

Venous Thromboembolism Prevention: A Risk Assessment Tool

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Table of Contents

Introduction 3

Theoretical Framework 4

Evidence 5

Proposal 6

Implementation 7

Conclusion 9

References 10

Introduction

Deep vein thrombosis (DVT) is defined by the U.S. National Library of Medicine (2018) as a blood clot that forms in a vein deep in the body, most commonly in the lower leg or thigh. People who are currently or recently hospitalized, recovering from surgery, or being treated for cancer are at increased risk of developing a serious and potentially deadly complication of DVT known as pulmonary embolism (PE). DVT and PE are collectively referred to as venous thromboembolism (VTE). According to the Center for Disease Control and Prevention (2018), an estimated 100,000 Americans die of VTE annually. Research also shows that 10-30% of people will die within one month of diagnosis and sudden death is the first symptom in about 25% of people who have a PE (CDC, 2018).

More and more people living in the United States have factors that increase their risk for a VTE. Without improvements in and consistent use of strategies to prevent VTE, the number of people affected is expected to increase. Although anyone can develop a blood clot, over half of blood clots are related to a recent hospitalization or surgery, which are known as hospital acquired venous thromboembolism (HA-VTE). Reports suggest that as many as 70% of HA-VTE cases can be prevented, but fewer than half of hospitalized patients receive appropriate prevention measures (CDC, 2018).

Hospital acquired venous thromboembolisms are a growing issue that need to be addressed sooner rather than later. In fact, the World Thrombosis Day Campaign (2018) says:

To prevent hospital-associated VTE and related morbidity, every hospital worldwide should establish and enforce a VTE protocol. Protocols may vary by institution and

country, but should include a VTE risk assessment that is tied to proper prevention and treatment guidelines. (p. 2)

Many hospitals and organizations in the U.S. have started to address this issue and are implementing risk assessment tools to better prevent VTEs in hospitalized patients.

Unfortunately, there are also many hospitals who have not implemented a policy regarding this issue yet. The goal of this presentation is to propose a nursing venous thromboembolism risk assessment tool that can be implemented in any hospital, explain the evidence behind these tools, and recommend a way of implementing it into professional practice.

Theoretical Framework

The nursing theory that supports an improvement in VTE prevention is Betty Neuman's Systems Model that was founded in the 1970s. This model focuses on the response of the client system to actual or potential environmental stressors and the use of several levels of nursing prevention intervention to ensure optimal client system wellness. Neuman believes the major concern of nursing is to prevent the invasion of stressors by providing care through primary, secondary, and tertiary prevention. This proposal concentrates mainly on the primary prevention portion of the systems model. Primary prevention aims to prevent disease or injury before it ever occurs. It is applied in patient assessment and intervention by identifying and reducing possible or actual risk factors (Nursing Theory, 2016).

Risk assessment tools focus on identifying a patient's unique risk factors for the development of a venous thromboembolism such as immobility, advanced age, and obesity. It then provides a framework for implementing appropriate interventions to reduce these risk factors such as intermittent sequential compression devices or anticoagulant therapy. The

prevention of VTEs in the hospital alleviates the risk of severe complications due to the disease and the need for further treatment later. This in turn ensures optimal client system wellness which is the overall goal of the Neuman's Systems Model.

Evidence

First and foremost to understand the need for a risk assessment tool it is important to recognize the effectiveness of the VTE prevention methods available today to hospitals throughout the country. In a study by Kwok M. Ho, MPH, PhD, FRCP and Aik Jen Tan, MBBS (2013) published in the *American Heart Association Circulation Journal*, no prophylaxis, thrombo-embolic deterrent (TED) hose, intermittent pneumatic compression (IPC) devices, and pharmacologic thrombo-prophylaxis were reviewed and compared. The study found that IPC devices were more effective in reducing VTE occurrence than no prophylaxis or TED hose. It also found that a combination of IPC devices and pharmacologic thrombo-prophylaxis was the most effective in reducing occurrence in high risk patients. This information is important to note because many risk assessment tools provide a score at the end that suggests appropriate prophylactic interventions. This study demonstrates that these interventions are successful in reducing the occurrence of VTE and should be implemented when necessary.

There are many risk assessment tools available that have been implemented in many different hospitals. However, there is one that continues to show up in many research articles: the Caprini VTE Risk Assessment. This particular assessment tool has been appraised and validated by many sources; one in particular is the *Journal of American Medical Association*. In the article, medical professionals used a retrospective study to confirm that this tool was able to appropriately identify individual risk of developing VTE. Those with a Caprini score above eight were significantly more likely to develop inpatient VTE than those with a score of eight or

below. Statistics showed that those at super high risk (>8) received some type of prophylaxis and had a VTE rate of 11.5% compared to those at low risk (0-2) who had a VTE rate of 3.5% (Obi et al., 2015). This is important because it supports the fact that these risk assessment tools, particularly the Caprini assessment, can correctly identify an individual's risk for VTE. With correct risk scores, appropriate prophylactic interventions are more likely to be implemented successfully.

Further research shows that Johns Hopkins Hospital has implemented a risk assessment tool in the form of a computerized "smart order set." After the implementation of this new program, there was a 24.5% increase in prescriptions for risk-appropriate VTE prophylaxis; symptomatic VTE decreased significantly from 5.2% to 0.7%; the number of patients being overmedicated for prophylaxis decreased; and no difference in major bleeding incidences occurred with increased prophylaxis (Zeidan et al., 2013). This evidence proves that risk assessment tools can successfully be implemented into any hospital and profoundly increase the use of VTE prevention measures and lower incidence of VTE without causing complications. These are just a few of the abundance of evidence out there supporting VTE risk assessment tools in hospital settings.

Proposal

Simply being admitted to a hospital increases a person's risk for the development of VTE. Therefore, implementing a risk assessment tool that nurses can use to better prevent VTE could prove very beneficial to any hospital. The local rural hospital currently being assessed does not have a policy written for the risk assessment of VTE. Based on recent research the proposed policy is as follows:

POLICY TITLE:

Venous Thromboembolism (VTE) Prevention: A Risk Assessment Tool

POLICY STATEMENT:

Risk assessment is performed by licensed nurses on every patient upon admission or transfer to the specific unit.

Interventions are implemented according to the risk score. Unlicensed assistive nursing personnel may aid in the implementation of non-pharmacologic prevention measures. Follow unit specific policy for each intervention: Nursing P&P Section III – 062 for use and operation of IPC; Section III – 093 for postoperative convalescent care and the use of TED hose; and Section III – 123 for the transferring and ambulation of patients with total hip replacements.

Reassessment is performed as needed.

SUPPORTIVE DATA:

VTE risk assessment tools have proven to be successful in determining a patient's risk of developing a VTE and providing appropriate patient specific prophylaxis. These tools greatly reduce the incidence of hospital acquired venous thromboembolism and increase prevention measures used.

DOCUMENTATION:

The licensed nurse documents assessment and interventions in electronic medical records or on appropriate forms in patient chart.

Implementation

Once this new policy is approved for use on the unit, it is ready to be added to the policy book and implemented on the floor. After speaking with a manager at the local hospital, various implementation techniques have been established and found effective on the medical/surgical unit (L. Moss, RN, personal communication, March 22, 2018). First, the new policy would be brought up and discussed in the unit meeting. This gives the manager a chance to explain the importance of the new policy and how it should work. Most nurses understand the concept of VTE and the effects it has on a patient, however, this would be a great time to reiterate the serious complications that can occur if patients are not provided appropriate prevention measures. During these meetings any questions from the staff about the policy can also be

addressed. After discussing with nursing staff, all new policies at the local hospital are posted on the hospital intranet under “Nursing Policy and Procedures.” This provides continuity of care because every employee is able to access this site. It also can be accessed by the education department and be covered in new nurse orientation classes. In addition, the new policy would be posted on the bulletin boards in the staff lounge and nursing stations. Posting it where each employee can see it will cover the employees who were unable to make it to the unit meetings. This particular policy does not require a skill to be taught and return demonstrated. Simple risk assessment tools take into account the assessment skills licensed nurses already possess and use every day.

In order to evaluate the compliance of nurses on the unit the nurse manager has a few options. One evaluation method would be to look in the computer at patients’ electronic medical records (EMR) or in their paper charts to see if the risk assessment was performed. Charts could be randomly picked or every single chart could be assessed for a better compliance evaluation. In addition to checking to see whether the risk assessment was performed, it is also important to check to see if prophylaxis is being used appropriately. Again, EMRs and charts could be reviewed randomly to ensure prevention measures were put in place and are being used appropriately. Another method of verifying staff compliance is randomly checking patients’ rooms to ensure their intermittent compression devices were on and working. If a risk assessment was not performed and no interventions were implemented, the physicians would also notice. The manager at the local hospital stated physicians are diligent about notifying her if something is not being done for his/her patient (L. Moss, RN, personal communication, March 22, 2018).

As well as making sure the policy is implemented correctly, it is also important to evaluate the effectiveness of the policy. Hospital acquired venous thromboembolism incidence

should be evaluated after the first year of implementation. If these incidence rates decrease then the overall goal of the risk assessment tool was met. The financial department should also be consulted in monitoring the monetary benefits of this policy, including a decrease in finances needed to treat HA-VTE. According to the CDC, hospital acquired venous thromboembolisms costs U.S. health care systems \$10 billion or more each year (CDC, 2018). Hospitals that implement a risk assessment tool should show decreases in these costs.

Conclusion

Prophylactic measures have been studied and researchers found that intermittent compression devices and anticoagulant therapy effectively decreases the rate of VTE occurrence. Risk assessment tools at many hospitals across the nation have demonstrated great results in targeting at-risk patients. Those hospitals who have already implemented risk assessment tools have shown increased prophylaxis being prescribed and lower incidence rates of VTE. Venous thromboembolisms are a serious condition that kills over 100,000 Americans and cost the U.S. health care system over \$10 billion each year. If you had a tool to prevent VTEs in your hospital would you use it?

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