



**U**  
**THROMBOSIS**  
**WATCH**

**Issue: 15 April 2008**

**Editors:**

**Robert Pendleton, MD**

**Michelle Wheeler, PharmD**

**Matthew T. Rondina, MD**

**Pamela Proctor, RN, MSN**

A special thanks to Sharla Watts for editorial oversight



**University Health Care**

Thrombosis Service

Each quarter, in conjunction with Thrombosis Watch, University of Utah Health Care Thrombosis Service will briefly review a topic felt to be of importance to those interested in, or responsible for the prevention and/or treatment of thrombotic disorders. Our initial topic will be a review of the JCAHO 2008 national patient safety goals related to anticoagulation. These goals highlight areas in health care which are believed to be problematic and in need of system-wide solutions. Further explanation about these goals and details about those applicable to anticoagulation are available on the JCAHO website.

## **REVIEW TOPIC: 2008 JCAHO ANTICOAGULATION NATIONAL PATIENT SAFETY GOALS**

Annually there are over 12-million hospitalized patients at risk for VTE<sup>1-2</sup>, 2.3 million patients with atrial fibrillation, 700,000 people who suffer acute stroke, 1.5 million patients hospitalized with acute coronary syndrome (ACS), and 250,000 patients with venous thromboembolism (VTE). Although there are antithrombotic strategies available that have the ability to effectively improve outcomes for patients in these groups, there are considerable practice gaps in the routine implementation of these therapies. Gaps include inadequate use of prophylaxis in at-risk patients, failure to comply with recommendations for the management of ACS or VTE, and inadequate monitoring of anticoagulated patients<sup>3</sup>. As a result, despite the fact that it is commonplace for practitioners to work to prevent, and to treat thrombotic disorders in the United States, numerous patient safety initiatives have focused on the appropriate implementation and use of antithrombotic therapies to improve outcomes.

Anticoagulants, a mainstay in the prevention and treatment of these problems, themselves carry considerable risk. Consider the following examples which illustrate the problems and risks currently associated with anticoagulant use:

1. A major bleeding complication event rate of 2-5 % in patients receiving therapeutic heparin,<sup>4</sup>
2. A high risk of major bleeding complications for patients newly started on warfarin, during the first 3 months of therapy (2%, 1.5%, and 0.4% of patients will have a major bleeding complication, intracranial hemorrhage, or fatal bleed respectively<sup>5</sup>).
3. Annualized major bleeding complications which are 2-fold higher in the first month of warfarin initiation compared to subsequent months<sup>6</sup>.
4. At least 11% of discharged patients experiencing an adverse drug event (ADE) in the early post-discharge period. Of these, anticoagulants account for the highest rate of ADE per prescription (7.1 ADE per 100 prescriptions)<sup>7-8</sup>. Root cause analysis suggests that the primary reasons for these ADEs are inadequate patient education and lack of appropriate monitoring<sup>8</sup>. Hospitalization and transition of care post-hospitalization are particularly vulnerable periods for patients newly begun on anticoagulant therapy, due to:
  - a. Concomitant medical complications
  - b. Frequent use of interacting medications
  - c. Potential for gaps during transition of care

Because of the prevalence of these issues, the associated risk, and the significant practice gaps, in the management and prevention of thrombotic disorders in general, and the safe use of anticoagulants in particular, the 2008-2009 National Patient Safety Goals include anticoagulation therapy as a key safety measure<sup>9</sup>. The goal of this measure is to reduce the likelihood of patient harm associated with the use of anticoagulation therapy.

### **Some key requirements of the 2008 National Anticoagulation Patient Safety Goals:**

- Implement a defined anticoagulation management program.
- Use only oral unit dose products and pre-mixed infusions, if available
- Dispense warfarin in accordance with established monitoring procedures
- Use approved protocols for the initiation and maintenance of anticoagulation therapy
- Ensure a baseline INR is available prior to initiating warfarin therapy
- Institute a policy for baseline and ongoing laboratory tests for heparin and LMWH
- Organization provides education to prescribers, staff, patients, and families
- Patient/family education includes the importance of follow-up monitoring, compliance, dietary restrictions, and the potential for adverse drug interactions



# REVIEW TOPIC CONTINUED

The need is clear, the expectations enumerated, and the challenge now lies before all of us to implement these requirements in our respective institutions. Although there is a lack of evidence-based quality improvement interventions specific to anticoagulant therapy, there are numerous QI tools and methods available to help<sup>10</sup>. University of Utah Health Care is actively working to meet these expectations. To learn more about what we are doing to meet the 2008-2009 NPSG as it relates to anticoagulant therapy, or to access other QI resource web links, you can visit the Thrombosis Service website: <http://healthcare.utah.edu/thrombosis/>. In the near future we will be adding a posting bulletin board to our site, via which we hope to create a community of thought and ideas to support one another in successfully attaining these expectations, which will lead to improved patient safety and improved patient outcomes.

## References:

1. Rosamond W, Flegal K, Friday G, Furie K, et al.. Circulation, Feb 2007; 115: e69 – e171.
2. Anderson FA Jr, Zayaruzny M, Heit JA, et al.. Am J Hematology 2007; 82(9): 777-82.
3. Schuneman HJ, Cook D, Grimshaw J, et al. CHEST 2004; 126: 688s-696s.
4. Levine MN, Raskob G, Beyth RJ, Kearon C, and Schulman S. CHEST 2004; 126: 287s-310s.
5. Linkins L, Choi PT, and Douketis JD. Ann Intern Med, Dec 2003; 139: 893-900.
6. Fang MC, Go AS, Hylek EM, et al. Journal of the American Geriatrics Society 2006; 54 (8), 1231-1236.
7. Forster AJ, Clark HD, Menard A et al. CMAJ 2004; 170(3): 345-349.
8. Forster AJ, Murff HJ MD, Peterson JF. et al. Journal of General Internal Medicine 20 (4), 317-323.
9. [www.jointcommission.org/PatientSafety/NationalPatientSafetyGoals/08\\_hap\\_npsgs.htm](http://www.jointcommission.org/PatientSafety/NationalPatientSafetyGoals/08_hap_npsgs.htm) (accessed April 3, 2008)
10. [www.ihc.org](http://www.ihc.org) (accessed April 3, 2008)



# WHAT'S NEW IN THE LITERATURE?

JOURNALS REVIEWED: AMERICAN JOURNAL OF HEMATOLOGY, AMERICAN JOURNAL OF MEDICINE, ARCHIVES OF INTERNAL MEDICINE, Chest, Journal of the American College of Cardiology, Journal of the American Medical Association, Journal of Thrombosis and Haemostasis, Lancet, Thrombosis and Haemostasis

## 1. Increased risk of hemorrhage in patients receiving combination anticoagulation and antiplatelet therapy.

### Outcomes associated with combined antiplatelet and anticoagulant therapy. Johnson S, Rogers K, Delate T, et al. Chest 2008 Jan 15(Epub ahead of print)

This was a retrospective, longitudinal cohort analysis evaluating the rates of hemorrhage and thrombosis in patients receiving either warfarin alone (n = 2560) or warfarin in combination with at least one antiplatelet agent (n = 1623). Antiplatelet agents included all strengths of aspirin, dipyridamole, clopidogrel, and the dipyridamole/aspirin combination and were not distinguished in the results. The cohort included patients that were on long-term warfarin therapy and not newly started during the analysis. The results showed a significant increase in hemorrhagic rates in the combination group compared with the monotherapy group (overall hemorrhagic rates: 4.2% vs 2.0%, p<0.001, major hemorrhagic rates: 2.0% vs 0.9%, p<0.001 respectively). The majority of the major hemorrhage events required transfusion. Thrombosis rates and mortality were not significantly different between the two groups. The combination group did have a significantly higher incidence of low INRs (INR ≤1.5) and high INRs (INR ≥4.5). The bottom line is that combining warfarin and anti-platelet therapy should be well thought out and the decision to proceed only be in situations where the benefits are felt to outweigh the increased risk of bleeding.

## 2. Which risk stratification scheme for thromboembolic events is better in patients with atrial fibrillation?

### Comparison of risk stratification schemes to predict thromboembolism in people with nonvalvular atrial fibrillation. Fang MC, Go AS, Chang Y, et al. J Am Coll Cardiol 2008;51:810-815.

Five commonly used risk stratification schemes were evaluated in a cohort of patients (n = 10,392) who had nonvalvular atrial fibrillation and were not taking warfarin during various periods of time over a median follow-up period of 6 years. The risk schemes that were evaluated included the following: AFI, SPAF, CHADS<sub>2</sub>, Framingham, and the 7<sup>th</sup> ACCP guidelines. A total of 685 thromboembolic events (643 ischemic strokes and 42 non-stroke peripheral emboli) occurred during the 32,721 person-years off warfarin, which was used for evaluation. The overall result was that no risk scheme was superior to another in predicting thromboembolic events. All of the schemes showed only moderate improvement over no schemes in predicting thromboembolism. These results did not change substantially when a subgroup analysis was performed in patients who were off warfarin for a full period of 12 months, compared to the combined group of patients. In addition, the percentage of patients falling in the various risk groups varied substantially in the schemes. For example, 16.4% of patients fell into the high risk category in the Framingham stratification, while 80.4% of patients were considered high risk in the ACCP scheme. This variation of categorizing patients from scheme to scheme is concerning regarding exposure or non-exposure to anticoagulation. The bottom line is that the schemes evaluated are incongruent in their categorization of stroke risk for patients with atrial fibrillation.

## 3. Insight on peri-procedural bridging of anticoagulation in patients undergoing outpatient surgery.

### Risk of thromboembolism with short-term interruption of warfarin therapy. Garcia DA, Regan S, He-nault LE, et al. Arch Intern Med 2008;168(1):63-69.

This was a prospective, multi-institutional, observational study evaluating bleeding and thromboembolic risk in patients on chronic warfarin therapy undergoing outpatient surgery. A total of 1293 episodes from 1024 patients were included for analysis. Data were as follows:

Bridging occurred in:	<ul style="list-style-type: none"><li>• 28.8 % of those with prosthetic valves</li><li>• 8.6 % overall (on 1<sup>st</sup> interruption of warfarin)</li></ul>
30 day follow-up:	<ul style="list-style-type: none"><li>• 7 thromboembolic events<ul style="list-style-type: none"><li>○ 3 strokes</li><li>○ 2 PE</li><li>○ 1 DVT</li><li>○ 1 ischemic bowel</li></ul></li></ul>



# WHAT'S NEW IN THE LITERATURE?

	<ul style="list-style-type: none"> <li>○ No patients suffering a thromboembolic event had been bridged (including two patients deemed high risk (one having a recent DVT and the other with active malignancy))</li> <li>• 6 <b>major bleeding</b> events post-procedure             <ul style="list-style-type: none"> <li>○ 4 of these patients had been bridged</li> </ul> </li> <li>• 17 <b>non-major bleeding</b> events             <ul style="list-style-type: none"> <li>○ 10 of these patients had been bridged</li> </ul> </li> </ul>
--	---

These results suggest that identification of patients who benefit from peri-procedural bridging remains controversial and that there are both pros and cons to this decision. A randomized trial evaluating the use of bridging versus placebo could help establish the risks versus benefits of bridging in various patient populations

## 4. Another option for HIT treatment?

### Fondaparinux for the treatment of patients with acute heparin-induced thrombocytopenia. Lobo B, Finch C, Howard A, et al. *Thromb Haemost* 2008;99:208-214.

This was a prospective, open-label pilot study evaluating the use of fondaparinux in the treatment of heparin-induced thrombocytopenia (HIT). Seven patients with a diagnosis of HIT were compared with ten historical controls that used a direct thrombin inhibitor (DTI). Patients were given either treatment doses of fondaparinux, if thrombosis was present at the time of diagnosis, or prophylactic doses for HIT without thrombosis. The primary outcome was platelet recovery. This was defined in two ways:

- If the platelet count was less than 100,000/mm<sup>3</sup> at baseline, then recovery was either a 30% increase of nadir or a platelet count > 100,000/mm<sup>3</sup> on day 7
- If the platelet count was >100,000 when therapy was started, then platelet recovery was considered if the platelet count stayed over 100,000 at days 3 and 7

Secondary outcomes included comparison of the complication rates between:

- Patients treated with fondaparinux versus a DTI and
- Successful bridging of fondaparinux or a DTI to warfarin therapy

Results included the following:

Outcome	Fondaparinux N=7	Direct Thrombin Inhibitor (DTI) N=10
Platelet recovery	All patients had positive platelet recovery	8 of 10 patients had full platelet recovery  2 of 10 died during data collection period
Thromboembolic complications	No events	No thromboembolic events  4 of 10 patients with venous gangrene NOTE: Two of these patients were given warfarin prior to starting the DTI and two others developed gangrene after initiation of DTI treatment



## WHAT'S NEW IN THE LITERATURE?

Major bleeding	No events	No events
Successful bridging	2 of 6 met criteria for successful bridging NOTE: The seventh patient had prophylactic doses of fondaparinux and was not transitioned to warfarin  <ul style="list-style-type: none"> <li>• 1 pt: lower limb amputation for previous indication</li> <li>• 1 pt: supratherapeutic INR</li> <li>• 2 pt: had fondaparinux d/c after one therapeutic INR</li> </ul>	0 of 10 met criteria for successful bridging

Fondaparinux may be an alternative for patients diagnosed with HIT ready to be transitioned to warfarin, but further larger studies will be needed to solidify this approach. Until then, remember that fondaparinux is NOT FDA approved for HIT and IF it is used it should be done cautiously and by those with experience in the management of this potentially devastating condition.

### 5. Excessive bleeding with idraparinux in patients with atrial fibrillation.

**Comparison of idraparinux with vitamin K antagonists for prevention of thromboembolism in patients with atrial fibrillation: a randomized, open-label, non-inferiority trial. The Amadeus Investigators. Lancet 2008;371:315-321.**

This was a randomized, open-label, non-inferiority trial comparing the use of vitamin K antagonists and the investigational drug, idraparinux (a long-acting, once weekly, injectable indirect anti-Xa inhibitor) in patients with atrial fibrillation. Patients were either randomized to adjusted-dose vitamin K antagonists (n= 2293) with a goal INR between 2 to 3 or idraparinux 2.5 mg (n= 2283) given subcutaneously once weekly. The primary outcomes were cumulative incidence of all stroke and systemic thromboembolism and bleeding. The trial was stopped after a mean follow-up period of 10.7 months due to excessive bleeding with idraparinux. There were 21 intracranial hemorrhages (ICH) in the idraparinux group as compared to 9 in the vitamin K antagonist group. Thirteen patients died in the idraparinux group due to fatal bleeding versus two patients in the vitamin K antagonist group. Major bleeding was higher overall in the idraparinux group versus the vitamin K antagonist group (74 versus 29 respectively). The cumulative incidence of all stroke and systemic thromboembolism was found non-inferior but this was at the time of the trial termination so it is unclear if this would have changed had the study been completed. With these results, idraparinux is not a recommended alternative in patients with atrial fibrillation.

### 6. Risk of VTE in patients with cancer and risk of cancer in patients with VTE, which came first?

**Venous thromboembolic events and organ-specific occult cancers: a review and meta-analysis. Iodice S, Gandini S, Lohr M, et al. J Thromb Haemost epub.**

This meta-analysis evaluated the risk of venous thromboembolism (VTE) in cancer patients and the likelihood of cancer in patients presenting with VTE. There was a significantly high level of heterogeneity between the studies evaluated. The results did find a greater risk of cancer in patients with idiopathic versus secondary VTE (pooled relative risk of 3.8, 95% CI, 2.6-5.4), as well as in patients with VTE versus no VTE (pooled relative risk of 3.2, 95% CI, 2.4-4.5). The authors also speculated that the incidence was higher in those studies where extensive cancer screening was done upon VTE findings suggesting perhaps that screening may find more patients with cancer than was previously thought. There are currently no consensus recommendations on cancer screening after the diagnosis of VTE. When evaluating the risk of VTE in patients with cancer, certain cancers had an increased risk over others. These included cancers of the ovary (pooled relative risk of 6.45, 95% CI, 4.02-10.4), pancreas (pooled relative risk of 6.11, 95% CI, 3.83-9.74), liver (pooled relative risk of 5.55, 95%



## WHAT'S NEW IN THE LITERATURE?

CI, 1.99-15.5), blood (pooled relative risk of 4.22, 95% CI, 3.41-5.23), brain (pooled relative risk of 3.76, 95% CI, 1.89-7.5), kidney (pooled relative risk of 3.42, 95% CI, 1.88-6.23), lung (pooled relative risk of 3.14, 95% CI, 1.52-6.5), and colon (pooled relative risk of 2.86, 95% CI, 1.41-5.77). Staging of the various cancers was not available. The bottom line is that in patients with unexplained VTE, patients should receive, at a minimum, a thorough history, physical and routine age-appropriate cancer screening. Further, for patients with established cancer, VTE preventive measures should be implemented whenever feasible such as during periods of hospitalization or surgery.

### **7. Increased risk of VTE and mortality associated with erythropoietin and darbepoetin in patients with cancer-related anemia.**

**Venous thromboembolism and mortality associated with recombinant erythropoietin and darbepoetin administration for the treatment of cancer-associated anemia. Bennett CL, Silver SM, Djulbegovic B, et al. JAMA 2008;299(8):914-924.**

This meta-analysis evaluated trials of cancer patients that received the erythropoiesis-stimulating agents (ESAs), erythropoietin and darbepoetin and the relative risk of developing a venous thromboembolism and overall mortality as compared to patients receiving placebo. The results showed an increased risk of both VTE and mortality in patients receiving ESAs. There was an overall VTE increase of 1.57-fold in patients on ESAs. There was no distinction of the types of cancer or stage of cancer in this meta-analysis. This finding is supported by case reports and other advisory reports that have come out in recent years. There was also a 1.1-fold increase in mortality. This result is limited due to using data from studies that were not powered to look for mortality or tumor progression. Recent reports have also raised concerns regarding potential for tumor progression. More studies are needed to evaluate the role of ESAs in patients with anemia and cancer and to elucidate the reason behind this potential for increased VTE rates and mortality, and which specific patient populations may be at increased risk.

### **8. Another use of baseline aPTTs.**

**Activated partial thromboplastin time and risk of future venous thromboembolism. Zakai NA, Ohira T, White R, et al. Am J Med 2008;121:231-238.**

This study evaluated the association of a low baseline activated partial thromboplastin time (aPTT) and the risk of future venous thromboembolism (VTE). There have been numerous retrospective studies that have speculated on the association between low baseline aPTTs and the risk of VTE. This prospective trial looked at 13,880 cases with a median follow up period of 13.1 years. There were 260 new VTE events during this period (179 diagnosed as deep vein thrombosis (DVT), and 81 diagnosed with a pulmonary embolism) including 111 idiopathic events. Two patients did not have a baseline aPTT to include with the results, so a total of 258 patients were used for evaluation. The results were reported in quartiles of aPTT (1<sup>st</sup> quartile = 21.1-27.0 seconds, 2<sup>nd</sup> quartile = 27.1-28.7 seconds, 3<sup>rd</sup> quartile = 28.8-30.6 seconds and 4<sup>th</sup> quartile = 30.7-35.8 seconds). Any aPTT that was over 35.8 seconds was excluded to prevent bias from patients who may have lupus anticoagulants. The findings for the overall cohort showed an incidence of VTE per 1000 person-years as 2.5 in the 1<sup>st</sup> quartile, 1.7 in the 2<sup>nd</sup> quartile, 0.9 in the 3<sup>rd</sup> quartile and 0.8 in the 4<sup>th</sup> quartile. A nested case control study also looked at the 258 patients who had VTE events and a control group of 589 patients. Looking at these results in a stratified logistic regression model, the strongest association of low baseline aPTTs and VTE was in patients in the following categories: idiopathic thrombosis, PE, male gender, and African-American ethnicity. When looking at other risk factors in addition to low aPTT, a very large increase in risk was found in patients who were obese (BMI  $\geq$ 30), had factor V Leiden and a D-Dimer above the median ( $\geq$ 0.35 mcg/mL). In conclusion, a low aPTT may be a predictor of future VTE events.

### **9. How does the U.S. compare with the rest of the world with VTE prophylaxis?**

**Venous thromboembolism risk and prophylaxis in the acute hospital care setting (ENDORSE study): a multinational cross-sectional study. Cohen AT, Tapson VF, Bergmann JF, et al. Lancet 2008;371:387-394.**

This was a multi-national (358 hospitals in 32 countries) cross-sectional chart-audit survey looking at the preva-



## WHAT'S NEW IN THE LITERATURE?

lence of venous thromboembolism (VTE) prophylaxis in all inpatients meeting the criteria for VTE prophylaxis consistent with the ACCP guidelines. 68,183 patients were screened. There were 30,827 (45%) included as surgical patients and 37,356 (55%) included as medical patients. Using the ACCP guideline criteria, 35,329 (51.8%) of the screened patients were considered at-risk patients for VTE and warranted VTE prophylaxis. Just over half of the surgical patients (n=11,613 or 58.5%) screened were given prophylaxis while only 39.5% (n=6119) of medical patients received any form of prophylaxis. There was large variability in the percentage of VTE prophylaxis depending on the country. The range was between 3% to 70% in medical patients and 0.2% to 90% in surgical patients. Only 48% of patients reported in U.S. hospitals received prophylaxis in the medically ill population while 71% of surgical patients received appropriate VTE prophylaxis. These results show that there is still a large gap between what is recommended and what is being done around the world as well as here in the United States with regard to implementing DVT prophylaxis in at-risk inpatients.

### *10. A review of when to use PCC.*

#### **Role of prothrombin complex concentrates in reversing warfarin anticoagulation: a review of the literature. Leissinger CA, Blatt PM, Hoots WK, et al. Am J Hematol 2008;83:137-143.**

This review evaluated the literature for the use of prothrombin complex concentrates (PCC) in reversing warfarin anticoagulation. Fourteen studies were included with a total of 460 patients. Many of these are retrospective case series that show promising results but few were randomized trials. Efficacy has been demonstrated in various studies where bleeding was stopped within minutes of the infusion. Included in the discussion is the use of PCC with and without vitamin K, where studies show that PCC alone can decrease the INR immediately but may lose its effectiveness within 12-24 hours. When comparing PCC with FFP, time to correction of the INR was shorter when using PCC over FFP. In the 460 patients included in all of the trials there was no mention of disseminated intravascular coagulation (DIC). There were seven complications associated with thrombosis, including 3 strokes, 2 deep vein thromboses, and 2 myocardial infarctions. It is unclear the extent to which patients had underlying co-morbidities. In summary, PCC is able to effectively and rapidly correct excessive anticoagulation due to warfarin therapy and is a viable alternative to FFP and IV vitamin K in patients who are bleeding. However, there remain uncertainties with regard to overall risk: benefit compared to other reversal strategies as well as appropriate dosing.



## **NEW PRACTICE GUIDELINE ALERT:**

THESE ARE **NEW PRACTICE GUIDELINES PUBLISHED THIS PAST QUARTER.**  
FULL TEXT ACCESS IS AVAILABLE FOR UNIVERSITY HEALTHCARE EMPLOYEES AT:  
[WWW.HEALTHCARE.UTAH.EDU/THROMBOSIS](http://WWW.HEALTHCARE.UTAH.EDU/THROMBOSIS).

1. Update to the aha/asa recommendations for the prevention of stroke in patients with stroke and transient ischemic attack. [STROKE](#) 2008; 39:epub
2. 2007 focused update of the ACC/AHA 2004 guidelines for the management of patients with st-elevation myocardial infarction. [J Am Coll Cardiol](#) 2008; 51(2): 210-47.
3. Acc/aha physician consortium 2008 clinical performance measures for adults with nonvalvular atrial fibrillation or flutter. [Circulation](#) 2008; 117: 1101-1120

### **CLINICAL CASE OF THE QUARTER:**

#### **WHAT TO DO WITH ANTICOAGULANTS IN A POST-OP PATIENT WITH AN IN-DWELLING EPIDURAL CATHETER?**

NJ is a 60 yr old female admitted to the trauma service 2 days ago after a MVA where she was a restrained driver. Patient experienced multiple injuries including fractures to the ribs and femur. An epidural catheter was placed initially for pain control and will be removed today. You are asked to help with giving recommendations on when it would be safe to start pharmacological VTE prophylaxis for this patient.

Pertinent labs from this morning:

Scr: 1.1 WBC: 6.7 Hct: 43.3 Hgb: 15.1 Platelets: 330

#### **Assessment and Plan:**

For trauma patients with associated lower extremity fractures, such as femur fracture, the ACCP guidelines recommend prophylaxis with a low molecular weight heparin as a first line agent, such as our formulary agent, enoxaparin 30mg SQ twice daily. This should be continued at least during the period of hospitalization, including the rehab period.

ACCP recommends that it is safe to start the enoxaparin at least 2 hours **AFTER** pulling the catheter (our institutional guidelines recommend a conservative 4 hours).

For full information on the University Hospital guidelines on neuraxial anesthesia and anticoagulation visit the intranet link listed below.

[http://intranet.uuhsc.utah.edu/policy/index.cfm?fuseaction=cPolicies.policy&fileId=2424&fileVersionId=7&policiesAsOfDate=04/14/2008&sess\\_id=](http://intranet.uuhsc.utah.edu/policy/index.cfm?fuseaction=cPolicies.policy&fileId=2424&fileVersionId=7&policiesAsOfDate=04/14/2008&sess_id=)

Additionally, the American Society of Regional Anesthesia and Pain Medicine has a consensus statement on this top and the link is available as follows:

<http://www.asra.com/consensus-statements/>



# QUESTIONS

(Answers Found at Bottom)

1. Which of the following is part of the 2008 National Patient Safety Goal's Anticoagulation requirement (requirement 3e)?
  - a. Implementation of a defined anticoagulation management program
  - b. Use of protocols to initiate and maintain anticoagulation therapy
  - c. Develop policy that addresses baseline and ongoing laboratory tests required for patients receiving heparin or LMWHs.
  - d. Organization provides education about anticoagulation therapy to prescribers, staff, patients, and families.
  - e. All of the above
2. What is the FDA-approved dose of fondaparinux to treat a 70kg male who is diagnosed with heparin-induced thrombocytopenia with thrombosis?
  - a. 2.5mg SQ once daily
  - b. 5mg SQ once daily
  - c. 7.5mg SQ once daily
  - d. None of the above
3. Which risk stratification scheme is the "best" in assessing a patient's thromboembolic risk with non-valvular atrial fibrillation?
  - a. CHADS<sub>2</sub>
  - b. Framingham
  - c. 7<sup>th</sup> ACCP guidelines
  - d. SPAF
  - e. None of the above
4. Which following statement is TRUE regarding idraparinux?
  - a. Idraparinux is an indirect anti-Xa inhibitor given as a once-daily injection
  - b. The atrial fibrillation study was stopped early due to increased efficacy of idraparinux
  - c. The atrial fibrillation study was stopped early due to decreased efficacy of idraparinux
  - d. The atrial fibrillation study was stopped early due to increased adverse events (adverse bleeding) with idraparinux
  - e. The atrial fibrillation study was stopped early due to decreased adverse events with idraparinux
5. Regarding the use of VTE prophylaxis the **United States**:
  - a. VTE prophylaxis in surgical patients is better than all other countries
  - b. VTE prophylaxis in medical patients is better than all other countries
  - c. The VTE prophylaxis rate in surgical patients is worse than in medical patients.
  - d. The VTE prophylaxis rate in medical patients is worse than in surgical patients
  - e. None of the above

**University Healthcare Thrombosis Service**  
**Visit us at: [www.healthcare.utah.edu/thrombosis](http://www.healthcare.utah.edu/thrombosis)**

Answers: 1. E; 2. D; 3. E; 4. D; 5. D



**University Health Care**  
Thrombosis Service

# UNIVERSITY HEALTHCARE THROMBOSIS SERVICE

## NEWS AND EVENTS

### General:

- The University of Utah Health Care warfarin education booklet published in November 2007 (**My Warfarin Therapy—A Patient's Guide**) **has been translated into Spanish**. This information is now available on the Thrombosis Service website (<http://healthcare.utah.edu/thrombosis>) and will be available in print in the near future.
- Dr. Matthew Rondina, hospitalist and co-director of the Thrombosis Service was recently awarded a grant from Pfizer Inc. which will look at the effects of several antibiotics on cellular signaling events
- The University of Utah Thrombosis Service, in conjunction with the Departments of Pharmacy Services and Quality and Patient Safety is actively involved in assuring compliance with the 2008 JCAHO Safety Guidelines related to anticoagulation.
- Michelle Wheeler, PharmD has decided to leave the Thrombosis Service to join the Drug Information Service. Michelle has been an invaluable asset to the growth of our service and she will be missed. Fortunately she has agreed to continue supporting our service through protocol review and educational venues.

### Research:

The Thrombosis Service research group is looking for potential participants for a phase III clinical trial, sponsored by Boehringer-Ingelheim Inc., looking at prevention of recurrent DVT/PE in patients previously diagnosed with, and nearing planned completion of warfarin treatment for proximal DVT and/or PE:

Trial	<b>RE-SONATE:</b> Twice-daily oral direct thrombin inhibitor dabigatran etexilate in the <b>long-term prevention of recurrent symptomatic venous thromboembolism in patients with symptomatic deep-vein thrombosis or pulmonary embolism</b>
Objective	To evaluate whether dabigatran etexilate is superior to placebo in the long-term prevention of recurrent symptomatic VTE in patients with symptomatic DVT or PE who have completed 6-18 months of treatment with a VKA
Drug Profile:	Oral pro-drug of the active direct thrombin inhibitor dabigatran Dabigatran is a low molecular weight, reversible <b>thrombin inhibitor</b>
Inclusion Criteria	<ul style="list-style-type: none"><li>• <b>Patients with confirmed symptomatic PE or proximal DVT who have been treated for 6-18 months with therapeutic warfarin</b></li><li>• <b>Duration of further anticoagulation needs is unclear</b></li></ul>

If you have a patient who fits these criteria and would like to refer them as a potential candidate for this trial, please contact the Thrombosis Service Research Group: 339-5005

### Education:

- The Thrombosis Service is sponsoring a **Thrombosis Symposium**, to be held **April 18, 2008**, on the University of Utah health sciences campus. The program will provide a comprehensive update on thrombotic disorders. For complete information or to register, please call 801-581-7818 or go to the following web address: [http://healthcare.utah.edu/thrombosis/news/ed\\_mtgs.html](http://healthcare.utah.edu/thrombosis/news/ed_mtgs.html)
- Quarterly **Thrombosis Journal Club** will resume July 2008. To be added to the contact list for this quarterly educational opportunity, please email: [Sharla.watts@hsc.utah.edu](mailto:Sharla.watts@hsc.utah.edu) or for further information please see this web address: <http://healthcare.utah.edu/thrombosis/professionals/cme/quarterly/index.html>
- **CME will be available beginning July 2008 for both Thrombosis Journal Club and Thrombosis Watch** (our online educational offering)

