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AUDIT/QUALITY IMPROVEMENT

Audit of Venous Thromboembolic Prophylaxis in Medical Ward in Patients Admitted to Goulburn Base Hospital, New South Wales, Australia in the Month of December 2022

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Abstract

Venous thromboembolism being a leading cause of mortality and morbidity in Australia, an audit conducted over a period of one month in a rural hospital setting in NSW, demonstrated that high risk cases did not all receive adequate VTE prophylaxis and fell short of achieving national standards of VTE assessments of all patients admitted to the medical ward. Timing of administration of VTE prophylaxis was also not in sync with the surgical ward.

Background

VTE (venous thromboembolism) is a leading cause of morbidity and mortality in Australia with more than 14,000 Australians diagnosed with a VTE each year, and more than 5,000 cases resulting in death [1]. VTE has been shown to cause more deaths than all transport accidents and falls combined and more deaths than bowel or breast cancer [1]. In 2008, the total hospital inpatient expenditure on VTE in Australia was estimated as $81.2 million [1]. Incidence of VTE among hospitalised patients was found to be more than 100 times greater than the incidence among community residents [2] and of all deaths in Australian hospitals, seven per cent are due to VTE [1].

At Goulburn Base hospital (GBH), in April 2021, the local Anaesthetic Lead and the Surgical team arranged a joint action for the administration time of VTE of prophylaxis locally for in-patients admitted to the Surgical ward. However, this action was not followed across other specialities in the hospital.

This short audit was therefore undertaken in December 2022 amongst patients admitted to the GBH Medical ward to understand if patients were given VTE prophylaxis appropriately. The duration and timing of administration of VTE prophylaxis along with some other factors were assessed to compare with results that are otherwise nationally available within Australia.

Aims and Objectives

Patients admitted to GBH on Medical ward in Dec 2022 were assessed if VTE prophylaxis was used. We also analysed VTE prophylaxis timings and frequencies arranged by the Medical teams for admitted patients on the GBH medical ward. The measured variables in this audit also included average duration of inpatient stay and if no prophylaxis was given, whether a reason for excluding such treatment was clearly made available in the medical notes during each of the patients' inpatient details.

Standards

VTE is one of the leading causes of preventable death in Australia. A VTE risk assessment must be completed within 24 hours of admission to the hospital and re-assessed at least every 7 days [3]. Risk of embolism is highest after major surgery, major injury and during periods of infection and inflammation. Prevention of venous thromboembolism framework is also available [3].

NSW Health has previously published a VTE risk assessment tool [4] for patients older than 16 years

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that are admitted to an NSW public hospital or health service, this assessment tool can help assessing VTE risk via known risk factor, identify contraindications and other conditions to consider for using pharmacological prophylaxis or mechanical prophylaxis or mechanical prophylaxis and help consider duration of therapy besides a reassessment.

In GBH, the Surgical wards arrange VTE prophylaxis administration in the evening at around 8 p.m.

Methods

Records of all patients admitted under Medicine at GBH in the month of December 2022 were assessed from 'Powerchart' after obtaining appropriate permissions from the hospital authority.

After ensuring appropriate de-identification, patient age, sex, risk, date of admission and date of discharge, cause for admission along with number of in-patient days, VTE risk identification at time of admission and if VTE prophylaxis was given or not given and date and time given was documented; a cause -if possible- when prophylaxis was not given was also charted (Table 1). Discern analytics 2.0 to extract data from Powerchart was used. Microsoft excel (spreadsheet) was used for further analysis of available data.

Results

This study on the month of December 2022 covered a total of 100 patients admitted under Medicine at GBH, NSW. VTE risk was classified in 37 patients only. Average age of in-patients in the month of Dec 2022 admitted to Medical ward was 69.7 years. The average number of inpatient days was 9 and the ratio of females: Males 41:59.

There were 35 moderate and high-risk patients admitted during this period. The longest inpatient stay for the patients admitted in December who did not receive prophylaxis for VTE was 16 days. The most common cause for not administering VTE prophylaxis was deemed to be low platelets followed by gastro-intestinal bleeding.

Prophylaxes used were Enoxaparin (Clexane) and heparin/heparinised saline. Dosages administered were correct for the age and given weight. Enoxaparin was administered always in the morning except once in the evening (in an extremely high-risk patient admitted with multiorgan problems).

Table 1 below identifies the high risk 23 patients, cause for admission, number of days of in-patient stay and number of days VTE prophylaxis was given of all

Table 1: Identifies the high risk 23 patients, cause for admission, number of days of in-patient stay and number of days VTE prophylaxis was given of all days admitted and type of prophylaxis given. 13/23 cases not receiving VTE prophylaxis had no underlying cause identified (56.5%).

Risk	Admission cause	Days prophylaxis given/ days of admission	Prophylaxis given	Prophylaxis
Higher Risk	Febrile and generally unwell	Given regularly	N/A	Apixaban
Higher Risk	Febrile and hypoxic at GP with gurgling chest sounds	6 of 9	Yes	Enoxaparin (Clexane)
Higher Risk	Sepsis and right upper quadrant pain	8 of 10	Yes	Enoxaparin (Clexane)
Higher Risk	Lethargy and abdominal discomfort	9 of 15	Yes	Enoxaparin (Clexane)
Higher Risk	COVID, cough, sputum, vomiting, lethargic, weak	2 of 4	Yes	Enoxaparin (Clexane)
Higher Risk	Tongue swelling	5 of 7	Yes	Enoxaparin (Clexane)
Higher Risk	Congestive cardiac failure with acute renal worsening	11 of 12	N/A	Warfarin
Higher Risk	Left cellulitis with chronic arterial insufficiency ulcer and erythema	2 of 4	Yes	Aspirin, enoxaparin (Clexane)
Higher Risk	Suprapubic discomfort, functional decline and high temperature	18 of 19	Yes	Enoxaparin (Clexane)
Higher Risk	Lethargy, shortness of breath, haematuria	9 of 13	N/A	Rivaroxiban
Higher Risk	Shortness of breath	6 of 8	Yes	Enoxaparin (Clexane)
Higher Risk	Rigid abdominal pain	5 of 7	Yes	Enoxaparin (Clexane)
Higher Risk	Postchemo complication	all days	Yes	Clexane
Higher Risk	SOB, reduced oxygen, increased work of breathing	Given regularly	Yes	Dabigatran
Higher Risk	COPD exacerbation, acute SOB	Given regularly	N/A	Apixaban

Higher Risk	SDH	Justified	N/A	Heparin
Higher Risk	Fall	N/A	N/A	Aspirin
Higher Risk	GI bleed, limb ischaemia	N/A		NIL
Higher Risk	Intermittent left sided chest pain	3 of 4	Yes	Enoxaparin (Clexane)
Higher Risk	Increased confusion	2 of 11	Yes	enoxaparin (Clexane)
Higher Risk	Liver cirrhosis, nephrotic syndrome, cellulitis	Given regularly	Yes	Enoxaparin (Clexane)
Higher Risk	Aspiration	Given regularly	N/A	Clopidogrel
Higher Risk	SOB, pulmonary hypertension	6 days/11	Yes	Heparin/Clexane

Table 2: Identifies 12 moderate risk patients, cause for admission, number of days of in-patient stay and number of days VTE prophylaxis was given of all days admitted and type of prophylaxis given. 12/13 patient did receive prophylaxis on admission (92%), the reason is unknown in the 1 that did not receive prophylaxis.

Risk	Admission cause	Day's prophylaxis given/ days of admission	Prophylaxis given	Prophylaxis
Moderate Risk	Infected pressure ulcer R ankle	8 of 9	Yes	Enoxaparin (Clexane)
Moderate Risk	Hyponatraemia, secondary to hypovolaemia, anaemia (GI bleed)			NIL
Moderate Risk	Shortness of breath, productive cough, sore throat	4 of 7	Yes	Enoxaparin (Clexane)
Moderate Risk	Confusion and generally unwell	1 of 3	Yes	Enoxaparin (Clexane)
Moderate Risk	Lower abdominal pain with immunocompromised shingles rash	6 of 7	Yes	Rivaroxaban
Moderate Risk	Worsening shortness of breath, known COPD	0 of 7	NOT NEEDED	Heparin
Moderate Risk	Confusion secondary to cognitive impairment	13 of 15	Yes	Enoxaparin (Clexane)
Moderate Risk	COVID, cough, febrile	8 of 9	NOT NEEDED	Rivaroxiban
Moderate Risk	Fever, unwell, cough	all days	Yes	Apixaban
Moderate Risk	Nausea, vomiting, epigastric discomfort,	5th till 6th Dec Heparin, 7th onwards Clexane	Yes	Clexane, heparin
Moderate Risk	Nausea, vomiting, leg wound, AKI, sepsis	Given regularly	Yes	Enoxaparin (Clexane)
Moderate Risk	Pleuritic chest pain following laparotomy -- PE	Given regularly	Yes	Enoxaparin (Clexane)

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Discussion

This study in the month of December 2022 at GBH in NSW, Australia showed VTE risk classification was available in only 37 out of 100 admissions, as opposed to standards set by NSW Health that specify 100% of patients need VTE risk assessment classification at time of admission. 56.5% of high-risk category patients did not receive VTE prophylaxis. On the contrary, 92% of moderate risk patients received VTE prophylaxis. The dosages administered were 100% on target for the chosen anticoagulants thereby mitigating risks of under or over-coagulation.

The 2013 Quality Systems Assessment (QSA) data estimates that only 40 per cent of patients are assessed for VTE risk at admission, and only 70 per cent of those at risk are provided with appropriate prophylaxis [5].

This study was a snapshot of current practise at GBH in the month of December 2022. However, it would be important to identify if patients admitted to GBH in December 2022 who did not receive appropriate VTE prophylaxis as per national guidelines, could have been harmed - for example from a deep vein thrombosis or pulmonary embolism. It is also important that further data is collected formally over a longer period.

The Surgical and Medical wards at this Hospital should engage to implement a standard VTE prophylaxis policy so that there is uniform practise throughout the

Hospital for all patients admitted locally as in-patients (Table 2).

Conclusion

This small audit from the month of Dec 2022 shows improvements are necessary to achieve national Australian guidelines for VTE prophylaxis for patients admitted on the Medical ward at GBH, NSW. As a significant proportion of patients deemed high-risk did not receive VTE prophylaxis, further data collection over a longer period and uniformity of VTE prophylaxis practise across both the Surgical and Medical wards at this Hospital may be necessary to avoid patient harm.

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