

Prevention of Venous Thromboembolism

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1 Background

Venous thromboembolism (VTE), comprised of pulmonary embolism (PE) and deep vein thrombosis (DVT), is one of the most common and deadly complications among hospitalized patients. (Haut, Lau, Kraenzlin, Hobson, Kraus, Carolan, Haider, Holzmueller, Efron, Pronovost, & Streiff, 2012) There are more than 100,000 deaths per year associated with VTE. (U.S. Department of Health and Human Services, 2008) The Agency for Healthcare Research and Quality highlights that appropriate VTE prophylaxis is the number one patient safety initiative needed to prevent in-hospital death. (Maynard, 2008) The administration of heparin or enoxaparin in addition to using mechanical prophylaxis such as TED anti-embolism stockings or sequential compression devices (SCDs) is critical in preventing complications associated with DVTs. Johns Hopkins Hospital currently uses a computerized provider order entry-based clinical decision support tool that requires prescribers to risk assess each patient. The tool uses an evidence-based algorithm to recommend a risk-appropriate VTE prophylaxis regimen. While the vast majority of patients are prescribed risk-appropriate VTE prophylaxis, a substantial number of doses of pharmacological VTE prophylaxis are not administered to hospitalized patients. (Haut et al, 2012)

2 Objectives

- Gather patient data for August 2013 to understand the reasoning behind the non-administration of prescribed doses of heparin or enoxaparin
- Identify human factors associated with VTE prophylaxis non-administration on two specific medical and surgical units at Johns Hopkins Hospital

3 Methods

- We collected data on all doses of heparin and enoxaparin due to be administered during August 2013 and we noted whether it was administered or not. If the dose was not administered, we noted the reason as documented by nurses
- We collected the risk assessment information completed by the provider for each patient from the VTE risk assessment tool

Medical Unit – VTE Prophylaxis Administration by Risk Stratum

| Risk Stratum | Status | | Total | |
|--------------|-----------------------------------|---------------|-------|------------|
| | Performed | Not Performed | Count | Percentage |
| High | Total Performed | | 388 | 64% |
| | Total Not Performed | | 220 | 36% |
| | Patient Refused | | 174 | 29% |
| | Patient Condition Not Appropriate | | 28 | 5% |
| | Patient Not Available | | 12 | 2% |
| | Physician Request | | 3 | 0% |
| | Task Rescheduled | | 2 | 0% |
| | Patient Discharged | | 1 | 0% |
| Moderate | Total Performed | | 405 | 60% |
| | Total Not Performed | | 266 | 40% |
| | Patient Refused | | 223 | 33% |
| | Patient Condition Not Appropriate | | 34 | 5% |
| | Patient Not Available | | 4 | 1% |
| | Patient Discontinued | | 2 | 0% |
| | Physician Request | | 1 | 0% |
| | Task Rescheduled | | 1 | 0% |

Surgical Unit – VTE Prophylaxis Administration by Risk Stratum

| Risk Stratum | Status | | Total | |
|-----------------------------------|-----------------------------------|-----------------|-------|------------|
| | Performed | Not Performed | Count | Percentage |
| High | Total Performed | | 1165 | 90% |
| | Total Not Performed | | 134 | 10% |
| | Patient Refused | | 71 | 5% |
| | Patient Condition Not Appropriate | | 18 | 1% |
| | Family/Significant Other Refused | | 15 | 1% |
| | Patient Not Available | | 8 | 0.6% |
| | Patient Discharged | | 6 | 0.5% |
| | Physician Request | | 4 | 0.3% |
| | Other | | 12 | 0.9% |
| | Moderate | Total Performed | | 213 |
| Total Not Performed | | 26 | 11% | |
| Patient Refused | | 3 | 1% | |
| Patient Condition Not Appropriate | | 3 | 1% | |
| Patient Not Available | | 1 | 0.4% | |
| Physician Request | | 1 | 0.4% | |

4 Results

Among 608 doses on the medical unit at high risk for developing VTE, 220 (36%) were not administered. 174 (29%) of doses not administered were documented as due to patient refusal and 28 (5%) were documented as not given due to inappropriate condition. Among 671 doses for patients at moderate risk, 266 (40%) doses were not administered. 223 (33%) non-administered doses were documented as patient refused and 34 (5%) doses were documented as not given due to inappropriate condition.

Among doses that were documented as patient refused for high and moderate risk patients, 6 doses were refused due to the patient's ability to ambulate. This shows that there may not be enough education from nurses to patients regarding the use of pharmacological VTE prophylaxis. Among doses that were documented as patient condition not appropriate, 20 missed doses were documented as due to patient ambulation. This shows that there may be a misconception among nurses that ambulation is effective prophylaxis against VTE. As pharmacological VTE prophylaxis is a routine medication – not PRN – the decision to withhold the dose should be made only in consultation with the prescriber.

Among 1299 doses due to be administered to patients at high risk of developing VTE on the surgical unit, 134 (10%) doses were not administered. 71 (5%) of doses not administered were documented as due to patient refusal and 18 (1%) were documented as not given due to inappropriate condition.

5 Conclusions

Overall, 36% of prescribed doses of pharmacological VTE prophylaxis to high risk patients on the medical unit were not administered and 10% of doses to high risk patients on the surgical unit were not administered. When reviewing the nurses' comments, a commonly observed misunderstanding is that ambulation is effective to prevent VTE. Consequently, this data shows that non-administration is most frequently the result of either suboptimal patient education or awareness among nurses regarding the purpose of VTE prophylaxis.

6 Future Directions

- Create patient educational pamphlets that highlight the harms of VTE and benefits of VTE prophylaxis
- Educate nurses on the importance of VTE prophylaxis
- Empower nurses to engage patients so that patients make informed decisions regarding their VTE preventive care

7 References

- Haut, E., Lau, B., Kraenzlin, F., Hobson, D., Kraus, P., Carolan, H., Haider, A., Holzmueller, C., Efron, D. Pronovost, P., & Streiff, M. (2012). Improved Prophylaxis and Decreased Rates of Preventable Harm With the Use of a Mandatory Computerized Clinical Decision Support Tool for Prophylaxis for Venous Thromboembolism in Trauma. *American Medical Association, 147* (10), 901-907.
- The Department of Health and Human Services. (2008). The Surgeon General's Call to Action to Prevent Deep Vein Thrombosis and Pulmonary Embolism.
- Maynard G. (2008). Preventing hospital-acquired venous thromboembolism: a guide for effective quality improvement. Agency for Healthcare Research and Quality.
- Guyatt, G., Akl, E., Crowther, M., Gutterman, D., & Schunemann, H. (2012). Executive Summary: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *American College of Chest Physicians*. 3-23.

Funding Source:

The Helene Fuld Leadership Program for the Advancement of Patient Care Quality and Safety



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