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Improving VTE risk assessment at point of admission to a tertiary centre cardiology ward

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Abstract

Cardiology wards are generally high turnover units, which may receive primary PCI, high-risk NSTEMI patients, and other general cardiac admissions from a large geographical area. Many centres also provide national specialist services for rarer cardiac conditions for which admissions may be lengthy. Cardiac patients have significant risk factors for venous thromboembolism (VTE) as immobility may be due to systolic dysfunction, attachment to continuous monitoring and predisposition to chest pain, or cardiac syncope. It is recommended by NICE that an initial VTE risk assessment is undertaken at the time of patient admission, with reassessment within 24 hours. For this purpose a risk assessment tool is featured on the front of many Trust drug charts. It is noted that this risk assessment is electronic in other trusts. We undertook an audit into the drug chart documentation of VTE risk assessment on the cardiology ward and the Coronary Care Unit (CCU) at The Royal Free Hospital. It was evident that documentation of VTE risk assessment was poor. The audit interventions were; a teaching presentation to the cardiology department, an educational poster, several update emails to the department and the identification of a 'VTE risk assessment champion' to audit ongoing compliance. Following these measures the second audit round demonstrated that documentation of initial risk assessment was slightly improved, but significant improvement was seen in documentation of risk assessment at 24 hours post admission. Results from a third audit cycle indicated that the improvement in initial VTE risk assessment was sustained, and that there was a significant sustained improvement in risk assessment at 24 hours ($p < 0.05$).

Recommendations for sustained improvement included: redesigning the drug chart so that the VTE risk assessment tool was linked to the VTE prophylaxis prescription box, and designating the responsibility of the initial VTE risk assessment to the on call junior doctor who receives admissions on to the ward.

Problem

It was noted that VTE prophylaxis was frequently prescribed to patients admitted to the cardiology ward and high dependency unit at The Royal Free Hospital, however the prescriptions usually did not correspond to a contemporanous VTE risk assessment. VTE prophylaxis was often prescribed before patients arrived on the ward from accident and emergency or the coronary angiography and interventional cardiology suites. Overall the completion of VTE risk assessments early in admission seemed to be poor. The completion of VTE risk assessments was frequently left to pharmacists who reviewed the drugs charts in the days following the patient's arrival on the ward. Medical reviews of patients' risks for thromboembolism were seldom undertaken at later stages in the admission.

Background

Preventable VTE has been estimated to kill 25,000 people every year in the UK. [1] It is also suggested that 70% of all pulmonary embolism occurs in non-surgical patients. [2] [3] [4] Low molecular weight heparins are the mainstay of prophylaxis and treatment for VTEs, and have been shown in two meta-analyses to reduce the risk of VTE by between 38-57%. [5] [6] However, studies have indicated that the prescription of VTE prophylaxis is inconsistent. The IMPROVE study assessed the provision of VTE prophylaxis across 52 hospitals in twelve countries, finding that only 60% of the patients who were eligible for VTE prophylaxis actually received it. [7] In the global ENDORSE study which looked at 68,000 patients, only 38.5% of eligible medical patients received appropriate VTE prophylaxis. [8] NICE guidelines (CG92) outline a recommended approach to assessing VTE risk and selecting appropriate prophylaxis for adults admitted to hospital (See NICE Guidelines below). [10] It has been noted that dissemination of information by local colleagues has been conducive for improving uptake in VTE prophylaxis. [11] In addition, the efficacy of educational interventions as well as nominating a designated person to take on the role of 'champion' for the task has been noted in several studies. [12] [13] [14] [15] [16]

Other measures described to improve VTE risk assessments include asking consultants to remind junior doctors, educational posters, designating nursing staff to check for VTE assessment, putting a visual reminder against the patient name on the bed board, and the use of electronic reminders. The latest report from NHS UK indicates a generally high level of risk assessment provision, with 96% of all patients receiving a risk assessment on admission. [17]

NICE Guidelines CG92

1. Assess all patients on admission to identify those who are at increased risk of VTE

2. Reassess patient's risks of bleeding and VTE within 24 hours of admission and whenever the clinical situation changes, to: ensure the methods of VTE prophylaxis being used are suitable, and to ensure that VTE prophylaxis is being used correctly

Baseline measurement

A baseline audit (Cycle 1) was carried out in the cardiology ward in which drug charts for forty inpatients were checked for VTE risk assessment completion. It was seen that 40% of the patients assessed did not have a documented VTE assessment on admission and 95% did not receive a further check at 24 hours as per NICE guidelines (Table 1).

In addition, data pertaining to the prescription of LMWH on drug charts audited in Cycle 1 and Cycle 2 was collated retrospectively from electronic medical records (Table 2).

See supplementary file: ds5490.pptx - "Table 1 "

Design

In order to increase the number of patients who successfully received VTE risk assessments at the point of admission we undertook to provide an educational presentation, poster, email, and the appointment of a 'VTE champion'. The VTE champion would aim to review drug charts for patients on the day of their admission to ensure an appropriate VTE risk assessment had been carried out.

Strategy

The findings of the baseline audit were presented and discussed at the cardiology department education meeting. There was an educational presentation on the need for improving the provision of admission risk assessments and how creating a position of responsibility has been shown to be an effective measure for this purpose at other hospitals. A poster and update emails were produced and circulated within the cardiology department. At the end of the first cycle, a VTE champion was nominated to start work on the project. A second audit cycle (Cycle 2 in Table 1) was completed after a two week interval, and a third audit cycle (Cyle 3 in Table 1) was completed after a further two week interval in which the VTE champion monitored charts independently of the auditor.

Results

From the baseline audit, the second and third audit cycle indicated improvements in the completion of both the initial VTE risk assessments and in the completion of the 24 hour reassessment of VTE risk. The improvement was sustained from the second to the third audit cycle.

Data collected retrospectively was limited due to incomplete availability of electronic medical records (Table 2). However, from scanned records of 32 of 40 drug charts audited in Cycle 1, it was seen that 55% of cards contained a LMWH prescription. From scanned records of 29 of 44 drug charts audited in Cycle 2, 36% contained a LMWH prescription. In Cycle 1 50% of drug charts without LMWH prescription contained an explanation for this as a documented clinical decision. This was true for 38% of drug charts without LMWH prescription from Cycle 2. It is interesting to note the discrepancy between patients who were prescribed LMWH and those who were not, despite completed risk assessments 'triggering' for LMWH prescription. These two measures do not directly correlate however, due to the third factor of documented contraindications to LMWH despite risk of thrombosis, and the use of alternative antiplatelet or anticoagulant agents which may have been prescribed elsewhere on the drug chart rather than in the designated section for low molecular weight heparins. Table 3 contains several examples of documented explanations for not prescribing LMWH.

See supplementary file: ds5808.pptx - "Tables 2 and 3"

Lessons and limitations

Lessons from Cycle 1: The provision of initial VTE risk assessment was shown to be poor and not concurrent with prescription of VTE prophylaxis.

Limitations: Audit being done at junior doctor changeover time may have misrepresented to some degree normal practice of provision of effective risk assessment.

Lessons from Cycle 2: There was an improvement in provision of initial VTE risk assessment and also in reassessment post 24 hours.

Limitations: The VTE Champion was not independent from the auditor at this stage.

Lessons from Cycle 3: The provision of initial VTE risk assessment was improved from Cycle 1 but not from Cycle 2. The VTE Champion was independent from the auditor.

Limitations: The sample size remained too small to be able to indicate a statistically significant improvement in provision of initial VTE risk assessment.

Conclusion

This audit has shown an improvement in the admission VTE assessment being carried out for patients admitted to the cardiology ward, however not at a statistically significant level. There remains room for improvement in the provision of admission VTE risk assessments by admitting doctors. This audit has shown a sustained and statistically significant improvement in the 24 hour VTE risk reassessment of patients.

In order to ensure long term sustainability in the provision of admission VTE risk assessments it will be necessary to continue to

deliver further teaching and training in this regard as there are frequently new members joining the team as well as a change in junior doctors every four months. The role of the VTE champion has contributed greatly to the improvement noted, and it would be advisable to allocate this responsibility to a junior doctor who can review the risk assessments and prescriptions for VTE prophylaxis for their patients.

It is relevant to consider how the culture of 'championing' VTE risk assessment documentation can be sustained and whether the frequent changeover of staff will impact upon this and the need for constant reminders. The advent of electronic prescribing will facilitate the documentation of VTE risk, as this will entail a compulsory risk assessment, which may link to a prompt for appropriate prescription. Electronic recording of risk assessment and prescriptions will be complemented by an understanding of the value of risk assessment and the motivating factors for 'compliant' prescriber documentation. Junior doctor led teaching, electronic learning modules and multidisciplinary discussion should serve to emphasize the risk assessment as a reminder that patient specific VTE risk changes with an evolving clinical picture and its use therefore as a tool for risk re-evaluation, more so than as a 'tick box' exercise or hospital audit device.

In order to meet national standards in which both an admission assessment and a reassessment 24 hours post admission are completed it will be necessary to institute a system for medical and pharmacy staff reviews of drug charts. It is also recommended that revised drug charts incorporate VTE prophylaxis prescription with the risk assessment tool.

These findings are applicable to other centres where patients are received by on call doctors and then handed over to ward based medical staff.

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Declaration of interests

None

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Ethical approval

This project was exempt from ethical approval because as a designated improvement study local policy indicated that ethical approval was not required.