Venous Thromboembolism (VTE)

Cindy Ward, DNP, RN-BC, CMSRN, ACNS-BC

Objectives

- Identify 3 risk factors for VTE in a hospitalized patient.
- Identify proper documentation for SCD use.
- Document informed refusal when patients refuse VTE prophylaxis.
- Verbalize calling the provider when VTE prophylaxis is not ordered on a patient without documented contraindications.

What is VTE?

- A VENOUS THROMBOEMBOLISM (VTE) occurs when your blood forms a clot inside a vein.
- A clot in a vein in the arm or leg is a deep vein thrombosis (DVT).
- When a piece of a clot breaks off and travels to the lungs it is called a pulmonary embolism (PE).

Potentially Preventable VTE

- VTE that occurs because the patient did not have prophylaxis ordered or did not receive prophylaxis that was ordered.
  - Pharmacologic or mechanical prophylaxis was not ordered by the provider.
  - Anticoagulants were not given by the nurse.
  - SCDs were not consistently worn by the patient or documented by the nurse.
  - Patient refused pharmacologic or mechanical prophylaxis and the provider was not notified to discuss other options.

Quick Facts

- 300,000 – 600,000 people per year are affected by VTE.
- VTE is the leading cause of preventable hospital death in the US.
- Patients with DVT who are untreated have a 37% incidence of PE that is fatal.
- Combined mortality from PE (initial and recurrence) is 73%.

Beckman, M.G.; Hooper, W.C.; Critchley, S.E. & Ortel, 2010; Maynard & Stein, 2008; Stein & Matta, 2010

Quick Facts

- PE is the most preventable cause of death.
- VTE can occur without symptoms (silent).
- 1 in 20 hospitalized patients will suffer a fatal PE if they have not received adequate VTE prophylaxis.
- For 25% of patients with PE, the first symptom is sudden death.

Bonner & Johnson, 2014; International Consensus Statement, 2013; Heit, 2005 ; Maynard & Stein, 2008.

Post-thrombotic Syndrome

- Occurs in approximately 1/3 of patients with DVT.
- Symptoms include chronic pain, swelling, skin discoloration, venous ulcers.
- More common in proximal DVT.
- Symptoms worsen with use of the limb
- Causes significant impact on quality of life.

Arumugaswamy & Tran, 2014

Post-thrombotic Syndrome

- 5 – 10% of patients progress to severe post-thrombotic syndrome.
- Symptoms may be so severe that the patient is disabled.
- Prevention of DVT is of primary importance in preventing post-thrombotic syndrome.

Bonner & Johnson, 2014

Risk Factors

Caprini Risk Assessment

Each factor represents 1 point:

- Age 40 – 59
- Minor surgery planned
- History of prior major surgery
- Varicose veins
- History of Inflammatory Bowel Disease
- Swollen legs (current)
- Obesity (BMI > 30)
- AMI (< 1 month)
- CHF (< 1 month)
- Sepsis (< 1 month)
- Abnormal pulmonary function (COPD)
- Medical patient currently on bedrest
- Leg brace or plaster cast
- Central line
- Blood transfusion (< 1 month)
- Other risk factors….

For women add:

- Oral contraceptive of HRT
- Pregnancy or post-partum < 1 month
- History of unexplained stillbirth or recurrent (> 3) miscarriages, premature birth with toxemia of pregnancy or growth restricted infant.

Each risk factor represents 2 points:

- Age 60 – 74 years
- Major surgery (< 60 minutes in length)
- Arthroscopic surgery (> 60 minutes)
- Laparoscopic surgery (> 60 minutes)
- Previous malignancy
- Morbid obesity (BMI > 40)

Each risk factor represents 3 points:

- Age 75 years or more
- Major surgery lasting 2 – 3 hours
- BMI > 50 (venous stasis syndrome)
- History of SVT/DVT/PE
- Family history of DVT/PE
- Present cancer or chemo
- Present Factor V Leiden
- Positive prothrombin 20210A
- Elevated serum homocysteine
- Positive lupus anticoagulant
- Elevated cardiolipin antibodies
- Heparin-induced thrombocytopenia
- Other congenital or acquired thrombophilia

Each risk factor represents 5 points:

- Elective major lower extremity arthroplasty
- Hip, pelvis or leg fracture (< 1 month)
- Stroke (< 1 month)
- Multiple trauma (< 1 month)
- Acute spinal cord injury (paralysis) (< 1 month)
- Major surgery lasting > 3 hours

Caprini, 2005

Risk Factors (Virchow's Triad)

Venous Stasis	Vessel Injury	Hypercoagulability
Increasing age	Surgery	Cancer & cancer therapy
Immobility	Prior VTE	Oral contraceptives, HRT
Stroke/paralysis	Central venous catheters	Inflammatory bowel
Acute medical illness	Trauma	Sepsis
Spinal cord injury	Fractures	Pregnancy & postpartum
Obesity	Vasculitis	Thrombophilia
Severe COPD	Chemotherapy	Nephrotic syndrome
Anesthesia	Vascular injuries	Polycythemia vera
Varicose veins	Burns	Sickle cell disease
CHF	Smoking	Dehydration

Cox, 2014; Maynard, 2009

VTE Prophylaxis

- A clot can start forming in just hours, so early prophylaxis is important.
- Prophylaxis should be based on a person's risk.
- Low risk patients probably don't need any prophylaxis other than ambulation.
- Ambulation alone does not provide adequate prophylaxis for hospitalized patients.

Cox, 2014; Maynard, 2009

VTE Prophylaxis

- Most hospitalized patients have at least one risk factor.
- Moderate risk patients generally need either pharmacologic or mechanical prophylaxis.
- High risk patients may need both types of prophylaxis unless contraindicated.
- Make sure the patient receives what is ordered!

Cox, 2014; Maynard, 2009

Contraindications to Pharmacologic Prophylaxis

- Active or increased risk for bleeding
- Thrombocytopenia
- Heparin induced thrombocytopenia
- Spinal or epidural analgesia
- Impaired renal function (Lovenox)

Larkin, Mitchell & Petrie, 2012; Micromedex, 2014

Contraindications to Mechanical Prophylaxis

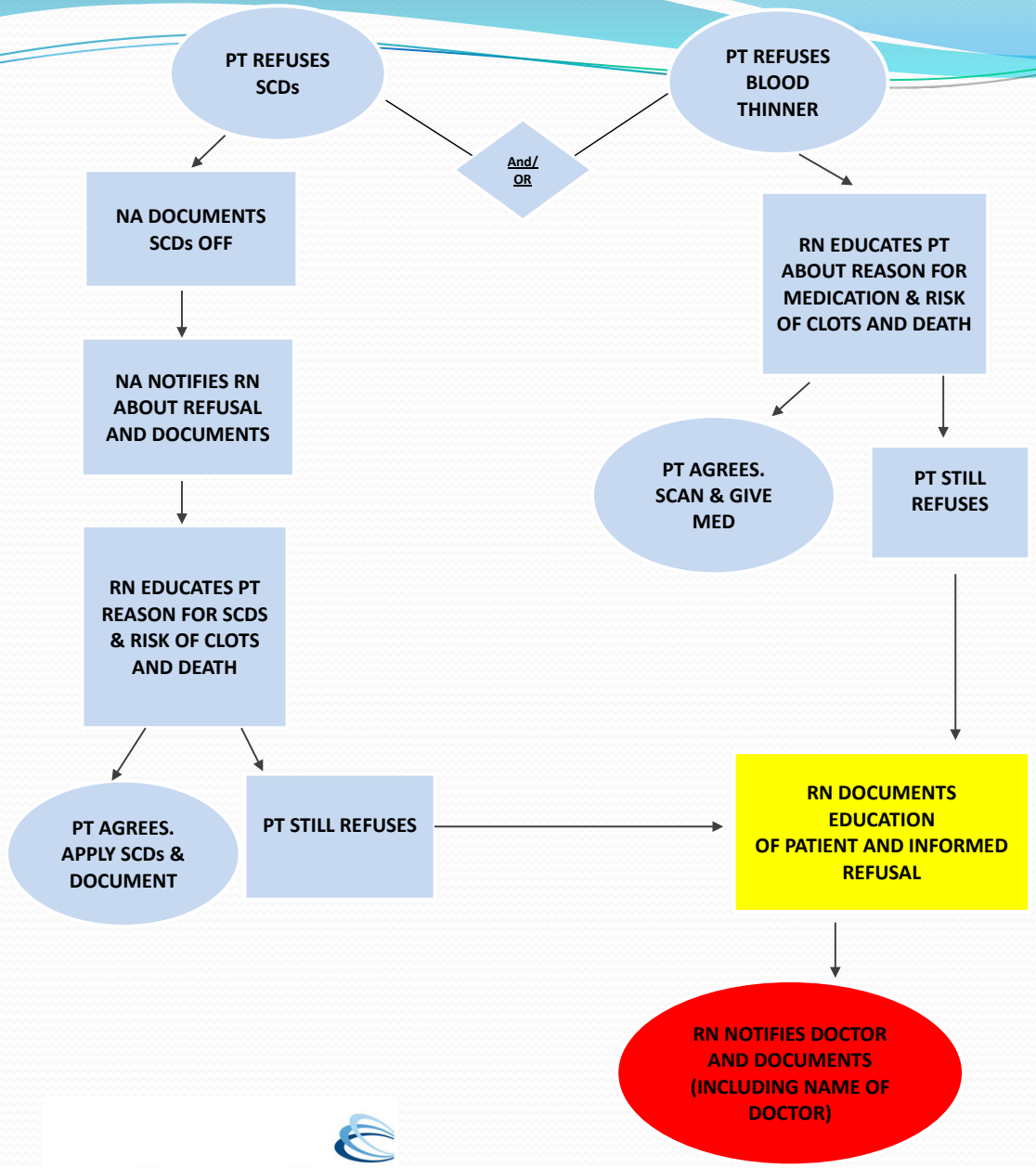
- Suspected or known DVT
- Local leg conditions such as dermatitis, gangrene, skin graft, wound, incision
- Severe arteriosclerosis or other ischemic vascular disease
- Massive edema of legs or pulmonary edema from CHF
- Extreme deformity of leg

Covidien, 2010; Stevens & Douketis, 2010

Informed Refusal

- Similar to informed consent.
- Inform the patient of why it is recommended they have the treatment, the risk they are accepting by refusing the treatment (what could happen to them).
- Must be documented in Epic
- The provider must be notified.

VTE Prophylaxis Refusal Communication Tree



CARILION CLINIC

Holding Medications

- Making the decision to hold or not administer a medication is not an independent nursing decision.
- You can hold a medication until you discuss the issue with the provider.
- There should be an order if a medication is to be held.

Holding Medications

- If you think you should hold a medication, verify with the provider.
- If a patient is off the unit for a test or dialysis when an anticoagulant is scheduled to be given, give it when the patient returns.
- If the patient returns too close to the next scheduled dose, ask the pharmacy to re-schedule.

References

- Arumugaswamy A & Tran H. (2014). Post-thrombotic syndrome: a potential cause of venous ulcer. *Wound Practice & Research, 22*(2), 85 – 90.
- Beckman, M.G.; Hooper, W.C.; Critchley, S.E. & Ortel, T.L. (2010). Venous thromboembolism A public health concern. *American Journal of Preventive Medicine, 38*(4S), S4995 - S501. doi: 10.1016/j.amepre.2009.12.017
- Bonner, L. & Johnson, J. (2014) Deep vein thrombosis: diagnosis and treatment. *Nursing Standard, (28)*21, 51-58.
- Caprini, J. A. (2005). Thrombosis risk assessment as a guide to quality patient care. *Disease-a-Month, 51*, 70-78. doi:10.1016/j.disamonth.2005.02.003
- Carilion Clinic. (2014). *Sequential Compression Devices (SCD).* Retrieved from http://insidecarilion.org/hubs/policies
- Covidien. (2010). Operation and Service Manual Kendall SCD. Mansfield, MA: Covidien.
- Cox, M. J. (2014). A matter of life and death: A paradigm shift in VTE prevention for physicians and clinicians. [PDF document]. VTE Clinical Seminar Series Webinar. Sponsored by Arjohuntleigh. October 15, 2014.
- Enoxaparin. DrugPoints Summary. Truven Health Analytics, Inc. Greenwood Village, CO. Available at: http://www.micromedexsolutions.com. Accessed November 19, 2014.

References

- Heit, J. A. (2005). Venous thromboembolism: disease burden, outcomes and risk factors. *Journal of Thrombosis and Haemostasis, 3*, 1611–17.
- Heparin. DrugPoints Summary. Truven Health Analytics, Inc. Greenwood Village, CO. Available at: http://www.micromedexsolutions.com. Accessed November 19, 2014.
- International Consensus Statement .(2013). Prevention and Treatment of Venous Thromboembolism. http://www.europeanvenousforum.org/files/publications/guid_vte/Chapter_9_Medical_Patients_PDF.pdf
- Larkin, B.G., Mitchell, K.M. & Petrie, K. (2012). Translating evidence to practice for mechanical venous thromboembolism prophylaxis. *AORN Journal, 96*, 513 – 527.
- Maynard, G. (2009, September). Venous Thromboembolism (VTE) Prevention in the Hospital. Presented at the Agency for Healthcare Research and Quality Conference. Slides retrieved from http://archive.ahrq.gov/news/events/conference/2009/maynard2/index.html.
- Maynard, G. M., & Stein, J., Prepared by the Society of Hospital Medicine. (2008). *Preventing hospital-acquired venous thromboembolism: A guide for effective quality improvement.* (No. 08-0075). Rockville, MD: Agency for Healthcare Quality and Improvement.
- Stein, P. D., & Matta, F. (2010). Epidemiology and incidence: The scope of the problem and risk factors for development of venous thromboembolism. *Clinics of Chest Medicine, 31*, 611-628. doi:10.1016/j.ccm.2010.07.001
- Stevens, S.M. & Douketis, J.D. (2010). Deep vein thrombosis prophylaxis in hospitalized medical patients: Current recommendations, general rates of implementation, and initiatives for improvement. *Clinics in Chest Medicine, 31*, 675 - 689. doi:10.1016/j.ccm.2010.07.005