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Improving venous thromboembolism risk assessment compliance using the electronic tool in admitted medical patients

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Abstract

Sheikh Khalifa Medical City (SKMC) in Abu Dhabi is the main tertiary care referral hospital in the United Arab Emirates (UAE) with 560 bed capacity that is fully occupied most of the time.

SKMC senior management has made a commitment to make quality and patient safety a top priority. Venous thromboembolism (VTE) risk assessment has been identified as a critical patient safety measure and key performance indicator. The electronic VTE risk assessment form a computerized decision support tool was introduced to improve adherence with deep venous thrombosis (DVT) prophylaxis recommendations. A multidisciplinary task force team was formed and led this quality improvement project. The purpose of this publication is to indicate the quality improvement interventions implemented to enhance compliance with VTE risk assessment and the outcomes of those interventions.

We chose to conduct the pilot study in General Medicine as it is the busiest department in the hospital. The study period was from April 2014 till August 2015.The lessons learned were disseminated throughout the hospital. Our aim was to improve VTE risk assessment compliance by using the electronic form in order to ensure patient safety and reduce preventable harm. VTE risk assessment compliance improved in general medicine from 4% to 98%, and overall SKMC compliance from 21% to above 90%.

Problem

Venous thromboembolism prevention is a key safety measure and a major key performance indicator (KPI) identified by leadership and front line care givers as a high priority area. SKMC has introduced the electronic VTE risk assessment form in April 2014. However, the transition from paper to electronic was a challenge requiring many performance improvement interventions to get front line staff engaged to complete the VTE risk assessment within 24 hours of admission. The overall baseline hospital compliance was low at 21% and for general internal medicine was 4%. As a result a multidisciplinary task force team was formed by senior management, and the focus was to target physician ownership and accountability as a means to improve compliance.

Background

Venous thromboembolism (VTE) is a leading cause of morbidity and mortality in hospitalized medical patients with complex medical problems. The electronic VTE risk assessment tool is an important patient safety and quality measure and can have a major impact on improving VTE prophylaxis compliance and clinical outcomes by reducing deep vein thrombosis, pulmonary embolism and significant bleeding.

The joint commission international (JCI) has identified VTE prevention as a critical patient safety measure and care of patient (COP) standard mandates that the hospital uses measurement information to evaluate the services provided to high-risk patients and integrates that information into the hospital's overall quality improvement program.

SKMC policy states that all admitted adult patients receive a VTE risk assessment within 24 hours of admission, which includes risk assessment for bleeding; and all patients identified at risk of VTE receive appropriate and effective prophylaxis within 24 hours of admission in order to reduce the occurrence of VTE in hospitalized patients.

Baseline measurement

The VTE risk assessment key performance indicator compliance target set by our governing body is above 90%. The overall baseline hospital performance compliance pre-implementation in April 2014 was 21% (175 completed out of 842 patients admitted) and for general internal medicine was 4% (13 completed out of 339 patients admitted).

Design

Methodology used was prospective study of VTE risk assessment compliance in admitted adult patients (18 years and above) by using a specific segmented electronic report that contained all required information including the medical service, time of admission, time of VTE risk assessment completion, admitting physician and attending physician. The information was extracted from the electronic VTE risk assessment screening tool.

The overall baseline hospital performance compliance pre-implementation in April 2014 was low at 21% (175 completed out of 842 patients admitted), and for general internal medicine was 4% (13 completed out of 339 patients admitted). We identified the problem and a multidisciplinary taskforce team was formed. A brainstorming session was conducted; we came up with some ideas and tested those interventions through a series of Plan, Do, Study, Act (PDSA) cycles.

Strategy

We chose to conduct the pilot study in General Medicine as it is the busiest department in the hospital; the general medicine admissions represented 40 to 45 % of overall SKMC hospital admissions at any given month during the study period from April 2014 till August 2015. The average number of general medicine admissions and the overall number of SKMC admissions per months during the study period were 322 patients and 752 patients respectively.

The key interventions tested and their impacts on improving the VTE risk assessment compliance were as below:

- Eliminate the previously used VTE risk assessment paper form.
- Sharing the compliance data on regular basis with the division of general medicine.
- Conducting educational sessions to increase awareness and address concerns.
- Creating and communicating educational material on VTE risk assessment completion to frontline staff.
- Incorporating VTE risk assessment in the mandatory electronic medical record (EMR) training for all newly hired physicians.
- Revised the electronic VTE risk assessment alert: options changed from “Document and OK” to “Document and IGNORE”.
- The general medicine division took ownership and accountability; and the compliance data was shared monthly with the division head and department chair.
- Screening all medical admissions daily and providing timely feedback to the physicians to complete the assessment within 24 hours.

From April 2014 we started by eliminating the paper VTE risk assessment form and sharing the VTE risk assessment compliance data with the general medicine physicians on monthly basis. This improved the compliance from 4% in April 2014 to 13% in July 2014.

From July 2014 till October 2014 we conducted a number of educational sessions to increase awareness and address concerns, we also shared educational material on how complete the VTE risk assessment electronic form. We corrected the misconception among physicians that the form is complicated and takes a long time to fill when in fact it takes less than one minute to complete. This improved the compliance from 13% in July 2014 to 36% in October 2014.

In October 2014 we incorporated VTE risk assessment education in the mandatory electronic medical record training for all newly hired physicians. We also revised the VTE risk assessment alert to clarify and set accountability by changing the options from “Document and Ok” to “Document and IGNORE”. The division of general medicine took ownership and accountability for their compliance rates, and worked on ways to improve compliance mostly through effective communication and feedback. Those interventions resulted in improved compliance from 36% in October 2014 to 84% in April 2015.

In April 2015 we started screening all general medicine admissions the following morning for VTE risk assessment completion. Reminder e-mails were sent to the admitting physicians in a timely manner to complete the VTE risk assessment within the set target of less than 24 hours from the time of admission. We were able to achieve more than our target of 90% compliance and sustained this improvement for four consecutive months.

See supplementary file: ds6172.png - “PDSA 1”

Post-measurement

With the implemented performance improvement interventions we were able to improve general medicine VTE risk assessment compliance from 4% in April 2014 to 98% in August 2015. By the end of the study period those general medicine improvement efforts significantly impacted the overall SKMC VTE risk assessment compliance resulting in a remarkable improvement in compliance rates from 21% in April 2014 to 95% in August 2015.

Lessons and limitations

Senior management support and empowerment was one of the critical success factors. However, it took time to get buy-in and engagement from front line staff due to different background education and training. In addition we addressed the misconception that the electronic VTE form is complex and time consuming when in fact it took less than one minute to complete. This was demonstrated in our educational sessions.

The role of information technology and automation was critical. The implementation of the electronic VTE alert to remind physicians to complete the assessment within 24 hours to meet the KPI time frame had a significant impact on improving compliance.

The sustainability of this project will need to be enforced by engaging the frontline staff and maintaining leadership support.

Conclusion

The multidisciplinary taskforce team managed to implement quality improvement interventions and change management strategies that resulted in significant improvement in electronic VTE risk assessment compliance for admitted general medicine patients. This improvement will enhance patient safety and reduce preventable harm. Support and commitment from senior leadership

was critical to the success of this project.

This performance improvement project shows that quality improvement teams using information technology must understand the clinical context and engage the front line staff in order to overcome resistance to change and implement sustainable systems.

References

1. Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest, February 2012; 141(2_suppl)
2. Joint Commission International Accreditation for Hospitals, 5th Edition, 2014, Assessment of patients, AOP 1.2
3. Joint Commission Resources Inc. Anticoagulation therapy: toolkit for implementing the national patient safety goal. 2008, Oakbrook Terrace, IL: Joint Commission Resources.
4. N Kucher, S Koo, R Quiroz, et al. Electronic alerts to prevent venous thromboembolism among hospitalized patients, N Engl J Med, 352 (2005), pp. 969–977
5. F Dentali, JD Douketis, M Gianni, W Lim, MA Crowther, Meta-analysis: anticoagulant prophylaxis to prevent symptomatic venous thromboembolism in hospitalized medical patients, Ann Intern Med, 146 (2007), pp. 278–288
6. WH Geerts, GF Pineo, JA Heit, et al. Prevention of venous thromboembolism: the Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy, Chest, 126 (2004), pp. 338S–400S
7. GP Clagett, FA Anderson, J Heit, MN Levine, HB Wheeler, Prevention of venous thromboembolism, Chest, 108 (1995), pp. 312–334
8. W Ageno, A Squizzato, F Ambrosini, et al. Thrombosis prophylaxis in medical patients: a retrospective review of clinical practice patterns, Haematologica, 87 (2002), pp. 746–750
9. HT Yu, ML Dylan, J Lin, RW Dubois, Hospitals' compliance with prophylaxis guidelines for venous thromboembolism, Am J Health Syst Pharm, 64 (2007), pp. 69–76
10. JW Eikelboom, A Mazzarol, DJ Quinlan, Thromoboprophylaxis practice patterns in two Western Australian teaching hospitals, The American College of Chest Physicians, et al. Haematologica, 89 (2004), pp. 586–593
11. A Amin, S Stemkowski, J Lin, G Yang, J Thromb Haemost, Thromboprophylaxis rates in US medical centers: success or failure?, 5 (2007), pp. 1610–1616
12. VF Tapson, H Decousus, M Pini, et al. Venous thromboembolism prophylaxis in acutely ill hospitalized medical patients: findings from the international medical prevention registry on venous thromboembolism, Chest, 132 (2007), pp. 936–945
13. AT Cohen, R Alikhan, JI Arcelus, et al. Assessment of venous thromboembolism risk and the benefits of thromboprophylaxis in medical patients, Thromb Haemost, 94 (2005), pp. 750–759
14. SR Kahn, A Panju, W Geerts, et al. Multicenter evaluation of the use of venous thromboembolism prophylaxis in acutely ill medical patients in Canada, Thromb Res, 119 (2007), pp. 145–155.

Declaration of interests

None of the authors have any declared conflict of interest.

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Ethical approval

This was a performance improvement project hence it is exempt from ethical approval requirement.