Development of a Nurse Driven DVT Prophylaxis Protocol

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Abstract

Introduction: Venus Thromboembolism (VTE) is considered to be the most common, preventable cause of hospital-related death. Prophylaxis reduces the rate of VTE by 50-65% (Michota, 2007). Many studies have shown that half or more of the at-risk patients do not receive adequate prophylaxis. This study covers the need for a prophylaxis protocol, how to set up a nurse-driven prophylaxis protocol and the improvements that can be achieved through the utilization of one. Problem: Currently at this institution, DVT prophylaxis is managed by physicians. There is no standard tool for risk assessment in their decision tree. Physicians must rely on their own independent clinical judgment when ordering prophylaxis. This leads to frequent missed opportunities for adequate prophylaxis. One audit of charts from last year at this VA Medical Center being studied, revealed only 72% of patients seen over a 60 day period received adequate DVT prophylaxis in the first 24 hours of admission. Studies have shown missed opportunities to exceed 50% at many institutions utilizing this system (Dager, 2010). In one study, nurses were empowered to take responsibility for all admitted patients and ensure appropriate VTE prophylaxis was provided. Rates for appropriate prophylaxis in admitted patients rose from 27% to 85% ($p<0.0001$) (Collins, R. 2010). This speaks volumes as to what nurses administering an effective protocol can accomplish. Identification Framework: The theory utilized is Watson's Caring Theory (Watson, J. 2009) with the emphasis being on patient safety.

Definition of Terms:

Embolism – The obstruction of a blood vessel by a blood clot or foreign matter.

Prophylaxis – Measures designed to promote health and prevent spread of disease.

Protocol – A system of rules which explain the correct conduct and procedures to be followed in formal situations.

Thrombosis – The formation or presence of a blood clot in a vessel.

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Chapter 1: Introduction

Purpose of Project

Deep vein thrombosis/venous thromboembolism (DVT/VTE), represent a huge danger to hospitalized patients. In fact, VTE is the single greatest cause of preventable deaths in hospitalized patients. Each year in the United States, an estimated 350,000-900,000 persons develop incident VTE. Of these approximately 100,000 will die (Streiff 2014). Prevention of these events is high on the list of The Joint Commission (TJC) and the Centers for Medicare and Medicaid Services (CMS). This topic is of importance to nursing practice in that VTE events pose one of the most serious safety threats to any patient population in hospitals. Reducing that threat and improving the safety of our own patients, allows nurses and physicians to focus on the patient's other healthcare issues. Routine nursing assessment and intervention, based on evidence-based protocols, can have a positive influence on patient outcomes. Statistically, 70% of VTE's are DVT's and 30% are actually Pulmonary Embolism's (PE's) (Herbers 2010). Estimates related to preventable VTE are a cost of $10,000 per DVT and $20,000 per PE. To understand the significance of the cost, a 300 bed hospital with a 40% prophylaxis rate, translates into $1.7 million per year in additional costs. (Camden 2014) Added to this, in non-federal hospitals are financial consequences for violating never event standards from The Centers for Medicare and Medicaid (CMS).

Purpose Statement

The purpose of this project is to develop a nurse-driven DVT prophylaxis protocol that will be instituted in an intensive care setting. The design should be easily understood and

implemented, and should lend itself to a research study without difficulty, and be reproducible in other venues. It consists of a risk assessment, which will numerically stratify the patients' that are at risk for DVT. That assessment will be paired with an order set, which will chose the appropriate intervention based on a pre-determined algorithm. This algorithm is based on the 2012 recommendations of the American College of Chest Physicians. There should also be documentation of bleeding risks and contraindications; these will be included in the therapy choice.

Background significance of the problem:

- VTE is the number one cause of potentially preventable deaths in hospitalized patients. (Michota, 2007)

- This represents 1 in 17 preventable deaths and 8 events per 1,000 stays. (Streiff et al., 2014)

- VTE prevention is a priority of The Joint Commission (TJC) and the Centers for Medicare and Medicaid services. (CMS) (Michota, 2007)

- VTE prophylaxis is rated by the Agency for Healthcare Research and Quality (AHRQ) as the number 1 most effective patient safety practice for hospitals. (TJC 2007)

- VTE prophylaxis rates are publically reported on the Hospital Compare website (Michota, 2007)

- VTE is part of the Ventilator Acquired Pneumonia Prevention Bundle requirement. (Herbers & Zarter, 2010)

- 70 percent of VTE's are DVT's and 30 percent are PE's. (Herbers & Zarter, 2010)

- Approximately 75 percent of fatal PE's, diagnosed at autopsy, were in medical patients. (Michota, 2007)

- There is a disconnect between evidence and practice as it relates to VTE prevention. In one large study, 71 percent of patients diagnosed with VTE had received no prophylaxis in the last 30 days. (TJC 2007)

- In one Meta-analysis, PE was reduced using low dose anticoagulant by 1/3, which represents 4 events per 1,000 patients treated. (CAMDEN & LUDWIG, 2014)

- VTE prophylaxis is under-utilized in the United States despite the availability of evidence-based clinical practice guidelines from authoritative sources. Rates of adherence to guidelines to VTE prophylaxis of less than 20 percent have been reported. ((Dager, 2010)

- Prophylaxis reduces the incidence of VTE by 50-65 percent. (Michota, 2007)

Design

The research tool used was the Caprini Risk Assessment tool. The Caprini Risk Assessment Tool is a well-respected, reliable and valid measurement tool used to quantify and stratify a patient's risk for Deep Vein Thrombosis (DVT). Using Caprini's Risk Stratification, an algorithm will be followed to determine the level of care. The Risk assessment tool and associated algorithms were acquired from Dr. Caprini following an Internet request. The algorithm follows the American College of Chest Physicians (ACCP) guidelines from 2012.

Conclusion

Time and again studies have proven that protocol based care is superior in overall outcomes to individualized planned patient care. In this circumstance, the use of a standard Risk Assessment Tool allows for the stratification and resulting interventions to be consistent from one provider to another.

When coupled with an algorithm that is heavily evidenced based, the level of care improves accordingly. This has been the basis of reports from AHRQ, The Joint Commission and CMS. Our goal in this project is to create a protocol which is inexpensive, easy to duplicate and can be performed at the unit level. It is felt that if these goals are met, others will attempt to replicate the protocol, and in doing so identify not only a need but a solution to a problem in their unit. This study does not go into the specific number of VTE's and DVT's that were prevented, largely because the VA does not keep or report this data. However, studies, which speak to the number of DVT/VTE's avoided based on the number of patients receiving adequate prophylaxis, are available.

Purpose and Planning of Project

The purpose of this paper is to evaluate if a nurse-driven deep vein thrombosis/venous thromboembolism (DVT/VTE) prophylaxis protocol can be developed and instituted in an ICU setting.

DVT and VTE represent a huge danger to our population of hospitalized patients. In fact, VTE is the single greatest cause of preventable deaths in hospitalized patients. Prevention of these events is high on the list of The Joint Commission (TJC) and the Centers for Medicare and Medicaid Services (CMS). This project is intended to outline the need for a DVT/VTE prophylaxis protocol in the CICU of a Veterans Administration Hospital.

This topic is of importance to nursing practice in that VTE events pose one of the most serious safety threats to any patient population in hospitals. Reducing that threat and improving the safety of our own patients, allows nurses to focus on the patient's other healthcare issues. Routine nursing assessment and intervention, based on evidence-based protocols, can have a

positive influence on patient outcomes. However there was considerable push back from the staff

nurse ranks. Many saw this as just one more "mandatory template" to complete in their daily

charting. It was also seen as the nurses having to do the medical teams' work for them. Duplicate

charting is already the bane of these nurses existence, and many saw it as exactly that.

Fortunately there was enough leadership at both the staff nurse level as well as from the nurse

manager and senior nursing management. The fact that this particular unit is in a struggle to

improve its' Beacon status from Silver to Gold definitely helped further the cause. This author

has a personal understanding of the dangers and consequences of DVT and VTE as a survivor of

both.

    The proposed project is an executed (PDSA) Plan, Do, Study, Act cycle. The first phase

was to research the literature to find a DVT/VTE Risk Assessment Tool. There were several

already in use in the literature. The Caprini Tool was chosen because it provided a

comprehensive risk stratification. The Padua scale, though frequently cited in the literature as

well did not appear as comprehensive. Dr. Caprini is a well-recognized and highly respected

vascular surgeon. He has done extensive work in the area of DVT/VTE recognition and

prophylaxis. The project lead contacted Dr. Caprini in at his practice in Chicago by E-Mail and

requested his permission to use his work. Forty-eight hours later written permission was granted

and a copy of his most recent Risk Assessment Tool was kindly sent. This tool uses weighted risk

factors to give a score. This score striates the severity of the DVT/VTE risk for the patient. This

score is then utilized to create a treatment plan for prophylaxis based on ACCP guidelines.

    The risk assessment tool was then utilized to review sixty days of patient data from the

CICU. The data revealed that only 72% of patients received appropriate prophylaxis for DVT or

had explanations as to why treatment was deferred. This included patients who were therapeutic

on warfarin or other anticoagulant therapy as an outpatient prior to admission.

While in the plan phase, permission from the Chief of Cardiology to go forward with

both the project and the study were obtained. The decision to get permission from the Chief of

Cardiology followed nearly a year of dialogue and eventually stalled negotiations with the

Medical Director of the CICU. During that time it was made quite clear that he would only

endorse a physician driven protocol, not a nurse driven one. The project leader discussed with the

Chief of Cardiology that the 72% compliance exhibited by the medical staff in their addressing

of this issue was suboptimal. It was felt that a nurse driven protocol could achieve significantly

higher results. It was also explained that failure to have such a protocol was one of the listed

deficiencies in the CICU's quest for Beacon Gold status. The request was then granted.

The next hurdle was to obtain an order set which could be utilized in the protocol. With

the assistance of an Attending Physician, access to a pre-existing order set for DVT/VTE

prophylaxis was given. This physician suggested using this order set as it would not have to go

through the Pharmacy and Therapeutics committee, as it was an existing order set. It also aligned

perfectly with the Caprini Risk Assessment and American College of Chest Physicians (AACP)

guidelines. Nursing informatics then produced a working Risk Assessment tool and Therapeutic

Order Set. Screen Shots of these can be seen in the Tables Section.

Just prior to implementation, the head of Pharmacy and Therapeutics committee weighed

in and insisted that this protocol have the approval of the Director of Nursing, Nursing CPPC

committee and then the Pharmacy and Therapeutics committee, prior to implementing a pilot

study. A meeting is set with Pharmacy and Therapeutics for early June of 2015.

The implementation or Do phase should follow immediately. Once started, this phase will last 60 days. The data will be collected and compared to the retrospective study performed of the previous 60 days. The short timeframe gives opportunity to reflect on any necessary operational changes, which may be required prior to initiating another study. The beauty of this study is its ability to be replicated in other units and other Veteran's Administration (V.A.) facilities system-wide for validation. It is important to note here that the Veterans Health Administration is a federal entity, and as such they are exempt from reporting DVT/VTE data. This is all the more reason for internal monitoring and control of issues such as these.

Chapter 2: Review of Literature

Theoretical Literature

Jean Watson's "Theory of Human Caring" was used for this project. It seemed appropriate for a number of reasons. First it focuses on patient-centered caring behaviors, communication and most importantly, patient safety. More importantly, this is the theory used by the institution in which I will perform my project.

Empirical Literature

A review of the empirical literature was performed using Boolean searches for DVT, VTE, risk assessment, and prophylaxis. Twelve articles were selected ranging in date from 2007 to 2014. Attempts were made to obtain evidence from which a protocol could be developed, an assessment tool developed and sufficient data to prove the need for the study.

The first article reviewed was Camden, R., & Ludwig, S. (2014). Prophylaxis against venous thromboembolism in hospitalized medically ill patients. The article was entitled: Update and Practical Approach from the *American Journal of Health-System Pharmacy*. "Major updates

in the medical literature for the prevention of VTE in medically ill patients are reviewed." The

authors suggest using special population considerations in risk assessment. These would include

morbidly obese, chronic kidney or liver disease. The authors are Clinical Pharmacists. This

article provides the ACP and ACCP current guidelines for the treatment and prophylaxis of DVT

and VTE. These were quite helpful in developing a protocol and algorithm.

The second article reviewed was Collins, R., MacLellan, L., Gibbs, H., MacLellan, D. &

Pletcher, J. (2010). This article was published in Australia. This international study is included

in this work because it mirrors the study this project lead is performing. It was written by nurses

in 2010, it describes a nurse led initiative in a hospital setting. This is one of very few studies of

its kind. This was a clinical audit of 2063 hospitalized patients. "Nurses were empowered to take

responsibility of VTE risk assessment all admitted patients and to ensure that appropriate VTE

prophylaxis was provided." The rates for appropriate prophylaxis rose from 27% to 85%

($p<0.0001$), which showed statistically significant results.

The third article reviewed was Haines, S., T. (2010). The pharmacist author begins by

reviewing risk factors for VTE. He points out that although "several effective means of

prophylaxis exist, they are under-utilized." He believes that "Quality Improvement Initiatives to

improve VTE prophylaxis rates including mandatory practice, outcome reporting, and pay-per-

performance requirements should be utilized." VTE assessment tools, algorithms, protocols and

policies should be developed and used. This inference is especially important. Hospitals outside

the federal government all must comply with reporting DVT/VTE rates and therefore face

financial consequences if they do not comply. The federal government, including the Veterans

Administration Hospitals are exempt from reporting or its' financial consequences.

The fourth article reviewed was Herbers, J., & Zarter, S. (2010). Written in 2010, by a

team of medical doctors, it speaks to the V.A. system itself. The authors point out that there were

"frequent missed opportunities for prevention, as well as inappropriate mechanical prophylaxis

and/or inadequate anticoagulation." Heparin and Enoxaparin were frequently underdosed.

Sequential compression devices need to be worn continuously to be effective. Frequently there is

patient refusal to wear them as well as non-compliance on the part of nursing in assuring that

they are kept on at all times.

The fifth article reviewed was Porter, G., Dinning C., & Bonner, L. (2012). Written in

the United Kingdom in 2012 this article outlines the efforts of nurses working in the National

Health System as they campaign to reduce VTE's with the introduction of a National Risk

Assessment Programs. Lack of such a program, in the United States, contributes to the poor rate

of compliance with accepted standards. The Veterans Administration is the leading example of

national Health in the United States. Rather than being exempt from reporting, would it not be

better to set the example and develop and implement programs such as these?

The sixth article reviewed was Schiro, T., A., Sakowski, J., Romanelli, R., J., Jukes, T.,

Newman, J., Hudnut, A., & Leonard, T. (2011). This article discusses variation in the scoring of

risk assessment and adherence to guidelines. The researchers found that outcomes were

improved with the appointment of a Nurse Case Manager, whose duties were to oversee the

program, and an automated VTE risk assessment tool. The result was improved adherence to

guidelines. This role could easily become the responsibility of a CNL rather than a Case

Manager.

The seventh article reviewed was Streiff, M. B. Brady, J., P., Grant, A., M., Grosse, S., D. Wong, B., and Popovic, T. (2014). This research originated from the Centers of Disease Control (CDC) grand rounds. The article was published in 2014 and demonstrates interesting new statistics regarding morbidity and mortality associated with VTE. Among statistics cited: 350,000-900,000 persons develop VTE, of whom 100,000 will die, and 30%-50% of the patients with lower extremity DVT will develop post-thrombotic syndrome. Additionally the study states that 10%-30% of persons who develop a VTE will develop another one within 5 years. From 2007 to 2009 an average of 550,000 hospital stays each year had a discharge diagnosis of VTE. The article goes on to discuss that despite efforts over the previous decades, VTE remains a significant risk that is not being effectively dealt with.

Summary

Based on the literature, several things became clear. Consistently, the authors recommended that a risk assessment with scoring and stratification be performed. They also recommended intervention based on ACCP guidelines for prophylaxis. The most common theme was for a collaborative multi-disciplinary effort to develop and implement a prophylaxis program.

Although the statistics varied from author to author, one thing was evident: DVT's and VTE's are largely preventable. When these are allowed to populate, they are both costly and extremely dangerous. Developing a protocol that will assure that each patient is evaluated and receives prophylaxis whenever possible, is the best way to assure a consistent quality outcome.

Chapter 3: Measurement Methods

The Caprini Risk Assessment Tool is a well-respected, well-vetted measurement tool used to quantify and stratify a patient's risk for deep vein thrombosis (DVT). Developed by Dr. Joseph Caprini and Dr. Juan Arcelus. Studies have been done attesting to the validity of this tool. The most notable was performed at the University of Michigan and published in 2009 (Bahl 2009). The tool has been validated in nearly 20,000 patients and is in use in countries world-wide. This sing Caprini's' Risk Stratification algorithm will be followed to determine the level of care.

Population

The population will be veteran service members who are seeking care in the Cardiac Intensive Care Unit (CICU). This project is designed as an opt-out. Therefore, unless there are extenuating circumstances, all patients admitted in the CICU will be utilizing this protocol.

Setting

The setting for this project will be the CICU of a 400 bed Veterans Administration Teaching Hospital in central North Carolina.

Ethical considerations.

There was no need for IRB approval because this was a Quality Improvement project, not a research study.

Practice Change

Current practice for selecting DVT prophylaxis is made by the physician. No formal risk assessment tool is utilized, and the provider selects the intervention they feel best meets the needs of the patient. There is also no formal means of documenting the refusal to intervene other than the use of a separate progress note. The proposed practice change would assign the risk

assessment and the ordering of intervention to the nurse. The nurse would follow a protocol and order the intervention, per policy, following the writing of a physician's text admission order for "DVT prophylaxis per nursing protocol."

Chapter 4: Results

As previously discussed, the project did not meet its May 1, 2015 roll out date. This was due to the need to clear Pharmacy and Therapeutics Committee. This is expected to begin as planned sometime after the Pharmacy and Therapeutics meeting in early June of 2015.

Discussion

As eluded to earlier, studies have shown missed opportunities in excess of 50%, when utilizing a system without a formal risk assessment tool, and accompanying order protocol. Nursing already utilizes successful nurse-driven protocols for Clinical Institute Withdrawal Assessment for Alcohol (CIWA), wound care, heparin infusions, and ventilator bundles. These nurse-driven protocols provide prompt, safe and consistent care in a supervised setting. They prevent oversights with the inclusion in order sets that nurses have built safety checks into already. In the event that the physician has a compelling reason not to utilize the protocol, they opt out from ordering it and instead write a progress note as to why this choice was selected.

The biggest limitation could be in the decision to have a protocol as an opt-in or opt out. In the case of the-opt in protocol, the physician must chose to utilize the protocol. In the case of the opt-out, the physician must write for the protocol or write a progress note as to why they opt out. The Director of Cardiology ordered this protocol to be executed as an opt-out to insure greater physician use.

Another issue that may be encountered is the need to obtain an initial physician's order for the protocol, when ordering interventions "per policy." To not do this, the committee deemed, would be practicing medicine.

The Veterans Administration is the largest example of Government run healthcare in this country today. They have been leaders in areas such as Electronic Medical Records and Bar Code Medication Administration. These innovations are used in virtually every hospital today. However, The Veterans Administration has fallen woefully behind the rest of the country when dealing with the issue of DVT prophylaxis. Given the scope and severity of illness that we are discussing, would it not be appropriate for the Veterans Administration to lead the way in regards to this issue as well?

Assuming that the project rolls out in June as expected, another set of data from March and April of 2015 have just been compiled. A first computation of the data revealed a compliance with ACCP guidelines at approximately 67%. These numbers will be refined and compared to the data from the nurse driven protocol for statistical significance. A second study has been discussed for the Medical Intensive Care Unit (MICU) in which the same guidelines would apply, and the same tools would be used. This study however, would be entirely physician driven. It will need to be determined whether it was nursing or the protocol that made the greatest difference.

Chapter 5: Discussion/Conclusion

Conclusion

This project is easily replicated in any microsystem. The greatest hurdles are not with proving the need for such a protocol, but rather in uniting all the stakeholders in immediate and

perhaps unconventional change. In conclusion, there were several goals achieved in the

development of this protocol. First, patients will be protected from a killer that stalks hospitals

world-wide. The single best treatment for VTE and its sequella is prevention. Also, this protocol,

once proven clinically, can be duplicated in other departments. There is no reason that it cannot

be applied in other inpatient settings. Lastly, it serves to point out that while we think we are

delivering the best possible care, the data frequently reveals that there is room for improvement.

This project lead will continue on with this work with the long-term goal of pushing this protocol

to the other critical care areas, medical areas, and potentially other VA facilities. There is huge

potential for future work and follow up to provide the highest level of safe care that we can to

our veteran population.

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Appendices

Caprini Risk Assessment and Hospital Order Set

DVAMC Computerized Patient Record System

Reminder Dialog Template: DVT/VTE PROPHYLAXIS ASSESSMENT

```
DVT/VTE PROPHYLAXIS ASSESSMENT

  CHOOSE ALL THAT APPLY:

   Each Risk Factor Represents 1 Point
  Risk Factors:
    *
      □ (1) Age 41-60 years
      □ (1) Minor Surgery (< 1 month)
      □ (1) History of Major Surgery (<1 month)
      □ (1) Visible varicose veins
      □ (1) History of Inflammatory bowel Disease
      □ (1) Swollen legs (current)
      □ (1) Obesity (BMI > 25)
      □ (1) Acute Myocardial Infarction (< 1 month)
      □ (1) Congestive Heart Failure
      □ (1) Serious infection, including pneumonia (< 1 month)
      □ (1) Lung disease (for example, emphysema or COPD)
      □ (1) On bed rest or restricted mobility (< 1 month)
      □ (1) Oral contraceptives or hormone replacement therapy (< 1 month)
      □ (1) Pregnancy or postpartum (<1 month)
      □ (1) History of unexplained stillborn infant, recurrent spontaneous abortion >3, premature birth with toxemia, g
      □ (0) No risk factors

        Subtotal: *0      ⊟
```

Visit Info		Finish	Cancel

```
diminishes and pharmacologic thromboprophylaxis can be initiated.
DVT RISK:
```

Health Factors: **DVT ASSESSMENT DONE**

* Indicates a Required Field

Reminder Dialog Template: DVT/VTE PROPHYLAXIS ASSESSMENT

```
   Each Risk Factor Represents 2 Points
Risk Factors:
 *
☐ (2) Age 61-74 years
☐ (2) Arthroscopic surgery
☐ (2) Malignancy (present or previous)(excluding basal cell skin cancer)
☐ (2) Laparoscopic or major surgery (>45 minutes)
☐ (2) Patient confined to bed (>72 hours)
☐ (2) Immobilizing plaster cast (<1 month)
☐ (2) Central venous access, PICC, port
☐ (0) No risk factors

      Subtotal: *0

CHOOSE ALL THAT APPLY:

   Each Risk Factor Represents 3 Points
Risk Factors:
 *
☐ (3) Age 75 years or older
☐ (3) History of DVT/PE
☐ (3) Family history of thrombosis
☐ (3) Personal or family history of + blood test indicating increased risk of blood clotting
☐ (0) No risk factors

      Subtotal: *0
```

Visit Info		Finish	Cancel

```
diminishes and pharmacologic thromboprophylaxis can be initiated.
DVT RISK:
```

Health Factors: **DVT ASSESSMENT DONE**

* Indicates a Required Field

Reminder Dialog Template: DVT/VTE PROPHYLAXIS ASSESSMENT

```
  CHOOSE ALL THAT APPLY:

    Each Risk Factor Represents 5 Points
  Risk Factors:
     *
  ☐ (5) Stroke (<1 month)
  ☐ (5) Elective major lower extremity arthroplasty (< 1 month)
  ☐ (5) Hip, pelvis or leg fracture (< 1 month)
  ☐ (5) Acute spinal cord injury (paralysis) (< 1 month)
  ☐ (5) Multiple trauma (<1 month)
  ☐ (0) No risk factors

          Subtotal: *0        ⬍

Total Score: *0        ⬍

(adapted with permission. ISMS: J.A. Caprini, MD--jcaprini2@aol.com)


If any of the following are present, patient considered High Risk for bleeding. Use intermittent pneumatic
 compression until risk of bleeding diminishes and pharmacologic thromboprophylaxis can be initiated.

     *
  ☐ active bleeding
  ☐ previous major bleeding
  ☐ known untreated bleeding disorder
  ☐ severe renal or hepatic disorder
  ☐ thrombocytopenia
  ☐ acute stroke
  ☐ uncontrolled systemic hypertension
  ☐ lumbar puncture, epidural or spinal anesthesia witin previous 4 hours or next 12 hours
  ☐ concomitant use of anticoagulatns, antiplatelet therapy or thrombolytic agents
  ☐ none
```

Visit Info			Finish	Cancel

```
diminishes and pharmacologic thromboprophylaxis can be initiated.
DVT RISK:
```

Health Factors: **DVT ASSESSMENT DONE**

* Indicates a Required Field

Reminder Dialog Template: DVT/VTE PROPHYLAXIS ASSESSMENT

(adapted with permission. ISMS: J.A. Caprini, MD--jcaprini2@aol.com)

If any of the following are present, patient considered High Risk for bleeding. Use intermittent pneumatic
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  ☐ previous major bleeding
  ☐ known untreated bleeding disorder
  ☐ severe renal or hepatic disorder
  ☐ thrombocytopenia
  ☐ acute stroke
  ☐ uncontrolled systemic hypertension
  ☐ lumbar puncture, epidural or spinal anesthesia witin previous 4 hours or next 12 hours
  ☐ concomitant use of anticoagulatns, antiplatelet therapy or thrombolytic agents
  ☐ none

DVT RISK:

  ◉ Low Risk (score of 1-2)
     ◉ Low bleeding risk
        Intermittent pneumatic compression
     ○ High bleeding risk
  ○ Moderate Risk (score of 3-4)

Visit Info		Finish	Cancel

diminishes and pharmacologic thromboprophylaxis can be initiated.
DVT RISK:

Health Factors: **DVT ASSESSMENT DONE, DVT LOW RISK**
Orders: **Low Risk VTE Prophylaxis Menu**

* Indicates a Required Field

◁ | ▷   **Low Risk VTE Prophylaxis Menu**   Done

LOW RISK VTE PROPHYLAXIS MENU

Select one or both of the below options:

↵ 1   Encourage early ambulation
↵ 2   Place SCD and educate

Reminder Dialog Template: DVT/VTE PROPHYLAXIS ASSESSMENT

If any of the following are present, patient considered High Risk for bleeding. Use intermittent pneumatic
 compression until risk of bleeding diminishes and pharmacologic thromboprophylaxis can be initiated.

*

☐ active bleeding
☐ previous major bleeding
☐ known untreated bleeding disorder
☑ severe renal or hepatic disorder
☐ thrombocytopenia
☐ acute stroke
☐ uncontrolled systemic hypertension
☐ lumbar puncture, epidural or spinal anesthesia witin previous 4 hours or next 12 hours
☐ concomitant use of anticoagulatns, antiplatelet therapy or thrombolytic agents
☐ none

DVT RISK:

◉ Low Risk (score of 1-2)

   ◯ Low bleeding risk
   ◉ High bleeding risk

      Intermittent pneumatic compression
      Encourage early ambulation

◯ Moderate Risk (score of 3-4)

◯ High Risk (score 5 or greater)

Visit Info   Finish   Cancel

DVT/VTE PROPHYLAXIS ASSESSMENT
 CHOOSE ALL THAT APPLY:

Health Factors: **DVT ASSESSMENT DONE, DVT LOW RISK**
Orders: **Low Risk VTE Prophylaxis Menu**

* Indicates a Required Field

◁ | ▷   **Low Risk VTE Prophylaxis Menu**   Done

LOW RISK VTE PROPHYLAXIS MENU

Select one or both of the below options:

↵ 1   Encourage early ambulation
↵ 2   Place SCD and educate

Reminder Dialog Template: DVT/VTE PROPHYLAXIS ASSESSMENT

compression until risk of bleeding diminishes and pharmacologic thromboprophylaxis can be initiated.

*
☐ active bleeding
☐ previous major bleeding
☑ known untreated bleeding disorder
☐ severe renal or hepatic disorder
☐ thrombocytopenia
☐ acute stroke
☐ uncontrolled systemic hypertension
☐ lumbar puncture, epidural or spinal anesthesia witin previous 4 hours or next 12 hours
☐ concomitant use of anticoagulatns, antiplatelet therapy or thrombolytic agents
☐ none

DVT RISK:

◯ Low Risk (score of 1-2)
◉ Moderate Risk (score of 3-4)
    ◉ Low bleeding risk

      Intermittent pneumatic compression
      Encourage early ambulation
      Low dose unfractionated heparin (see orders tab for medication order)

    ◯ High bleeding risk
◯ High Risk (score 5 or greater)

Visit Info		Finish	Cancel

DVT/VTE PROPHYLAXIS ASSESSMENT
CHOOSE ALL THAT APPLY:

Health Factors: **DVT ASSESSMENT DONE, DVT MODERATE RISK**
Orders: **Moderate Risk VTE Menu**

* Indicates a Required Field

◁ ▷   **Moderate Risk VTE Menu**   Done

MODERATE VTE RISK MENU

1   Heparin 5000 units SQ Q12H

May also choose one or both of the below options:

↵ 2   Encourage early ambulation

↵ 3   Place SCD and educate

Reminder Dialog Template: DVT/VTE PROPHYLAXIS ASSESSMENT

If any of the following are present, patient considered High Risk for bleeding. Use intermittent pneumatic
 compression until risk of bleeding diminishes and pharmacologic thromboprophylaxis can be initiated.

 *

☐ active bleeding
☐ previous major bleeding
☐ known untreated bleeding disorder
☑ severe renal or hepatic disorder
☐ thrombocytopenia
☐ acute stroke
☐ uncontrolled systemic hypertension
☐ lumbar puncture, epidural or spinal anesthesia witin previous 4 hours or next 12 hours
☐ concomitant use of anticoagulatns, antiplatelet therapy or thrombolytic agents
☐ none

DVT RISK:

◯ Low Risk (score of 1-2)

◉ Moderate Risk (score of 3-4)

   ◯ Low bleeding risk

   ◉ High bleeding risk

      Intermittent pneumatic compression
      Encourage early ambulation

◯ High Risk (score 5 or greater)

| Visit Info | | Finish | Cancel |

DVT/VTE PROPHYLAXIS ASSESSMENT
  CHOOSE ALL THAT APPLY:

Health Factors: **DVT ASSESSMENT DONE, DVT MODERATE RISK**
Orders: **Encourage early ambulation, Place SCD and educate**

* Indicates a Required Field

Selected Orders

☑ Encourage early ambulation
☐ Place SCD and educate

Stop Order Set

Reminder Dialog Template: DVT/VTE PROPHYLAXIS ASSESSMENT

compression until risk of bleeding diminishes and pharmacologic thromboprophylaxis can be initiated.

*
☐ active bleeding
☐ previous major bleeding
☑ known untreated bleeding disorder
☐ severe renal or hepatic disorder
☐ thrombocytopenia
☐ acute stroke
☐ uncontrolled systemic hypertension
☐ lumbar puncture, epidural or spinal anesthesia witin previous 4 hours or next 12 hours
☐ concomitant use of anticoagulatns, antiplatelet therapy or thrombolytic agents
☐ none

DVT RISK:

◯ Low Risk (score of 1-2)
◯ Moderate Risk (score of 3-4)
◉ High Risk (score 5 or greater)
   ◉ Low bleeding risk

      Intermittent pneumatic compression
      Encourage early ambulation
      Low dose unfractionated heparin (see orders tab for medication order)

   ◯ High bleeding risk

| Visit Info | | Finish | Cancel |

DVT/VTE PROPHYLAXIS ASSESSMENT
CHOOSE ALL THAT APPLY:

Health Factors: **DVT ASSESSMENT DONE, DVT HIGH RISK**
Orders: **High Risk VTE Menu**

* Indicates a Required Field

◁ | ▷   **High Risk VTE Menu** | Done |

HIGH VTE RISK MENU

1   Heparin 5000 units SQ Q8H

May also choose one or both of the below options:

↵2   Encourage early ambulation

↵3   Place SCD and educate

Reminder Dialog Template: DVT/VTE PROPHYLAXIS ASSESSMENT

```
If any of the following are present, patient considered High Risk for bleeding. Use intermittent pneumatic
 compression until risk of bleeding diminishes and pharmacologic thromboprophylaxis can be initiated.

    *
  ☐ active bleeding
  ☐ previous major bleeding
  ☐ known untreated bleeding disorder
  ☑ severe renal or hepatic disorder
  ☐ thrombocytopenia
  ☐ acute stroke
  ☐ uncontrolled systemic hypertension
  ☐ lumbar puncture, epidural or spinal anesthesia witin previous 4 hours or next 12 hours
  ☐ concomitant use of anticoagulatns, antiplatelet therapy or thrombolytic agents
  ☐ none

DVT RISK:

  ◌ Low Risk (score of 1-2)

  ◌ Moderate Risk (score of 3-4)

  ◉ High Risk (score 5 or greater)

      ◌ Low bleeding risk

      ◉ High bleeding risk

          Intermittent pneumatic compression
          Encourage early ambulation
```

Visit Info		Finish	Cancel

```
DVT/VTE PROPHYLAXIS ASSESSMENT
  CHOOSE ALL THAT APPLY:
```

Health Factors: **DVT ASSESSMENT DONE, DVT HIGH RISK**
Orders: **Encourage early ambulation, Place SCD and educate**

* Indicates a Required Field

Selected Orders

- ☑ Encourage early ambulation
- ☐ Place SCD and educate

Stop Order Set