

## **Venous Thromboembolism Prevention and Quality Improvement**

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Quality improvement seeks to standardize processes and structures to reduce variation, achieve predictable results, and improve outcomes for patients, healthcare systems, and organizations (CMS, n.d.). It is ever-evolving within the healthcare system as medical knowledge and advancements continue to improve. Quality and Safety Education for Nurses (QSEN) guides nurses in changing how they care for patients to ensure that each patient receives safe, high-quality care (OJIN, n.d.). QSEN focuses on developing effective teaching methods to ensure that future nurses have the knowledge, skills, and attitudes (KSAs) necessary for continuous quality and safety improvement of care (*QSEN Competencies* | QSEN, n.d.).

KSAs ensure that the nurse is competent and confident enough in their skills and knowledge to continuously evaluate their practice and adjust their care to promote better patient outcomes and patient-centered care. Nurses that are rigid in their practice and do not make advancements in their knowledge and capabilities hinder themselves, their patients, and their institutions. As healthcare is constantly evolving and updating, nurses need to be able to keep up with the latest knowledge and advancements to provide the best possible care for their patients and be advocates for their patients when circumstances prove necessary. This constant evolution gives nurses the knowledge and skills to identify and treat venous thromboembolisms that their patients may develop.

Venous thromboembolism, or VTEs, is a precarious medical ailment that is the product resulting from the formation of a blood clot that occurs within a vein (NHLBI, 2022). VTE includes deep vein thrombosis (DVT) and pulmonary embolism (PE). DVTs occur in deep veins most commonly found in the lower leg, thigh, or pelvis but can also occur in the arms should there be a large intravenous central line within the vein (NHLBI, 2022). PEs result from a clot

that ruptures or breaks free and travels to the lungs via the bloodstream and can lead to more dangerous and possibly perilous conditions should the clot block the oxygen supply to vital organs, such as the brain.

VTEs are common, with as many as 600,000 occurrences in the United States annually. The risk for developing a VTE is highest following a major surgery, a major injury, or during prolonged infections and inflammation (NHLBI, 2022). This increase in risk has to do with several key factors: possible damage to the veins that occurred during the surgery or from the injury; lack of movement after surgery or during long-distance traveling leading to venous stasis or pooling of the blood in the venous system (NHLBI, 2022).

Knowing the warning signs is crucial for those within the medical field, especially nurses and physicians, as this knowledge will enable nurses and physicians with early detection and treatment of a VTE. However, the best treatment for a VTE is the prevention of VTE. This includes but is not limited to knowing the risk factors for VTEs, the general/typical signs and symptoms, understanding demographics, and acknowledging comorbidities that may increase the risk for VTEs.

### **Article Summary**

The article *Perioperative Venous Thromboembolism Prophylaxis* focuses on providing standardized recommendations for creating and implementing prevention protocols via mechanical or pharmacological prophylactic methods to prevent VTEs (Bartlett et al., 2020). These authors focus primarily on the prevention of VTEs amongst surgical patients as the formation of a deep vein thrombosis in the surgical extremity, either during the operation or postoperatively, can lead to a life-threatening pulmonary embolism.

Bartlett et al. (2020) observed that specialists in the perioperative practice strongly believed in the impact of high-quality nurse-driven protocols in the perioperative portion of patient care. Implementation of these validated and evidence-based protocols improve patient outcome and reduce patient risk for VTE development. The nurse-driven methods included protocols for increasing nurse adherence to mechanical and pharmacological VTE prophylaxis and updating guidelines for assessing the individual's risk of VTE as well as their bleeding risk prior to surgery in order to provide a provisional guide towards optimal prophylactic treatment for VTE and bleeding (Bartlett et al., 2020).

### **Introduction**

Updates on VTE prevention guidelines provide medical personnel with recommendations for the creation and implementation of standardized protocols with the goal of reducing VTE formation either during or after surgery (Bartlett et al., 2020). These protocols included individualized risk assessment evaluations perioperatively as well as prophylactic mechanical and pharmacological treatment both perioperatively and postoperatively. It is crucial that these risk assessment evaluations and prophylactic treatments be validated via evidence-based nurse-driven protocols. Corroboration of these nurse-driven protocols increases staff adherence to the assessments and treatments as well as improve patient outcome (Bartlett et al., 2020).

Risk assessments for VTE prevention also include the assessment of the risk for excessive bleeding in patients prior to surgery. Standards in the comprehensive assessment of VTE and bleeding risks provide appropriate prophylactic treatment guidelines. However, new recommendations in criteria for these perioperative evaluations indicate that the assessments need to be individualized and scored. This can be done by using a standardized risk assessment tool as this allows patients to be sorted into categories based off of their individual scores. By

performing these individualized assessments, improvement in the accuracy of and adherence to VTE prophylactic treatment can improve patient outcome (Bartlett et al., 2020).

## **Overview**

Perioperative practice specialists strongly believe that due to the life-threatening impacts of a PE, perioperative nurses must know and understand the importance of VTE prevention within the operating room (Bartlett et al., 2020).

These specialists also concluded that there is evidential support justifying the application and utilization of nurse-driven protocols that reduce VTE risk in surgical patients, improve patient outcomes, and increase adherence to mechanical and pharmacological prophylactic treatment (Bartlett et al., 2020). Two new recommendations were made as an addition in nurse-driven protocols towards the prevention of VTEs in postoperative patients. The primary focus of the new recommendations included the assessment of adherence to mechanical VTE prophylaxis and nurse-initiated mechanical prophylaxis with intermittent pneumatic compression are brought into perspective, the benefits of these additions far outweigh risks.

New recommendations were suggested for outlining criteria used for VTE risk assessment that should be added to the evaluation of evidence-based practices and provide a standardized tool to improve the accuracy of risk assessment. These standardized tools would include categories or scores for the risk of VTE and bleeding development (Bartlett et al., 2020).

## **Quality Improvement**

Comprehensive VTE risk assessments are becoming increasingly popular with the addition of the assessment of bleeding risk in preoperative patients in order to aid in the direction of prophylactic treatment. Bartlett et al. (2020) observed that perioperative specialists believe in the

most recent proposal for individualized risk assessment evaluations as this provides a baseline for a prophylactic treatment plan upon those comprehensive individual findings. Bartlett et al. (2020) also observed that the idea and desire for an evidence-based standardized risk assessment tool should be implemented into preoperative care. These tools improve the accuracy of VTE risk assessment, promote adherence to prophylactic treatment, and support collaborative communication between interdisciplinary teams.

These prophylactic treatments included mechanical and pharmacological remedies. Mechanical treatment involves the physical therapy portion of postoperative treatment, such as early ambulation and manipulation of the postoperative limb via a CPM machine. Pharmacological remedies include medications that reduce platelet aggregation as well as blood thinners. VTEs are very dangerous and can progress into medical emergencies that require immediate intervention. However, prevention is entirely possible through mechanical and pharmacological prophylactic treatment, implementation of nurse-driven protocols, and standardized risk assessments. This article concludes that through the implementation of these evidence-based practices, the prevention of hospital-acquired VTE events will decrease as patients will receive the appropriate prophylactic treatment (Bartlett et al., 2020).

### **Application to Nursing**

Venous thromboembolism (VTE) events are a major aspect in nursing care, primarily in situations where a patient poses higher risks for the development of these injuries such as during or after surgery. Guidelines and protocols have been placed to reduce patient risk for these devastating events. Optimal patient outcomes are more likely in environments where protocols and guidelines are nurse-driven as this increases the adherence to prophylactic protocols,

improves the accuracy of VTE risk assessment, and supports interdisciplinary team communication (Bartlett et al., 2020). Maintaining competency of medical personnel and remaining up-to-date on appropriate practices further enable improved patient outcome as staff are more knowledgeable and well-versed in patient-specific care. By understanding these standards, nurses are able to incorporate all aspects of nursing care to further enhance patient experience, knowledge, education, and outcome.

## **Practice**

Some of these practices include early ambulation or movement of the surgical extremity, mechanical strategies, and pharmacological therapies. According to Khatri et al. (2021), mechanical prophylaxis includes graduated compression stockings (GCS) and active devices, which would include intermittent pneumatic compression (IPC). While mechanical interventions can be effective in comparison to no interventions, Khatri et al. (2021) believe that there is doubt behind the clinical utility of mechanical methods, particularly when used as an adjunct to other strategies.

Pharmacological methods remain to be the preferred prophylactic treatment, especially when used adjunctively with mechanical methods. The main idea behind this is because medications are more reliable, easier to use, and are more manageable than mechanical methods as the dosing can be more individualized and patient-specific (Bartlett et al., 2020).

## **Education**

Medical knowledge and technology are continuously evolving, therefore, so too should the knowledge of medical personnel. Nursing remains to be a lifelong learning experience and is crucial to remain up-to-date and continuously develop professionally (Mlambo et al., 2021). Continuous education is provided for nurses by hospitals through seminars and conferences in

order for them to increase their knowledge or to learn new things. Nurses need to remain competent about the signs and symptoms of a VTE formation in order for early detection and treatment to prevent a VTE event from occurring. Additionally, nurses need to remain knowledgeable regarding the medications being prescribed and administered for prophylactic treatment. Gaps in knowledge on either of these two aspects can lead to detrimental effects.

## **Research**

Further clinical study is always a must. However, in a hospital setting, the priority for further study continues to increase as the role of a nurse becomes more independent and impactful on patient care and outcomes. As pathophysiology of VTEs is still being studied, research will need to continue for interventions and prophylactic treatment. Medical advancements continue to occur, thus developing new and improved methods for prophylactic treatment is a must.

## **Conclusion**

Overall, quality improvement remains a top priority in healthcare as it sets standards and structures that directly impact knowledge, skills, and behaviors within the healthcare setting in order to reduce variation, improve outcomes, and achieve predictable results (CMS, n.d.). QSEN works hard to provide this wide array of information through continuous nursing education in order to guide nurses towards their potential by improving their skills, assessing their knowledge, and determining their attitudes towards healthcare and patient care.

Venous thromboembolisms continue to remain a major risk factor for patients undergoing surgery or those with limited mobility. Early detection and treatment are the best prevention method. By using prophylactic treatment and risk assessments, VTE development can be further prevented and improve patient outcome. Through nurse-driven methods of mechanical and

pharmacological interventions, patient risk for developing a VTE decreases further. As VTEs continue to remain a life-threatening crisis in the healthcare setting, knowledge of signs and symptoms to promote early detection, prophylactic treatment to prevent formation, and continuous education for nursing staff in order to remain competent enables improved patient outcome thus improving the quality of care and stay that a patient receives.

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