

Bleeding Risk Scores Predict In-Hospital Outcomes in Post Percutaneous Coronary Intervention Patients



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BACKGROUND

- Percutaneous coronary intervention (PCI) is a common life-saving procedure that re-establishes blood flow to occluded coronary vessels.
- Around 965,000 PCI are performed every year in the U.S.¹ with Rhode Island Hospital and The Miriam Hospital performing around 2000 PCI per year.
- A major complication of PCI is periprocedural bleeding, an event strongly associated with longer in-hospital stays and mortality.²
- Bleeding risk scores such as the PRECISE-DAPT and ARC-HBR have been shown to effectively predict post-PCI patient's bleeding outcomes within a year period.^{3, 4}
- It is unknown whether these two bleeding risk scores are useful immediately in predicting in-hospital bleeding outcomes in patients undergoing PCI.

OBJECTIVES

- To calculate the PRECISE-DAPT and ARC HBR scores in patients who underwent PCI with a drug eluting stent between 2015 and 2018 at Rhode Island Hospital or at The Miriam Hospital.
- To determine rates of net adverse clinical events (NACE) of post-PCI patients.
- To compare the performance of two proposed bleeding risk scores (the PRECISE-DAPT and ARC-HBR) in the prediction of in-hospital NACE.

METHODS

- A REDCap database was created for 2034 patients who met inclusion criteria and underwent PCI between 2015 and 2018 at Rhode Island Hospital and Miriam Hospital.
- Each patients' charts was read via EPIC for data of interest to calculate the PRECISE-DAPT and ARC-HBR scores.
- Some data collected included age, lab values, bleeding history, medication history, and medical history.
- The database was then combined with the National Cardiovascular Cath PCI Data Registry, which already contained all the in-hospital outcome variables for each of the patients.
- Afterward, the database was analyzed via statistical methods to determine if the two bleeding scores were useful in predicting in-hospital outcomes.

RESULTS

- The overall in-hospital bleeding rate after the PCI procedure was 1.7% in a cohort of 2034 patients.
- As stratified by the PRECISE-DAPT score, patients defined as high bleeding risk (n=562) had a much higher rate of post-PCI in-hospital bleeding events as compared to patients defined as low bleeding risk (n=1472) (6.05% vs. 1.77%; p<0.001).
- Similarly, patients defined as high bleeding risk by the ARC-HBR (n=778) had higher rates of post-PCI in-hospital bleeding events, when compared to patients defined as ARC-HBR low bleeding risk (n=1256) (4.88% vs. 1.75%; p<0.01).
- Combining the two bleeding risk scores seem to have an additive effect (n=2034) (1.53% vs. 6.30%; p<0.001).

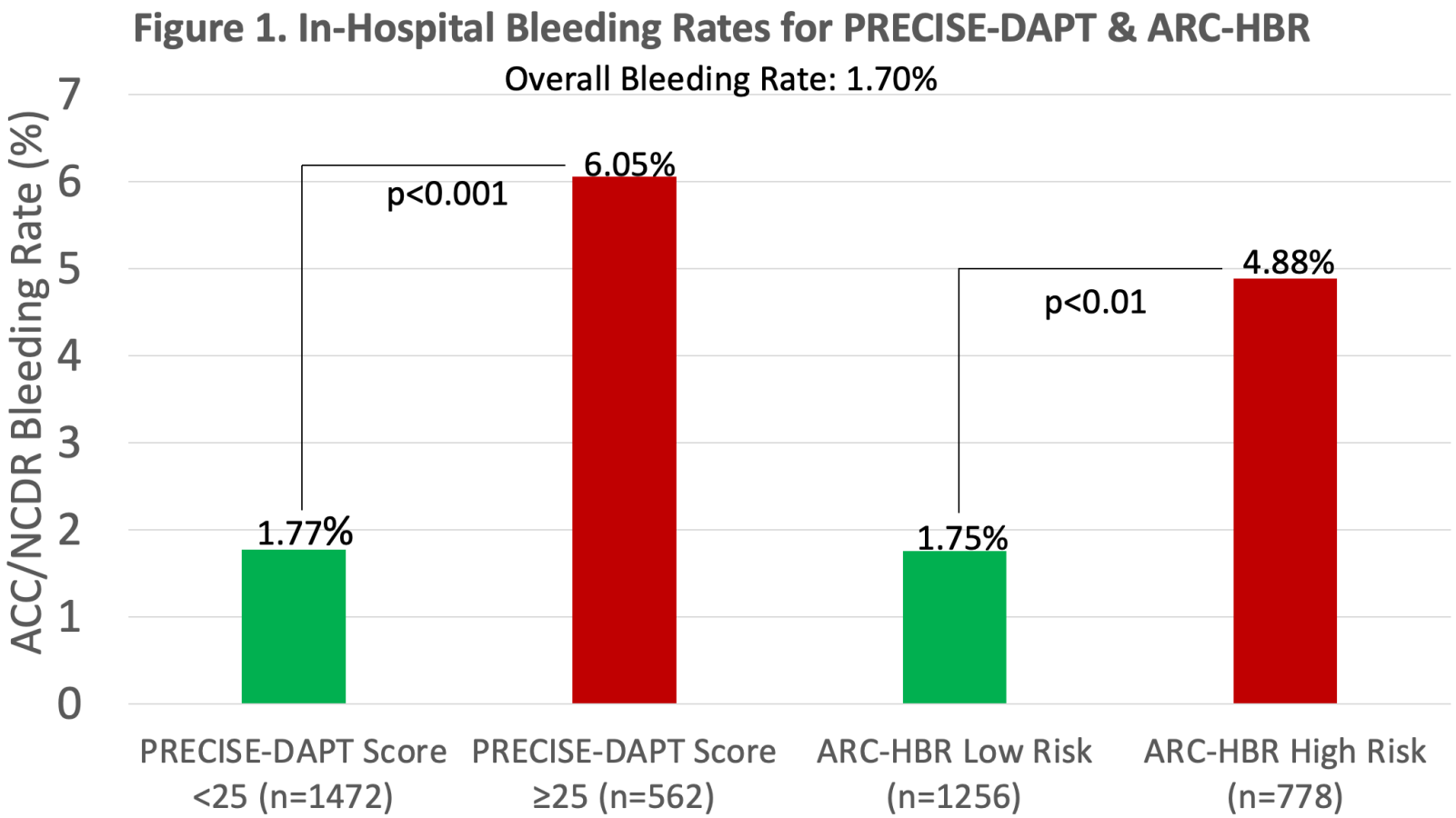


Figure 1. The rates of in-hospital bleeding as defined by the ACC/NCDR definition in the low risk vs. the high-risk group as defined by the PRECISE-DAPT and ARC-HBR scores. A PRECISE-DAPT score of 25 or higher indicates a high bleeding risk.

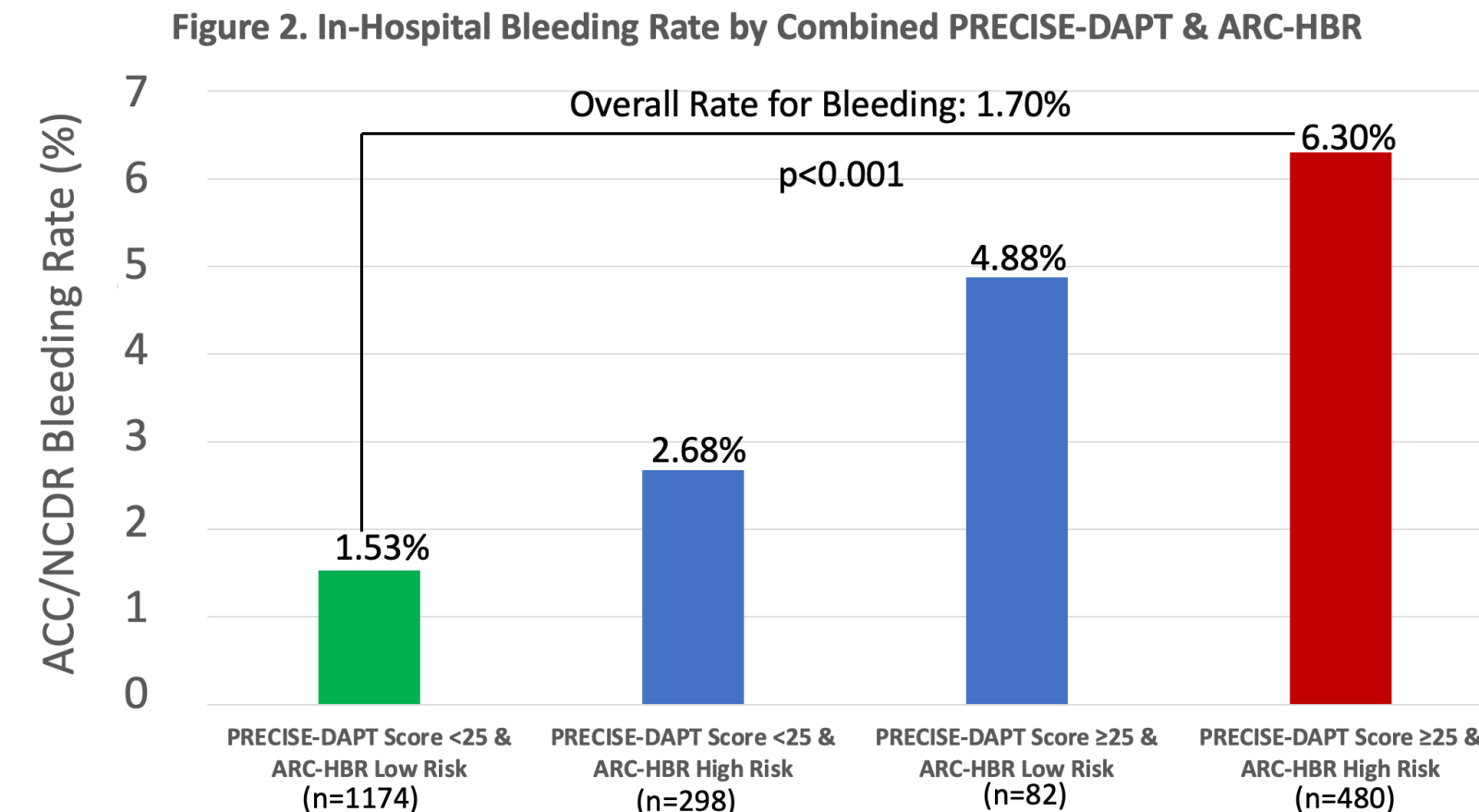


Figure 2. The rates of in-hospital bleeding as defined by the ACC/NCDR definition when combining the two scores together.

CONCLUSIONS

- The PRECISE-DAPT and ARC-HBR scores successfully stratified patients bleeding risk and predicted in-hospital bleeding events.
- Consequently, there is a benefit to calculating these two scores on admission for PCI patients.
- Clinicians may use these risk scores to stratify patients undergoing PCI and alter their periprocedural treatments to minimize the risk of post-PCI in-hospital outcomes such as bleeding events.
- Some periprocedural treatments to reduce bleeding risk include decreasing the duration of peri-procedural anticoagulation medication or accessing the coronary artery by inserting the catheter at the radial site vs. the femoral site.

FUTURE DIRECTIONS

- We will re-examine the in-hospital mortality, stroke, and MI rates once the cohort is completed. The database was only half completed when these results were analyzed. The completed cohort should contain around 4000 patients.
- We can compare the bleeding risk scores in men vs. women, as women generally have a higher rate of bleeding post-PCI.
- We can further stratify the patients based on elective PCI vs. PCI due to an acute coronary syndrome (a heart attack) to determine if the bleeding risk score better predicts in-hospital bleeding events in patients with an acute coronary syndrome.

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