

FINAL PROGRESS REPORT

Title of Project:

Illinois Surgical Quality Improvement Collaboration Conference: Venous Thromboembolism

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Structured Abstract

There has been a widely accepted desire to improve the quality of surgical care in the United States through sharing outcomes and collaborative innovation. The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) provides hospitals with reliable, validated, risk-adjusted surgical outcome reports and resources. The Illinois Surgical Quality Improvement Collaborative (ISQIC), a statewide collaboration of ACS NSQIP hospitals in Illinois, was established to focus on improving venous thromboembolism (VTE) outcomes after surgery. VTE, consisting of deep vein thrombosis and pulmonary embolism, is a leading source of surgical morbidity and mortality and is largely preventable. Evidence-based interventions and best practices toward VTE prevention were shared using a small-conference forum and brought together national experts, local clinicians, and administrators invested in improving patient care. The goal was to decrease VTE events in the statewide collaborative, thereby improving patient outcomes.

Key Words:

- ACS NSQIP (American College of Surgeons National Surgical Quality Improvement Program)
- ISQIC (Illinois Surgical Quality Improvement Collaborative)
- VTE (venous thromboembolism)
- DVT (deep vein thrombosis)
- PE (pulmonary embolism)
- Quality improvement

Purpose *(Objectives of Study).*

Venous thromboembolism (VTE), including deep vein thrombosis (DVT) and pulmonary embolism (PE), is a leading cause of morbidity and mortality in hospitalized, postoperative patients. Initial data from Illinois Surgical Quality Improvement Collaborative (ISQIC) showed that almost all the hospitals within ISQIC had a higher than expected VTE rate. Therefore, representatives from participating sites agreed to set up a conference to discuss VTE as a quality improvement target.

Scope *(Background, Context, Settings, Participants, Incidence, Prevalence).*

American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP[®]) has provided hospitals in the United States with standardized national outcomes data that is validated, risk adjusted, and clinically abstracted by trained personnel. It is a reliable metric to facilitate quality improvement^{1,2}. By using ACS NSQIP as a foundation, Michigan Surgical Quality Collaborative (MSQC) has successfully embarked upon several specific initiatives and improved outcomes in patients undergoing colectomy, reducing incidence of surgical site infections and identifying patients at risk for postoperative myocardial ischemia³. By forming a collaborative, MSQC used quarterly meetings to share collaborative data, discuss best practices, and learn options and interventions from centers with better performance. Using MSQC as a successful model, several ACS NSQIP centers in Illinois formed a statewide collaboration called the Illinois Surgical Quality Improvement Collaborative (ISQIC) to improve surgical outcomes within the state.

By reviewing initial data within the ISQIC, it was found that the VTE rate was worse than expected in almost all the ISQIC centers when using the ACS NSQIP program. Postoperative VTE was the second most common medical complication, the second most common cause of excess length of stay, and the third most common cause of excess mortality and led to excess charges in an analysis of over seven million acute care patients, so VTE became an optimal target for surgical quality improvement within ISQIC⁴.

Methods *(Study Design, Data Sources/Collection, Interventions, Measures, Limitations).*

The ISQIC conference on VTE was held as a day-long symposium to which all ACS NSQIP sites (including those in the enrollment process) in Illinois were invited. Each site was encouraged to send several participants, including a surgeon champion, surgical clinical reviewer, surgical nurse, VTE clinical expert as appointed by the surgeon champion, quality officer, and other individuals involved with quality improvement. At the conference, successful and failed VTE practices would be shared. Breakout sessions were held to create a top-five list of VTE quality improvement interventions and/or best practices. The goal was for the participants to implement the top items at each ISQIC participating site.

Results (*Principal Findings, Outcomes, Discussion, Conclusions, Significance, Implications*).

On January 14, 2012, 41 attendees from 12 ISQIC hospitals, including attendings, residents, nurses, pharmacists, and quality improvement leaders, attended the Illinois Surgical Quality Improvement Collaborative VTE & DVT/PE Conference, led by Mark Eskandari, MD.

Presentation started with overview of the current status of the ACS NSQIP collaboratives by Dr. Mehul Raval, a previous ACS Clinical. In addition, he demonstrated how individual hospitals can collect additional variables through the custom field functionality of the workstation to enhance information collected by ACS NSQIP.

Joseph Caprini, MD, MS, Professor of Surgery in the NorthShore University Health System and Professor of Biomedical Engineering at the Robert R. McCormick School of Engineering and Applied Science at Northwestern University, educated the attendees with his expert knowledge on the subject matter, including national statistics on the incidence of PE and DVT. Various long-term consequences, such as pulmonary hypertension, post-thrombotic syndrome, and venous insufficiency, were discussed. Dr. Caprini taught the audience his VTE Risk Assessment Model, the Caprini scale. Chemical prophylaxis is recommended according to the score received. Risks and benefits of different chemical prophylaxis were also discussed.

Oncologic patients have an increased risk of VTE. Surgical oncologist David Bentrem, MD, MS (The Harold L. and Margaret N. Method Research Professor in Surgery at the Northwestern University of Medicine), presented the epidemiology of VTE in patients with cancer. He stated that all inpatients with cancer should receive VTE prophylaxis if there is no contraindication. Patients who underwent high-risk abdominal or pelvic cancer surgery should also receive 4 weeks of chemical prophylaxis as outpatients. Dr. Bentrem encouraged high-risk medical oncology patients to receive chemical prophylaxis as well.

Reed Panos, MD, presented findings from a study of ISQIC VTE (DVT/PE) data. Of six Illinois medical centers, 123 VTE events occurred; 37.5% occurred after discharge. Eleven percent of those post-discharge events had chemical prophylaxis. The average number of days after discharge at time of diagnosis was 16.85. These findings had prompted the Carle Foundation Hospital to change its preoperative risk assessment, postoperative orders, and discharge practices. A few concerns were raised after the implementations, mainly with regard to medication availability and reimbursements. VTE data after implementation have not been examined yet.

Northwestern Memorial Hospital was one of the sites with a high rate of DVT/PE. Amy Halverson, MD, discussed the change of practice that took 2 years to implement. Successful implementation required teamwork across specialties, conferences, and electronic order sets. As a result, there was a 35% to 70% reduction of DVT/PE rates.

After these presentations, participants were divided into five working groups to generate ideas for improvement. Ideas were then voted upon by all the participants. The options with the highest number of votes were listed for group discussion: VTE prophylaxis at discharge, risk score at discharge, device- and/or line-related VTE, extension of follow-up to 90 days, preoperative screening for high-risk patients, and investigation of prophylaxis failure. After discussion among all attendees, it was decided to focus on prophylaxis and risk score at discharge.

The participants were again divided into five working groups, but this time division was according to their clinical role. Each group was tasked with creating or researching materials to assist with implementation of the above quality improvement tactics:

- Group A - Create informational materials for patients
 - Determine format and key message regarding prophylaxis and risk score at discharge
- Group B – Create informational materials for physicians
 - Determine format, key information, steps, and takeaway points
- Group C – Create informational materials for hospital administration
 - Determine format, key information, cost savings, and resources needed
- Group D – Research and assemble evidence for prophylaxis at discharge and risk score at discharge
 - Review literature and identify knowledge gaps, assemble bibliography
- Group E – Establish data collection rules and monitor results
 - Choose specific variables to collect, identify outcomes of interest, assist in defining variables, and participate in long-term data analysis

The notes taken by each group were collected at the end of the day and distributed to the working groups after the conference. Working groups were encouraged to communicate with each other over email in the subsequent weeks to finalize their projects in the future.

List of Publications and Products (*Bibliography of Published Works and Electronic Resources from Study*)

References:

1. United States Department of Veterans Affairs. VA Health System is "Best in the Nation," Says IOM, 2002.
2. The Joint Commission: Performance Measures. Available at www.jointcommission.org/PerformanceMeasurement/, 2008.
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4. Zhan C, Miller MR. Excess length of stay, charges, and mortality attributable to medical injuries during hospitalization. *JAMA* 2003; 290(14):1868-74.