

Pre-PCI bleeding risk score predicts greater risk, higher costs

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A pre-procedure bleeding risk score can accurately identify high-risk, high-cost patients and may provide an opportunity to employ bleeding avoidance strategies to improve patient outcomes and reduce total costs related to percutaneous coronary intervention (PCI) procedures, according to a retrospective study being presented March 26 at the 61st annual American College of Cardiology (ACC) scientific session.

More than 1.3 million PCIs are performed annually in the U.S. Peri-procedure bleeding is the most common non-cardiac complication associated with PCI, occurring in 3 to 6 percent of cases, explained the study's lead author Craig E. Strauss, MD, MPH, a [cardiologist](#) at the Minneapolis Heart Institute at Abbott Northwestern Hospital in Minneapolis and physician researcher with the Minneapolis Heart Institute Foundation. These complications have been shown to increase the length of hospital stay, increase morbidity and mortality, as well as increase the total costs of the hospitalization.

"The risk score assesses patient characteristics before the procedure is performed, and includes symptoms at presentation, history of [heart failure](#) or prior PCI, age and [kidney function](#)," said Strauss. Based on these factors, physicians and the cath lab team categorize patients as low risk, intermediate risk or high risk for bleeding complications associated with the PCI procedure.

Once the patient's characteristics are identified, evaluating his or her risk score takes a matter of minutes, said Strauss. "In addition, the enhanced

knowledge of the patient's risk can help guide decision-making for the procedure," he added.

In this study, researchers applied the pre-PCI bleeding [risk score](#) to all 8,309 PCI patients at three high-volume hospitals within the Allina Hospitals & Clinics Cardiovascular Service Line between January 2009 and September 2011. Strauss and colleagues calculated bleeding risk scores and grouped cases by low-risk (0-7), intermediate-risk (8-17) and high-risk (18 or more).

Among the 8,309 PCI patients, 15 percent were deemed high-risk, 48 percent intermediate-risk and 37 percent low-risk patients.

Comparing these groups, the high-risk, intermediate-risk and low-risk patients, respectively, had statistically significantly different rates of:

- Any complication (24.5 percent vs. 7.5 percent vs. 2.4 percent);
- Hospital length of stay in days (5.2 vs. 2.9 vs. 1.9);
- Need for blood transfusion (12.3 percent vs. 3.1 percent vs. 0.5 percent);
- Total costs (\$22,821 vs. \$14,500 vs. \$11,539); and
- Mortality (6.7 percent vs. 1.2 percent vs. 0.7 percent).

"Employing real-time decision support tools to identify which patients fall into which category of risk prior to the procedure allows interventional cardiologists to tailor the treatment of patients, including selection of anticoagulant therapies and whether or not to use a vascular closure device, for example," said Strauss, adding that these findings contribute to the ever-growing importance of personalized, evidence-based medicine.

Provided by Minneapolis Heart Institute Foundation

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