Reduce the Risk: PCI Bleed

A Campaign of the American College of Cardiology
Shared Best Practices
Implementing a Bleeding Risk Tool Into Your EHR

November 6, 2019
12:00 – 1:00 pm ET
Webinar #6
Hosted by:

Andrea Price MS, CPHQ, RCIS, AACC
Reduce the Risk PCI Bleed Steering Committee Chair

Special Guests:

Cornelia Anderson, BSN, RN, CPHQ, AACC
Product Manager CathPCI Registry

Jennifer Varner, BSN, RN, C4
STEMI Coordinator/Clinical Manager
West TN Heart and Vascular Center

Dylan Wilson, Pharm D
West TN Heart and Vascular Center
Agenda

1. Welcome and Introductions
2. Overview of Metric #40 PCI In-Hospital Risk Standardized Bleeding
3. Shared Best Practices – How a Risk Model Tool was Successfully Integrated into an EMR
4. Q&A
5. Announcements
Performance Measure #40:

PCI in-hospital risk standardized rate of bleeding events (all patients)
Risk Standardized Bleeding

• Hierarchical risk model
• Predictive patient variables
• Hospitals factors
  o Universal (performance measures, guidelines)
  o Specific (volume, location, academic)
PCI Bleeding Outcome

Any **ONE** of the following:

1. Bleeding event w/in 72 hours **OR**
2. Hemorrhagic stroke **OR**
3. Tamponade **OR**
4. Transfusion for patients with a pre-procedure Hgb >8 g/dL and pre-procedure Hgb not missing; **OR**
5. Absolute Hgb decrease from pre-PCI to post-PCI of ≥ 4 g/dL for patients with pre-procedure Hgb ≤ 16 g/dL or mechanical ventricular support device not used
Patient Eligibility

1. Patient’s with PCI performed during the Episode of Care
2. Patient risk variables are obtained from the index PCI procedure
3. Exclude patients who died on the same day of the procedure
4. Exclude patients with CABG
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Index PCI Procedure
<table>
<thead>
<tr>
<th>Pre-Procedure RISK Predictive Variables</th>
<th>PCI RISK Predicative Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (spline at 70)</td>
<td>Female</td>
</tr>
<tr>
<td>Cerebrovascular Disease</td>
<td>STEMI</td>
</tr>
<tr>
<td>Peripheral Arterial Disease</td>
<td>Thrombolytics</td>
</tr>
<tr>
<td>Chronic Lung Disease</td>
<td>Diabetes</td>
</tr>
<tr>
<td>Heart Failure w/in 2 weeks</td>
<td>Diabetes Therapy</td>
</tr>
<tr>
<td>NYHA Scale</td>
<td>Currently on Dialysis</td>
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<tr>
<td>Prior PCI</td>
<td>Cardiogenic Shock w/in 24hrs</td>
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<tr>
<td>Cardiac Arrest w/in 24hrs</td>
<td>Calculated BMI</td>
</tr>
<tr>
<td>Pre Procedure Hemoglobin (spline at 13)</td>
<td>Coronary Territory (number of diseased vessels)</td>
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<tr>
<td></td>
<td>Calculated GFR</td>
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<td>PCI Status</td>
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<tr>
<td></td>
<td>Pre-PCI LVEF</td>
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<tr>
<td></td>
<td>Cardiogenic Shock start of PCI</td>
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<td></td>
<td>Stenosis Immediately Prior to Rx</td>
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<td></td>
<td>Pre-PCI TIMI Flow</td>
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<td></td>
<td>Chronic Total Occlusion</td>
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<tr>
<td></td>
<td>Lesion Complexity</td>
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<td></td>
<td>PCI of Left Main or Proximal LAD</td>
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<tr>
<td></td>
<td>Previously Treated Lesion</td>
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<tr>
<td></td>
<td>Treated w/ stent</td>
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<tr>
<td></td>
<td>In-stent restenosis</td>
</tr>
<tr>
<td></td>
<td>In-stent thrombosis</td>
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</tbody>
</table>
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Hierarchical Risk Model

Patient Variables

Hospital Variables

\[(x + a)^n = \sum_{k=0}^{n} \binom{n}{k} x^k a^{n-k}\]

Outcome: Bleeding Rate
Regression to the Mean
Where are we now?

2017Q4 benchmark 2.81

2018Q4 benchmark 2.47
Bleeding Risk Modeling
RAB vs RSB

2017Q3 benchmark 3.89

2017Q4 benchmark 2.81
What’s next?

• Develop hierarchical risk modeling for mortality & AKI
• Continue to report all traditional risk models in the detail lines
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REDUCE THE RISK: PCI BLEED CAMPAIGN

Reduce the Risk: PCI Bleed
WEST TENNESSEE HEALTHCARE

- Public, Not-for-Profit
- Serve 500,000 across 19 Counties
- Offer several clinics throughout Region
- 7 Emergency Departments
- Treat over 185,000 people per year
- EMS serves 5 Counties
- 3 Acute Care Facilities that hold Chest Pain Center Accreditation
- Jackson General, Dyersburg Hospital and Volunteer Hospital in Martin
Jackson Madison County General Hospital is considered the “flag-ship”
- Operates about 700 beds
- Includes Cardiovascular Surgery
- Serve over 9,000 heart patients a year
- State’s leader in treating heart attacks
- Received the Chest Pain MI Platinum Award
PCI REDUCE THE RISK BLEED CAMPAIGN

- Opted into the Campaign in October of 2018
- Presented to administration for approval
- Incorporated the Campaign into already existing Cardiac Interventional Modality Group

Advantages
- Intravascular Cardiology, IT, CCL Director, Pharmacy, Administration and Nursing
We educated the team on Metric #40 and the definitions for a “bleeding event”
DRILL DOWN DATA

- Reviewed individual patients that had a bleed during those quarters
- Reviewed several key elements
- Reviewed data from different angles
- Recommended next steps
- Added the Bleed Risk Calculator
IMPLEMENTING A BLEED RISK TOOL IN THE EMR

- Agreement to use the Cath PCI Bleeding Risk Calculator
- IT department was on a build freeze
- Use the internet tool
- Provided education
- Internet access made available
AFTER THE IT BUILD FREEZE

- IT collaboration
- Building algorithms
- Making it work
- Next steps....
- Go Live was 2/25/2019
- Highlight, Copy and Paste
- Score was added to the CCL documentation
- Communicated at the Time Out

### Predicted Risk

<table>
<thead>
<tr>
<th>Adjusted CathPCI Bleeding Event Risk (Example)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient's Risk</strong></td>
</tr>
<tr>
<td>31.8%</td>
</tr>
</tbody>
</table>

In the United States, the average bleeding event risk for all patients undergoing this procedure is 3.3%.

Taking into account the patient's specific clinical condition, the estimated estimate that the patient may experience a bleeding event is 31.8%.

This means that for every 100 patients having a similar clinical makeup, there would be 31.8 that experienced a bleeding event.

Bleeding Event is an absolute drop in hemoglobin > 4g/L, a RBC transfusion and/or a procedural intervention/surgery to reverse/seal bleeding that occurs within 72 hours of the PCI procedure.

The model provides an objective risk-adjusted estimate of bleeding which has real value for both patient and provider. It should be considered as one element in the evaluation process, to be considered along with the other traditional factors that determine whether the patient is an appropriate candidate for the procedure.

#### Based on following evaluation

<table>
<thead>
<tr>
<th>Patient Demographics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age: 65 Years</td>
</tr>
<tr>
<td>Race: White</td>
</tr>
</tbody>
</table>

#### Patient Pre-Procedural Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Mass Index (BMI)</td>
<td>28.76 kg/m²</td>
</tr>
<tr>
<td>Height</td>
<td>180 cm</td>
</tr>
<tr>
<td>Weight</td>
<td>95 kg</td>
</tr>
<tr>
<td>Baseline Hemoglobin</td>
<td>10.1 g/L</td>
</tr>
<tr>
<td>Prior STEMI</td>
<td>No</td>
</tr>
<tr>
<td>Prior Cardiogenic Shock</td>
<td>Yes</td>
</tr>
<tr>
<td>Prior PCI</td>
<td>No</td>
</tr>
<tr>
<td>Dialysis</td>
<td>No</td>
</tr>
<tr>
<td>Glomerular Filtration Rate (estimated)</td>
<td>74.87 mL/min/1.73m²</td>
</tr>
<tr>
<td>Serum Creatinine (Scr)</td>
<td>95.33 pmol/L</td>
</tr>
</tbody>
</table>

Only highlight on your results what is shown here.

USE CONTROL + C while the highlight page is up.

Go to patient EHR, with Documents tab open, your added note open and ready to paste into body, right click cursor in body box then, CONTROL + V.

Click sign under the note if complete.
<table>
<thead>
<tr>
<th>Risk of Post-Percutaneous Coronary Intervention Bleeding Based on the Bedside Bleeding Risk Prediction Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STEMI</strong></td>
</tr>
<tr>
<td>○ No  ○ Yes</td>
</tr>
<tr>
<td><strong>Age, yrs</strong></td>
</tr>
<tr>
<td>○ Less than 60  ○ Age 71 - 79  ○ Age 60 - 70  ○ Greater than or equal to 80</td>
</tr>
<tr>
<td><strong>BMI</strong></td>
</tr>
<tr>
<td>○ Less than 20  ○ BMI 20 - 30  ○ BMI 31 - 39</td>
</tr>
<tr>
<td><strong>Previous PCI</strong></td>
</tr>
<tr>
<td>○ No  ○ Yes</td>
</tr>
<tr>
<td><strong>Chronic Kidney Disease</strong></td>
</tr>
<tr>
<td>○ No: greater than 90  ○ Mild GFR 60 - 89  ○ Moderate: GFR 30 - 99  ○ Severe: less than 23 and/or dialysis dependent</td>
</tr>
<tr>
<td><strong>Cardiogenic Shock</strong></td>
</tr>
<tr>
<td>○ No  ○ Yes: sustained SBP less than 90 requiring inotropic, vasopressor, or mechanical support</td>
</tr>
<tr>
<td><strong>Cardiac Arrest Within 24 H</strong></td>
</tr>
<tr>
<td>○ No  ○ Yes</td>
</tr>
<tr>
<td><strong>Female</strong></td>
</tr>
<tr>
<td>○ No  ○ Yes</td>
</tr>
<tr>
<td><strong>Hb</strong></td>
</tr>
<tr>
<td>○ Hb less than 13  ○ Hb greater than or equal to 13 or less than 15  ○ Hb greater than or equal to 15</td>
</tr>
<tr>
<td><strong>PCI Status</strong></td>
</tr>
<tr>
<td>○ Elective: outpatient  ○ Urgent: inpatient prior to discharge  ○ Emergency: &quot;as soon as possible&quot;, call-in, bums other cases: Salvage: coding, last resort</td>
</tr>
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</table>

- PCI Bleed Risk calculator built in the EMR
CathPCI Bleed Risk Assessment

Step 1: Assess bleed risk
- Low: ≤ 25
  - Consider 1 bleed avoidance strategy
- Mod: 26-65
  - Implement 1 bleed avoidance strategy
- High: > 65
  - Implement 2 bleed avoidance strategies

Step 2: Choose BAS
- Access site
  - #1 Radial
- GPIIb/IIIa inhibitor
  - #2 No GPI or bolus-only GPI
- Closure device
  - #3 Perclose

**For Impella, implement #2 and #3 above**
METRIC #40 HISTORICAL DATA

Historical Performance

Quarterly Value

2017Q1: 3.57  
2017Q2: 3.8  
2017Q3: 4.17  
2017Q4: 4.6  
2018Q1: 3.45  
2018Q2: 4.02  
2018Q3: 3.17  
2018Q4: 2.65
QUESTIONS?
Team Roster

- Multidisciplinary Team
- Identify Champion and Roles
- Contact Information
- Submit to NCDR within 45 days
- ncdr@acc.org or ncdrmall@acc.org

<table>
<thead>
<tr>
<th>Contact Name (First &amp; Last Name)</th>
<th>Position Title</th>
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<tbody>
<tr>
<td>Physician Medical Director</td>
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<tr>
<td>Team Facilitator</td>
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<tr>
<td>Hospital Administration Sponsor</td>
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<td>Team Member</td>
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Webinars

• All Webinars are archived and available for review
• Webinar #7 January 22, 2020
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