

# Abstract Presentations (continued)

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## **P335** **Risk of Venous Thromboembolism Increases as a Function of Below-range International Normalized Ratio Levels in Total Knee Arthroplasty Patients**

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**Objectives:** To investigate the relationship of international normalized ratio (INR) levels - based on ranges recommended by the American College of Chest Physicians (ACCP) - to incidence of venous thromboembolism (VTE) following total knee arthroplasty (TKA). **Methods:** A retrospective cohort analysis was conducted using an electronic medical record database. Data were obtained for patients who had undergone TKA between January 1, 2004 and January 31, 2009, who initiated warfarin therapy within 3 days after surgery, had  $\geq 2$  INR measurements, and who had no history of VTE. Subjects were followed through their continuous warfarin therapy for up to 90 days. INR levels were categorized according to ACCP guidelines: in the recommended range (2-3), below range (<2) and above range (>3). For subjects who had experienced a VTE (including deep vein thrombosis [DVT], pulmonary embolism [PE], and thrombophlebitis), INR levels prior to the event were used. Using a Cox proportional hazards model adjusted for baseline characteristics, the incidence rate of VTE was calculated and compared between subjects who had INR levels below range and subjects who had INR levels in range. The distribution of time to event was examined, with VTE during hospitalization coded as occurring on the discharge date. **Results:** A total of 1667 eligible subjects were identified, of whom 56 (3%) experienced a VTE event: DVT, 28; PE, 17; thrombophlebitis, 11. Of these 56 events, 27 (48%) occurred during TKA hospitalization. Among all study subjects, the majority (54%, n=906) had only below-range INR levels; these were associated with increased risk of VTE: adjusted HR 4.43; 95% CI 2.50-7.85;  $P < 0.0001$ . **Conclusions:** Among patients undergoing TKA, a VTE event was more than four times as likely to occur if measured INR values were below the ACCP-recommended range (<2). Anticoagulant thromboprophylaxis resulting in INR values <2 may be placing patients at increased risk for VTE. Given the substantial number of below-range INR measurements with warfarin therapy and the associated increased risk of VTE, further research is warranted to validate these findings.

**Disclosures Block:** **S. Kachroo**, None; **B.L. Nordstrom**, Commercial interest: Ortho-McNeil Janssen Scientific Affairs, Modest, H. Other; **E. Nutescu**, Ortho-McNeil Janssen Scientific Affairs, Significant, B. Research Grant; **Eisai**, Significant, E. Honoraria; **J. Schein**, Ortho-McNeil Janssen Scientific Affairs, Significant, A. Employment; **Stockholder of Johnson and Johnson, Modest, F. Ownership Interest;** **A. Fisher**, Ortho-McNeil Janssen Scientific Affairs, Significant, A. Employment; **Stockholder of Johnson and Johnson, Modest, F. Ownership Interest;** **B. Bookhart**, Ortho-McNeil Janssen Scientific Affairs, Significant, A. Employment; **Stockholder of Johnson and Johnson, Modest, F. Ownership Interest.**

## **P336** **LDL Density and Cardiovascular Profile among Patients with an Incident Myocardial Infarction: Results in 1,975 Patients in the TRIUMPH Registry**

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**Background:** Recent evidence suggests that LDL levels alone may be an incomplete assessment of cardiovascular risk, given the emerging importance of LDL density. Specifically, an excess of low-density LDL (Pattern B vs. A/B or A) has been shown in primary prevention cohorts to be particularly atherogenic. To date, however, the prevalence of Pattern B profiles among patients presenting with an MI has not been described. **Methods:** The TRIUMPH registry enrolled acute MI patients from 24 US centers between 4/05 and 12/08. We excluded patients with prior MI or missing LDL levels; leaving 1,975 patients for analysis. Patients were stratified by LDL patterns, using the VAP method, to compare their demographic and clinical characteristics. As a secondary analysis, we examined changes in LDL pattern from baseline in patients newly on statins at 6 months. **Results:** Pattern B LDL profiles were present in 644 (32.6%) of patients. These patients were younger and more likely to be male, obese, have larger waist circumferences, higher triglycerides, and lower HDL levels (Table). Blood pressure, fasting glucose, and Lp-a levels did not differ across groups. Among 311 MI patients started on a statin, their LDL patterns became more atherogenic in 99 (31.8%) and less atherogenic in 43 (13.8%), suggesting little improvement with statins. Of the 113 patients with Pattern B at baseline, 84 (74.3%) patients did not improve, while the remaining 29 (25.7%) changed to a more favorable pattern. **Conclusion:** Patients with LDL Pattern B were younger and had more risk factors for metabolic syndrome. Statins did not markedly improve particle size patterns over time, suggesting that other approaches may be needed to further modify risk.

Patient characteristics and 6-month LDL patterns according to LDL Density Pattern at baseline

### **Patient characteristics and 6 month LDL patterns**

Variable	Pattern A (n=777)	Pattern A/B (n=554)	Pattern B (n=644)	p-value
Age (yrs.)	59.9 ± 12.8	58.2 ± 12.1	55.3 ± 10.7	<0.001
Male	473 (60.9%)	383 (69.1%)	482 (74.8%)	<0.001
Caucasian	475 (61.3%)	378 (68.2%)	495 (77.1%)	<0.001
MI type:				<0.001
STEMI	303 (39.0%)	275 (49.6%)	326 (50.6%)	
NSTEMI	468 (60.2%)	273 (49.3%)	315 (48.9%)	
DM	224 (28.8%)	175 (31.6%)	180 (28.0%)	0.359
LDL-C (mg/dL)	94.4 ± 32.2	95.8 ± 31.7	100.0 ± 31.9	0.004
Triglycerides (mg/dL)	132.4 ± 65.2	133.8 ± 60.3	200.1 ± 149.0	<0.001
HDL (mg/dL)	42.6 ± 11.4	40.9 ± 10.3	36.6 ± 8.1	<0.001
BMI (kg/m <sup>2</sup> )	28.5 ± 6.1	29.9 ± 6.7	30.8 ± 6.6	< 0.001
Waist circumference (in)	37.6 ± 5.6	38.9 ± 5.7	39.3 ± 5.3	< 0.001
hsCRP (mg/L)	4.2 ± 6.0	3.7 ± 4.6	3.2 ± 4.0	<0.001
Home statin use (%)	191(24.6%)	165(29.8%)	218(33.9%)	<0.001
Initial systolic BP (mmHg)	141.9 ± 31.7	143.1 ± 27.3	144.9 ± 29.1	0.171

**Disclosures Block:** **R. Mathews**, None; **K. Gosch**, None; **M. Blazing**, Merck, Modest, H. Other; **K. Kulkarni**, Atherotech, Inc., Significant, A. Employment; Royalty from University of Alabama, Modest, H. Other; **E.D. Peterson**, BMS-Sanofi, Modest, B. Research Grant; Merck Schering-Plough, Modest, B. Research Grant; **K.P. Alexander**, None; **J. Spertus**, Atherotech, Inc., Modest, C. Other Research Support.

## **P337** **Prediction of In-Hospital Major Bleeding Among Patients with Acute Myocardial Infarction: Results from 90,273 Patients in the Acute Coronary Treatment Intervention Outcomes Network Registry®- Get With The Guidelines™ (AR-G)**

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**Background:** Bleeding is a common complication of acute myocardial infarction (AMI) management and is associated with worse outcomes. Risk estimation is important to guide choice and intensity of therapy and minimize bleeding-related adverse events. **Methods:** Using AR-G data, an in-hospital major bleeding model and risk score was developed. Major bleeding was defined as a HCT drop >12%, ICH, retroperitoneal bleeding or transfusion if baseline HCT >28%, and transfusion if baseline HCT <28% with witnessed bleeding. The model used only baseline variables and was developed (n=72,313) and validated (n=17,960) in STEMI and NSTEMI patients (251 US centers from 1/07 to 12/08). C statistic was tested in the derivation and validation cohorts and across key subgroups. **Results:** Twelve independent factors were identified: heart rate, baseline hemoglobin, female sex, initial creatinine, older age, EKG changes, heart failure or shock on presentation, diabetes, peripheral artery disease, lower weight, systolic blood pressure, and home warfarin use. The model discriminated in the derivation (c=0.73) and validation (c=0.71) cohorts. A score (0-91) was created for the relative odds for major bleeding. Bleeding risk increased tenfold from lowest to highest score: very low risk (3.9%), low risk (7.3%), moderate risk (16.1%), high risk (29%), and very high risk (40%). This trend was consistent across age, sex, and MI type (Figure). **Conclusion:** The AR-G bleeding model and score estimates bleeding risk across a broad range of STEMI and NSTEMI patients. The model provides clinicians an easy-to-use aid to facilitate treatment decision making and may ultimately promote better patient outcomes.

