**ABSTRACTS - Myocardial Ischemia and Infarction**

1146-108

**Association of Major Bleeding With Adverse Clinical Outcomes and Length of Stay: A TACTICS TIMI 18 Substudy**

Mark K. Jorgenson, David E. Cohen, Graham C. Wong, Christopher P. Cannon, Eugene Braunwald, C. Michael Gibson, The TIMI Study Group, Brigham & Women's Hospital, Boston, MA

Background: Severe complications remain a potentially important contributor to morbidity and cost in the treatment of acute coronary syndromes (ACS). We hypothesized that bleeding would be associated with increased complications, excess cost, and increased length of stay.

Methods: The TACTICS TIMI 18 enrolled 2220 patients with ACS and compared early invasive and conservative management strategies on a background of Trofiban therapy. Major bleeding was defined as a decrease in the blood hemoglobin level of at least 0.5 g per deciliter, the need for the transfusion of 2 or more units of blood, the need for coronary artery bypass grafting (CABG), tamponade during the index hospitalization.

Results: Major bleeding occurred in 4.4% of all patients, 14.4% of CABG patients, 2.4% of non-CABG patients, and 4.7% of PCI patients. Intracranial hemorrhage occurred in one patient. Vascular access site bleeding occurred in 0.4% of all patients and in 1.5% of PCI patients. Increased age, lower weight, ST deviation, positive troponin status, an early invasive strategy, angiography during the initial hospitalization, emergent PCI, and CABG were all associated with major bleeding in univariate analysis. Only CABG and Age <65 were independently associated with major bleeding in the multivariate analysis.

After adjustment for CABG, age >65, positive troponin status, diabetes, and ST deviation, major bleeding was independently associated with an increased risk of death at 30 days (p = 0.01), in-hospital costs, and 1.2 days per patient increase in length of stay (after adjustment for CABG, age >65, positive troponin status, diabetes, and ST deviation).

Conclusions: Major bleeding occurred infrequently despite a high rate of invasive revascularization procedures. Major bleeding is associated with excess costs, increased length of stay, and higher mortality.

1146-109

**Renal Insufficiency in the Setting of an Acute Coronary Syndrome Is Associated With a Marked Increase in Death and Myocardial Infarction at 30 days**

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Background: Renal insufficiency (RI) is an established predictor of long-term outcome in patients with coronary artery disease. The impact of RI on short-term outcomes following hospitalization for an acute coronary syndrome (ACS) remains unknown. We sought to investigate whether RI at the time of presentation with an ACS predicted clinical events up to 30 days.

Methods: Using an interventional registry database, 504 patients presenting with an ACS were grouped into one of four categories based on creatinine clearance (CrCl) in ml/min: >90, 60-90, 30-60, and <30. Patient outcomes were recorded at 30 days and 1 year. Results: Using a test of trend and homogeneity, we observed an exponential rise in the risk of death and MI at 30 days for each decrement in renal function (R²=0.32, p<0.00001). Patients were then divided into two groups classified as normal (CrCl <60) or RI (CrCl <60). When compared to normals, patients with renal insufficiency suffered a 5-fold excess of death or MI at 30 days (OR 5.23, 95% CI 2.57-10.66, p<0.0001). Conclusion: The prevalence of RI (defined as CrCl <60) was 28% in the ACS population, and conferred a 5-fold increased risk of death and MI at 30 days. The prevalence and impact of RI is therefore equal to, or greater than, many of the commonly utilized biomarkers for risk assessment in ACS. This suggests that the presence of RI should weigh heavily in the overall risk assessment of ACS patients.

1146-110

**Blinded Adjudication of Reinfarction Following Fibrinolysis: Data From the HERO-2 Trial**

John K. French, John J. Edmund, Philip E. Aylward, Cheuk-Ki Wong, Ralph A. Stewart, Barbara F. Williams, Ivor L. Gerber, Carmine DePasquale, Rachel O’Connell, John Simms, Harvey D. White, for the HERO-2 Investigators, Green Lane Hospital, Auckland, New Zealand, Flinders Medical Centre, Adelaide, Australia

Background: Re-infarction (reMI) is associated with worse outcomes following fibrinolytic therapy and is increasingly a component of the primary endpoint in clinical trials. In 2001, 3 large clinical trials reported that reMI was reduced in patients receiving the experimental reperfusion and adjuvant therapies. In HERO-2, reMI randomized patients to receive either intravenous heparin or bivalirudin prior to streptokinase. reMI was adjudicated by a Clinical Endpoints Committee (CEC) and we report the results of reMI adjudication.

Methods: Adjudication was performed on data collected by investigators according to the following pre-defined criteria: i) <18 hours from randomization to heparin during PCI; ii) >200,000 chest pain and 219 ST elevation in 2 leads; iii) 18 hours from randomization (Ck or CKMB levels >5x ULN) to 21 upper limit of normal (ULN) of CK or CKMB levels >3x ULN or ii) surgical revascularization (CK or CKMB levels >5x ULN) also in 4 new LBBB or new Q waves.

Results: Of 779 cases referred for CEC adjudication of reMI, 170 cases (24%) were adjudicated as reMI. The prevalence and impact of RI is therefore equal to, or greater than, many of the commonly utilized biomarkers for risk assessment in ACS. This suggests that the presence of RI should weigh heavily in the overall risk assessment of ACS patients.

1146-111

**Bivalirudin Versus Heparin for Patients With Thrombocytopenia**

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Background: Patients (Pts) who develop thrombocytopenia (TCP) associated with heparin or heparin-like inhibitors have increased risk of bleeding events as well as myocardial infarction (MI) and death (Circ1999). Pts with TCP at baseline are at higher risk to develop significant TCP. In a consecutive series, 15.6% of Pts with MI had a platelet (PLT) count of <200,000 at presentation, increasing bleeding and ischemic complications compared to pts with normal PLT counts. Bivalirudin, a direct thrombin inhibitor that does not cause TCP, has been shown to decrease bleeding and ischemic complications compared to heparin during PCI.

Methods: We compared the outcome of Pts with relative TCP at baseline to Pts with normal PLT counts. Bivalirudin, a direct thrombin inhibitor that does not cause TCP, has been shown to decrease bleeding and ischemic complications compared to heparin during PCI. From a database of 4,763 pts enrolled in 5 trials of bivalirudin vs. heparin in conjunction with PCI, 238 (5%) pts had a PLT count <200,000 at the time of the PCI. Pts treated with bivalirudin had lower incidence of death, MI, revascularization, or major hemorrhage (see table). Conclusions: Relative TCP (<200,000) is relatively common even for pts enrolled in randomized clinical trials. Pts treated with bivalirudin had significantly lower incidence of death, MI, revascularization, or major hemorrhage. The overall outcome and magnitude of benefit with bivalirudin was similar to pts with a PLT count >200,000 at baseline. Relative TCP does not appear to be a risk factor for adverse outcome among pts treated with heparin.

<table>
<thead>
<tr>
<th>Event</th>
<th>Bivalirudin (n=745)</th>
<th>Heparin (n=860)</th>
<th>O R 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death, MI, Revascularization or Major</td>
<td>47 (6.3%)</td>
<td>72 (10.6%)</td>
<td>0.67</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>57</td>
<td>0.83</td>
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<tr>
<td>Death or MI</td>
<td>22 (3.0%)</td>
<td>30 (4.4%)</td>
<td>0.66</td>
</tr>
<tr>
<td>Revascularization</td>
<td>14 (1.9%)</td>
<td>18 (2.6%)</td>
<td>0.35</td>
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<tr>
<td>Major Hemorrhage</td>
<td>19 (2.6%)</td>
<td>37 (5.4%)</td>
<td>0.26</td>
</tr>
</tbody>
</table>

1146-112

**Gender-Specific Risk Factors for Thrombolytic Stroke With Acute Myocardial Infarction**

Eric Van De Graaff, Eric A. Shry, Paul D. Frederick, Nathan Every, Mary Blaney, Morris Cheeks, Steven R. Steinhubl, Wright Patterson Medical Center, Dayton, OH, Ovation Research Group, Highland Park, IL

Background: Risk factors for nonhemorraghic-cerebrovascular accidents (NHCVAs) in the setting of myocardial infarction (MI) have been described. To date no study has evaluated gender-specific risk factors for NHCVA. Methods: Analysis of the National Registry of Myocardial Infarction (NRMI) 3/4 database. This suggests that women are 64% more likely to suffer NHCVA with MI than are men. This difference persists despite controlling for 27 variables using a multivariate model (OR for women vs. men 1.431, 95% CI 1.285-1.593). We analyzed records of 257,637 male and 197,865 female patients with MI found in the NRMI 3/4 database. Of these 997 males (0.389%) and 1250 females (0.636%) suffered NHCVA. Females with NHCVAs were significantly more likely to be older, have a
history of hypertension or heart failure, weight loss; were less likely to use tobacco, have a history of bypass surgery; and were less likely to undergo coronary revascularization. (P=0.0001 all). Increased time to revascularization, larger infarction size, and worse ejection fraction on discharge were more predictive of stroke in men than in women (table). When multivariate analysis was performed on patients individually, more patients remained independently predictive in the male, but not female, population. Conclusion: Women are at significantly higher risk in non-hospital N-IV-SCVA following MI, which is not explained by then greater prevalence of other risk factors.

### 1140-115 Elevated Troponin I Is an Independent Prognostic Marker for Increased Mortality Even in Patients Hospitalized With Noncardiac Diagnoses

Svyd W. Bogdz, Curtis T. Stins, Jason A. Zelli, Cyndi Y. Leung, University of California-Irvine Medical Center, Orange, CA

**Background:** Numerous studies have shown troponin I (TnI) to be a valuable predictor of prognosis in acute coronary syndrome patients, but none has assessed the clinical significance of elevated TnI (>0.5 ng/mL) in patients hospitalized with non-cardiac diagnoses.

**Methods:** In a retrospective analysis, a total of 60 patients, 30 consecutive with elevated Troponin I (eTnI) and 30 consecutive with normal TnI (nTnI) hospitalized with non-cardiac diagnoses were investigated. Prevalence Rate Ratio (PRR) was utilized to analyze all-cause mortality as the primary end-point. Multinomial logistic regression analysis was utilized to adjust mortality data for variables that differed significantly between the two groups.

**Results:** The major categories of the admitting diagnoses were pulmonary (CtI = 8, nTnI = 9, p = 0.04), sepsis (CtI = 7, nTnI = 1), neurological (eTnI = 6, nTnI = 5), gastrointestinal (eTnI = 7, nTnI = 6), and others (eTnI = 2, nTnI = 5). There were no significant differences found between the two groups in terms of their total number of cardiac risk factors, previous history of coronary artery disease or coronary revascularization, baseline creatinine, hematocrit, cholesterol levels, and use of aspirin, beta-blockers, angiotensin converting enzyme inhibitors, or statins. The eTnI group compared to the nTnI group consisted of 47% males, compared to 65% males in the nTnI group (p < 0.01). Mean age in the eTnI group was 67.8 years compared to 59.8 years in the nTnI group (p = 0.047). Of the 30 patients with elevated TnI (mean = 2.10 ± 0.52 SD), 12 (40%) died during index hospitalization as compared to zero deaths reported in patients with normal TnI (mean = 0.04 ± 0.0007 SD), and this difference was significant (PRR = 2.7, 95% CI = 1.9-3.8, p < 0.005). Despite differences in age and gender between the two groups, adjusted analysis revealed elevated Troponin I to be the only risk factor for mortality (p < 0.005 for TnI, p = 0.2 for gender; p = 0.8 for age). Conclusion: We have shown for the first time that the elevated Troponin I is an independent prognostic marker for increased mortality even in the patients admitted with non-cardiac diagnoses. There was a trend towards more patients with sepsis in the elevated TnI group.

### POSTER SESSION

#### 1147 Applying Evidence-Based Therapies in Clinical Practice

Tuesday, April 01, 2003, 9:00 a.m.-1:00 a.m. McCormick Place, Hall A
Presentation Hour: 9:00 a.m.-10:00 a.m.

#### Initial Results of the Guidelines Applied In Practice for Improving Quality of Care Patients With Acute Myocardial Infarction: The Flint-Saginaw Cooperative Initiative of the American College of Cardiology Foundation, Greater Flint Health Coalition, and Michigan Peer Review Organization

Rajendra H. Mehta, Cecilia K. Montoya, Jessica Fawzi, Dorothy Nagle, James Kure, Dawn E. Shaddinger, Gregg W. Stone, Center for Cardiac & Vascular Research and Washington Adventist Hospital, Takoma Park, MD, Cardiovascular Research Foundation and Lenco Hill Heart and Vascular Center, New York, NY

**Background:** Delays in time to angioplasty after hospital arrival in patients (pts) undergoing primary PCI for AMI have been associated with increased mortality in large data sets. However, the inherent reasons and correlates for delay to angioplasty remain poorly understood.

**Methods:** We analyzed the baseline demographic, angiographic, and procedure-related variables predictive of delays in door-to-balloon time (DB time) in the CADILLAC trial, in which 2,080 pts of any age with AMI onset <12 hours (excluding shocks) were randomized to PTCA vs stent, with vs without abciximab.

**Results:** Median DB time was 120 minutes (interquartile range 90-162) for all pts. Statistically significant clinical predictors of delay >2hrs by univariate analysis included female gender (risk ratio 1.13, p<0.0001), insulin dependent diabetes (RR 2.22, p=0.002), prior CABG (RR 3.28, p=0.02), non-ST-elevation MI (RR 4.05, p<0.0001), 3 vessel disease (RR 1.9, p=0.02), and delayed time to ER arrival (p=0.0003). Angiographic predictors of delay included procedure TIMI 3 flow, small reference vessel diameter and larger initial MLD (all p<0.001). Multivariate predictors of delay using stepwise logistic regression included non-LAD infarction (p<0.04), female gender (p<0.0004), 3 vessel disease (p<0.002), small reference vessel diameter (p<0.001), and larger initial MLD (p<0.0001).

**Conclusion:** The time from hospital presentation to angioplasty is >1.5 hours in 36% of pts with AMI undergoing contemporary interventional management. Predictors of delay to treatment after hospital arrival may be explained by atypical symptoms or indeterminate ECGs (female gender or LCA MI), and less severe symptoms (smaller infarct vessel or patency of infarct vessel due to larger MLD). These data emphasize the need for awareness and expedited reperfusion pathways for patients at highest risk for delays to PCI.

#### 1147-94 Beneficial Effects of Direct Call to Emergency Medical Services on Time Delay in Timelines of Patients With Acute Myocardial Infarction: A Real World Data From RICO Database

Jean-Claude Dero, Anke Derksen, Leticia Mekel, Marjolein Zeller, Yves Laurent, Isabello Juliller, Jacques Ravsy, Vuyisile Coete, Jean-Eric Wolf, CHU Dijon, Dijon, France

**Background:** Delayed access to medical care in patients with acute myocardial infarction (AMI) increases myocardial damage. Only few studies have analysed the influence of direct call to emergency medical services (EMS) in patients with AMI. From the regional observatory of MI (RICO) database, we report the acute management in patients calling either EMS or other medical contact (OMC) as first medical seek after symptoms onset of MI, Methods: Data were prospectively collected from January to October 2001, in the 6 medical centers in charge of MI in the region of Cote d’Or. Among the 6,212 patients included, only 57% (10%) directly called EMS after symptoms onset (group EMS) and 43% (90%) called another medical contact (group OMC). Results: The baseline characteristics including age and risk factors were similar among the 2 groups of patients. Moreover, cardiovascular history was the same between the 2 groups, except for history of MI (21% in EMS group vs 11% in OMC group, p<0.05). The median times from symptoms onset to first medical intervention (48 vs 105 min, p<0.03) and from