PCI In-Hospital Risk Adjusted Rate of Bleeding Events

Metric 37

Disclosures

• Tony Hermann has nothing to disclose
• Mark Hutcheson has nothing to disclose
• Cornelia Anderson has nothing to disclose
• Issam Moussa has nothing to disclose

Objectives:

• Discuss the significance of Bleeding Complications associated with PCI
• Identify the role of Bleeding Avoidance Strategies
• Discuss the Inclusion and Exclusion Criteria for the Risk Adjusted Bleeding Model
• Demonstrate knowledge of data abstraction through participation with the ARS
• Discuss the Risk Adjusted Bleeding Model as reported in the Outcomes Report
Incidence & Affects of Bleeding Events associated with PCI

- Bleeding occurs in 2-6% of patients
- Length of stay
- Increased cost
- MI & Stroke
- Mortality
- Blood Transfusions

*Association Between Use of Bleeding Avoidance Strategies and Risk of Periprocedural Bleeding Among Patients Undergoing Percutaneous Coronary Intervention* JAMA 2012

*Bleeding, Blood Transfusion, and Increased Mortality after PCI* JACC 2009

CathPCI Resources for Metric 37 and Risk Adjusted Models

CathPCI Registry

V4 Outcomes Companion Guide

Metric 37

37. PCI in-hospital risk adjusted rate of bleeding events (all patients)

**Description:** Your hospital’s risk adjusted rate of bleeding events for patients with PCI procedures using the NCDR® PCI bleeding risk adjustment model.

Count of patients with PCI procedures with at least one of the following:

1. Bleeding event w/in 72 hours (8050)
2. Hemorrhagic stroke (8021)
3. Tamponade (8025)
4. Post-PCI transfusion (8040)
5. Absolute hgb decrease (7320 and 7345) from pre-PCI to post-PCI
PCI Risk Adjusted Bleeding Model

Model Eligibility

- **Facility Level**
  - Pass DQR
  - Hemoglobin

- **Patient Level**
  - PCI procedure
  - Index procedure
  - Non missing variables

Exclusions

- patients who die

Risk Variables

- **Age >80**
- GFR >45-60
- BMI >30
- STEMI
- Lytics
- Cardiogenic Shock
- Pre-Procedure Hgb <=13
- Diabetes
- Female
- Cardiac Arrest w/in 24 hrs
- NYHA Class IV
- Prior PCI
- CKD on Dialysis
- Lesion complexity

Bleeding Avoidance Strategies

- Risk Assessment
- Smaller Sheath Size
- Vascular Closure devices
- Bivalirudin/Angiomax
- Radial Access

* Bleeding Avoidance Strategies and Outcomes in Patients ≥80 Years of Age with ST-Elevation MI Undergoing Primary PCI www.ajconline.org 2012
Section J  Intra/Post-Procedure Events  
Seq#8050 (Bleeding Event w/in 72 hours)

Documentation:
• 58 yo female
• Positive Stress Test w/ high risk of ischemia
• PMH: HTN, Dyslipidemia
• Right femoral access
• PCI of 99% Prox LAD w/ DES
• Discharged home 48 hours after PCI
• Pre-Hemoglobin 14.8 Post-Hemoglobin 11.2
• No bleeding event documented
ARS Question #1
How is Bleeding Event w/in 72 Hours Seq#8050 coded?

1. Yes
2. No

How is Bleeding Event w/in 72 Hours Seq#8050 coded?

Documentation:
• Discharged home 48 hours after PCI
• Pre-Hemoglobin 14.8
  Post-Hemoglobin 11.2
• No bleeding event documented

Question:
1. Yes
2. No

ARS Question #2
As the second part to coding a Bleeding Event which data element would be coded?

1. Bleeding at the Access Site (Seq#8055)
2. Hematoma at Access Site (Seq#8060)
3. Retroperitoneal Bleeding (Seq#8070)
4. GI Bleed (Seq#8080)
5. GU Bleed (Seq#8090)
6. Other Bleed (Seq#8100)
As the second part to coding a Bleeding Event which data element would be coded?

Documentation:
- Pre-Hemoglobin 14.8
- Post-Hemoglobin 11.2
- No bleeding event documented

Question?
1. Access Site (8055)
2. Hematoma (8060)
3. Retroperitoneal (8070)
4. GI Bleed (8080)
5. GU Bleed (8090)
6. Other (8100)

ARS Question #3
Will this patient appear as an ‘Observed Bleed’ in Metric 37?

1. Yes
2. No

Will this patient appear as an ‘Observed Bleed’ in Metric 37?

Documentation:
- Pre-Hemoglobin 14.8
- Post-Hemoglobin 11.2
- Seq#8050 Bleeding Event w/in 72 hrs- Yes

NCDR
Section J Intra/Post-Procedure Events
Seq#8040 (RBC/Whole Blood Transfusion)
Documentation:

- 42 yo male with positive stress test
  - Intermediate Risk of Ischemia
- PMH: HTN, Mitral Valve Repair
- Pre-Procedure Hgb 14 g/dL
- Diagnostic cath
  - All major vessels <50% disease
  - LVEF 45-50%
- Post-Procedure Hgb 8.7 g/dL
- 2 units blood transfused

ARS Question #4
Will this patient appear as an ‘Observed Bleed’ in Metric 37?
1. Yes  2. No
**Will this patient appear as an ‘Observed Bleed’ in Metric 37?**

**Documentation:**
- Pre-Procedural Hgb: 14 g/dL
- Diagnostic cath:
  - All major vessels <50% disease
  - LVEF 45-50%
- Post-Procedural Hgb: 8.7 g/dL
- 2 units blood transfused

**Question:**
1. Yes
2. No

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**Bleeding Events**

- Patient presents to ER in Cardiac Arrest
- PMH: PCI, HTN, Dyslipidemia
- Emergently to cath lab
- ECMO to Left Femoral A/V Access
- Right Arterial Access for Angiography
- LM thrombus
- Thrombectomy & Stent

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**Section J Intra/Post-Procedure Events**
Seq#8040 (RBC/Whole Blood Transfusion)

**Documentation:**
- Patient presents to ER in Cardiac Arrest
- PMH: PCI, HTN, Dyslipidemia
- Emergently to cath lab
- ECMO to Left Femoral A/V Access
- Right Arterial Access for Angiography
- LM thrombus
- Thrombectomy & Stent
Section J Intra/Post-Procedure Events
Seq#8040 (RBC/Whole Blood Transfusion)

Documentation:
• Transferred to ICU
• ECMO is replaced w/ IABP on day 2
• Pre Hgb 13.5 g/dL 72Hrs Post Hgb 11.0 g/dL
• Day 4 Hemoglobin 8.9 g/dL (4.6g/dL drop)
• CT dx of Retroperitoneal hematoma
• Transfusion PRBC’s administered

ARS Question #5
Has the Criteria been met for RBC/Whole Blood Transfusion Seq#8040?
1. Yes  2. No

Has the Criteria been met for RBC/Whole Blood Transfusion Seq#8040?

Documentation:
• Day 4 Hemoglobin 8.9 (4.6g/dL drop)
• Transfusion PRBC’s administered

Question:
1. Yes
2. No
ARS Question #6
Has the criteria been met to code Bleeding Event w/in 72 Hours Seq#8050?
1. Yes  2. No

Has the criteria been met to code Bleeding Event w/in 72 Hours Seq#8050?

Documentation:
- Pre Hgb 13.5 g/dL 72Hrs
- Post Hgb 11.0 g/dL
- Day 4 Hemoglobin 8.9 (4.6g/dL drop)
- CT dx of Retroperitoneal hematoma
- Transfusion PRBC’s administered

Question:
1. Yes
2. No

ARS Question #7
Will this patient appear as an ‘Observed Bleed’ in Metric 37?
1. Yes  2. No

37. PCI In-hospital risk adjusted rate of bleeding events (all patients)
Description: Your hospital’s risk adjusted rate of bleeding events for patients with PCI procedures using the NCDR®, PCI bleeding risk adjustment model.
Will this patient appear as an ‘Observed Bleed’ in Metric 37?

Documentation:
- Day 4 Hemoglobin 8.9 (4.6g/dL drop)
- Seq#8050 Bleeding Event w/in 72hrs-No
- Seq#8040 Transfusion-Yes

Question:
1. Yes
2. No

Bleeding Events

Section J Intra/Post-Procedure Events
Seq#8035 (Other Vascular Comp Requiring Tx)

Documentation:
- 73 yo male PCI for STEMI 3 weeks ago
- Patient c/o chest pain at rest
- EMS transport to ER
- Normal ECG & Negative Biomarkers
- Cath Lab for Unstable Angina
- Right Femoral Access
- FFR of 1st Diagonal
- DES 1st Diagonal
Section J  Intra/Post-Procedure Events
Seq#8035 (Other Vascular Comp Requiring Tx)

Documentation:
• Post Procedure to Recovery Area
• Patient c/o pain & pressure to Right Groin
• Assessment=Hematoma, Full Bladder
• Foley Catheter
• Femoral Artery Pseudo Aneurysm
• Ultrasound guided compression of PA
• Hemoglobin drop of 3g/dL noted in AM

ARS Question #8
Has the criteria been met for coding Other Vascular Complications Requiring Treatment Seq#8035?
1. Yes
1. No

Has the criteria been met for coding Other Vascular Complications Requiring Treatment Seq#8035?

Documentation: Question?
• Hematoma 1. Yes
• Pseudo aneurysm 2. No
• Ultrasound guided compression of PA
• Hemoglobin drop of 3g/dL in AM
ARS Question #9
Does this scenario meet the criteria for coding Bleeding Event within 72 Hours in Seq#8050?
1. Yes  2. No

Documentation:
- Hematoma
- Pseudo aneurysm
- Hemoglobin drop of 3g/dL in AM

ARS Question #10
As the second part to coding a Bleeding Event which data element would be coded?
1. Bleeding at the Access Site  (Seq#8055)
2. Hematoma at Access Site  (Seq#8060)
3. Retroperitoneal Bleeding  (Seq#8070)
4. GI Bleed  (Seq#8080)
5. GU Bleed  (Seq#8090)
6. Other Bleed  (Seq#8100)
As the second part to coding a Bleeding Event which data element would be coded?

**Documentation:**
- Hematoma
- Pseudo aneurysm
- Hemoglobin drop of 3g/dL in AM

**Question?**
1. Access Site (8055)
2. Hematoma (8060)
3. Retroperitoneal (8070)
4. GI Bleed (8080)
5. GU Bleed (8090)
6. Other (8100)

Section G  PCI Procedure
Seq#9500 Procedure Medications

**Documentation:**
- Hemostasis is achieved with mechanical compression
- Resolution of Pseudo aneurysm
- Total Hemoglobin drop observed 3.6g/dL
- LOS 3days
- D/C Meds: Beta blocker, Nitrates, ASA, Statin, a P2Y12 inhibitor—Brilinta is started and Clopidogrel is discontinued

ARS Question #11
Are P2Y12’s and/or Brilinta coded in Discharge Medications?
1. Yes/No  2. Yes/Yes  3. No/Yes  4. No/No
Are P2Y12’s and/or Brilinta coded in Discharge Medications?

Documentation:
• D/C Meds: Betablocker, Nitrate, ASA, Statin, a P2Y12 inhibitor-Brilinta

Question:
1. Yes/No
2. No/Yes
3. Yes/Yes
4. No/No

ARS Question #12
Will this patient appear as an ‘Observed Bleed’ in Metric 37?

1. Yes  2. No

| Metric 37. PCI in-hospital risk adjusted rate of bleeding events (all patients) |
| Description: Your hospital’s risk adjusted rate of bleeding events for patients with PCI procedures using the NCORP PCI bleeding risk adjustment model. |
| Numerator | Count of patients with PCI procedures with at least one of the following: |
| 1. Bleeding event w/in 72 hours (8050); OR |
| 2. Hemorrhagic stroke (8022); OR |
| 3. Tamponade (8015); OR |
| 4. Post-PCI transfusion (8040) for patients with a pre-procedure hgb >8 g/dL AND no CABG and pre-procedure hgb not missing; OR |
| 5. Absolute hgb decrease (7220 and 7240) from pre-PCI to post-PCI of >= 2 g/dL AND pre-procedure hgb <16 g/dL AND pre-procedure hgb not missing. |

Will this patient appear as an ‘Observed Bleed’ in Metric 37?

Documentation:
• Seq#8035 Other Vascular Complications Req Rx
• Seq#8050 Bleeding Event w/in 72 Hours
• Seq#8060 Hematoma

Question:
1. Yes
2. No
Bleeding Events

Section G  PCI Procedure
Seq#9500 Procedure Medications

Documentation:
• 68 year old female s/p right hip replacement
• C/o chest tightness x40min 3days post-op
• STE in leads I, AVL, V5, V6
• Cath lab-Right Radial Access
• Radial Cocktail administered
  – 2,000 units Heparin
  – 2mg Verapamil
  – 200mcg Nitroglycerin

ARS Question #13
Is Verapamil captured as a Calcium Channel Blocker in Seq#5027?

1. Yes
2. No
Is Verapamil captured as a Calcium Channel Blocker in Seq#5027?

Documentation:
- Right Radial Access
- Radial Cocktail
  - 2,000u Heparin
  - 2mg Verapamil
  - 200mcg Nitroglycerin

Question?
1. Yes
2. No

ARS Question #14
Is the IA Heparin of the Radial Cocktail captured for Procedural Medications?

1. Yes
2. No

Is the IA Heparin of the Radial Cocktail captured for Procedural Medications?

Documentation:
- Right Radial Access
- Radial Cocktail
  - 2,000u Heparin
  - 2mg Verapamil
  - 200mcg Nitroglycerin
Section D  Cath Lab Visit
Seq#5350 (Arterial Access Site)

Documentation:
• Coronary Angiography
  – Mid RCA 65%
  – Proximal Circumflex 95%
  – Distal Diagonal 70%
• PCI through radial access is unsuccessful
• PCI completed through Left Femoral Artery
• Stent to Prox Circumflex
• Angioseal to femoral/TR Band to radial access
• Patient is moved to ICU

ARS Question #15
How is Arterial Access Site Seq#5350 coded?
1. Femoral
2. Brachial
3. Radial
4. Other

How is Arterial Access Site Seq#5350 coded?

<table>
<thead>
<tr>
<th>Arterial Access Site</th>
<th>Femoral</th>
<th>Brachial</th>
<th>Radial</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right Radial Access</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Radial</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section J  Intra/Post Procedural Events
Seq#8000-8100

Documentation:

- ICU
  - Tachycardia HR 120's
  - Hypotensive SBP 100's
  - JVD, muffled heart sounds
- 2D Echo
- Pericardiocentesis
- Right Radial Access site oozing

ARS Question #16
How will this event be captured in the Intra & Post-Procedure Events?

1. Cardiogenic Shock Seq#8005
2. Heart Failure Seq#8010
3. Tamponade Seq#8025
4. Other Vascular Complications Requiring Treatment Seq#8035

How will this event be captured in the Intra & Post-Procedure Events?

Question?

1. Cardiogenic Shock Seq#8005
2. Heart Failure Seq#8010
3. Tamponade Seq#8025
4. Other Vascular Complications Requiring Treatment Seq#8035
ARS Question #17
Bleeding at Access Site Seq#8055 will not be coded, why?
1. Because a post-procedural event was already coded
2. Because the parameters of Seq#8050 Bleeding Event w/in 72 hrs were not met
3. Because this is captured under Seq#8035 Other Vascular Complications Req Rx

Documentation:
- Right Radial Access site bleeding
- PCI completed through Left Femoral Artery

Question:
1. Because a post-procedural event was already coded
2. Because the parameters of Seq#8050 Bleeding Event w/in 72 hrs were not met
3. Because this is captured under Seq#8035 Other Vascular Complications Req Rx

ARS Question #18
What other reason would prevent coding this event in Seq#8055 Bleeding at Access Site?
1. Radial Access site bleeding is not captured
2. Because Mark said, ‘No’
3. The Access site is specific to what was coded in Seq#5350 Arterial Access Site
What other reason would prevent coding this event in Seq#8055
Bleeding at Access Site?

**Documentation:**
- Right Radial Access site bleeding
- PCI through radial access is unsuccessful
- PCI completed through Left Femoral Artery

**Question:**
1. Radial Access site bleeding is not captured
2. Cause Mark said, ‘No’
3. The Access site is specific to what was coded in Seq#5350 Arterial Access Site

**ARS Question #19**
Will this patient appear as an ‘Observed Bleed’ in Metric 37?

1. Yes  2. No

**37. PCI in-hospital risk adjusted rate of bleeding events (all patients)**
**Description:** Your hospital’s risk adjusted rate of bleeding events for patients with PCI procedures using the NCDR®-PCI bleeding risk adjustment model.

<table>
<thead>
<tr>
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<td>5. Absolute hgb decrease (7.00 and 7.945) from pre-PCI to post-PCI of &gt; 2 g/dL AND pre-procedure hgb &lt; 16 g/dL AND pre-procedure hgb not missing.</td>
</tr>
</tbody>
</table>

**Will this patient appear as an ‘Observed Bleed’ in Metric 37?**

**Documentation:**
- Right Radial Access site bleeding
- Pericardiocentesis
- Seq#8025 Tamponade-Yes

**Question:**
1. Yes
2. No
Bleeding Events

Section J  Intra/Post Procedural Events
Seq#8015 (CVA/Stroke)

Documentation:
• 79 yo male in cardiac arrest, multi defib
• Sustainable rhythm with ST Elevation
• Intubated, Emergently to cath lab
• Totally occluded RCA, treated with DES
• Unresponsive 24hrs later
• CT shows embolic stroke
• Neuro status unchanged 48 hrs after PCI

ARS Question #20
How will Seq#8015 (CVA/Stroke) & Seq#8021 Hemorrhagic Stroke be coded?
1. Yes/Yes  3. No/No
2. Yes/No  4. No/Yes
How will Seq#8015 (CVA/Stroke) & Seq#8021 Hemorrhagic Stroke be coded?

Documentation:
- Unresponsive 24hrs later
- CT shows embolic stroke
- Neuro status unchanged 48 hrs after PCI

Question:
1. Yes/Yes
2. Yes/No
3. No/No
4. No/Yes

ARS Question #22
Will this patient appear as an ‘Observed Bleed’ in Metric 37?

1. Yes  2. No

Will this patient appear as an ‘Observed Bleed’ in Metric 37?

Documentation:
- Seq#8015 CVA/Stroke-Yes
- Seq#8021 Hemorrhagic Stroke-No

Question:
1. Yes
2. No
Bleeding Events

Section J Intra/Post-Procedure Events
Seq#8050 (Bleeding Events w/in 72 Hours)

Documentation:
• 39 year old male
  — staged PCI for proximal 95% LAD lesion
  — IABP to right femoral access
  — Pre-Procedure Hemoglobin 11.8 g/dL
• Recent History:
  — Presented to ER in cardiogenic shock
  — AMI 48 hours ago
  — Primary PCI with DES for totaled RCA

Section J Intra/Post-Procedure Events
Seq#8050 (Bleeding Events w/in 72 Hours)

Documentation:
• In ICU
  — IABP discontinued in AM
• 48 hours after staged PCI GI Bleed
  — Stat Hgb 8.9 g/dL
  — Protonix 40mg IVPB
  — 2 units PRBC’s
• Discharged 7 days after arrival
ARS Question #23
Has the criteria been met to code Bleeding Event w/in 72 Hours Seq#8050?
1. Yes  2. No

Documentation:
• Pre-Procedure Hemoglobin 11.8 g/dL
• GI Bleed
• Stat Hgb 8.9 g/dL w/in 48 hrs
• 2 units PRBC’s

ARS Question #24
As the second part to coding a Bleeding Event which data element would be coded?
1. Bleeding at the Access Site (Seq#8055)
2. Hematoma at Access Site (Seq#8060)
3. Retroperitoneal Bleeding (Seq#8070)
4. GI Bleed (Seq#8080)
5. GU Bleed (Seq#8090)
6. Other Bleed (Seq#8100)
As the second part to coding a Bleeding Event which data element would be coded?

Documentation:
- Pre-Procedure Hemoglobin 11.8 g/dL
- GI Bleed
- Stat Hgb 8.9 g/dL with/ in 48 hrs
- 2 units PRBC’s

Question?
1. Access Site (8055)
2. Hematoma (8060)
3. Retroperitoneal (8070)
4. GI Bleed (8080)
5. GU Bleed (8090)
6. Other (8100)

ARS Question #25
Will this patient appear as an ‘Observed Bleed’ in Metric 37?

1. Yes   2. No

Will this patient appear as an ‘Observed Bleed’ in Metric 37?

Documentation:
- 48 hours after staged PCI GI Bleed
- 2 units PRBC’s
- Seq#8040 Blood Transfusion-Yes
- Seq#8050 Bleeding Event w/ in 72 hours-Yes
- Seq#8080 GI Bleed-Yes

Question:
1. Yes
2. No
Dashboard View Metric 37

On the Dashboard Drilldown

Metric 37 in the Outcomes Report
Got it??????

When the Observed rate is >Expected
1. Missing Data? Audit charts to determine if variables used to determine risk are consistently completed.
3. Data Collection & Entry? Analyze the process around data collection/entry and or systems used.

Questions???