**Introduction**

Venous thromboembolism (VTE) is a significant cause of morbidity and mortality for hospitalized patients. There are approximately 900,000 new VTE events and 100,000 VTE-related deaths every year. In the United States, more deaths occur due to VTE than breast cancer, AIDS, and motor vehicle accidents combined. VTE are considered preventable events with appropriate prophylaxis; however, prophylaxis is frequently delayed on hospital admission. With this information in mind, we chose to investigate the incidence of VTE prophylaxis delays for 100 high-risk patients admitted to ARMC’s medical floor. We believe this goal could be accomplished by initiating a VTE prophylaxis standard order set in ARMC Emergency Departments.

**Methodology**

This was a retrospective study of 100 medically ill patients admitted to the medical floor from the Emergency Department at AtlanticCare Regional Medical Centers from December 2018 to March 2019. Data collection consisted of: patient demographics, length of stay, timing of prophylaxis for VTE, type of VTE prophylaxis, and Padua Prediction Score (Figure 1).

**Results**

**Results Continued**

The first dose of prophylaxis was given within 24 hours of arrival to 75% patients, with only 25% of patients receiving their first dose within 8 hours (Figure 2). Of all 100 patients, 13 patients did not receive prophylaxis during their hospital stay. Also, the length of time between VTE prophylaxis order and administration of first dose showed that 74% of patients received prophylaxis within 12 hours (Figure 3). Only 36% of patients received prophylaxis in under 4 hours from the time the order was placed (Figure 3). 62% of patients were identified as having a Padua score of greater than or equal to 4 at the time of admission, suggesting significant risk for VTE. It is important to consider that 2 of the patients expired during admission, 3 patients developed VTE, and 95% of patients had no significant adverse outcomes (Figure 5).

**Discussion**

Patients are at high risk for VTE for the duration of their hospital admission. VTE prophylaxis helps to reduce mortality and morbidity rates in medically ill patients. However, delays in prophylaxis can increase the rates of such events occurring. Though reasons for delays vary, we identified that how the order is placed is a significant contributor to such delays. Orders placed as “routine” are administered at a specific time each day, regardless of time of admission. This means if a patient is admitted in the afternoon the routine order will not be administered until a predetermined time the following morning. Routine ordering was a commonly encountered in our chart review, causing significant delays in VTE prophylaxis. Our investigation revealed that there was a disparity in length between time of admission and first dose of prophylaxis. For example, only 2% of patients received prophylaxis in the first 4 hours of arriving at the hospital (Figure 2). Of the 100 patients, 13% did not receive any prophylaxis during their hospital stay (Figure 2). The study showed a mortality rate of 2% with 3% of all patients developing a VTE (Figure 5). These results would require further study to demonstrate a relationship between delays in VTE prophylaxis and adverse outcomes in the medically ill population. Within AtlantiCare, there is a significant variation in order placement for VTE prophylaxis that can be addressed through standardization of a VTE prophylaxis ordering set based on identifying high-risk individuals. Decreasing the time between presentation at the hospital to VTE prophylaxis administration has the potential to improve patient outcomes.

**Limitations:**

Our investigation had several limitations. First, the sample size was small at only 100 patients. The study was also limited by human error in data analysis and chart documentation. There was variation both between investigator review of data and chart documentation between providers.

**Future Directions:**

In order to more effectively administer VTE prophylaxis in medically ill patients, we recommend implementation of a standard STAT order for patients at high risk for VTE according to the Padua Prediction score to receive prophylaxis by the admitting team and then a routine order to follow. The AM would be to reduce delays of prophylaxis in the next year by 75%.

**References**


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**Figure 1:** This table represents the criteria for the Padua Prediction Score. A score greater than or equal to 4 estimates that the patient is at high risk for a VTE.

**Figure 2:** Demonstrates within what time period patients received VTE prophylaxis within arriving to the ED.

**Figure 3:** Demonstrates the length of time from when the order for first dose prophylaxis was placed to when it was administered. Figure 2 displays a significantly delayed administration from order time, suggesting an even longer discrepancy between door to first dose time.

**Figure 4:** Demonstrates patients’ risk scores upon admission. Padua score was chosen as it is the VTE risk score assessment used within the AtlantiCare system. Patients with a Padua score greater than or equal to 4 are indicated for prophylaxis.

**Figure 5:** Demonstrates patient outcomes during their hospital admission. Out of 100 patients 5 total had adverse outcomes.