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Declining Rate of Venous Thromboembolism in Patients Evaluated for Pulmonary Embolism in Two United States Emergency Departments and Low Rate of Empiric Anticoagulation

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## Society for Academic Emergency Medicine Western Regional Abstracts

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### 1 Declining Rate of Venous Thromboembolism in Patients Evaluated for Pulmonary Embolism in Two United States Emergency Departments and Low Rate of Empiric Anticoagulation

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**Hypotheses:** The current prevalence of venous thromboembolism (VTE) among patients evaluated in United States emergency departments (EDs) is lower than the 24-30% reported by others. Physicians seldom use empiric heparin therapy, even when clinical suspicion for VTE is high.

**Objective:** To determine the prevalence of VTE among ED patients evaluated for pulmonary embolism (PE).

**Methods:** Patients undergoing a D-dimer or imaging study for PE were prospectively enrolled at two academic EDs (consecutive sample at institution #1 and random sample at institution #2) between August 2005 and April 2006. Patients were enrolled prior to completion of diagnostic testing and had structured telephone and medical record follow up at 90 days. The outcome of VTE (either PE or DVT) was based upon adjudicated agreement of two of three blinded, physician reviewers.

**Results:** We enrolled 350 patients, mean age 46+/-20 y, 65% female, 58% Caucasian. The prevalence of VTE was 24/350 (7%, 95% CI: 4 to 10%). The prevalence of VTE was 17/225 (8%, 4 to 12%) at institution #1 and 7/125 (6%, 2 to 11%) at institution #2. The first diagnostic test was more commonly an imaging study rather than D-dimer among VTE+ patients (75%) than VTE- patients (34%, 95% CI for the 31% difference: 20 to 55%). The evaluating physician reported that PE was more likely than an alternative diagnosis in 12/24

VTE+ patients (50%, 29 to 71%) compared to 54/326 VTE- patients (17%, 13 to 21) with a sensitivity, specificity and likelihood ratio positive of 50% (29 to 71%), 83% (79 to 87%) and 3.0 (1.8 to 4.6), respectively. Physicians started heparin prior to imaging in 1% (0 to 2%) of VTE- patients and 4% (0 to 21%) of VTE+ patients.

**Conclusions:** The overall prevalence of VTE was significantly lower (7%) than in previous reports. Physicians were able to correctly identify VTE as the leading diagnosis in a greater percentage of VTE + patients, and often ordered imaging initially, but seldom treated with heparin prior to imaging.

### 2 Tandem Measurement of D-Dimer and Myeloperoxidase Decreases Unnecessary Pulmonary Vascular Imaging in Emergency Department Patients Evaluated for Pulmonary Embolism

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**Background:** The D-dimer (DD) has become a standard method of screening patients for pulmonary embolism (PE), but is limited by a high false-positive rate (FPR) leading to a high rate of unnecessary imaging. Hypothesis: The tandem measurement of myeloperoxidase (MPO) following a positive (+) DD will significantly decrease the rate of unnecessary pulmonary vascular imaging.

**Objective:** 1) Determine the potential of MPO to decrease unnecessary imaging in emergency department (ED) patients evaluated for PE with a +DD. 2) Determine the appropriate threshold for MPO in this application.

**Methods:** A consecutive or random sample of patients