Deciphering Cardiovascular Disease in ICD-10

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Learning Objectives

- At the completion of this educational activity, the learner will be able to:
  - Identify changes to coding and documentation guidelines for cardiovascular disease with focus on coronary artery disease, myocardial infarction, congestive heart failure, and stroke
  - Define areas of increased specificity through clinical examples including procedural documentation
  - Incorporate documentation changes into compliant queries
  - Confidently engage physician participation

Cardiovascular Disease

Source: Circulation, Heart Disease and Stroke Statistics--2014 Update: A Report From the American Heart Association, 2013;01.cir.0000441139.02102.80
Projected Economic Burden in US

Source: Circulation, Heart Disease and Stroke Statistics--2014 Update: A Report From the American Heart Association, 2013;01.cir.0000441139.02102.80

Quality of Care

Cost Reduction

Quality of Care (Life Expectancy)

Healthcare Spending

Quality Improvement

Health Care Reform
Impact of ICD-10 on Quality Data?

- Quality measures need translation
- Clinical intent of the measure
  - The specificity of ICD-10-CM codes may alter the definition of the quality measure
  - ICD-10-CM coding conventions and guidelines can affect inclusions and/or exclusions
  - Will the patient population be better identified?
- Impact on existing trend data

Engagement, education, collaboration
Hypertensive Diseases (I10–I15)

- Hypertensive diseases (heart, renal, cerebrovascular, etc.) have unique codes based on documentation
- Benign, accelerated, and malignant are nonessential modifiers in ICD-10-CM
  - Accelerated and malignant are “CCs” in ICD-9-CM, but no separate code in ICD-10-CM; therefore “no CC or MCC”
  - Assess impact
Acute Coronary Syndrome

- Spectrum of unstable coronary artery disease
  - **Unstable angina**
  - *(Demand ischemia)*
  - **Non-ST segment elevation myocardial infarction (NSTEMI)** – elevation of cardiac biomarkers (i.e., troponin) **without** ST segment elevation on ECG
  - **ST segment elevation myocardial infarction (STEMI)** – elevation of cardiac biomarkers (i.e., troponin) **with** ST segment elevation on ECG

Unstable Angina

- **Unstable angina** is suggested if:
  - **Angina** (chest discomfort) that is unprovoked by exertion and lasts for 20 minutes
    **OR**
  - New onset, defined as angina pain that began within last 2 weeks to 2 months and requires minimal exertion to provoke
    **OR**
  - Accelerating angina, defined as angina pain that has worsened over past few days to weeks and is occurring more frequently or with less provocation
**Angina Pectoris**

- Unstable
- Accelerated
- Crescendo
- Progressive
- Spasmodic
- Atherosclerosis of native vessel
- Atherosclerosis of bypass graft
- Atherosclerosis of coronary artery of transplant
- Postinfarction

- STEMI
- NSTEMI
- Subsequent
- Postprocedural

- Acute myocardial ischemia without infarction

**ICD-10 and Angina**

- ICD-10-CM guidelines:
  - Combination codes for atherosclerotic heart disease with angina pectoris
    - I25.11 Atherosclerotic heart disease of native coronary artery with angina pectoris
    - I25.7x Atherosclerosis of coronary artery bypass grafts and coronary artery of transplanted heart with angina pectoris
  - A causal relationship is assumed with atherosclerosis and angina, unless dissociated
  - Sequencing of coronary artery disease and acute MI remains unchanged
- Specification needed:
  - Type (unstable, spasm, other)
  - Etiology (native vessel, bypass graft (autologous—vein/artery, nonautologous), transplant)
- Combination codes when specified as “unstable” angina define severity (CC) as well as serve as own CC as principal diagnosis
- No MS-DRG changes (based on previous direction of sequencing from ICD-9)
Myocardial Ischemia

<table>
<thead>
<tr>
<th></th>
<th>ICD-9-CM</th>
<th>ICD-10-CM</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACS</td>
<td>411.11 (CC)</td>
<td>I24.9 (CC, no change)</td>
</tr>
<tr>
<td>Unstable angina</td>
<td>411.11 (CC)</td>
<td>I20.0 (CC, no change)</td>
</tr>
<tr>
<td>Demand ischemia without infarction</td>
<td>411.89 (CC)</td>
<td>I24.8 (CC, no change)</td>
</tr>
<tr>
<td>Myocardial ischemia without infarction</td>
<td>411.89 (acute or ≤ 8 wks.), CC</td>
<td>I24.9 (acute or ≤ 4 wks.), CC</td>
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<tr>
<td></td>
<td>411.89 (subacute), CC</td>
<td>I24.9 (subacute), CC</td>
</tr>
<tr>
<td></td>
<td>414.9 (chronic or &gt; 8 wks.)</td>
<td>I25.9 (chronic or &gt; 4 wks.)</td>
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</tbody>
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Notes:
1. Two codes separating ACS from unstable angina.
2. No change in indexing or exclusions except definition of acute regarding myocardial ischemia.
3. Consider subacute as option in query to define acuity of ischemia.
4. Although some physicians include myocardial infarction with ACS or demand ischemia on a clinical basis, ICD-10 (like ICD-9) does not consider equivalent. Query if clinical indicators support myocardial infarction.

Clinical Case

65 WM with known CAD s/p 2 vessel CABG, HTN, sick sinus syndrome, and hyperlipidemia is admitted with prolonged recurrent chest pain and dyspnea concerning for angina. ECG and initial cardiac enzymes are unremarkable. After admission, patient develops high-grade symptomatic second-degree AV block, refractory to medical therapy.

Given the angina and AV block, cardiac catheterization was performed. Catheterization reveals mild to moderate atherosclerotic disease of grafts to left circumflex and left anterior descending as well as disease in the right coronary artery. Dual-chamber pacemaker was placed. Medical management was recommended with initiation of nitrates and increasing beta-blockers. Discharge diagnoses of CAD with angina and high-grade secondary AV block was noted.

Diagnoses:
1. Atherosclerotic disease of right coronary artery with angina (I25.119)
2. Atherosclerotic disease of unspecified bypass grafts with angina (I25.709)
3. AV block, second degree (I44.1)
Query

65 WM with known CAD s/p 2 vessel CABG, HTN, sick sinus syndrome, and hyperlipidemia is admitted with prolonged recurrent chest pain and dyspnea concerning for angina. ECG and initial cardiac enzymes are unremarkable. Cardiac catheterization reveals mild to moderate atherosclerotic disease. Discharge diagnoses of CAD with angina and high-grade secondary AV block was noted.

Can this patient’s angina be further specified as:
1. Unstable/accelerated
2. Spasm induced
3. Stable
4. Other ____________________
5. Cannot be determined

Clinical Case

77 WF with HTN, CAD, and DM was admitted with melena concerning for acute diverticular bleed.

**Diagnostics:** Evaluation revealed tachycardia (115) and mild hypotension with BP 90/54 mmHg. Hemoglobin was noted to be 7.2 g/dl as well as a peak troponin of 0.09 ng/ml (0.15). ECG revealed nonspecific T wave changes.

**Hospital course:** Patient was followed on telemetry. Patient was transfused, and hemoglobin improved as did blood pressure. GI bleeding resolved without intervention.

Discharge diagnoses included acute diverticular bleed, anemia, and elevated troponin secondary to anemia.
Query

77 WF with CAD was admitted for diverticular bleed. Evaluation revealed tachycardia (115) and mild hypotension with BP 90/54 mmHg. Hemoglobin was noted to be 7.2 g/dl as well as a peak troponin of 0.09 ng/ml (0.15). ECG revealed nonspecific T changes. Patient was followed on telemetry. Discharge diagnoses noted elevated troponin secondary to anemia. Can the elevated troponin be further specified as:

1. Demand ischemia
2. Acute myocardial ischemia without infarction
3. Subacute myocardial ischemia without infarction
4. Abnormal troponin only
5. Other ________________
6. Clinically unable to determine

Acute Myocardial Infarction (AMI)

- **Third Universal Definition of Myocardial Infarction:**
  - Evidence of myocardial necrosis in a clinical setting consistent with acute myocardial ischemia
  - One of the following must exist to establish the clinical diagnosis of MI:

- **Type 1 (coronary occlusion) and type 2 (demand):**
  - Rise and fall of biomarkers (troponin) with at least one above 99th percentile with at least one of the following indications of myocardial ischemia:
    » Symptoms of myocardial ischemia (chest pain, dyspnea)
    » ECG findings of new ischemia (ST changes, new LBBB)
    » Development of pathological Q waves on ECG
    » Imaging evidence of new loss of viable myocardium or new regional wall motion abnormalities (nuclear med scans or cath)
Acute Myocardial Infarction (cont.)

- **Type 3:** Sudden unexpected cardiac death with symptoms suggestive of myocardial ischemia, and accompanied by new ischemic changes or new LBBB on ECG, but death occurring before biomarkers (preferably troponin) could be adequately assessed.

- **Type 4 A and B:** For percutaneous intervention patients with normal baseline troponin values, if the elevations of biomarkers are 5X the 99th percentile, the MI is designated as PCI-related. A subtype is used for stent thrombosis.

- **Type 5:** For CABG patients with normal baseline troponin levels, if the elevations of biomarkers are 10X the 99th percentile and either new pathological Q waves or new LBBB or angiographically documented new graft occlusion or imaging evidence of loss of viable myocardial tissue the MI is designated as CABG-related.

ICD-10 and Acute Myocardial Infarction

**I25.2**
Old or healed MI (not requiring care)

**I21.x**
Initial acute MI
- STEMI
  - Site
  - Vessel
  - Unspecified
- NSTEMI

**I22.x**
Subsequent acute MI
- STEMI
  - Site
  - Vessel
  - Unspecified
- NSTEMI

**Patient with a recent AMI has another (new) AMI within the 4 week time frame of the initial AMI.**
Acute Myocardial Infarction

• I21  Initial AMI
  – STEMI
    • I21.0  STEMI of anterior wall (Left main vs. LAD vs. other)*
    • I21.1  STEMI of inferior wall (RCA vs. other)*
    • I21.2  STEMI of other sites (Left circumflex vs. posterior …)*
    • I21.3  STEMI of unspecified site
  – NSTEMI
    • I21.4  NSTEMI (nontransmural, subendocardial, non Q-wave)

* Fifth digit required

Acute Myocardial Infarction

• I22  Subsequent AMI
  – Subsequent STEMI
    • I22.0  Subsequent STEMI of anterior wall
    • I22.1  Subsequent STEMI of inferior wall
    • I22.8  Subsequent STEMI of other sites
    • I22.9  Subsequent STEMI of unspecified site
  – Subsequent NSTEMI
    • I22.2  NSTEMI (nontransmural, subendocardial, non Q-wave)
Acute Myocardial Infarction

• ICD-10-CM notes:
  – If NSTEMI evolves to STEMI, assign the STEMI
  – If STEMI converts to NSTEMI due to thrombolytic therapy, it is still coded as STEMI
  – If only STEMI or transmural MI without the site documented, query or assign I21.3 (STEMI of unspecified site)
  – If an AMI is documented as nontransmural or subendocardial, but the site is provided, it is still coded as subendocardial MI

Acute Myocardial Infarction

• ICD-10-CM notes:
  – AMI specified by site (except subendocardial or nontransmural), but not specified as STEMI or NSTEMI, should be coded to acute MI STEMI by site (Coding Clinic, 1st Quarter 2013, pp. 25–26)
  – A code from category I22 must be used in conjunction with a code from category I21
  – The sequencing of the I22 and I21 codes depends upon the circumstances of encounter
  – Complications of STEMI and NSTEMI (within 4 weeks)
    • Must be accompanied by code from category I21 or I22
    • I23.x is sequenced first if it is reason for encounter, followed by I21 or I22
    • I23.x is sequenced after I21 or I22 if complication occurs in same encounter
  – No significant MS-DRG changes
Sequencing of AMIs

Admission for acute MI

Previous MI?

YES

NO

YES

> 4 weeks

NO

I21 (principal)

I22 (principal)
I21 (secondary)

I21 (principal)
I25.2 (secondary)

Admission for COPD with MI after admission

Previous MI?

YES

COPD (principal)

AMI > 4 weeks

NO

COPD (principal)
I21 (secondary)

I22 (secondary)
I21 (secondary)
I25.2 (secondary)
Clinical Case

84 WM with HTN, CAD, DM, and recent inferior MI was admitted for UTI with sepsis. Temperature 102, HR 110, and POX 98% RA. Laboratory data revealed WBC 17K, creatinine 1.0, and urinalysis with bacteria and pyuria. Ceftriaxone was started, and urine culture grew *E. coli*. Patient was maintained on home medications of carvedilol, aspirin, and atorvastatin. EKG revealed Q waves in the inferior leads. Patient remained on telemetry, and cardiac enzymes were followed.

**Discharge diagnoses:**

- *E. coli* sepsis (A41.51, N39.0)
- Recent inferior MI (I25.2)

**Any opportunities in ICD-10?**

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Query

84 WM with HTN, CAD, DM, and recent inferior MI was admitted for UTI with sepsis. Patient was maintained on home medications of carvedilol, aspirin, and atorvastatin. EKG revealed Q waves in the inferior leads. Cardiac enzymes were followed, and the patient remained on telemetry. Discharge diagnoses include *E. coli* sepsis and recent MI. Can the “recent MI” be further specified as:

1. Inferior STEMI that occurred less than or equal to 4 weeks ago
2. Inferior NSTEMI that occurred less than or equal to 4 weeks ago
3. Inferior MI of unknown type that occurred less than or equal to 4 weeks ago
4. Old or healed inferior MI
5. Other __________________
6. Cannot provide further information
Impact on Quality Analytics

- The term “acute” is no longer used to classify myocardial infarction in ICD-10
  - ICD-10: initial or subsequent MI
- **Definition of “acute” myocardial infarction (MI) has changed**
  - ICD-9: eight weeks from initial onset
  - ICD-10: four weeks from initial onset
- **Subsequent vs. initial episode of care**
  - ICD-9: fifth character defines initial vs. subsequent episode of care
  - ICD-10: no ability to distinguish initial vs. subsequent episode of care
- **Subsequent (MI)**
  - ICD-9: no ability to relate a subsequent MI to an initial MI
  - ICD-10: separate category to define a subsequent MI occurring within 4 weeks of an initial MI

**Implications:**
- Confusion and inconsistency in coding
- Analysis of quality metrics compromised
- Identifying the index hospital, therefore, initial episode of care hindered in ICD-10
ICD-10-PCS
Coronary Artery Bypass Graft

Postoperative diagnoses:
1. Coronary artery disease, three-vessel
2. Atypical angina
3. Shortness of breath and fatigue
4. Outside positive stress test
5. Mild-moderate dilated mitral regurgitation on preoperative echo

Operations:
1. Elective off-pump coronary artery bypass grafting x 4; RIMA to LAD-MID; LIMA to OM-1; aortocoronary saphenous vein bypass grafting to DIAG-1 to RCA PL
2. Saphenous vein segment was harvested endoscopically from the left leg

Coronary Artery Bypass Graft

• Root operations:
  – **Bypass**: altering the route of passage of the contents of a tubular body part
  – **Excision**: cutting out or off, without replacement, a portion of a body part
Coronary Artery Bypass Graft

• Codes:
  – RIMA -> LAD: 02100Z8
  – LIMA -> OM1: 02100Z9
  – Saphenous -> D1 AND RCA: 021109W
  – ___?_____ saphenous endoscopic harvest
    • (missing documented body part)

Coronary Artery Bypass Graft

• Bypass procedures
  – B3.6b: Coronary arteries are classified by number of distinct sites treated, rather than number of coronary arteries or anatomic names of a coronary artery
    • Body part: identifies number of coronary artery sites bypassed to
    • Qualifier: specifies the vessel bypassed from
  – B3.6c: If multiple coronary artery sites are bypassed, a separate procedure is coded for each coronary artery site that uses a different device and/or qualifier
Coronary Artery Bypass Graft

• **Excision for graft:**
  – B3.9: If an autograft is obtained from a different body part in order to complete the objective of the procedure, a separate procedure is coded.

• **B4: body part**
  – B4.4: Coronary arteries are classified as single body part, specified by the number of sites treated. Separate body part values are used to specify the number of sites treated when the same procedure is performed on multiple sites in the coronary arteries.

ICD-10-PCS Documentation Issues

• Body part specification
  – “Lesser” vs. “greater” saphenous with approach
  – Bypass from
    • “SVG” to LAD
    • “Jump” grafts (two or more anastomoses per graft)
ICD-10-PCS PTCA With Stent

**Procedures:**
1. Coronary angiography
2. Percutaneous transluminal coronary angioplasty (PTCA) and stent of the left anterior descending

**Stents:**
1. A 2.25 X 12 millimeter drug-eluting stent in the proximal left anterior descending, 2.25 X 12 millimeter Xience stent in the mid left anterior descending
2. Unsuccessful attempt at placing a 2.25 X 14 millimeter drug-eluting stent in the distal left anterior descending

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PTCA With Stent

• Root operations
  – **Dilation:** expanding an orifice or the lumen of a tubular body part

• Guidelines
  – **B4: body part**
    • B4.4: Coronary arteries are classified as single body part, specified by the number of sites treated. Separate body part values are used to specify the number of sites treated when the same procedure is performed on multiple sites in the coronary arteries.
PTCA With Stent

- ICD-10-PCS codes
  - PTCA/stent LAD x2: 027134Z
  - Unsuccessful stent distal LAD: 02703ZZ
- Issues
  - Sites treated rather than number of arteries treated
  - Angioplasty not coded separately as in ICD-9-CM

ICD-10-PCS Documentation Issues

- Vascular catheter insertion
  - Reason for device (monitoring, infusion)
  - Vessel where the catheter terminates
    - Subclavian central venous catheter in superior vena cava
- Valve surgery
  - Annuloplasty with ring (supplement)
  - Replacement with device (St. Jude valve vs. synthetic substitute vs. zooplastics)
- Cardiac catheterization
  - Diagnostic vs. Swan Ganz placement
- Pacemaker
  - Location of pocket (subcutaneous tissue)
  - Lead placement where it ends (left atrium, left ventricle …)
- Maze (destruction)
  - Location of lesions (atrium, pulmonary veins)
Heart Failure and ICD-10

• Currently documentation requirements UNCHANGED
  – No change in the axis of classification
  – No change in coding guidelines
  – No changes in MS-DRG impact

• Changes:
  – All forms (acute, chronic, unspecified) of lung/pulmonary edema with heart disease are coded to I50- with no change in impact
  – A specific heart failure code (I50-) can be added as an ODX with rheumatic heart failure but excludes each other as CC

Clinical Case/Query

Patient is noted to have a history of congestive heart failure (CHF). Pulmonary edema was noted in the progress notes, and the patient was treated with IV furosemide. Echocardiogram was performed with EF 60%.

Query:
The patient is noted to have a history of CHF. Pulmonary edema was noted and IV furosemide was given. Echocardiogram showed EF 60%. Can the patient’s condition be further specified as:
• Acute diastolic heart failure
• Chronic diastolic heart failure
• Both
• Other _________
• Unable to provide any further information
Stroke and ICD-10

• Stroke is defined as acute neurologic injury that results from:
  – Brain ischemia (80%) from thrombosis, embolism, or systemic hypoperfusion
  – Brain hemorrhage (20%) from intracerebral hemorrhage or subarachnoid hemorrhage
• Strokes may be established radiographically or by the persistence of a neurological deficit

Stroke

• I60–I62 Nontraumatic intracranial hemorrhage
  – Location (subarachnoid, intracerebral, subdural, intracranial)
  – Source or site for intracerebral
  – Laterality

  I60.51 Nontraumatic subarachnoid hemorrhage from right vertebral artery
Stroke

- I63 Cerebral infarction
  - Cause (thrombosis, embolism, unspecified occlusion or stenosis)
  - Location (precerebral, cerebral)
  - Laterality
    - I63.311 Cerebral infarction due to thrombosis of the right middle cerebral artery

- MSDRG change: tPA administration in 24 hours no longer impacts DRG (No longer to DRG 65)

Clinical Case

62 WF with HTN, atrial fibrillation (INR 1.3) ischemic cardiomyopathy, diabetes, and hyperlipidemia presents with 8 hours of right-sided weakness, numbness, ataxia, and altered mental status concerning for acute stroke.

**Diagnostics:** Head CT reveals hypodensity in left temporal lobe. MRI/MRA reveals occlusion of branch of left middle cerebral artery with associated hypodensity and edema with midline shift. Echocardiogram reveals no evidence of clot.

**Hospital course:** Patient is placed on clopidogrel with plans to start coumadin outpatient. Repeat head CT is performed in 72 hours with stable findings. Patient’s weakness and mental status changes improve, and after risk stratification, patient is discharged to rehab.

**Discharge diagnoses:** Acute left CVA, weakness, mental status change

What are opportunities for documentation improvement?

Impact and specification
Specificity in Documentation

- Acute left CVA
  - I63.512, Cerebral infarction due to unspecified occlusion or stenosis of left middle cerebral artery
    - **Query for embolism?**
- Right weakness (R53.1)
  - Hemiparesis (CC): dominant vs. nondominant; flaccid vs. spastic
- Mental status change (R41.82)
  - Encephalopathy (MCC): metabolic vs. other
- Edema and midline shift
  - Cerebral edema (MCC) and brain compression (MCC)
- Atrial fibrillation (I48.91)
  - Persistent (CC) vs. chronic

Query

62 WF presents with 8 hours of right-sided weakness, numbness, ataxia, and altered mental status concerning for acute stroke. Head CT reveals hypodensity in left temporal lobe. Patient’s weakness and mental status changes improve, and after risk stratification, patient is discharged to rehab with diagnosis of acute left CVA. Can the patient’s weakness be further specified as:

1. Hemiparesis of right dominant side
2. Hemiparesis of right nondominant side
3. Right-sided weakness only
4. Other ____________
5. Clinically undetermined
Stroke

- I65–I66 Occlusion and stenosis of precerebral and cerebral arteries, not resulting in cerebral infarction
  - Location
  - Laterality

Stroke Sequelae

- I69 Sequelae of cerebrovascular disease
  - Residual (aphasia, dysphagia, hemiparesis)
  - Type of cerebrovascular disease (hemorrhage, infarction)
  - Dominance with hemiparesis
- No change impact
  - Hemiparesis (CC) specified or unspecified
Summary

• ICD-10 is a documentation issue as much as it is a coding issue
• Most documentation is already present in the medical record to support code assignment
• Issues in ICD-9 will be the same as in ICD-10 with some exceptions
• Key to physician engagement is:
  – Physician-led training
  – Peer-to-peer specialty specific education that is personalized for each physician’s clinical practice
  – Most physicians don’t know what they don’t know about documentation: Here is the answer!

Thank you. Questions?

In order to receive your continuing education certificate(s) for this program, you must complete the online evaluation. The link can be found in the continuing education section at the front of the workbook.