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The following abstracts, which are published here with author permission, were presented at the Western Regional Society for Academic Emergency Medicine Research Forum in Portland, Oregon on March 16, 17, 2007.

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

Kristen E. Nordenholz, MD; Alice M. Mitchell, MD MS; Jeffrey A. Kline, MD.

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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

Alice M. Mitchell, MD, MS; Kristen E. Nordenholz, MD; Jeffrey A. Kline, MD.

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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

undergoing evaluation for PE was enrolled at two academic EDs between April 2005 and April 2006. Patients were enrolled and a serum sample was obtained prior to the results of diagnostic testing or therapy. Patients were followed for 90 days for the outcome of venous thromboembolism (VTE, either PE or deep venous thrombosis), which required the consensus of two of three blinded physician reviewers. A DD was measured in all patients and considered + if ≥ 500 ng/mL and MPO was measured on patients with +DD.

Results: We enrolled 305 patients, 21 with VTE (7%, 95% CI: 4-10%) within the follow-up period. One hundred sixty-six (55%) had a -DD, none with VTE (sensitivity 100%, 84-100%). Among the 139 patients with +DD, 39 (28%, 21-36% of +DD patients and 13%, 9-17% of total) had a MPO <22 ng/mL, none had VTE (sensitivity 100%, 91-100%). Thus, tandem measurement of DD and MPO would have decreased unnecessary subsequent pulmonary vascular imaging from 45% to 32% (95% CI for difference of 13% = 5-30%).

Conclusion: The tandem measurement of DD and MPO would have significantly decreased unnecessary pulmonary vascular imaging compared with DD alone. This finding should be validated prospectively.

3 Agreement of Medical and Undergraduate School Counselors about the Ways an Average Student Can Improve His Application to Medical School

Sharon Shapiro, BA; Kristi Stanley, BA; Sean O Henderson, MD; Kristy Massopust, BA.
USC/Keck School of Medicine

Background: This year more than 39,000 students applied to medical school. For the average applicant, advice on strengthening one's application to medical school is quite varied. There is little data that compares how a Medical School Admissions Office (MSAO) judges an applicant's activities compared with what pre-medical counselors (PMC) advise their undergraduate students to do.

Objective: To determine whether or not a disparity exists between the advice PMC offer undergraduate students and what the MSAO believes would improve an average student's application to medical school.

Methods: A survey was sent out to 100 undergraduate PMC and 123 MSAOs. The survey asked participants to rate 10 different activities on a scale of 1 to 10 that might increase an average student's chance of admittance to medical school. We stated that the hypothetical average student achieved a 30 MCAT score and an undergraduate GPA of 3.7 from a midlevel university. The list of activities was presented in a varied fashion to ensure no bias in the order of the survey. It was completed by 56 undergraduate schools and 72 medical schools. Those schools that did not respond to the first survey were queried a second time.

Results: Overall there was good agreement between the two groups with regard to the value of community service, volunteering in any medical setting, and obtaining a MPH or other graduate degree. PMCs tended to overvalue the importance of work in research, both clinical (7.34 vs. 6.14, $p < 0.002$) and laboratory (6.6 vs. 5.3, $p < 0.003$) compared to MSAOs. PMCs also undervalued retaking the MCAT and joining a service organization such as the Peace Corps.

Conclusion: There is general consistency given student applicants for medical school. Both PMCs and MSAOs agreed that volunteering in a medical/clinical setting is a highly valued activity. Participants similarly agreed that the least important activity was working in a non-medically related job to gain "real world" experience.

4 Validity of Self-Reported Hypertensive Status in the Multiethnic Cohort

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Background: In large cohort studies, data is most practically collected from self-reported surveys. However, the validity of the self-reported data is brought into question when it is verified with medical records.

Objective: To determine the accuracy of self-reported hypertensive status by comparing it with the diagnosis of hypertension (HTN) by a physician in a multiethnic population.

Methods: Study subjects were chosen from among the African American and Latino participants of the Multiethnic Cohort Study (MEC), a cohort of 215,251 individuals from the five main ethnic groups in California and Hawaii. MEC participants received a comprehensive 26-page questionnaire upon enrollment in which subjects reported their hypertensive status and indicated if they were taking anti-HTN medication. Three years later a second questionnaire was sent and subjects again reported their hypertensive status. We then contacted the subjects' health care providers to ascertain the subjects' hypertensive status, medication history, as well as representative blood pressures from the past four years.

Results: Of the 32 subjects self-reported as non-HTN, the PMD confirmed HTN in 50%. Of the 21 subjects self-reported as having HTN and taking anti-HTN meds, 85.7% were indeed hypertensive according to their physicians. Among non-HTN subjects (physician confirmed), the average systolic blood pressure (SBP) was 127 and among the self-reported HTN subjects (non-HTN per their physicians), the average SBP was 118. In self-reported non-hypertensive subjects who were diagnosed hypertensive by their physician, the average SBP was 137. Within hypertensive subjects (physician confirmed), the average SBP was 141.

Conclusion: The self-reported data for the absence of chronic