**Appropriateness of use of bivalirudin in patients undergoing Percutaneous Coronary Catheterization using CRUSADE bleeding score: single center study**

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**Background:** Percutaneous coronary intervention (PCI) is a conventional procedure for the management of stable coronary artery disease. The goals of this study were to establish periprocedural bleeding risk before elective PCI and to observe consequent changes in anticoagulant after implementation of use of a bleeding risk calculator. The secondary outcome included average total cost per case in which bivalirudin was used compared to use of heparin.

**Methods:** This pilot retrospective study was approved by St. Vincent Charity Medical Center Institutional review board. The cohort consisted of 100 patients who underwent PCI procedures between October 2014 and October 2015, whose bleeding risk was derived by using CRUSADE bleeding risk calculator to determine the appropriate use of angiomax in them. The CRUSADE Bleeding Score was developed using data from over 89,000 "real-world" patients enrolled in the CRUSADE Quality Improvement Initiative that presented with NSTEMI. We developed (n=71,277) and validated (n=17,857) a logistic regression model to identify eight independent predictors of in-hospital major bleeding. A patient's CRUSADE Bleeding Score equals the sum of the weighted scores for the independent predictors (range 1-100 points).

The CRUSADE Bleeding Score considers baseline patient characteristics (female sex, history of diabetes, peripheral vascular disease), admission clinical variables (heart rate, systolic blood pressure, signs of CHF), and admission laboratory values (hematocrit, calculated creatinine clearance) to estimate the patient's likelihood of having an in-hospital major bleed event.

**Results:** The CRUSADE bleeding risk calculator distinguished patients in the pilot cohort as high risk, moderate risk and low risk for bleeding after a PCI procedure. Among 100 patients who underwent PCI, 23 were high, 26 moderate, and 27 low and 24 very low risk. 96 out of 100 patients received bivalirudin irrespective of their bleeding risk score. Out of 4 patients who received heparin 2 were low risk, 1 was very low risk and 1 was moderate risk.

**Conclusion:** A simple bleeding risk calculator can substantially reduce overall bivalirudin use by specifically decreasing its use among patients at low bleeding risk while maintaining its use among patients at high bleeding risk. Studies have proven that incidence of bleeding complications remained unchanged despite decreasing bivalirudin use among patients undergoing elective PCI who were at low risk of bleeding. The cost of bivalirudin is 20 times more than heparin and its inappropriate use would be burden for patient.