

Venous Thromboembolism Safety Tool Kit

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Medication Safety: Tools for Diverse Settings

September 10, 2008

8:00 AM – 9:30 AM

VTE Safety Toolkit

- Partnership in Patient Safety Grant
- AHRQ (Agency for Healthcare Research and Policy)
- 2-year grant to improve care for patients at risk for or diagnosed with VTE
 - PI: Brenda Zierler, PhD
 - Co-PI: Gene Peterson, MD

VTE Safety Toolkit- What is It?

- Evidence-based algorithms, guidelines, recommendations, and order sets for preventing, diagnosing, treating and educating patients and providers about VTE
- Educational intervention and compliance training
- Medications – heparin, warfarin

Interdisciplinary Clinical Team

Name

Expertise

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Robb Glenny, MD	Toolkit/Cases/Pulmonary ICU
Paul Hendrie, MD	Toolkit/Hematologist
Karen McDonough, MD	Toolkit/Medicine Consult
Kim Cantwell-Gab, BSN	Toolkit/Patient Education
Gene Peterson, MD	Co-PI/Cases/Administration
Brenda Zierler, PhD	Toolkit/Cases/Research Design
David Flum, MD	Consult/Prevention/Surgeon
*Mark Meissner, MD	Consult/DVT Diagnosis/Surgeon
Sylvia McKenzie, RN	QI/Mechanical Prophylaxis
Seth Wolpin, PhD	Dashboard/Web Team

Why Study VTE?

Epidemiology of VTE

- VTE encompasses deep vein thrombosis (DVT) and pulmonary embolism (PE)
- ***Most common preventable cause of hospital death***
- 900,000 Americans suffer VTE each year
 - 400,000 DVT
 - 500,000 PE

Epidemiology of VTE

- In 300,000 patients, PE proves fatal
 - 3rd most common cause of hospital-related deaths in the United States
 - Post-thrombotic syndrome will be seen in 800,000 pts.
 - 7% of these individuals will have a severe form of the problem and will become disabled
 - Survivors are at risk for recurrence of PE
 - Pulmonary hypertension develops in approximately 30,000 patients who survive their PE

Epidemiology of VTE

- 1 of 20 hospitalized medical patients will suffer a fatal PE if they have not received appropriate thrombosis prophylaxis
- 50% of the 2 million cases of DVT yearly are "silent"

Risk Factors for VTE

- Determine who should receive prophylaxis
- Every patient at UWMC should be assessed for risk of developing VTE
- Understand contraindications to pharmacologic prophylaxis (heparin, warfarin)
- Offer mechanical prophylaxis when pharmacologic prophylaxis is not safe

VTE Safety Toolkit- Components

- **VTE Prophylaxis** (focus of today's talk)
- Risk Assessment Tool
- DVT Diagnostic Algorithm
- PE Diagnostic Algorithm
- HIT Assessment
- Heparin nomograms (dosing)
- VTE Treatment Pathway
- DVT Treatment Order Set
- Vascular Lab Requisition
- Neural-axial anesthesia guidelines
- Patient Education (prevention & treatment)

VTE as a Clinical and System Problem

- System Barriers
 - Providers are not employees of 450-bed academic medical center
 - No standards of practice
 - Multiple disciplines treating small numbers of patients (without experience or expertise)
 - Prophylaxis is underutilized

PAST EXPERIENCE

- Implementation of DVT pathways
- Reasons for failure
 - Trying to change individual physician behavior
 - No culture of safety
 - Lack of systems supports
 - No integrated information system
 - Ownership/turf issues

VTE Prophylaxis

- Every patient should be assessed for risk of developing VTE
- Determine who should receive prophylaxis
- Understand dosing and contraindications to pharmacologic prophylaxis (heparin, warfarin)
- Offer mechanical prophylaxis when pharmacologic prophylaxis is not safe
- Document assessment and prophylaxis plan

Steps in Implementation

- Dedicated Web Site
- Training Modules – pilot in winter 2007
- Test interactive cases as educational intervention
- Gather feedback about training (effectiveness, clarity, timeliness, relevance)



HOME

This Website contains multiple evidence-based tools called the **VTE Safety Toolkit**, for the prevention, diagnosis, and treatment of venous thromboembolism (VTE).

The development and implementation of the toolkit was funded by the Agency for Healthcare Research and Quality (AHRQ) for the purpose of increasing the implementation of safe practice interventions for patients at risk for or who are diagnosed with VTE, through use of an evidenced-based and system-supported interactive **VTE Safety Toolkit**.

DEDICATION

This project is dedicated to the late Dr. D. Eugene Strandness, Jr., MD, who was a Professor of Medicine at the University of Washington School of Medicine. Dr. Strandness had consecutive NIH funding for 15 years studying the natural history of venous thromboembolism. He was an outstanding clinical researcher, mentor, friend and colleague.



HOME

TOOLKIT

PATIENT EDUCATION

PHYSICIAN COMMUNICATION

LINKS

REFERENCES

DEVELOPERS

[Prevention Guidelines](#)

[Screening & Assessment](#)

[Diagnostic Algorithms](#)

[VTE Treatment Pathways](#)

[Anticoagulation Management](#)

PREVENTION GUIDELINES



[For Adults](#)



[Anticoagulation Guidelines For Neuraxial Procedures](#)



PREVENTION GUIDELINES

DVT AND PE PREVENTION GUIDELINES FOR ADULTS

This toolkit component was created by providers at the University of Washington Medical Center and Harborview Medical Center and is the prophylaxis guidelines for the prevention of VTE. The levels of evidence for recommendations are included in the guideline.

[Click here to download](#)  (Updated November 2006)

TERMS OF USE

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SCREENING & ASSESSMENT

 [UW VTE risk assessment and prophylaxis order set](#)

 [UWMC vascular diagnostic service \(Vascular Lab Requisition\)](#)



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DIAGNOSTIC ALGORITHMS



[Diagnostic Workup for Patients Presenting with Signs and Symptoms of DVT](#)



[Diagnostic Workup for Patients Presenting with Signs and Symptoms of PE](#)



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VTE TREATMENT PATHWAYS



[Treatment of acute VTE](#)



ANTICOAGULATION MANAGEMENT

 [Optimal Therapeutic Range and Duration of Anticoagulation](#)

 [Flexible Initiation Methods for Warfarin](#)

 [Dosing Adjustment Nomogram for Warfarin](#)

 [Recommendations for the Frequency of Monitoring Warfarin](#)

 [Clinical Management of Suspected HIT](#)



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[Signs and Symptoms and Prevention Measures](#)

[Outpatient Treatment Protocol](#)

[Patient Testimonials](#)

[Signs and Symptoms and Prevention Measures](#)

[Outpatient Treatment Protocol](#)

[Patient Testimonials](#)

PATIENT EDUCATION





LINKS



AHRQ Patient Safety Network

<http://psnet.ahrq.gov/>

University of Washington Anticoagulation Clinic

<http://uwmcacc.org/>

University of Washington Laboratory Medicine Guidelines for Hypercoagulable Workup (go to page 14 for Venous thromboembolism)

<http://depts.washington.edu/labweb/PatientCare/Clinical/Guides/hemostasis.pdf>

Coalition to Prevent Deep Vein Thrombosis

<http://www.preventdvt.org/>

National Consensus Standards for the Prevention and Care of Venous Thromboembolism (including Deep Vein Thrombosis and Pulmonary Embolism)

<http://www.qualityforum.org/projects/ongoing/vte/default.asp>



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Geerts WH, Pineo GF, Heit JA, et al. Prevention of venous thromboembolism: the Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. *Chest* 2004; 126:338S-400S

2. ANTICOAGULATION GUIDELINES FOR NEURAXIAL PROCEDURES

Horlocker TT, Wedel DJ, Benzon H, et al. Regional anesthesia in the anticoagulated patient: Defining the risks (the second ASRA Consensus Conference on Neuraxial Anesthesia and Anticoagulation). *Reg Anesth Pain Med* 2003; 28:172-197

3. UW VTE Risk Assessment and Prophylaxis Order Set

Caprini JA. Thrombosis risk assessment as a guide to quality patient care. *Dis Mon* 2005; 51:70-78

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White RH. The epidemiology of venous thromboembolism. *Circulation* 2003; 107:14-8

4. UWMC Vascular Diagnostic Service (Vascular Lab Requisition)

Anderson DR, Kovacs MJ, Kovacs G, et al. Combined use of clinical assessment and d-dimer to improve the management of patients presenting to the emergency department with suspected deep vein thrombosis (the EDITED Study). *J Thromb Haemost* 2003; 1:645-651

Wells PS, Anderson DR, Bormanis J, et al. Application of a diagnostic clinical model for the management of hospitalized patients with suspected deep-vein thrombosis. *Thromb Haemost* 1999; 81:493-497

Wells PS, Anderson DR, Rodger M, et al. Evaluation of D-dimer in the diagnosis of suspected deep-vein thrombosis. *N Engl J Med* 2003; 349:1227-1235

5. Diagnostic Workup for Patients Presenting with Signs and Symptoms of DVT

Anderson DR, Kovacs MJ, Kovacs G, et al. Combined use of clinical assessment and d-dimer to improve the management of patients presenting to the emergency department with suspected deep vein thrombosis (the EDITED Study). *J Thromb Haemost* 2003; 1:645-651

Geerts WH, Pineo GF, Heit JA, et al. Prevention of venous thromboembolism: the Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. *Chest* 2004; 126:338S-400S

Kearon C, Ginsberg JS, Douketis J, et al. Management of suspected deep venous thrombosis in outpatients by using clinical assessment and D-dimer testing. *Ann Intern Med* 2001; 135:108-111



DEVELOPERS



The work for this website is the culmination of ongoing venous research at the UWMC. The team members for the current AHRQ study include:

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Randomized Controlled Trial

- Test knowledge acquisition about VTE prevention using interactive case studies
- Control Group (passive didactic)
- Experimental Group (interactive case studies with feedback)
- Mandatory training (similar to HIPAA)
- Tracking outcomes by provider (currently tracking pre-intervention data)

VTE

VENOUS THROMBOEMBOLISM

TOOLKIT

LOGIN

USERNAME

PASSWORD

NEW USER

CLICK

SUBMIT

**Provider will be randomized
when they log-in**

PRE TEST

OPTION 1 OPTION 2

SUBMIT

Both groups will be pre-tested on current VTE prophylaxis knowledge

Patients Who Do Not Need Prophylaxis

Almost every hospitalized patient should receive VTE prophylaxis.

Those who do NOT need VTE prophylaxis include patients who are fully anticoagulated with:

- Warfarin (INR > 2.0),
- Heparin (aPTT > 60)
- Low molecular weight heparin (full dose)
- Direct thrombin inhibitors (bivalirudin, lepirudin, argatroban)
- Factor Xa inhibitors (fondaparinux)

As long as patients remain fully anticoagulated with these medications during hospital admission, additional VTE prophylaxis is not required

**Passive Didactic
Training on core
principles**

low risk patients who are fully ambulatory

POST TEST

OPTION 1 OPTION 2

SUBMIT

**Control Group will take
Post test after passive
training**

CASE 1

59 year old male who presents to the Emergency Department with new atrial fibrillation. The patient is admitted to the hospital and started on an intravenous heparin drip (70 U/kg bolus, 15 U/kg/hr initial infusion).
What is the most appropriate VTE prevention strategy?

Hct: 38

Platelets: 112

INR: 2.2

Creatinine: 2.3

- No need for prophylaxis
- Pharmacologic prophylaxis indicated
- Mechanical prophylaxis indicated

Interactive case studies with feedback

CASE 1

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This is not the correct answer. This patient will be fully anticoagulated with heparin as a bridge to transition to therapeutic oral anticoagulation for stroke prevention. This therapy is adequate prophylaxis for VTE.

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COMPLETION



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100% pass rate expected; certification will be granted and linked to Quality Improvement (compliance)

IMPLEMENTATION of VTE TOOLKIT

- Systems approach
- Buy-in from Administration
- Focus on patient safety
- Mandatory training to meet core competencies on VTE prophylaxis
- Joint Commission and the National Quality Forum

Conclusion

- Improve patient safety by adopting practice standards based on evidence from the literature
- Improve utilization of diagnostic services
- Improve safety of medications (heparin nomograms/guidelines)
- <http://vte.son.washington.edu>

Thank You

