

## 2015 CDC HA-VTE PREVENTION CHALLENGE CHAMPION



### ORGANIZATION:

Northwestern Memorial Hospital (NMH) | Chicago, Illinois

### PATIENT POPULATION:

- Over 49,000 inpatient admissions in 2014; 885 beds
- 19% belong to a racial or ethnic minority
- 5% are enrolled in Medicaid

### BACKGROUND

In 2008, Northwestern Memorial Hospital (NMH) had the highest rate of VTE compared to 118 other institutions based on data from the University HealthSystem Consortium. VTE in the surgical patient population was an especially glaring problem as NMH was listed as a risk-adjusted poor performer in the American College of Surgeons National Surgical Quality Improvement Project. To address the issue, NMH undertook an institutional and system-wide quality improvement (QI) project using a new NMH-developed comprehensive VTE prophylaxis composite measure, and also the six 2013 Joint Commission and the National Quality Forum hospital-level process measures of appropriate VTE prophylaxis and therapeutic anticoagulation administration for inpatients ("VTE core measures").

### OBJECTIVES

- To develop a novel composite process of care measure of VTE prophylaxis measuring provision of the 3 components of ideal postoperative VTE prophylaxis (early ambulation, mechanical prophylaxis, and chemoprophylaxis) throughout the entire hospitalization for surgical patients.
- To compare hospital performance on the SCIP-VTE-2 process measure to this novel measure.
- To improve adherence to the novel comprehensive VTE prophylaxis process measure.
- To improve hospital-level performance on the Joint Commission's six VTE core measures through a formal hospital-wide QI project focused on all inpatients rather than just surgical patients.

## METHODS

### Development of Novel Comprehensive VTE Prophylaxis Measure

A novel comprehensive VTE prophylaxis process was developed to better measure success of VTE prevention among surgical inpatients. This measure included three components of ideal postoperative VTE prophylaxis:

- An early ambulation component that required documentation of at least daily ambulation.
- A mechanical prophylaxis component that required documentation of continuous application and use of sequential compression devices (SCDs).
- A chemoprophylaxis component that required patient-specific, appropriate dosing and administration of prophylactic anticoagulants in every postoperative patient at NMH during their entire inpatient hospital stay and at the correct dose and frequency.

The novel comprehensive VTE prophylaxis process measure could also be utilized with component-specific exceptions contraindicating their use (e.g., heparin-induced thrombocytopenia, active bleeding in the past 48 hours, lower extremity wounds precluding SCD placement).

To evaluate the utility of the measure, surgical patients at NMH from 2012-2013 were assessed for SCIP-VTE-2 and composite measure adherence through chart review by a trained abstractor and a two-surgeon review process.

### Hospital-Wide VTE Prophylaxis Quality Improvement Project

To target hospital-level performance on the six VTE core measures, NMH launched a hospital-wide VTE prophylaxis QI project in May 2013, with an implementation process that iteratively improved each component over approximately 18 months. This project utilized the Define-Measure-Analyze-Improve-Control process improvement methodology, and was carried out by a multidisciplinary team with representatives from Surgery, Internal Medicine, Anesthesia, Process Improvement, Clinical Quality, Pharmacy, and Nursing.

Baseline VTE core measure compliance was assessed from 1/1/2013 to 5/1/2013, and 9 common failure points were identified and analyzed leading to the subsequent design, pilot testing, and implementation of 15 interventions in May 2013. Broadly, the fifteen interventions consisted of (1) electronic medical record (EMR) alterations/additions (e.g., decision support/order sets, forcing functions, alerts), and (2) educational initiatives for patients, nurses, and physicians.

Compliance rates were tracked on a monthly basis using a custom-designed electronic data warehouse report distributed to the QI team and unit nursing managers through the implementation period (16 months) to April 2015. After this, an interactive report was created which allowed unit managers to track failures in real time and act on the failure (e.g., missed chemoprophylaxis dose), rather than just retrospective review. These reports contained enough granularity to identify failures at the individual patient, nurse, and physician levels. Identified failures in provision of VTE prophylaxis were immediately provided as feedback to unit nursing managers so that rapid drilldown to the root cause(s) of the failure could be identified and rectified.

## RESULTS

### Novel Comprehensive VTE Prophylaxis Measure of 786 Surgical Patients

- 589 (74.9%) passed the ambulation measure.
- 494 (62.8%) passed the SCD measure.
- 678 (86.3%) passed the chemoprophylaxis measure.
- 268 (91.8%) SCD failures and 46 (42.6%) chemoprophylaxis failures were appropriately ordered but not actually administered to the patient.

When comparing the two measures, 784 (99.7%) passed SCIP-VTE-2 while only 364 (46.3%) passed the new composite measure ( $p < 0.001$ ).

### Hospital-Wide VTE Prophylaxis QI project

- Improved performance was seen on measures VTE-1, VTE-3, VTE-4, VTE-5, and VTE-6.
- VTE-1 performance improved significantly as a result of intervention targeted on the internal medicine population.
- The VTE-1 performance for surgical patients was always high, similar to SCIP-VTE-2.
- The percentage of patients who failed measure VTE-6 (number of patients with HA-VTE who did not have VTE prophylaxis ordered prior to diagnosis of their VTE) decreased from 8% to 2.4%, demonstrating improved VTE prevention prescribing habits in NMH providers.
- Performance on the VTE-2 measure was 100% pre- and post-intervention as targeted for intervention in 2007, showing the durability of the intervention.

## CONCLUSIONS

This new VTE prophylaxis process measure incorporating the 3 components of ideal postoperative VTE prophylaxis is a comprehensive measure that incorporates critical aspects of VTE prevention in post-surgical patients who are overlooked or incompletely measured by other VTE process measures. This measure unmasked inconsistent documentation of ambulation at NMH and, as a result, a policy mandating verification and regular documentation of ambulation attempts was instituted.

The novel comprehensive VTE prophylaxis process measure has also been implemented in the 55 hospitals in the Illinois Surgical Quality Improvement Collaborative. Each hospital has used the measure to uncover institution-specific areas for improvement in postoperative VTE prophylaxis, and are implementing interventions based on their specific local failures of care.

The hospital-wide VTE prophylaxis QI project demonstrated its efficacy as illustrated by improvement on all measures. Keys to success included:

- Achieving buy-in at the administrative and clinical levels.
- Educational interventions on the medical floors to achieve buy-in from the nursing staff.
- Frequent discussions between the surgical and medical clinicians on the multidisciplinary DMAIC team helped to define and resolve the differences in VTE prophylaxis ordering.
- Continued monitoring of performance, facilitated by leveraging the data from our EDW to generate ongoing performance reports that are regularly reviewed by hospital leadership, clinical process owners, and frontline nurse managers. The unit-specific reports allow nurse managers and clinical project owners to review prophylaxis failures on a case-by-case basis daily, and to address and rectify lingering problems.