

Improving Compliance For Prophylaxis Of Venous Thromboembolism

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Citation

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Abstract

The goal of this six week period study was to evaluate compliance for VTE prophylaxis before and after educational intervention

Results: During the observational phase there was a 75% and 21 % compliance with VTE prophylaxis in the MICU and medical wards respectively. Following an educational inservice, the compliance with prophylaxis improved to 85% and 39% for MICU and medical wards respectively during the interventional phase.

Conclusions: Compliance with prophylaxis is lower than in other teaching hospitals. The higher rate of compliance in the MICU is probably due to the presence of trained staff, the acuity of illness of patients and closed nature of the ICU. We proved that education and probably a multidisciplinary approach increases the use of VTE prophylaxis. The low rate of prophylaxis in the medical wards could be due to difficulties recognizing risk factors. Emphasis on risk factors recognition and education is highly recommended.

INTRODUCTION

Venous thromboembolism (VTE) is known to be a major cause of morbidity and mortality among hospitalized patients. VTE is also the inevitable precursor of pulmonary embolism, which is considered merely a complication of deep venous thrombosis. The rationale for the use of thromboprophylaxis is based on solid principles and scientific evidence. Most hospitalized patients have one or more risk factors for VTE and these risk factors are generally cumulative. (1, 2, 3) Without prophylaxis, the incidence of objectively confirmed, hospital-acquired DVT is approximately 10 to 40% among medical or general surgical patients and approximately 10% of hospital deaths are attributed to pulmonary embolism PE

While high-risk groups for VTE can be identified, it is not possible to predict which individual patient in a given risk group will develop a clinically important thromboembolic event. Furthermore, massive PE usually occurs without warning, and often it is not possible to resuscitate patients who experience this complication. (4) In a report from the Agency for Healthcare Research and Quality, the authors emphasize the appropriate use of prophylaxis to prevent VTE in patients at risk in order to reduce adverse patient outcomes while, at the same time, decreasing overall costs.

(5)

The goal of this study was to evaluate the compliance with prophylaxis for VTE in medical patients before and after a multi disciplinary educational intervention; to identify the risk factors for VTE among the in patients in an inner city hospital and to assess the role of education in the use of prophylaxis.

METHODS

The medical records of all patients admitted to the medical wards and Medical Intensive Care Unit (MICU) during a six weeks period were reviewed. The presence of the following risks factors for VTE was evaluated:

Figure 1

Age older than 40 years-old	Tobacco use
Mechanical ventilation	Immobilization
Congestive heart failure	Lupus anticoagulant or anticardiolipin antibodies
Malignancy	Pregnancy
Central intravascular lines	Trauma
Recent surgery	Obesity (BMI > 29)

Age > 40 years old and tobacco were considered as indication for prophylaxis if both factors were present or either one was associated with any of the others above mentioned risk factors.

The type of VTE prophylaxis was noted i.e. unfractionated heparin, low molecular weight heparin (LMWH), compression boots or others.

We excluded those patients receiving anticoagulation, patients already on VTE prophylaxis at admission and patients without risk factors. The study involved a two weeks pre-intervention period during which data was collected, followed by an interventional phase that involved one week education of the medical staff (medical residents) in the identification of risk factors for VTE and the importance of VTE prophylaxis. Education was provided verbally by one of the study investigators. Printed information was distributed as well.

Data was obtained during the 2 weeks pre-intervention phase and for four weeks post-intervention phase and included: demographics, admitting diagnosis, risk factors for VTE, compliance with VTE prophylaxis, type of prophylaxis and complications associated with prophylaxis.

RESULTS

We identified 250 patients that met the indications for VTE prophylaxis, 58 in the ICU and 192 in the medical wards. Table 1-

Figure 2

Table 1: Demographics

	MICU N=58	MEDICAL WARDS N= 192	TOTAL
MALES	29	89	118
FEMALES	29	103	132
AGE (MEDIAN)	55 (22 – 88)	59 (18 – 98)	57 (18 – 98)

As expected, patients in the MICU setting had more risk factors for VTE than those in the medical wards. Average was three risk factors in ICU patients vs. 2.1 per ward patient respectively. Table 2.

Figure 3

Table 2: Risk Factors for VTE per Patient

LOCATION	PERIOD OF STUDY	RISK FACTORS PER PT
MICU	Observation	3.6 (2 - 5)
	Intervention	2.4 (1 - 4)
	All	3.0 (1 - 5)
WARDS	Observation	2.2 (1 - 4)
	Intervention	2.1 (1 - 4)
	All	2.1 (1 - 4)

The most common indication for VTE prophylaxis in our study was age, followed by immobilization, smoking, congestive heart failure and malignancy. (Table 3)

Figure 4

Table 3: Frequency of Risk factors for VTE

RISK FACTORS	PATIENTS n=250
Age > 40 Years old	218 (87%)
Immobilization	138 (55%)
Smoking	80 (32%)
Congestive heart failure	35 (14%)
Malignancy	29 (12%)
Mechanical ventilation	21 (8.4%)
Obesity (BMI > 29)	19 (8%)
Trauma	7 (3%)
Vascular Devices	6 (2.4%)
Recent Surgery (less than 3 months)	6 (2.4%)
Lupus anticoagulant / Anticardiolipin Antibodies	3 (1%)
Pregnancy	1(0.4%)

The use of VTE prophylaxis in the MICU and medical wards before and after the educational intervention can be seen in table 4. No complications due to prophylaxis were observed.

Figure 5

Table 4: Utilization of Venous Thromboembolism Prophylaxis

LOCATION	PERIOD OF STUDY	PROPHYLAXIS		p Value
		INDICATED	USED %	
WARDS	Observation	66	14 (21%)	0.01
	Intervention	126	49 (39%)	
MICU	Observation	32	24 (75%)	0.37
	Intervention	26	22 (84%)	

DISCUSSION

In one study conducted in 1986, only 32% of high risk hospitalized patients received prophylaxis in medical wards. Physician education increased the use of prophylaxis to 52%. (6) In the MICU the use of prophylaxis ranges from 75% to 86%. A US study of 2,000 patients, hospitalized at 16 acute-care hospitals, showed that only one third of these patients actually received prophylaxis despite the presence of multiple risk factors or VTE. Use of prophylaxis was higher in teaching than in non-teaching hospitals and in hospitals whose physicians participated in formal continuing medical education programs. (7)

In our study, the utilization rate of prophylaxis is comparable to the one reported by other institutions, especially for the MICU (8). We observed a trend toward increased use of VTE prophylaxis after the educational intervention. The initial low use of VTE prophylaxis in the medical wards could represent a decreased awareness of the high incidence of DVT/PE in patients with risk factors or a difficulty identifying the respective risk factors. The improvement in VTE prophylaxis in the medical wards after physician education was statistically significant ($p = 0.01$). In the MICU the improvement was not statistically significant, most likely due two factors: the already initial high rate of VTE prophylaxis utilization and the small number of patients represented. The initial high rate of utilization of VTE prophylaxis in the MICU could be due to several factors; ours is a closed ICU where the residents provide care under the close supervision of a single critical care service attending, there by ensuring more uniformity of care and a high awareness of the need for prophylaxis and accountability. The multidisciplinary approach in the management of the critically ill patients is encouraged in our unit and a pharmacist participates in the daily rounds.

A consensus conference reviewing evidence based medicine

for VTE prophylaxis recommended that in acutely ill medical patients who have been admitted to the hospital with congestive heart failure or severe respiratory disease, or who are confined to bed and have one or more additional risk factors, including active cancer, previous VTE, sepsis, acute neurologic disease, or inflammatory bowel disease, prophylaxis with heparin should be given. In those patients with risk factors for VTE, and in whom there is a contraindication to anticoagulant prophylaxis, they recommend the use of mechanical prophylaxis. All patients admitted to a critical care unit should have a risk assessment for VTE; accordingly, most patients should receive thromboprophylaxis. (10) Some of the limitations of our study are that we did not evaluate outcome in both the groups and we did not follow up the patients to evaluate for the development of thromboembolic disease.

In conclusion, physician education and a multidisciplinary approach to patients care seem to have a positive effect in the utilization of standard VTE prophylaxis.

Previous studies showed that utilization of thromboprophylaxis is variable and utilization may vary with institutional education about this aspect of care (10).

So, a VTE assessment should be incorporated in the initial evaluation of all medical patients admitted to the hospital and we would even recommend that VTE prophylaxis be made a standing order in high risk areas such as Intensive Care Units. With the gaining popularity of Computerized Physician Order Entry, this could be incorporated with ease and safety so that compliance with VTE prophylaxis will improve and thus help towards patient safety.

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