proper education and medication compliance. (Lopez-Gonzalez & Kopparapu, 2022).

To decrease deaths caused by pulmonary embolisms, hospitals need to implement proper policies surrounding anticoagulant therapy, such as Lovenox. In addition, nurses must receive proper education on Lovenox prophylaxis to increase the medication compliance rate amongst patients post-discharge, as patients are responsible for administering this at home. Moreover, studies have shown that nurses who witnessed patient self-administration of Lovenox more than twice before discharge had higher medication compliance rates and fewer cases of postpartum complications such as pulmonary embolisms (Elmaghraby et al., 2022).

Problem Description

Hospital X’s Family Baby Unit (FBU) is a 25-bed unit. The healthcare staff reported an increase in pulmonary embolisms post-discharge amongst high-risk vaginal and cesarean section deliveries. While researching preventative methods to decrease the rates of pulmonary embolism, Lovenox prophylaxis was the best intervention available. Hospital X’s policy is to witness patients administer Lovenox at least once before discharge. However, studies have shown
witnessing patient self-administration twice or more before discharge is associated with higher
medication compliance rates and decreased complications risks (Elmaghraby et al., 2022). The
nurse plays an essential role in education. Nurses must know how to teach Lovenox prophylaxis
properly to ensure patients know how to take proper precautions once discharged.

The process begins with an initial microsystem assessment of current Lovenox
prophylaxis knowledge amongst nurses, researching current evidence-based practices, and
creating education for nurses. The process ends with identifying knowledge gaps within the
microsystem and data collection from questionnaires completed by nurses on the FBU. By
completing the microsystem assessment, the team aims to decrease the rate of pulmonary
embolism amongst postpartum women and improve nurses’ knowledge of Lovenox prophylaxis
to increase medication compliance post-discharge, which will aid in reducing pulmonary
embolisms.

Available Knowledge

We identified the population, intervention, comparison, outcome, and time frame
(PICOT) questions to implement proper evidence-based research. The following PICOT question
was created; “Does Lovenox prophylaxis education provided to Registered Nurses (RN) on the
postpartum unit increase patient compliance to reduce PE/DVT/VTE occurrence amongst
vaginal and cesarean deliveries post-discharge, in comparison to nurses who did not receive
Lovenox prophylaxis education in three months?”. Implementation of a PICOT question assists
us in finding proper evidence-based research to aid our quality improvement project and
implement change in the microsystem.
literature review was conducted to implement evidence-based research in the quality improvement project. The Keywords used to search for evidence-based research articles were Intervention, Lovenox, prophylaxis, anticoagulant, patient compliance, teach-back, and postpartum. To ensure the articles were of the highest credibility and evidence-based practices, the John Hopkins Literature Review Tool was used (Dang et al., 2022).

Several factors may affect a patient's compliance with medication. A study that analyzed women’s adherence to thromboprophylaxis revealed that compliance depended on individual perceived benefits/necessity and administration technique skill set as well as fear of needles and pain. To increase compliance rates amongst this population, it is essential to educate staff and patients on subcutaneous injection techniques and the rationale for treatment (Kalaitzopoulos et al., 2022).

Venous Thromboembolism (VTE) is the leading cause of maternal mortality; this includes DVT and PE. Pregnant women are at risk of VTE throughout pregnancy but are the most at risk during the third trimester. On the other hand, PE is most prevalent during the postpartum period, which is six weeks after delivery. Imaging for this specific patient population is under debate as both the mother and fetus must be taken into consideration as there is radiation exposure. Lovenox prophylaxis treatment is effective in decreasing and treating PE incidence cases. It is recommended to be taken for three months, followed by six weeks after delivery. Women were found to be receptive as it is safe to use during breastfeeding (Bates, 2021).

During pregnancy, several physiological changes take place. At this time, the body goes through a hypercoagulable state, increasing the risk of VTE. Pregnant women with a history or
family history of VTE or thrombophilia pose a higher risk of developing VTE while pregnant. These women are recommended to take anticoagulants prophylactically. Oral anticoagulants should be avoided during pregnancy as there is a teratogenic factor to take into consideration and may harm the fetus (Rybstein, 2019).

Pregnant women are 4-5 times more likely to develop a pulmonary embolism (PE) in comparison to nonpregnant women of the same age. This risk is the highest during the postpartum period. PE diagnosis frequently requires imaging through radiation, which poses a risk and danger for both mother and baby. To avoid this intervention, nurses must be able to recognize the signs and symptoms of pulmonary embolisms (Wiegers & Middeldorp, 2020).

Venous thromboembolism (VTE) is preventable. This is most common among postpartum women and is one of the leading causes of death in developed countries. Since 1998, death related to this problem has increased by 72%. However, thrombophylaxis has been shown to decrease these rates. Patients classified as low to moderate risk factors should receive anticoagulant therapy postpartum (Simon & Delaney, 2022).

The postpartum period is crucial to prevent complications. One of the most common complications is pulmonary embolism. Certain risk factors have the potential to increase the risk of developing a pulmonary embolism during the postpartum period. Moreover, studies revealed that a low-dose anticoagulant can aid in the reduction of pulmonary embolisms in women who have given birth (Blondon & Skeith, 2022).

**Rationale**

To improve healthcare experiences and patient outcomes at Hospital X, change must be implemented; as a result, Lewin's Change Theory was utilized. This theory consists of three
phases: unfreezing, change, and refreezing. This theory is widely applied to various hospitals and is respected by several nurses (Team, 2023). In the first stage, unfreezing, it was essential to recognize that change was needed and begin working towards it. This was established by leadership recognizing the rising rates of PEs. Change, the second stage consisted of project implementation, and nurses received educational brochures on Lovenox prophylaxis to increase patient medication compliance. Finally, the refreezing stage ensured that nurses apply the newly revised practice into their everyday care, such as witnessing patient medication self-administration more than twice and reviewing the education brochures.

**Specific Aim Statement**

This study aims to improve education amongst nurses about Lovenox prophylaxis to reduce the risk of pulmonary embolisms during the post-discharge period amongst women through providing nurse education annually regarding Lovenox administration and hospital policy, along with nurses witnessing the administration of Lovenox by patients, a minimum of two times before discharge to ensure correct medication administration. Through this implementation, nurses will see an 80% increase in patients’ medication adherence in a three-month period. Moreover, as a result of annual Lovenox prophylaxis education and increasing the times of witnessing medication administration, nurses will understand the policy and implement it in their everyday practice. There will be a decrease in pulmonary embolisms post-discharge as women will be more likely to adhere to medication compliance.

**Methods**

**Context**

A microsystem assessment utilizing the 5Ps assessed the unit’s needs. Questionnaires were administered to nurses from October 2023 to November 2023, before and after receiving
Give Love with Lovenox

Lovenox prophylaxis education from brochures students created. Furthermore, SWOT analysis, root cause analysis, and Gannt chart were created.

The microsystem assessment utilizing the 5 Ps allowed the group to effectively prioritize and identify the purpose, patient population, professionals, process, and pattern involved in this quality improvement project. After conducting the assessment, it was determined that the purpose of the project was to reduce the risk of postpartum embolisms through the use of Lovenox medication administration amongst mothers who underwent cesarean and vaginal deliveries at Hospital X. The professionals identified the nurses on the Family Baby Unit (FBU) at hospital X, who would be receiving re-education about Lovenox prophylaxis administration. Most importantly, the pattern identified in the microsystem assessment was that patients were not adhering to the postpartum Lovenox regiment post-discharge. As a result, these patients are at an increased risk of PE/DVT/VTE due to a lack of nurse teaching and/or poor understanding of self-administration education.

Conducting the SWOT analysis allowed the group to analyze the strengths, weaknesses, opportunities, and threats associated with the microsystem and project implementation (see Appendix E). Strengths identified were having the opportunity for staff to have Lovenox re-education available as a resource annually, practical nursing assessments for patients receiving Lovenox, and increasing accessibility to educational information related to PE/DVT/VTE. On the other hand, weaknesses were identified, such as staff not receiving Lovenox nor PE/DVT/VTE education annually. Some nurses reported not having received education about these topics since nursing school. In addition, other weaknesses were ineffective patient teaching at discharge about Lovenox self-administration and resistance to change amongst nursing staff at Hospital X. Opportunities identified were decreasing the rates of PE/DVT/VTE, increasing
compliance of Lovenox prophylaxis policy, effective patient teaching, increasing accuracy of patient assessments and quality of care. Finally, threats identified were time and cost allocated for re-education, staff resistance to implementing the Lovenox prophylaxis policy, and documentation burdens.

A Root Cause Analysis (RCA) was conducted using a fishbone diagram (see Appendix D). There was a lack of medication adherence post-discharge due to a lack of education and poor patient comprehension as a result of nurses not feeling comfortable and confident in knowledge related to signs/symptoms and prevalence of pulmonary embolisms. Nurses on the unit are only required to witness patient self-administration once before discharge. However, hospital policy did not provide nurses with education on the administration of this medication. Nurses were expected to know the procedures, although the hospital did not provide education.

To stay on track, the Gannt chart was utilized. This tool created a realistic timeline to implement the change project effectively (see Appendix F). The Gannt chart included timeliness for the project implementation and project planning. Project implementation and project evaluation and synthesis. During the project initiation, a literature review and a meeting with the leadership team took place. A timeline and unit needs assessment were conducted in the project planning phase. In the project implementation period, surveys and education were provided. Finally, post-surveys and evaluations were completed in the project evaluation and synthesis.

Cost Benefit Analysis

Implementing this quality improvement project is essential as it would decrease the rates of postpartum pulmonary embolism amongst women and enhance nurses' knowledge surrounding Lovenox prophylaxis. For nurses to quickly access information, badge buddies would be purchased for the unit, including a brief overview of Lovenox prophylaxis
administration. In addition, the annual refresher course on Lovenox prophylaxis would also be an additional cost. The total cost for these items would be $188,501 per year (see Appendix J).

**Intervention**

Microsystem data collection about Hospital X’s current Lovenox prophylaxis policy was active and passive observational data. The group designed and distributed surveys that analyzed data regarding the nurses’ current knowledge of Lovenox prophylaxis as well as analyzing nurses’ knowledge gained after receiving Lovenox prophylaxis education. As a result, the expected outcome is for there to be an increase in knowledge amongst nurses about Lovenox prophylaxis to decrease the rates of pulmonary embolisms. After all data was collected, recommendations were suggested. Limitations related to the interventions were getting the staff to trust students and hear us out. Due to these limitations, we communicated with the nurse educator, who spoke to the nurses about our presence on the unit. After this, nurses displayed more participation and compliance when students were present.

**Study of Intervention**

The intervention period for the quality improvement project took place from October to November 2023. The group took turns going into the unit to conduct pre and post-surveys and education. During the Plan Do Study Act (PDSA) cycle, the group planned the cycle in four different sections (see Appendix C). The cycle began with meeting the leadership team to discuss VTE/PE/DVT occurrence in both vaginal and c-section deliveries, as well as developing an aim statement. After speaking with leadership, we created a PICOT question, proposal, and data collection questionnaires. The microsystem was assessed using the 5 P’s, SWOT analysis, a root cause analysis, and data collection through surveys. Ultimately, survey data was analyzed, and recommendations were presented based on the data.
Measures

Data from the pre and post-surveys were analyzed to assess the effectiveness of the project implementation. The pre and post-survey consisted of the same questions, and nurses were to answer the questions before and after receiving Lovenox prophylaxis education. The survey consisted of questions to be answered in a Likert scale format. Nurses had the freedom of deciding to leave their names on the study or to leave it anonymous.

As mentioned, the PDSA Cycle was utilized. The first stage, “Plan,” consisted of meeting with the leadership team to discuss VTE/PE/DVT occurrence, developing an aim statement, PICOT question, proposal, data collection questionnaires, and creating educational brochures for the nurses on the unit about Lovenox prophylaxis. In the second stage of the PDSA cycle, the microsystem assessment took place while using the 5 P’s, conducting a SWOT and root cause analysis, collecting data, and administering pre and post-surveys to assess the nurse’s knowledge of the unit. In the “study” phase, the group analyzed results from the pre-and post-surveys that nurses completed after receiving education. Finally, the last “act” phase consisted of the group presenting evidence-based research recommendations to the leadership team, which took place on October 31, 2023 (see Appendix C).

Ethical Considerations

Nurses are responsible for being ethical healthcare leaders while supporting patients’ decisions. Nurses must follow the ANA Code of Ethics (COE) when providing care to all patients and explain the risks and benefits of any care provided (ANA, 2015). The ANA Code of Ethics was considered when designing this quality improvement project. This project has been approved as a quality improvement project by the University of San Francisco using the Quality Improvement review guidelines and does not require IRB approval.
Results

After conducting surveys, qualitative and quantitative results were gathered. It was revealed that 100% of nurses found the re-education beneficial, and 88% reported that they plan to witness their patients self-administer Lovenox more than two times before discharge (see Appendix K). Regarding the questionnaires administered, question 1 had a 24% total improvement rate after nurses received education. Question 2 results remained constant throughout the project, both before and after nurses received education. Question 3 had the most improvement. Nurses mainly scored a 5-rating compared to the first, scoring a 4. After receiving education, 68% of the nurses produced a 5 rating (see Appendix K).

Discussion

Pulmonary embolisms during the postpartum period can lead to death and are a severe preventative health issue with proper education. Several studies have shown the benefits of having staff, such as nurses, be properly informed of Lovenox prophylaxis so that this information can be taught to patients. The Lovenox quality improvement project must remain a lifelong implementation, as it can save several women’s lives. Nurse leaders must continue to spread awareness of this problem and introduce new nurses to the Lovenox education so that all staff are adequately informed and contribute to bettering postpartum women’s health.

Summary

This quality improvement project was a fantastic opportunity for students to enter the future CNL role and conduct a quality improvement project. In collaboration with the leadership team and nurses on the unit, change was successfully implemented. At the beginning of the project, nurses made comments and displayed pushback as several nurses were not on board with the project, and there was hesitancy when working with students (see Appendix I). However, we
tackled this issue by collaborating with the unit leadership team and had a mass email about the group’s presence and the project to be created. As CNLs, we must act as change agents and improve the unit’s education and knowledge. After this encounter, the project ran smoothly, and more nurses were inclined to work with students on the unit. Although this was one of the weaknesses of the project, a strength of it was having leadership staff strongly supporting the project implementation and displaying open communication.

**Lessons Learned**

To make the most impactful change within the microsystem, the CNL needs to catalyze change. The unit needs to implement quality improvement projects as they improve the unit as a whole and contribute to the better health of patients and the community. With implementing Lovenox education, nurses are better informed on its implications and administration teaching. Women can also now self-administer this medication confidently while at home since nurses are more informed on the administration technique and are properly teaching it to patients before discharging. Overall, the biggest lesson learned is that the CNL is a vital member of the healthcare team and valuable in creating positive change.

**Conclusion**

After conducting this quality improvement project, recommendations consist of utilizing the teach-back method when educating patients on how to self-administer Lovenox and nurses increasing the witnessing of patient self-administration more than two times before discharge. Moreover, implement annual refresher courses, keep educational signage around the unit to increase compliance, and implement a section in EPIC that allows nurses to chart how often they witness patient Lovenox administration.
Overall, we hope that the hospital permanently adopts the quality improvement project, as we hope to see a significant improvement and decrease in pulmonary embolisms amongst postpartum women and nurses feeling more comfortable conducting patient teaching. Implementing this project to improve patient outcomes at Hospital X is essential.
References


https://doi.org/10.3389/fcvm.2022.886416


https://doi.org/10.1016/j.thromres.2022.02.002

https://www.ncbi.nlm.nih.gov/books/NBK565875/


Appendices

Appendix A: Statement of Determination

Student Project Approval: Statement of Determination

Title of Project: Give Love with Lovenox: Improving Nurse Education on Lovenox Prophylaxis to Reduce Pulmonary Embolism Risk in the Post Partum Unit

Brief Description of Project:

This study aims to improve nurse education about Lovenox prophylaxis to reduce the risk of pulmonary emboli post discharge amongst high-risk postpartum women who underwent vaginal and cesarean deliveries in the family baby unit. Lovenox prophylaxis education provided to the nurses will be evaluated to determine the effectiveness of pulmonary embolus prevention. The project will last three months in hopes of closing the knowledge gaps and improving patient medication adherence as a result of improved teaching methods.

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: (http://answers.hhs.gov/ohrp/categories/1569)

This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Students may proceed with implementation.

Comments: Signature of Supervising Faculty

Signature of Student

(attach date) 12/4/2023
Give Love with Lovenox

Appendix B: Evidence-Based Change of Practice Project Checklist

EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST * STUDENT

NAME: Guadalupe Arroyo

DATE: 12/7/2023

SUPERVISING FACULTY: Nicole Beamish, DNP, APRN, PHN, CNL

Instructions: Answer YES or NO to each of the following statements:

<table>
<thead>
<tr>
<th>Project Title:</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>The aim of the project is to improve the process or delivery of care with established/accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>The specific aim is to improve performance on a specific service or program and is a part of usual care. ALL participants will receive standard of care.</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>The project is NOT designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does NOT follow a protocol that overrides clinical decision-making.</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does NOT develop paradigms or untested methods or new untested standards.</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does NOT seek to test an intervention that is beyond current science and experience.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.</td>
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</tr>
<tr>
<td>The project has NO funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.</td>
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</tr>
<tr>
<td>The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., not a personal research project that is dependent upon the voluntary participation of colleagues, students and/or patients.</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>If there is an intent to, or possibility of publishing your work, you and supervising faculty and agency oversight committee are comfortable with the following statement in your methods section.</td>
<td>x</td>
<td></td>
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</table>
Appendix C: Plan, Do, Study, ACT (PDSA)

1. PLAN
   - Collaborated w/ SCVMC leadership team regarding PE/DVT/VTE occurrence in vaginal & cesarean deliveries post-discharge
   - Developed an aim statement
   - Created a PICOT question
   - Generated a proposal
   - Designed data collection questionnaires
   - Educated nurses about Lovenox prophylaxis
   - Created brochures for nurses to learn about Lovenox prophylaxis

2. DO
   - Microsystems assessment using 5 P’s
   - Conducted a SWOT analysis
   - Ran a root cause analysis
   - Collected data on the Family Baby Unit
     - Pre-survey to assess RN’s knowledge
     - Post-survey to assess RN’s understanding post education

3. STUDY
   - Analyzed data gathered data from pre & post-surveys
   - Reviewed results from surveys

4. ACT
   - Developed and presented evidence-based research recommendations to the SCVMC leadership team on October 31, 2023.
Appendix D: Root Cause Analysis (Fishbone Diagram)

Root Cause Analysis

Fishbone Diagram

Documentation
Frequent documentation is time consuming and adds to nurse workload.

People
Some nurses are not confident in their knowledge of the S/S of PE
Some nurses are unfamiliar with the prevalence of PE's postpartum

Environment
Lack of medication adherence post discharge due to a lack of education and poor patient comprehension

Policies, Procedures, & Education
Most nurses have not had a refresher course on the use of Lovenox on their unit.
Procedures are not taught on unit, but RNs are expected to have prior knowledge
SCVCMC policy does not provide education about the medication and how to teach patient self-administration

RN's required to only witness patient self-administration 1x prior to discharge
All reported PE occurrences happened post-discharge and at the patients' homes.
Appendix E: SWOT Analysis (Strength, Weaknesses, Opportunities and Threats)

**SWOT ANALYSIS**

**STRENGTHS**
- Lovenox re-education available as a resource annually on the unit
- Effective nursing assessment for patients receiving Lovenox
- Accessible information regarding Lovenox and PE/DVT/VTE

**WEAKNESSES**
- Staff have not received education on Lovenox administration
- Staff have not received education on PE/DVT/VTE
- Lack of annual Lovenox and PE re-education
- Ineffective patient teaching at discharge
- Resistance to change among staff nurses

**OPPORTUNITIES**
- Decreased rates of PE/DVT/VTE post-discharge
- Increased compliance with the policy
- Effective patient teaching at discharge
- Increased accuracy of patient assessments
- Increased quality of care

**THREATS**
- Time and cost allocated for re-education
- Staff resistance to policy adherence
- Documentation burden
## Appendix F: Gantt Chart

<table>
<thead>
<tr>
<th>QI PROCESS</th>
<th>SEPTEMBER</th>
<th>OCTOBER</th>
<th>NOVEMBER</th>
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<tbody>
<tr>
<td></td>
<td>WEEK</td>
<td>WEEK</td>
<td>WEEK</td>
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<td></td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Project Initiation</td>
<td>Literature Review</td>
<td>Meeting with Leadership</td>
<td></td>
</tr>
<tr>
<td>Project Planning</td>
<td>Create Timeline</td>
<td>Unit Needs Assessment</td>
<td></td>
</tr>
<tr>
<td>Project Implementation</td>
<td></td>
<td>Pre-Survey</td>
<td>Education</td>
</tr>
<tr>
<td>Project Evaluation &amp; Synthesis</td>
<td></td>
<td>Post-Survey</td>
<td>Evaluation</td>
</tr>
</tbody>
</table>
Appendix G: Lovenox Prophylaxis Questionnaire- Pre-Survey

<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>I know what Lovenox is and why it is used on our unit.</td>
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<tr>
<td>I know it like the back of my hand</td>
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<tr>
<td>I feel comfortable administering Lovenox prophylactically and monitoring post-administration.</td>
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<tr>
<td>I am not.</td>
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<tr>
<td>Totally!</td>
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<tr>
<td>I know the signs and symptoms of pulmonary embolism (PE).</td>
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<tr>
<td>I can't remember.</td>
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<tr>
<td>Absolutely.</td>
<td></td>
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<tr>
<td>Based on your experience, have you seen a higher prevalence of Pulmonary Embolism (PE) in either C-Section or Vaginal deliveries?</td>
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<tr>
<td>C-Section</td>
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<tr>
<td>Vaginal</td>
<td></td>
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<tr>
<td>Not sure.</td>
<td></td>
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<tr>
<td>When was the last time you were educated or had a class about anticoagulant therapy (Lovenox)?</td>
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<td>Your answer</td>
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<tr>
<td>Do you think you would benefit from a refresher course about anticoagulant therapy (Lovenox)?</td>
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<tr>
<td>Yes</td>
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<tr>
<td>No</td>
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<tr>
<td>Maybe</td>
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<tr>
<td>Would you benefit from an anticoagulant (Lovenox) therapy flowsheet on EPIC?</td>
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<tr>
<td>Yes</td>
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<td>No</td>
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<td>Maybe</td>
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</tbody>
</table>
Appendix H: Lovenox Prophylaxis Questionnaire- Post-Survey

I know what Lovenox is and why it is used on our unit.

1 2 3 4 5
Not at all 〇 〇 〇 〇 〇 I know it like the back of my hand

I feel comfortable administering Lovenox prophylactically and monitoring post-administration.

1 2 3 4 5
I am not. 〇 〇 〇 〇 〇 Totally!

I know the signs and symptoms of pulmonary embolism (PE).

1 2 3 4 5
I can't remember 〇 〇 〇 〇 〇 Absolutely

Do you plan on watching your patient administer Lovenox more than once, if possible?

〇 Yes
〇 No
〇 Maybe

Did you benefit from this re-education about Lovenox?

〇 Yes
〇 No
〇 Maybe
Appendix I: Nurse Comments

NURSE COMMENTS

“When I was hired I never received education on anticoagulant therapy”

“The last time I was educated on Lovenox Prophylaxis was in nursing school, that was years ago”

“I’m busy and don’t want more charting”
Appendix J: Cost Benefit Analysis

Estimated Cost: Badge Buddies

$288 per year

Estimated Cost: Staff Developer/Educator for Lovenox Refresher Course

$188,244 per year

Total Estimated Cost: $188,532 per year
## Appendix K: Results

<table>
<thead>
<tr>
<th>Questions from the Lovenox Survey</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>I know what Lovenox is and why it is used in our unit.</td>
<td>● 4% scored 3</td>
<td>● 4% scored 3</td>
</tr>
<tr>
<td></td>
<td>● 36% scored 4</td>
<td>● 24% scored 4</td>
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<tr>
<td></td>
<td>● 60% scored 5</td>
<td>● 72% scored 5</td>
</tr>
<tr>
<td>I feel comfortable administering Lovenox prophylactically and monitoring post-administration.</td>
<td>● 4% scored 3</td>
<td>● 4% scored 3</td>
</tr>
<tr>
<td></td>
<td>● 20% scored 4</td>
<td>● 20% scored 4</td>
</tr>
<tr>
<td></td>
<td>● 76% scored 5</td>
<td>● 76% scored 5</td>
</tr>
<tr>
<td>I know the signs and symptoms of pulmonary embolism (PE).</td>
<td>● 4% scored 2</td>
<td>● 32% scored 4</td>
</tr>
<tr>
<td></td>
<td>● 4% scored 3</td>
<td>● 68% scored 5</td>
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<tr>
<td></td>
<td>● 52% scored 4</td>
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<td></td>
<td>● 40% scored 5</td>
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</tbody>
</table>

### Pie Chart

- **Do you plan on watching your patient administer Lovenox more than once, if possible?**
  - Yes: 88%
  - No: 8%
  - Maybe: 4%

- **Did you benefit from this re-education about Lovenox?**
  - 100%