Background/Problem Statement

- An estimated 510,000 adult hospitalizations during 2007-2009 had a discharge diagnosis of VTE and 70% of cases are believed to be preventable (Centers for Disease Control and Prevention, 2018).
- More than half of post-hospital-diagnosis of VTE are associated with a recent hospitalization and surgical procedure and is the fifth leading cause of hospital readmissions (CDC).
- High Risk Patients include:
  - Undergoing surgery involving the pelvis or lower limbs with a surgical time of 60 minutes or more.
  - Acute surgical admission with inflammatory or intra-abdominal conditions.
  - Expected significant reduction in mobility.
  - Or one or more of the following:

Review of Key Literature

- MacDougall et al. (2006) – examined annual healthcare costs related to VTE events.
- Elder et al. (2016) – explored causes for the ordered for mechanical prophylaxis for six patients.
- Brady et al. (2007) – observed 137 patients and found that 60% of cases are believed to be preventable (Centers for Disease Control and Prevention, 2018).
- Elder et al. (2016) – explored causes for the ordered for mechanical prophylaxis for six patients.
- MacDougall et al. (2006) – examined annual healthcare costs related to VTE events.

Purpose

The purpose of this project was to assess nurse understanding on the use and function of VTE prophylaxis, specifically mechanical prophylaxis.

Methods

This program development project included a pretest, intervention, and posttest design. Based upon the findings of the pretest, the educational program was developed to educate nurses on the use and function of mechanical prophylaxis. A program evaluation form was provided to participants for feedback and to ensure the project met the stated learning objectives.

Sample and Sites

Nurses at Rhode Island Hospital, a Brown University affiliated teaching hospital, working on the surgical unit, COOP 3, and caring for the postsurgical and trauma patients were included in the study. There were 32 active registered nurses on the unit.

Activities and Program Development

Content included: general nursing knowledge of mechanical therapy, discussion of alternative SCD devices and contraindications to using devices, proper sizing; required patient care and education; nurse documentation of device usage; and parameters for appropriate discontinuation. A poster presentation was used to display the information and nurses received informational cards with key information, such as a sizing chart, frequent alarms and troubleshooting the devices.

Theoretical Framework

The Logic Model Framework

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Activities</th>
<th>Outputs</th>
<th>Outcomes</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Your Planned Work</td>
<td>Your Intended Results</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Results

- Pre-test scores ranged from 2.4 to 4.2 out of a possible 5 points.
- The mean response rate was 3.6.
- Posttest scores ranged from 3.5 to 4.6.
- The mean response rate was 4.3.
- The average posttest response rate increased by 0.7 points compared to pre-test scores.
- Three questions showed greatest improvement in the posttest response.
- Question 1: I have been formally trained on the use of sequential compression devices (SCD).
- Posttest response increased by 1.3 points.
- Question 4: I am familiar when to use foot pumps as an SCD device.
- Posttest response increased by 1.2 points.
- Nurses with greater years of experience were more likely to have experience with foot pumps prior to the program.
- Question 6: When a patient is sitting in the chair, I maintain the SCD-device.
- Posttest response increased by 1.1 points.
- More neutral and disagree responses in the posttest compared in questions 1 and 4 by all age groups.

Summary & Conclusions

- A total of 21 nurses attended the educational sessions and completed a pre- and posttest for a 66% response rate.
- The response rate increased by 0.7 points overall in the posttest, demonstrating increased understanding on the use and function of mechanical prophylaxis in VTE prevention.
- Limitations included:
  - Program evaluated during a hospital-wide Joint Commission survey resulting in two afternoon sessions being canceled.
  - Posttest scores could have been 30.6-30.3 minutes of their time away from patient care. Session had to be condensed to meet nursing demands.
  - The number of leaves of absences could have affected participation rates.
- The results of the education program reflect the experience of one unit and cannot reflect the current knowledge of all nurses within Rhode Island Hospital on this topic.
- At the completion of the educational sessions, nurses were more likely to agree that they had been formally trained on the use and function of mechanical prophylaxis, increased familiarity with foot pumps as a compression device, and defining appropriate usage of therapy including maintaining therapy while sitting in a chair.

Implications for Advanced Practice

- Nurse Practitioners (NP) can serve as role models in analyzing, translating, and bringing evidenced-based research to the bedside. They also serve as patient advocates in populations at high risk for adverse events, including VTE events.
- NPs may participate in root cause analysis to determine the original contributor of VTE events within an organization and provide quality and safety personnel with current practice recommendations to guide education.
- A formal nursing policy on the use and function of mechanical prophylaxis may contribute to greater compliance among nurses at Rhode Island Hospital.
- Technology, such as incorporating automated practice reminders within the electronic medical record that alert nurses to not only screen patients on admission for risk factors of VTE, but promote mechanical prophylaxis usage can aid in greater compliance.
- Policy efforts at the national level must endorse public safety awareness on the seriousness of VTE. A more informed population will advocate for proactive care.
- Further research is needed to determine if by mandating such a program during a new hire orientation or in yearly competencies would increase compliance with mechanical prophylaxis and decrease VTE events hospital-wide. Additionally, educating physicians and advanced providers on mechanical prophylaxis removes the burden of preventative care and involves all team members.

References

- Kim, H., & Lee E. S. (2015). Major difficulties and information needs recognized by nurses in applying graduated compression stockings (GCS) for prevention of venous thromboembolism (VTE). A more informed population will advocate for proactive care.