Healthcare-Associated
VTE Prevention Challenge

2015 CDC HA-VTE PREVENTION CHALLENGE CHAMPION

ORGANIZATION:

University of Wisconsin Health | Madison, Wisconsin

PATIENT POPULATION:

- 24,500 inpatient admissions in 2014; 566 staffed beds
- 9% belong to a racial or ethnic minority
- 8% are enrolled in Medicaid

BACKGROUND

In 2009, University of Wisconsin (UW) Health created a pharmacist-led anticoagulation stewardship program. As part of this program, an analysis of VTE prophylaxis rates, VTE events, and hospital costs was conducted. The analysis identified areas for improvement in VTE risk assessment, ordering of VTE prophylaxis, and in preventing post-operative VTE events. This work led to the design and implementation of a VTE prevention program for all adult inpatients, with an ultimate goal of developing a sustainable process to improve rates of VTE prophylaxis, decrease hospital-acquired VTEs, and reduce excess healthcare costs associated with VTE events.

OBJECTIVES

- To ensure > 90% of inpatients received appropriate VTE prophylaxis within 24 hours of admission;
- To reduce the rate of post-operative VTE by >25%;
- To implement a VTE risk assessment tool to assist in the screening of inpatients and prescribing of appropriate VTE prophylaxis;
- To estimate the financial benefit to the healthcare system using internal patient and billing data.

METHODS

Developing VTE Guidelines and Risk Assessment

An extensive literature evaluation was completed, and a standardized approach to VTE risk assessment and prophylactic modalities was agreed upon by the Anticoagulation Stewardship Program. An institutional guideline on VTE prevention was developed, and validated risk assessment models for surgical and medical patients were adopted.

All adult admission, transfer, and post-operative order sets were updated to include a VTE risk assessment section. These sections included hard stops. Providers had to complete the risk

assessment and ordering of VTE prophylaxis or document reasons for omission to move forward in the order set.

Monitoring and Feedback

The pharmacist was the responsible party for monitoring and ensuring an accurate VTE risk screen was completed and appropriate VTE prophylaxis was ordered. To support monitoring, decision support tools were created for the pharmacist to complete, document, and assess appropriateness of VTE risk and prophylaxis regimens, and to identify any potential need for changes. Pharmacists were also responsible for following up with providers to resolve any discrepancies in VTE risk and order sets. Clinical monitoring for all inpatients was conducted at least once daily.

Provider Education

Implementation of the VTE prevention program included an in-service and competency for pharmacists, which included an overview of VTE prophylaxis evidence, use of support tools, and expectations of VTE prophylaxis surveillance and interventions. Education was delivered through a live presentation and computer-based training module.

Nursing education focused on the importance of VTE prophylaxis and the need to communicate to the care team (physician/pharmacist) if a patient refused either pharmacologic and/or mechanical prophylaxis.

Physician education was completed through the order-set group discussion and an electronic newsletter.

Cost Benefit Assessment

A cost-benefit assessment was conducted, comparing the hospital charges and length of stay between patients who developed a VTE during the hospitalization (cases) and those who did not develop VTE (controls) matched on age and gender, and coded by medical severity diagnosis related group (MSDRG).

RESULTS

Between 2008 and 2010

A total of 228 inpatient order sets were revised to include the VTE risk assessment and corresponding VTE prophylaxis orders to meet adopted institutional guidelines.

Significant increases were observed in all patients receiving VTE prophylaxis [76% to 92% ($p<0.001$)] and in surgical patients specifically receiving VTE prophylaxis [80% to 97% ($p<0.0001$)].

A significant reduction was demonstrated pre- and post-intervention in the number of post-operative events per 1000 (PSI-12) [11.3 vs. 7.5 ($p<0.001$)].

A matched case-control analysis of all PSI-12 events found an average estimated excess cost of $13,250 per VTE event, and an estimated excess length of stay of 3.38 days for cases.

Reductions in VTE events pre- and post-interventions avoided an estimated $500,000 in excess cost and avoided 128 excess inpatient days.

CONCLUSIONS

The design and implementation of UW Health's VTE prevention program proved to be a successful approach to improving VTE prophylaxis rates, decreasing post-operative VTE events, and decreasing costs associated with VTE events. By utilizing a stewardship model, there was minimal need for investment in additional resources.

Some challenges included under-estimating the time for the design and build of order set changes. However, it was through the order sets that the program was able to scale this program to reach all hospitalized patients. Another challenge was through the sustainability of the education process for new staff, particularly pharmacists and nurses. The challenge was resolved through the completion of VTE prevention education for all new pharmacists, and education for nursing built into their annual review process.

Overall, the sustainability of UW Health's program has been demonstrated through continued monitoring of PSI-12 events. VTE events have remained consistently below the initial baseline data with a rate of 5.7/1000 discharges in 2014.