VTE as a Quality Indicator

Myron Goldsmith, MD; George Whitelaw, RPh; and Denise A. Cannaday, JD, Brea, California, and Shrewsbury, New Jersey

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Abstract
Venous thromboembolism (VTE) is still the most common preventable cause of hospital death, with cancer a known significant risk factor for its development. Prophylaxis to prevent VTE in hospitalized surgical and medical patients has been suboptimal, and efforts for improvement have been unsuccessful. Recent practice guidelines on VTE in oncology from the National Comprehensive Cancer Network and American Society of Clinical Oncologists have further highlighted this relationship and could bridge performance measures and outcomes that can affect the strategies for preventing deep venous thrombosis and pulmonary embolism in oncology patients. Hospitals and physicians with poor performance data will have problems with payment from the Centers for Medicare & Medicaid Services and contracting the best rates from other payors. Hospital accreditation from The Joint Commission could be an issue for poorly performing institutions, as could consumer acceptance. The authors believe that specific oncology VTE measures should be developed to help decrease the current poor rates of VTE prophylaxis and also improve hospital and physician compliance. (JNCCN 2008;6:754–759)

The incidence of venous thromboembolism (VTE) in the hospital setting is unknown, but every year an estimated 12,000,000 hospitalized Americans are at risk for VTE, and 600,000 will develop the disease with almost 200,000 fatal events. These deaths occur despite the availability of hospital-based prophylaxis. VTE is the third leading cause of hospital-related mortality but the most preventable cause of hospital death. These statistics are the reason that VTE prevention, both inpatient and outpatient, has been a major priority for public health policy. The number of preventable deaths (defined as failure to rescue) and total health care costs are significant. Irrespective of what strategies have been adopted by hospitals to prevent VTE, opportunity still exists for further improvement based on the evidence of VTE prophylactic underuse.

According to the very large multinational IMPROVE (International Medical Prevention Registry on Venous Thromboembolism) and ENDORSE studies reported in 2007 and 2008, respectively, VTE prophylaxis is still significantly suboptimal in both hospitalized surgical and medical patients. A recent follow-up study on computer-generated alerts showed that although the alerts increased prophylaxis rates, they did not change the behavior of most physicians in the cohort study. The recommendation was made that “novel strategies must be employed to further improve the use of VTE prophylaxis in hospitalized high-risk patients, especially in Medical Service patients.”

The American College of Chest Physicians, at their First Consensus Conference on Antithrombotic Therapy in 1986, recommended that hospitals develop formal VTE prophylaxis strategies. Over the next 22 years, especially in the past 6 years, several organizations and agencies have provided a plethora of recommendations and measures for VTE prevention in various groups of hospitalized surgical and medical patients. These are mainly concerned with the prevention or treatment of VTE, which includes deep venous thrombosis (DVT) and its complication of pulmonary embolus (PE). However, no specific measure exists, either published or planned, for preventing cancer-related VTE, despite the prevalence of the 2 conditions in the same patient population. The authors believe that this oversight should be corrected.
The relationship between VTE and cancer is firmly established and has been reviewed recently. VTE occurs with a higher incidence in specific types of cancer, such as pancreas, lung, ovary, or kidney, than in the general population. Malignancy, especially if advanced or in active treatment with chemotherapy, is an extreme risk factor for VTE development, whether the patient is hospitalized or at home. Treatment with hormonal therapy (hormone replacement therapy, tamoxifen), chemotherapy, or antiangiogenic agents (thalidomide, lenalidomide) is associated with an increased risk for VTE. The presence of VTE in cancer patients, irrespective of stage, represents a poor prognosis. VTE is the second leading cause of cancer death after the cancer itself.

The results of the FRONTLINE (Fundamental Research in Oncology and Thrombosis) survey published in 2003 showed that although more than 50% of surgeons routinely started thromboprophylaxis, fewer than 5% of medical oncologists reported using thromboprophylaxis in their medical patients. The authors concluded that there was a need for guidelines to direct clinical practice and education of oncologists to reduce the morbidity and mortality associated with VTE in all cancer patients.

This recommendation was responded to by the NCCN in 2006 with their release of the NCCN Clinical Practice Guidelines in Oncology: Venous Thromboembolic Disease (in this issue; to view the most recent version of these guidelines, visit the NCCN Web site at www.nccn.org) and its revision in July 2007. These guidelines present algorithms for the prophylaxis of VTE, treatment of DVT and catheter-related DVT, and diagnosis and treatment of PE. The publication of the “American Society of Clinical Oncology (ASCO) Guideline: Recommendations for Venous Thromboembolism Prophylaxis and Treatment in Patients with Cancer” reaffirmed that cancer is a significant risk factor for VTE. The committee’s recommendations cover both inpatient and outpatient clinical scenarios and greatly complement the NCCN guidelines.

Both organizations recommend that all adult hospitalized cancer patients be considered for VTE prophylaxis with anticoagulants in the absence of bleeding or other contraindications. They also agree that cancer patients undergoing surgery are best treated with anticoagulants and that mechanical methods for VTE prophylaxis are additive and should be used, but not as monotherapy unless anticoagulation is contraindicated.

According to NCCN and ASCO guidelines, cancer patients undergoing a surgical procedure should be treated for at least 7 to 10 days postoperatively or for the duration of hospitalization with anticoagulation. These guidelines also strongly suggest prolonging pharmacologic thromboprophylaxis postoperatively for up to 4 weeks, especially after pelvic or high-risk abdominal surgery.

The organizations recommend anticoagulation be continued for at least 3 to 6 months when VTE is diagnosed in a patient with cancer, and consideration be given for indefinite anticoagulation in patients with active cancer and those undergoing chemotherapy. Neither NCCN nor ASCO recommends routine prophylaxis in all ambulatory cancer patients undergoing chemotherapy, except for those receiving antiangiogenic agents such as thalidomide or lenalidomide.

NCCN and ASCO strongly emphasize that all hospitalized cancer patients be considered for VTE prophylaxis, not just those undergoing surgery, and that care continue after discharge. In a study of VTE in the outpatient setting published in the Archives of Internal Medicine, Spencer et al. concluded that more VTE was diagnosed in the 3 months after hospitalization than during hospitalization. In the same issue, an editorial by Goldhaber called for using the prevalence of outpatient VTE as a quality measure for VTE prophylaxis among hospitalized patients. Spencer et al. further noted that the most common factor for outpatient VTE was a recent hospitalization or surgery, and that 29% of these patients had active cancer. More than half (57.2%) of outpatients with VTE who were hospitalized in the previous 90 days received inadequate anticoagulant prophylaxis in the hospital.

According to NCCN and ASCO guidelines, these cancer patients required pharmacologic thromboprophylaxis. Therefore, specific quality measures for prophylaxis or treatment of DVT/PE in cancer patients must be developed to augment current measures to help diminish what Goldhaber and others recognize as a preventable public health threat.

With the published guideline in agreement between the 2 most important cancer organizations on the importance of VTE prophylaxis and treatment in oncology patients, an opportunity now exists to develop oncology-specific measures regarding hospital-based rates of VTE prophylaxis and subsequent VTE
events. NCCN and ASCO have recognized the need for oncologists to perform VTE risk assessments and use appropriate prophylactic therapeutic interventions based on a specific duration of therapy depending on the clinical situation. These guidelines, if endorsed by the oncology community, can become consensus standards that serve as the foundation for specific quality measures. These measures can be process, performance, outcomes, or patient satisfaction, and reporting by hospitals and physicians allows Medicare and other payors to reward them for quality performance through their pay-for-performance programs (Figure 1).

There are still opportunities, however, to also refine existing measures to ensure that they are extended to specifically include oncology patients. The predominant focus of current measures is to reduce the incidence of adverse events at inpatient facilities, as stated by the National Quality Forum (NQF) in 2003 when they issued their initial report on Safe Practices for Better Healthcare.1 Their Safety Objectives (numbers 17 and 18) included reducing the occurrence of VTE and need for anticoagulation therapy to be effective and safe.

These recommendations were made to address the underuse of VTE prophylaxis despite the availability of VTE risk assessment tools and mechanical and medical prophylaxis. Hospitals were asked to develop organizational policies and procedures for preventing VTE as an opportunity to improve health care, optimize outcomes, and reduce costs. The NQF has remained a constant in the development of voluntary consensus standards and performance measures for VTE prevention, and currently endorses 17 key characteristics of preferred practices and 2 performance measures.17

This year, in collaboration with The Joint Commission (TJC) and assistance of other agencies and organizations, the NQF is advancing 7 additional performance measures for the prevention and care of VTE.18

The VTE candidate measures will be applicable to all medical patients, including those with cancer, and are as follows:

**Prevention**

VTE-1: Documentation of VTE risk assessment/prophylaxis within 24 hours of hospital admission or surgery end-time

VTE-2: Documentation of VTE risk assessment/prophylaxis within 24 hours after intensive care unit admission, transfer to intensive care unit, or surgery end-time

**Treatment**

VTE-3: Documentation of inferior vena cava filter indication (for quality improvement use only)

VTE-4: Patients with VTE with overlap of parenteral and warfarin anticoagulation overlap therapy for at least 5 days with an international normalized ratio (INR) of 2 or more before discontinuation of parenteral therapy; for more than 5 days with an INR less than 2 but were discharged on overlap therapy; or discharged in fewer than 5 days on overlap therapy

VTE-5: Patients with VTE receiving unfractionated heparin with dosages/platelet count monitoring by protocol or nomogram

VTE-6: Patients with VTE or their caregivers are given written discharge instructions or other educational material addressing all of the following: follow-up monitoring, compliance issues, dietary restrictions, and potential for adverse drug reactions and interactions

**Outcome**

VTE-7: Incidence of potentially preventable hospital-acquired VTE measured by patients who received no VTE prophylaxis before VTE diagnosis

These measures were pilot tested for 3 years before receiving approval from the TJC Technical Advisory

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**Figure 1** Evaluation of standards, measures, and performance.
Panel and being sent to the NQF. Once NQF endorses the VTE measures, the next step is to develop a specification manual that defines which patients are included using ICD 9 codes and which interventions are appropriate for that population.

NCCN and ASCO guidelines provide clinically important information for establishing the appropriate inclusion and exclusion criteria for medical and surgical prevention (NQF VTE-1). Oncology patients are distinguishable because they present a VTE risk from the type of cancer, drugs used in treatment, and their mobility, and these parameters must be incorporated into the VTE specifications to be relevant for cancer care.

NCCN and ASCO guidelines identify specific duration-of-care standards that can also be used in constructing relevant outcomes measures. The specification manual can use these guidelines to build measures or implementation expectations specific to cancer that are evidence-based and clinically supported. These performance and outcome measures will support the overall objective of reducing patient risk for VTE over a time horizon formalized by NCCN and ASCO.

Process and outcome measures relevant to VTE and oncology patients can be further developed through physician performance and guidelines. NCCN and ASCO guidelines provide an important tool in the American Medical Association Physician Consortium Performance Improvement (AMA PCPI). This working panel is focused on gaps in care that can be addressed with evidence-based medicine to formalize constructive measures. NCCN and ASCO guidelines will be of similar usefulness in the development of these physician measures.

The last phase of implementing the specification manual is to enforce the measures through accreditation, reporting, reimbursement, or incentives. Public and private institutions have already adopted prior Surgical Care Improvement Project (SCIP) VTE measures, which assess VTE prophylaxis being ordered and received, and are incorporating 6 of the NQF-proposed VTE measures in their pay-for-performance and public reporting initiatives (excluding the vena cava filter quality improvement measure).

Within these programs, a hospital's ability to contract best rates with payors, obtain full reimbursement for services, be eligible for bonus payments, and ensure competitive marketing and positive public perception will be impacted by their performance results. Quality performance rankings of hospitals and physicians are becoming more publicly accessible, and payors are encouraging their members to consider those results when selecting venue of care. Therefore, customer choice may also be a factor in a hospital's financial viability. Data specific to oncology and VTE can help refine those results so that a hospital's adherence to NCCN and ASCO guidelines will not be blurred within the overall hospital VTE rates.

TJC, which has been involved in the development of the VTE measures that are currently before the NQF for endorsement, has a central role in hospital accreditation. This in turn assists hospitals fulfill Centers for Medicare & Medicaid Services (CMS) auditing requirements and provides negotiating terms for tiered contracting arrangements with private insurers. TJC publicly reports hospital SCIP VTE performance on its Web site (www.qualitycheck.org) and proposes to add the VTE measures currently awaiting endorsement by the NQF.

CMS will also be implementing these VTE measures in the 2009 proposed Inpatient Prospective Payment System Rule. CMS will be incorporating the measures into its public reporting system, Hospital Compare, and is tying them into reimbursement as it moves from a hospital voluntary reporting system to a mandatory system that bases results on quality performance. The voluntary reporting system paid hospitals 2% of their annual payment update for reporting, financially benefitting the hospitals to participate. In fact, CMS enjoyed a 93% response rate from the nation's acute care hospitals.

The new system being developed by CMS, however, proposes to take 5% of all diagnosis-related groups paid to a hospital out of that hospital's budget, and this can only be earned back through reporting and achieving specific performance goals. CMS intends to use a phase-in system, with 2.5% in the first year to be pay-for-reporting and 2.5% pay-for-performance, ultimately resulting in the entire bonus being based on the hospital's performance results. A reduction in payment by 5% could have a significant impact on a hospital's annual income, creating a strong incentive for compliance.

With so much at stake, hospitals will then be looking to its surgeons and staff to maintain a sufficient level of care. Physicians' adherence to performance goals will have a significant impact on the hospitals' quality score, and therefore their cooperation and
support is vital to the hospital’s success. Physicians will also be impacted by programs directed specifically at their individual performance.

CMS in particular is moving forward with the Physician Quality Reporting Initiative, which is currently paying physicians 1.5% of total allowed charges for covered services in exchange for voluntary reporting, and is also hoping to move to result-based reimbursement. Within the program is Quality Measure #23, which evaluates the percentage of patients who had an order for VTE prophylaxis within 24 hours before and 24 hours after surgery. Although a general measure, it is particularly relevant to oncologists given the higher risk for VTE in cancer patients. Similar but more stringent pay-for-performance initiatives are also being developed in the private sector, holding physicians personally responsible for performance results.

CMS has also instituted a program in which hospitals will not receive additional payment for cases involving a selected condition that was not present on admission, commonly known as a never event. The presence of VTE as a nonreimbursed never event is being considered for fiscal year 2009 adoption. Private payors and states are also adopting this CMS initiative through their never event policies, under which neither the patient nor the payor reimburses the hospital for care rendered for NQF-endorsed preventable complications. Although these measures are not specific to the oncology department, they will greatly impact oncology given the increased incidence of VTE in the patient population and the low adherence to VTE prophylaxis in hospitalized surgical and medical patients.

Numerous other public and private organizations are compiling performance data and using it for public reporting or linking it to compensation rates, never event nonpayment, or incentive payments. Each of these organizations, however, has established different measures and measure specifications. A major effort is underway to harmonize all measures for all sites of care, and NCCN and ASCO guidelines provide the evidence to develop a standardized process and outcomes measures specific to cancer care. These guidelines provide the critical tool for developers, endorsers, and implementers to use sound evidence and consistency for oncology and cancer patients, and should establish the foundation for current and proposed VTE measures.

Hospital VTE prophylaxis performance is markedly changing the value matrix, and cancer patients must not be excluded. Hospital performance data and outcomes measures using risk-adjusted claims data have changed from a qualitative review to a quantitative assessment. These performance results were integrated into the new TJC accreditation requirements and CMS and private payors compensation plans. Hospitals and physicians will be further impacted by their performance results through consumer choice now that they have access to COMPARE, Quality Check, State Departments of Health, and other public and private organizations for comparative performance data, ranging from mortality rates to VTE prevention. Even small movements in patient hospital selection can impact the hospital’s fiscal viability, and measures specific to oncology and VTE can be a critical component in that equation.

VTE prevention in cancer patients is currently suboptimal, and NCCN and ASCO guidelines can fill a critical void in reducing these events. However, incentives must be provided for complying with those guidelines for meaningful change to occur. Measures incorporating findings that are specific to oncology care must be addressed and developed. Although current and pending VTE measures exist, the new TJC and NQF measures are essentially generic for all medical patients and surgeries not included in the SCIP VTE process measure. This bundled approach to VTE medical measures lacks the specificity to achieve the appropriate intervention for VTE prevention and long-term outcomes in cancer patients.

Creating new measures or adopting existing ones that have been refined to the cancer-specific population is important to bringing appropriate attention to this critical patient safety issue. As they continue their work in 2008 providing cancer measures, the AMA PCPI oncology panel should consider developing appropriate interventions related to VTE. These guidelines can formalize the standard of care for VTE prevention and outcomes with both private and public payors. The challenge now is to bring this issue to the forefront and urge the payor community to recognize the guidelines, and attain the support of hospitals, surgeons, and the medical community in preventing this public health threat.

References
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