

# CARDIOVASCULAR SYSTEM CODING MADE EASY

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AAPC Regional Conference  
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## Cardiovascular Agenda

- Billing and Coding Policy
  - Modifiers and Medical Necessity
- Nuts and Bolts
  - PET Stress Tests
  - Nuclear Stress Tests
  - Echo
  - Cardiac Catheterization
  - Cardiac Intervention
- ICD-9-CM
  - Update and Revisions
- ICD-10-CM

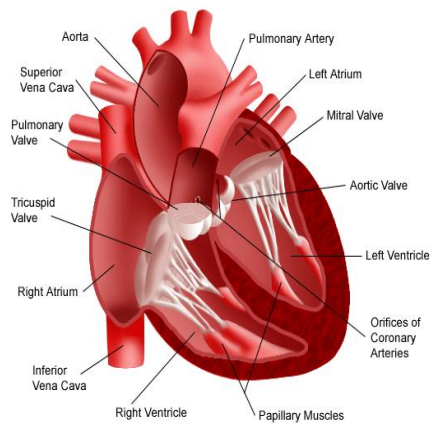


Photo :[http://www.bmhvt.org/services/card\\_ST.sh](http://www.bmhvt.org/services/card_ST.sh)

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## CV-Medical Legal

- NCD vs. LCD
- CAHABA Government Benefit Administrator
  - [https://www.cahabagba.com/part\\_b/policies\\_medical\\_review/lcd\\_active.htm](https://www.cahabagba.com/part_b/policies_medical_review/lcd_active.htm)
- National Correct Coding Initiative Coding Policy Manual for Medicare Services.
  - <http://www.cms.gov/nationalcorrectcodinited/>



<http://www.bing.com/images>

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## Medicare, Modifiers, and Medical Necessity

- Introduced to provide additional information
- Resource:
  - CMS Claims Processing Manual (PUB 100-04)
    - Chapter 1, section 60.1.3.1 and 60.4.2
  - Cahaba Government Benefit Administration
    - [https://www.cahabagba.com/part\\_b/education\\_and\\_outreach/general\\_billing\\_info/modifiers.htm#5](https://www.cahabagba.com/part_b/education_and_outreach/general_billing_info/modifiers.htm#5)



## Medicare, Modifiers and Medical Necessity

### • GA Modifier

- When to use the GA modifier?
  - Item or service expected to be denied as not reasonable and necessary
  - ABN--Waiver of liability on file
  - Required to be reported on claim when
    - Signed ABN on file
      - or
    - Patient's refusal with witnessed documentation
- Is the patient responsible if the claim is denied?
  - Beneficiary is NOT liable if ABN was not signed prior to the service being rendered
  - Beneficiary is responsible with ABN (i.e. other insurance)



## Medicare, Modifiers and Medical Necessity

### • Modifier GY

- When to use modifier?
  - When you expect a denial
    - Excluded or definition
    - Obtain Medicare denial for secondary payor
  - No ABN requirements
- What happens if you use GY modifier?
  - Create an automatic denial
  - Patient is liable for charges
    - Personally or via other insurances
- If you do not use GY Modifier
  - Claim Reviewed
  - Beneficiary may be liable
    - Excluded service or definition



## Medicare, Modifiers and Medical Necessity

### • Modifier GZ

- When to use GZ modifier?
  - Item or service does not meet Medicare policy standards for medical necessity and no ABN was obtained
  - Expect a service to be denied
  - Patient refused an ABN, but service provided
- What happens when GZ modifier is used?
  - Claim will be reviewed
  - If claim denied
    - Patient generally not liable
- Modifier is voluntary
  - Reduce risk



## Other Insurance Providers

Carrier Manual



Medical Policy



Diagnosis/CPT

## Cardiovascular Test

- PET Stress Test
  - Advanced stress test utilizing small amounts of “tracer” injected into blood stream
    - Ischemia
    - CAD
- Nuclear Stress Test
  - Radioactive exercise stress test
    - Size
    - Pumping blood
    - Damaged or dead muscle
    - Arteries (narrowed or blocked)
- Echocardiogram (ECHO)
  - Sound waves creates a motion picture of the heart
    - Size and shape of the heart
    - How well the heart is working (i.e. contracting, blood flow)

## PET Perfusion Test

**Indication:** Multiple cardiac risk factors and cardiomyopathy.

**Technique:** Perfusion PET images were acquired at rest. Low-dose noncontrasted CT transmission images were acquired for attenuation correction. Following an IV infusion of insulin and dextrose. F-18-FDG was administered intravenously and PET images representative of myocardial glucose metabolism were acquired. The fasting blood glucose was 99 mg/dl. Rest dose of Rubidium-82 (mCi): 42.4 and Rest dose of F-18 FDG (mCi): 13.5.

**Findings:** Quality of the study was good. Rest LVEF was 29%. Wall motion abnormalities: global hypokinesis with severe hypokinesis of the inferior wall. The PET perfusion images demonstrate a large zone of moderately decreased activity along the inferior wall. The FDG images demonstrate a matched severe metabolic defect concordant with the perfusion defect with no significant mismatch.

**Impression:** 1) The fixed perfusion abnormality involving the inferior wall is most consistent with myocardial scarring. The matching FDG metabolic defect is confirmatory of myocardial scarring with no evidence of hibernating for chronically ischemic myocardium. 2) The global left ventricular systolic function is severely compromised with a left ventricular ejection fraction of 29% and marked LV dilatation. There is global hypokinesis and severe hypokinesis of the inferior wall. 3) There is no prior study available for comparison. 4) The low-dose, noncontrasted, limited field-of-view CT demonstrates cardiomegaly, aortic valve calcifications, mild coronary artery calcifications.

## PET Perfusion Test

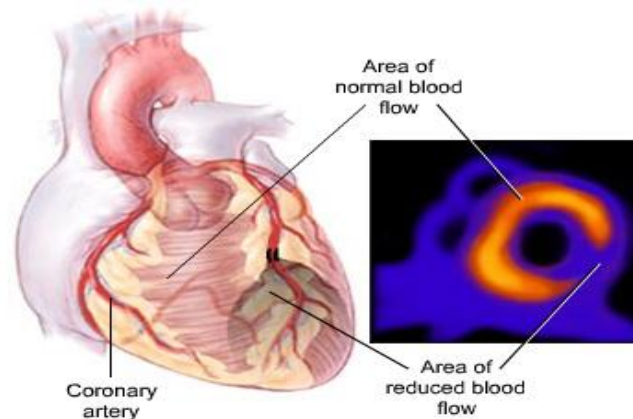
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**CODE(S):** (1) 425.4 (2) 424.1 (3) 414.00 (4) 429.3

(1) 78491-26 (2) 78459-26

## Nuclear Stress Test



## Nuclear Perfusion Study-- Example

**INDICATION:** Chest pain.

**LEXISCAN PORTION:** Patient underwent a Lexiscan nuclear perfusion study for suspected coronary artery disease. During the Lexiscan infusion, the patient was given 27 mCi of technetium-99m sestamibi for visualization of myocardium in standard different planes. Resting EKG shows normal sinus rhythm, has been changed to sinus tachycardia without ischemic EKG changes toward the end of the test. Resting heart rate is 80 beats per minute, has been changed to 108 beats per minute towards the end of the test. Resting blood pressure is 170/100, has been changed to 172/98 towards the end of the test. No significant malignant arrhythmias noted.

**CONCLUSION:** 1) Test was negative for chest pain. 2) Test was negative for ischemic EKG changes. 3) Good hemodynamic response noted. 4) Myocardial nuclear perfusion study documented in the patient's chart was negative for ischemia.

## Nuclear Perfusion Study-- Example

**INDICATION:** Chest pain

**DX CODE:** 786.50

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**CPT CODE(S): (1) 78452-26, (2) 93016 (3) 93018**

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## Treadmill and Myocardial Nuclear Perfusion Study--Example

**INDICATION:** Chest Pain

**FINDINGS:** Patient underwent treadmill nuclear perfusion study for suspected coronary artery disease. The patient exercised on the treadmill according to standard Bruce protocol for 8 minutes 1 second and achieved 9 METs. Resting EKG shows normal sinus rhythm, has been changed to sinus tachycardia without ischemic EKG changes. The patient achieved 9 METS. Resting heart rate is 75 beats per minute, has been changed to 156 beats per minute, which is 89% of maximum predicted heart rate. Resting blood pressure is 126/78, has been changed to 178/83 toward the end of the test. No significant malignant arrhythmias noted.

**CONCLUSION:** 1) Test was negative for chest pain. 2) Test was negative for ischemic EKG changes. 3) Good hemodynamic response noted. 4) Myocardial perfusion study documented in the patient chart as negative for ischemia.

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## Treadmill and Myocardial Nuclear Perfusion Study--Example

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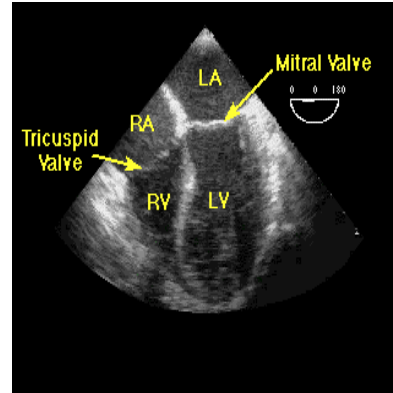
**CPT CODE(S): 78452-26, 93016, 93018**



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## Echocardiogram

- Reasons
  - Heart failure
  - Damage to heart valves
  - Congenital heart defects
  - Aorta aneurysm
  - Blood Clots
- Types
  - Transthoracic
  - Stress
  - Transesophageal
  - Fetal



<http://www.daviddarling.info/encyclopedia/E/echocardiogram.html>, 2011

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## Transesophageal Echocardiogram -- Examples

**INDICATION:** 66 year old man with head and neck cancer referred for mitral valve abnormality on TTE.

**CONCLUSIONS:** 1) Normal LV size and function. LVEF,55%. 2) Myxomatous changes of mitral valve leaflets with mild mitral valve prolapse. No MV mass or vegetation. 3) Mild mitral regurgitation. 4) PFO by agitated saline contrast

**FINDINGS:** The procedure and risk were explained to the patient who consented to the study. The patient tolerated the procedure well without any apparent complications. Pulse wave, continuous wave, and color Doppler used to assess Valvular function, pulmonary veins, and interatrial septum. TEE probe was placed by the Cardiologist. Patient received conscious sedation which was administered by anesthesia. The left ventricular chamber size is normal. The wall thickness is normal. Normal left ventricular systolic function. LVEF >55%. No thrombosis is visualized within the left ventricle. Normal LA chamber size. The left atrial appendage velocity is normal. No LA appendage thrombus. RV chamber size and systolic function within normal limits. RA appears normal. PFO seen. PFO by agitated saline contrast. AV is trileaflet. Leaflets are thin with normal excursion. No aortic stenosis or regurgitation. No aortic regurgitation. Myxomatous changes of mitral valve leaflets. There is prolapse of the anterior leaflet of the mitral valve. Mild mitral regurgitation. Tricuspid valve normal in structure and function. The pulmonic valve appears normal. No pulmonic regurgitation. Normal pericardium. Normal aorta. Main pulmonary artery normal. Pulmonary veins normal.

## Patent Foramen Ovale (PFO)

- Small hole located in the atrial septum that is used during fetal circulation.
- Normally the foramen oval closes at birth.
- If the atrial septum does not close properly, it is called the patent foramen ovale.
- Why is this important to coding?

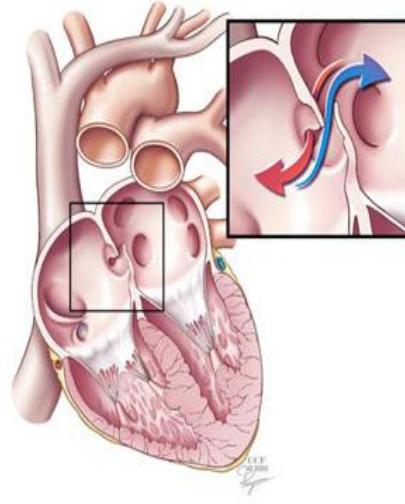


Photo <http://my.clevelandclinic.org/heart/disorders/congenital/pfo.aspx>

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**CODE(S):** 1) 424.0 2) 745.5 (1) 93315-26, (2) +93320-26, (3) +93325-26

**References:** CPT Assistant, December 1997 page 5-6

# Echocardiogram - What's Missing?

### Conclusion

- Normal left ventricular systolic function. LVEF=61 %. There is moderate concentric hypertrophy.
- Normal right ventricular size with normal function.
- Grade 1 diastolic dysfunction

### Interpretation Detail

**Gen:** 2D echocardiogram, M-mode, Doppler and color Doppler performed per protocol. Fully diagnostic study.

**Ind:** hypertension, SOB

**LV:** The left ventricle is normal in size with normal systolic function. The ejection fraction is 61 %. There is moderate concentric hypertrophy. The left ventricular regional wall motion is normal.

**LA:** The left atrium is normal. LA M-mode: 3.82 cm.

**RV:** The right ventricle is normal in size with normal function.

**RA:** The right atrium is normal.

**MV:** The mitral valve is normal.

**AV:** The aortic valve is normal and trileaflet.

**TV:** The tricuspid valve is normal. There is trace tricuspid regurgitation. The PASP is normal. PASP= 29 mmHg, estimated RAP=10mmHg.

**PV:** The pulmonic valve is normal. There is mild pulmonic regurgitation.

**Peri:** The pericardium is normal.

**PA:** The pulmonary artery is normal.

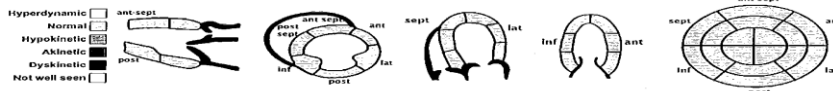
**IAS:** The interatrial septum is normal.

**Ao:** The aorta is normal. Aortic dimension - Ao M-mode= 2.81cm.

**Cava:** The inferior vena cava is normal. The superior vena cava is normal.

Vitals	
Ht 0in	HR Rhy
Wt 0lbs	T BMI
BSA 0	BP /
<b>Measurements</b>	
<b>LV Walls</b>	
IVSd: 1.5cm	0.6-1.1cm
IVSs: 1.87cm	0.8-2.0cm
PWd: 1.5cm	0.6-1.1cm
PWs: 1.7cm	0.8-2.0cm
<b>LV Mass</b>	
Linear: 278g	
<b>LV Chamber</b>	
LVIDd: 4.53cm	3.7-5.6 cm
LVIDs: 3.26cm	1.8-4.2 cm
RWT: 0.66	<0.42
<b>LV Systolic Function</b>	
FS: 28 %	>50%
EF: 61 %	
<b>LV Diastolic Function</b>	
E/A: 0.83	0.6-2
Decel: 308ms	70-100ms
<b>Aortic Valve</b>	
Peak grad: 12mmHg	
Mean grad: 7mmHg	
V1/V2: 0.71	

### Wall motion Diagram



# Transthoracic Echocardiogram - Example

**INDICATIONS (REASON FOR STUDY):** follow-up pericardial effusion, device ASD closure 3/31/2011.

**CONCLUSIONS:** Since prior echo 4/1/11, this limited echo done to follow-up pericardial effusion shows that the fairly small pericardial effusion seen yesterday is now slightly smaller. Today there is 1mm of pericardial fluid anteriorly and about 2mm of fluid posteriorly.

**MEASUREMENTS:** (See next Slide)

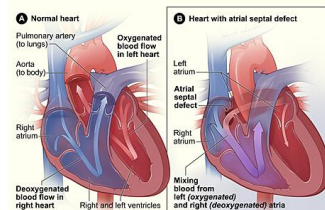


Photo: <http://www.ncbi.nlm.nih.gov/health/health-topics/topics/holes/types.html>, 2011

## Transthoracic Echocardiogram – Example (continued)

Name	Measurements	
	Value	Normal Range
Chamber measurements		
RVIDd (2D)	4.4 cm	(2.7-3.3)
IVSd (2D)	0.9 cm	(0.6-1.1)
LVIDd (2D)	4.1 cm	(3.5-5.6)
LVIDs (2D)	2.8 cm	(2.1-3.7)
LVPWd (2D)	0.9 cm	(0.6-1.1)
Ao Root Diam (2D)	2.6 cm	(2.1-3.7)
LA Diam (2D)	4.1 cm	(1.9-4)
LA Diam (2D) Index	2.2 cm/m <sup>2</sup>	(-2.3)
TV/PV Valve		
TR Pk Vel	3.34 m/sec	
RAP	3 mmHg	
RVSP	47.62 mmHg	
Mitral Valve		
MV Decal Time	195 msec	

## Transthoracic Echocardiogram - Example

INDICATIONS (REASON FOR STUDY): **follow-up pericardial effusion**, device ASD closure 3/31/2011.

**CODE(S): 423.9**

CONCLUSIONS: Since prior echo 4/1/11, this limited echo done to follow-up pericardial effusion shows that the fairly small pericardial effusion seen yesterday is now slightly smaller. Today there is 1mm of pericardial fluid anteriorly and about 2mm of fluid posteriorly.

**CODE(S): 93308-26**

MEASUREMENTS: (See previous Slide)

## Transthoracic Echocardiogram- Examples

**Indication:** Unspecified Disease of Pericardium

**Study Reason:** Breast cancer, breast implants, h/o perimembranous ventricular septal defect, s/p pericardiocentesis with 900 cc drained.

**Conclusions:** Only a trivial amount of pericardial fluid is present. The VSD was not assessed during this study. There is borderline significant respiratory variation in the mitral valve inflow pattern of 25-30%- this may be due to obesity, or suggest an element of constriction. Since previous echo 4/31/10, the effusion has been drained.

**Findings:** The study quality is fair. The left ventricular chamber size is normal. Moderate concentric LVH. LVEF >55%. LA moderately dilated. RV size normal. RV wall thickness is normal. RV systolic function normal. RA size normal. The aortic valve leaflets are not well visualized. No aortic regurgitation. Mitral valve normal. No mitral regurgitation. Tricuspid valve leaflets normal. No TV regurgitation. Pulmonic valve not well seen. Trivial pericardial effusion. Normal aorta. Inferior vena cava very small, suggesting central hypovolemia. Measurements: (See next slide)

## Transthoracic Echocardiogram- Examples

Measurements		
Name	Value	Normal Range
Chamber Measurements		
IVSd (2D)	1.8 cm	(0.6-1.1)
LVIDd (2D)	4.4 cm	(3.5-5.6)
LVIDs (2D)	4 cm	(2.1-3.7)
LVPWd (2D)	1.3 cm	(0.6-1.1)
Ao Root Diam (2D)	3 cm	(2.1-3.7)
LA Diam (2D)	5.2 cm	(1.9-4)

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**CODE(S):** 93308-26

## CARDIOVASCULAR CATHETERIZATION & INTERVENTION

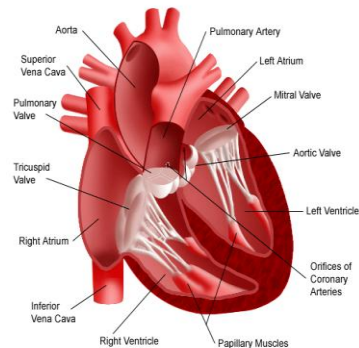
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Photo Google, 2011

## Cardiac Anatomy

- Four Chambers
  - Right and Left Atria
  - Right and Left Ventricle



- Four Valves
  - Aortic
    - Situated between the Left Ventricle and Aorta
  - Mitral
    - Situated between the Left Atrium and Left Ventricle
  - Pulmonary
    - Situated between the Right Ventricle and Pulmonary Artery
  - Tricuspid
    - Situated between the Right Atrium and Right Ventricle

## What should a coder be looking for?

### Right

- Catheter Placement and Measurements
  - Right Atrium-RA/Ventricle-RV
  - Pulmonary Artery-PA
  - Pulmonary Capillary Wedge-PCW
  - Arterial/Aortic –AO
- Resistance
  - Systemic Vascular-SVR
  - Peripheral Vascular - PVR
- Blood Gases
  - Superior Vena Cave-SVC
  - Main PA
- Cardiac Output
  - Thermal Cardiac Output
  - Thermal Cardiac Index
  - Fick Cardiac Output
  - Fick Cardiac Index

### Left

- Catheter Placement and Measurements
  - Left Ventricular
    - Wall Motion
    - Chamber Size
- Ventricular Pressures
  - Diastolic and Systolic Function
- Ejection Fraction – LVEF
- Valve Function
  - Aortic, Mitral
    - Regurgitation and Insufficiency
- Cardiac Output
  - Femoral Artery

## Selective Coronary Artery (SCA)

- Catheter Placement in one of the following:
  - Left Atrium, Ventricle
  - Includes Ventricular injections
  - Left Main Branches - LM
    - Left Anterior Descending-LAD
    - Ramus Intermedius
    - Circumflex-LC
    - Obtuse Marginal-OM
  - Right Coronary Branches - RCA
    - Posterior Descending Artery-PDA
    - Posterior Lateral Branch-PLB

## Cardiac Catheterization - Example (CC-1)

**Procedures Performed:** Left Heart Catheterization and Selective Coronary Angiography

**Indication for Procedure:** Ischemic Heart Disease and Dyspnea

**Patient History:** 68 year old Caucasian female referred by Dr. K Smith for a R/LHC for continued chest pain at rest and with exertion and SOB with and without exertion worse in the last few months. She said that she was having chest pain and numbness on the left side of her body 2-3 weeks ago. She was admitted to a Jackson, TN hospital and, her report says that she was having TIA's. She says there was no real treatment and she would like a more definitive answer for her sx's. I do not believe that she underwent stress testing recently or while hospitalized. Other PMH includes, HTN, obesity, Type II DM now requires metformin and insulin pump, and PVD. She was placed on Plavix about one month ago and taken off of her aspirin while recently hospitalized though she denies any GIB, or clotting difficulty. Depression and anxiety. She says that she had one LHC about 20 years ago that was negative.



## Cardiac Catheterization - Example (CC-2)

**Access/Catheter Placement:** The area was prepped and draped in the usual fashion and anesthetized with a local anesthetic. A 6Fr Terumo Radial sheath was placed in the right radial artery. A 7 Fr sheath was placed in the right internal jugular vein. Catheter was positioned in the right heart system to record pressures and cardiac outputs. A 6 Fr. pigtail catheter was used to perform left heart catheterization, measure pressures, and perform pull back across the aortic valve. Selective coronary angiography was performed using a 6 Fr Tiger catheter. Multiple injections of contrast were made into the left and right coronary arteries with angiograms recorded in multiple projections. Post-procedure, the arterial sheath was pulled and a closure device was deployed. Hemostasis was attained using a Terumo TR-Band closure device. Post-procedure, the venous sheath was pulled and pressure was applied to the site. At the completion of the study, the catheters were removed, hemostasis was maintained, and a dressing was applied.

## Cardiac Catheterization and Intervention Example (Output) (CC-3)

Baseline			
Right Heart Pressures			
RA	a wave = 7	v wave = 3	mean = 2
RV	26/4		
PA	27/10		mean = 17
PCW	a wave = 9	v wave = 6	mean = 5
Arterial Pressures			
AO	172/60		mean = 107
LV	139/8		
Resistances			
SVR		18 Wood units	
Right Heart Sats			
SVC		77%	
Main PA		77%	
Left Hear Sats			
Femoral Artery		98%	
Cardiac Outputs			
Thermal Cardiac Output	6.11 L/min		
Thermal Cardiac Index	2.76 L/min/m <sup>2</sup>		
Fick Cardiac Output	9.36 L/min		
Fick Cardiac Index	4.24 L/min/m <sup>2</sup>		

## Cardiac Catheterization - Example (CC-4)

Diagnostic coronary Information: The coronary anatomy is right-dominant.

LM is medium caliber. No angiographically significant. LAD is diffusely diseased. It has a very proximal 70% proximal lesion just after the takeoff of high D1. LAD in the proximal and mid segments and moderate diffuse disease. Apical LAD has a 90% focal in a bend. The overall caliber of the LAD is small due to the diffuse disease. Intracoronary nitro was given without significant change in lumen size. Circumflex is a medium caliber vessel and gives off a large OM1 and small caliber OM2. The LCx has mild luminal irregularities diffusely. There is a mid OM1 hazy 90% stenosis prior to its bifurcation. Moderate caliber RCA with mild diffuse proximal and mid disease. There is a 40% mid RCA lesion. There is a 95% distal RCA lesion after the PDA takeoff. The PDA is small caliber with proximal diffuse 70-90% stenosis.

### Conclusions:

Hemodynamics: The atrial pressure is normal. The pulmonary artery pressure is normal. The pulmonary capillary wedge pressure is normal. The cardiac output was normal.

Left Ventricular/Aortic Pressures and Angiography: The ejection fraction was estimated. The left ventricular overall contractility is hyperkinetic. The left ventricular end diastolic pressure is normal. The LVEDP measures 8 mmHg. LVEF is >70% with cavity obliteration with systolic contraction.

Coronary Arteriography: Right dominant system with severe three vessels CAD.

## Cardiac Catheterization and Intervention Example (CC-1)

**Procedures Performed:** Left Heart Catheterization and Selective Coronary Angiography **Indication for Procedure:** Ischemic Heart Disease and Dyspnea

**Patient History:** 68 year old Caucasian female referred by Dr. K Smith for a R/LHC for continued chest pain at rest and with exertion and SOB with and without exertion worse in the last few months. She said that she was having chest pain and numbness on the left side of her body 2-3 weeks ago. She was admitted to a Jackson, TN hospital and her report, says that she was having TIA's. She says there was no real treatment and she would like a more definitive answer for her sx's. I do not believe that she underwent stress testing recently or while hospitalized. Other PMH includes, HTN, obesity, Type II DM now requires metformin and insulin pump, and PVD. She was placed on Plavix about one month ago and taken off of her aspirin while recently hospitalized though she denies any GIB, or clotting difficulty. Depression and anxiety. She says that she had one LHC about 20 years ago that was negative.

## Cardiac Catheterization and Intervention Example (CC-2)

**Access/Catheter Placement:** The area was prepped and draped in the usual fashion and anesthetized with a local anesthetic. A 6Fr Terumo Radial sheath was placed in the right radial artery. A 7 Fr sheath was placed in the right internal jugular vein. **Catheter was positioned in the right heart system to record pressures and cardiac outputs.** A 6 Fr. pigtail catheter was used to perform **left heart catheterization, measure pressures, and perform pull back across the aortic valve. Selective coronary angiography** was performed using a 6 Fr Tiger catheter. Multiple injections of contrast were made into the left and right coronary arteries with angiograms recorded in multiple projections. Post-procedure, the arterial sheath was pulled and a closure device was deployed. Hemostasis was attained using a Terumo TR-Band **closure device.** Post-procedure, the venous sheath was pulled and pressure was applied to the site. At the completion of the study, the catheters were removed, hemostasis was maintained, and a dressing was applied.

**CPT Code(s): (1) 93460-26**

## Cardiac Catheterization - Example (Output) (CC-3)

Baseline			
Right Heart Pressures			
RA	a wave = 7	v wave = 3	mean = 2
RV	26/4		
PA	27/10		mean = 17
PCW	a wave = 9	v wave = 6	mean = 5
Arterial Pressures			
AO	172/60		mean = 107
LV	139/8		
Resistances			
SVR	18 Wood units		
Right Heart Sats			
SVC	77%		
Main PA	77%		
Left Heart Sats			
Femoral Artery	98%		
Cardiac Outputs			
Thermal Cardiac Output	6.11 L/min		
Thermal Cardiac Index	2.76 L/min/m <sup>2</sup>		
Fick Cardiac Output	9.36 L/min		
Fick Cardiac Index	4.24 L/min/m <sup>2</sup>		

RHC

## Cardiac Catheterization -Example (CC-4)

**Diagnostic coronary Information:** The coronary anatomy is right-dominant.

LM is medium caliber. No angiographically significant. LAD is diffusely diseased. It has a very proximal 70% proximal lesion just after the takeoff of high D1. LAD in the proximal and mid segments and moderate diffuse disease. Apical LAD has a 90% focal in a bend. The overall caliber of the LAD is small due to the diffuse disease. Intracoronary nitro was given without significant change in lumen size. Circumflex is a medium caliber vessel and gives off a large OM1 and small caliber OM2. The LCx has mild luminal irregularities diffusely. There is a mid OM1 hazy 90% stenosis prior to its bifurcation. Moderate caliber RCA with mild diffuse proximal and mid disease. There is a 40% mid RCA lesion. There is a 95% distal RCA lesion after the PDA takeoff. The PDA is small caliber with proximal diffuse 70-90% stenosis.

**Conclusions:** Hemodynamics: The atrial pressure is normal. The pulmonary artery pressure is normal. The pulmonary capillary wedge pressure is normal. The cardiac output was normal.

Left Ventricular/Aortic **Pressures and Angiography:** The ejection fraction was estimated. The left ventricular overall contractility is hyperkinetic. The left ventricular end diastolic pressure is normal. The LVEDP measures 8 mmHg. LVEF is >70% with cavity obliteration with systolic contraction.

Coronary Arteriography: Right dominant system with **severe three vessels CAD.**

**Code(s): (1) 414.01 (2) 401.9, (3) 278.00 (4) 250.00**

## Right Heart Catheterization w/Biopsy Example RHC w/Biopsy- page 1

**Procedure Performed:** Right Heart Catheterization. Endomyocardial biopsy.

**Patient History:** 61 y/o female s/p OHT, postoperative course complicated by fungal pneumonia. Recently found to have mild rejection on biopsy 8/10/11- presents for repeat biopsy.

**Access/Catheter Placement:** The area was prepped and draped in the usual fashion and anesthetized with local anesthetic. A 0Fr sheath was placed in the right femoral vein. A catheter was positioned in the right heart system to record pressures and cardiac outputs.

**Biopsies:** A Cordis endocardial biotome was advanced to the right ventricle and multiple biopsies were performed using standard technique. The pathology findings will be reported separately. Biopsy Comments: Endomyocardial biopsies were completed without complications. The patient tolerated this procedure well.

**Conclusions:** The right atrial pressure is normal. The right ventricular systolic pressure is normal. The pulmonary artery pressure is normal. There is elevated pulmonary vascular resistance. The cardiac output was normal. Intervention: Successful endomyocardial biopsy.

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Baseline			
Right Heart Pressures			
RA	a wave = 4	v wave = 5	mean = 1
RV	31/7		
PA	28/8		mean = 17
PCW	a wave = 5	v wave = 5	mean = 2
Arterial Pressures			
AO	111/70		mean = 84
LV	139/8		
Resistances			
SVR		20.68 Wood units	
PVR		3.34 Wood units	
Right Heart Sats			
SVC		70%	
Main PA		73%	
Left Heart Sats			
Femoral Artery		98%	
Cardiac Outputs			
Thermal Cardiac Output		4.57 L/min	
Thermal Cardiac Index		2.58 L/min/m <sup>2</sup>	
Fick Cardiac Output		4.01 L/min	
Fick Cardiac Index		2.27 L/min/m <sup>2</sup>	
Left to Right Shunt		0.48 L/min	

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## Right Heart Catheterization w/Biopsy Example

### RHC w/Biopsy- page 1

**Procedure Performed:** Right Heart Catheterization. Endomyocardial biopsy. **Patient History:** 61 y/o female s/p OHT, postoperative course complicated by fungal pneumonia. Recently found to have **mild rejection on biopsy** 8/10/11- presents for repeat biopsy.

**Access/Catheter Placement:** The area was prepped and draped in the usual fashion and anesthetized with local anesthetic. A 0Fr sheath was placed in the right femoral vein. A catheter was positioned in the right heart system to record pressures and cardiac outputs.

**Biopsies:** A Cordis endocardial biotome was advanced to the right ventricle and multiple biopsies were performed using standard technique. The pathology findings will be reported separately. **Biopsy Comments:** Endomyocardial biopsies were completed without complications. The patient tolerated this procedure well.

**Conclusions:** The right atrial pressure is normal. The **right ventricular systolic pressure is normal**. The pulmonary artery pressure is normal. There is elevated pulmonary vascular resistance. The cardiac output was normal. **Intervention:** Successful endomyocardial biopsy.

**CODE(S):** DX: (1)V58.44, (2) V42.1 **Pathology Result:** negative for rejection – do not code 996.83

**CPT CODE(S):** (1) 93505-26, (2) 93451-26-59

**Reference:** CPT Assistant April 2000 Page 10

## Cardiac Catheterization Report—Example New CPT Codes

**Procedure Performed:** Congenital RLHC, Pulmonary Angiography. **Indication for the Procedure:** Pulmonary Valve Disorder. Congestive Heart Failure. **Access/Catheterization Placement:** The area was prepped and draped in the usual fashion and anesthetized with 1% Lidocaine. A 5 Fr 11 cm sheath was placed in the right femoral artery. A 7 Fr sheath was placed in the right femoral vein. Catheter was positioned in the right heart system to record pressures and cardiac outputs. A 5 Fr. Pigtail catheter was used to perform left heart catheterization, measure pressures, and perform pull back across the aortic valve. A single plane left ventriculogram was recorded in the 30 degree RAO projection. Selective left coronary angiography was performed using a 5 Fr JL 3.5 catheter. At completion of the study, the catheters were removed, hemostasis was maintained, and a dressing was applied. Pulmonary Angiography: A 7 Fr Berman catheter was placed in the main PA.

**Diagnostic Coronary Information:** The coronary anatomy is right-dominant. The LM is a medium caliber vessel that bifurcates into LAD and LCx. It is angiographic ally free of disease. The LAD is a medium caliber vessel that gives rise to a small diagonal branch. The LAD has angiographic ally free of disease. The LCx is a medium caliber vessel that gives rise to two very small marginal branches and is angiographic ally free of disease. The RCA is a dominant, medium caliber vessel without evidence of angiographic ally significant disease. (Baseline Measurements taken)**Conclusions:** The right atrial pressure is elevated. The right ventricular overall contractility is normal. There is severe (grade 4+) pulmonic regurgitation. The patient shows evidence of severe pulmonary hypertension. There is ventricularization of the PA wave forms secondary to severe pulmonic valve stenosis. There is mild (grade 2) mitral valve regurgitation. There was severe pulmonic insufficiency.

## Cardiac Catheterization Report—Example New CPT Codes

**Procedure Performed:** Congenital RLHC, Pulmonary Angiography. **Indication for the Procedure:** Pulmonary Valve Disorder. **Congestive Heart Failure.** **Access/Catheterization Placement:** The area was prepped and draped in the usual fashion and anesthetized with 1% Lidocaine. A 5 Fr 11 cm sheath was placed in the **right femoral artery**. A 7 Fr sheath was placed in the **right femoral vein**. Catheter was positioned in the right heart system to record pressures and cardiac outputs. A 5 Fr. Pigtail catheter was used to perform left heart catheterization, measure pressures, and perform pull back across the aortic valve. A single plane left ventriculogram was recorded in the 30 degree RAO projection. Selective left coronary angiography was performed using a 5 Fr JL 3.5 catheter. At completion of the study, the catheters were removed, hemostasis was maintained, and a dressing was applied. Pulmonary Angiography: A 7 Fr Berman catheter was placed in the main PA.

**Diagnostic Coronary Information:** The coronary anatomy is right-dominant. The LM is a medium caliber vessel that bifurcates into LAD and LCx. It is angiographic ally free of disease. The **LAD is a medium caliber vessel** that gives rise to a small diagonal branch. The **LAD has angiographic ally free of disease**. The **LCx is a medium caliber vessel** that gives rise to two very small marginal branches and is **angiographic ally free of disease**. The RCA is a dominant, medium caliber vessel without evidence of angiographic ally significant disease. (Baseline Measurements taken) **Conclusions:** There is severe (grade 4+) pulmonic regurgitation. The patient shows evidence of severe **PULMONARY HYPERTENSION**. There is ventricularization of the PA wave forms secondary to severe **pulmonic valve stenosis**. There is mild (grade 2) **MITRAL VALVE REGURGITATION**. There was severe pulmonic insufficiency.

**CODE(S):** 1) 746.02, 2) 428.0 3) 424.0 4) 416.8  
1) 93531-26 2)93563 3) 93568 4)93565

## Cardiac Catheter Intervention

- **Stents**
  - 92980 – Initial Vessel
  - 92981 – Each Additional Vessel
- **Atherectomy**
  - 92995 – Initial Vessel
  - 92996 – Each Additional Vessel
- **Angioplasty**
  - 92982 – Initial Vessel
  - 92984 – Each Additional Vessel
- **Coding Criteria**
  - Initial Vessel
    - Same vessel, regardless of number of interventions
  - Each Additional Vessel
    - Must be different vessel
  - Code the first intervention to the to highest level
    - Highest level being the stent, followed by atherectomy, and lastly angioplasty
  - Each addition vessel should be assigned a code from
    - 92981 - Stent
    - 92996 - Atherectomy
    - 92984 - Angioplasty

## Interventional Guides

	Angioplasty	Atherectomy	Stent
<b>Notes</b>		(Includes Angioplasty when done on same vessel)	(Includes Angioplasty & Atherectomy same vessel)
Initial	92982	92995	92980
Each Additional	92984	92996	92981

### Modifiers

RC	Right Coronary Artery
LD	Left Anterior Descending Coronary Artery
LC	Left Circumflex Coronary/Obtuse Marginal Coronary Artery

## Same Day Sessions—What Should A Coder Do ?

- Diagnostic and Interventional Catheterization
- Append Modifier 59
- When would you append modifier?
  - Performed for diagnostic purposes
  - Previously performed by a physician at different facility and/or practice
  - Previous report not available for review
  - Acute/abrupt change in patient's condition

## Cardiac Interventional - Example

### Procedures Performed:

- Left Heart Catheterization
- Selective Coronary Angiography
- Transcatheter placement of an intracoronary stent c

### Patient History :

68 yr old female referred back from Dr. for LHC and coronaries. She was asymptomatic until Friday pm. She awoke that am and shortly after getting up began having chest pressure and felt very tired. She went on to the appt. and by the time she arrived she felt as if an elephant was sitting on my chest along with radiation of pain to right shoulder, neck, and arm. She felt very short of breath. According to the pt. MD ran an EKG and sent pt. via ambulance to the hospital. She under went draining of a left pleural effusion and an echocardiogram that showed global hypokinesis and no wall motion abnormalities. Her EF was 55%. Her troponin peaked at 2.6. According to Dr. notes she had **ST elevation of the 1W.**

### Cardiac Indications :

Rule Out CAD - Yes



## Cardiac Interventional - Example

The area was prepped and draped in the usual fashion and anesthetized with 1% Lidocaine. A 6Fr sheath was placed in the artery. 6 Fr. JL4 and JR4 catheters were exchanged over a guide wire to cannulate the coronary arteries. Additional catheters used in this procedure included: IM and MPA2. Multiple injections of contrast were made into the **left and right coronary arteries** with angiograms recorded in multiple projections. An injection of contrast was made into the **iliac artery to assess closure**. Post-procedure, the arterial sheath was pulled and a closure device was deployed. Hemostasis was attained using a 6Fr **Angio-Seal closure device**. At the completion of the study, the catheters were removed, hemostasis was maintained, and a dressing was applied.

### **Diagnostic Coronary Information:**

The coronary anatomy is right-dominant.

Left Main Coronary Artery

The left main is a medium caliber vessel that bifurcates into LAD and LCx.

### **Left Anterior Descending Coronary Artery**

The LAD is a small caliber vessel that gives rise to three small caliber diagonal branches. There is diffuse proximal disease up to 70% stenosis with evidence of competitive flow of the distal LAD.

## Cardiac Interventional - Example

### **Circumflex Coronary Artery**

The true LCx is a small caliber vessel with a mid eccentric 70% stenosis beyond the takeoff of the medium caliber marginal branch. There are two small distal marginal branches. OM1 has competitive flow from the SVG, and there is a severe 80% lesion in the OMI beyond the SVG insertion.

1st Marginal 90% stenosis

**Graft -** This is a LIMA graft.

### **LIMA to Mid LAD**

The LIMA to LAD graft is patent with brisk flow. Apical LAD is small and has eccentric 50% stenosis.

### **Graft -**

### **Aorta to 1st Marginal**

The vein graft to the first marginal is patent with brisk flow. Beyond the graft insertion the native marginal has an eccentric hazy 80% stenosis.

### **Graft -**

### **Aorta to 1st Diagonal**

The vein graft to the diagonal is patent with brisk flow. The subtended diagonal is very small.

### **Graft -**

### **Aorta to 1st Right Posterolateral**

The vein graft is occluded distally with slow flow throughout.

## Cardiac Interventional - Example

### LIMA to Mid LAD

The LIMA to LAD graft is patent with brisk flow. Apical LAD is small and has eccentric 50% stenosis.

### Graft -

### Aorta to 1st Marginal

The vein graft to the first marginal is patent with brisk flow. Beyond the graft insertion the native marginal has an eccentric hazy 80% stenosis.

### Graft -

### Aorta to 1st Diagonal

The vein graft to the diagonal is patent with brisk flow. The subtended diagonal is very small.

### Graft -

### Aorta to 1st Right Posterolateral

The vein graft is occluded distally with slow flow throughout.

### 1st Marginal

#### Guide Wire

- Medtronic Cougar XT .014 X 190.
- Angiomax used, XB3.5 6F guide, Cougar wire. Through the native system, the OMI lesion was crossed with the Cougar wire, pre-dilated with a 2.5 balloon and stented with a 2.5 x 12 Promus DES to 18 atm to 2.75 mm. No residual stenosis and TIMI 3 flow.

### Right Coronary Artery

The RCA is dominant, medium caliber vessel that gives rise to two posterolateral branches and a small caliber PDA. There is a 40% stenosis of the mid vessel and 95% stenosis of the distal RCA beyond the PDA. The PDA is very small caliber with diffuse proximal 70-90% stenosis.

### Coronary Intervention :

#### 1st Marginal

##### Guide Wire

- Medtronic Cougar XT .014 X 190.
- Angiomax used, XB3.5 6F guide, Cougar wire. Through the native system, the OMI lesion was crossed with the Cougar wire, pre-dilated with a 2.5 balloon and stented with a 2.5 x 12 Promus DES to 18 atm to 2.75 mm. No residual stenosis and TIMI 3 flow.

#### Distal RCA

##### Guide Wire

- Medtronic Cougar XT .014 X 190.
- Through the 6F JK4 guide, the 95% stenosis in the distal RCA beyond the PDA was wired with the Cougar wire, pre-dilated with a 2.5 balloon and stented with a 2.25 x 12 Promus DES to 18 atm to 2.5 mm. No residual stenosis and TIMI 3 flow.

#### Intervention:

- Successful drug eluting stent of the first obtuse marginal as above.
- Successful drug eluting stent of the distal RCA beyond the PDA as above.

**Diagnosis code(s) 414.01 for stents and 414.01, 414.02. CPT Codes: 92980-IC, 92981-RC, 93459-26-59**

# NEW TECHNOLOGY

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## New Technology Services

- TandemHeart pVAD
  - 0048T
  - Short term usage
    - Drainage of the left atrium and femoral artery cannulation for flow function
    - Allows time for the heart to strengthen and regain function
  - References: CPT Assistant, April 2010, page 6-8



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## New Technology Services

- CorValve, Implant of catheter-delivered Prosthetic Aortic Heart Valve, Endovascular Approach
  - 0256T

Open Heart Aortic Valve Replacement  
transformed into a beating heart  
percutaneous procedure.



## New Technology Services

- Intravascular Catheter-based Coronary Vessel or Graft Spectroscopy
  - 0205T
  - Performed during diagnostic or therapeutic intervention
    - Add-on service
    - Report in conjunction with 92980, 92982, 92995, 93508, 93452-93462, 93530-93533, 93563, 93564
- Angiovac - Removal of Pulmonary Embolism with extracorporeal bypass
  - Unlisted CPT Code 37799
- Implantable Pressure Sensor Lead, insertion or replacement
  - Unlisted CPT Code - 33999

## Importance of Documentation

- Coding is Based on Documentation
- When to Query MD?
  - Unsure and/or unclear
- Coding Guidelines
- Coding Clinic
- CPT Assistant
- Specificity



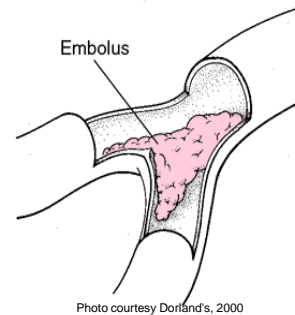
<http://yahoo.com/images/>

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## CV Updates and Revisions

- Aorta and Pulmonary Saddle Embolus Options
  - 444.0 (Invalid)
  - 415.13, Saddle embolus of pulmonary artery
  - 444.01, Saddle embolus of abdominal aorta
  - 444.09, Other arterial embolism and thrombosis of abdominal aorta

- Personal Hx of Pulmonary Embolism
  - V12.55

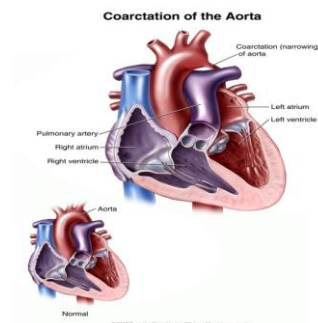


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## CV Updates and Revisions

- Anomalies of Pulmonary Artery
  - 747.3 (Invalid)
  - 747.31, Pulmonary artery coarctation and atresia
  - 747.32, Pulmonary arteriovenous malformation
  - 747.39, Other anomalies of pulmonary artery and pulmonary circulation

- Acquired Pulmonary AVM
  - Report using 417.0



## CV Updates and Revisions

- Anaphylaxis Terminology update
  - Anaphylaxis vs. Anaphylactic shock
    - Shock =>Reaction
      - 995.0
  - Requires a 5<sup>th</sup> digit
    - 999.4 (Invalid)
    - 999.4X
- Personal History
  - V13.8 (invalid)
  - V13.81, Personal history of anaphylaxis



OCTOBER 1, 2013

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## ICD-10-CM

- CHAPTER 9: DISEASE OF THE CIRCULATORY SYSTEM (I00-I99)
- I00-I02 Acute rheumatic fever
- I05-I09 Chronic rheumatic heart disease
- I10-I15 Hypertensive heart disease
- I20-I25 Ischemic heart diseases
- I26-I28 Pulmonary heart disease and diseases of pulmonary circulation
- I30-I52 Other forms of heart disease
- I60-I69 Cerebrovascular disease
- I70-I79 Diseases of the arteries, lymphatic vessels and lymph nodes, NEC
- I95-I99 Other and unspecified disorders of the circulatory system

## 120-125 Ischemic Heart Diseases

### ICD-9-CM

- 410.xx Acute Myocardial Infarction (AMI)
- 411.1 Intermediate coronary syndrome
- 411.81 Acute coronary occlusion without myocardial infarction

### ICD-10-CM

- I21 ST, elevation (STEMI) and non-ST elevation (NSTEMI) myocardial infarction
- I20.0 Unstable angina
- I24.0 Acute coronary thrombosis not resulting in myocardial infarction

## CHAPTER 9: DISEASE OF THE CIRCULATORY SYSTEM (100-199)

- Only one code for Essential Hypertension
  - No axis
  
- “Intermediate coronary syndrome” => “unstable angina”

## Acute Myocardial Infarction

- AMI time frames
  - 8 weeks or less => 4 weeks or less
  
- In AMI codes, ST elevation (STEMI) and non-ST elevation (NSTEMI) are in the ICD-10-CM code titles
  - Coding Guideline I.C.9.e.1.
  
- Initial AMI (I21) and subsequent AMI (I22)
  - Coding Guideline I.C.9.e.4.



## Hypertensive Heart and Chronic Kidney Disease

### Coding Guideline I.C.9.a.3.

Assign codes from **combination category I13**, hypertensive heart and chronic kidney disease, when both hypertensive kidney disease and hypertensive heart disease are stated in the diagnosis. **Assume a relationship between the hypertension and the chronic kidney disease whether or not the condition is so designated.** If heart failure is present, assign an additional code from category 150 to identify the type of heart failure.

## Atherosclerotic Coronary Artery Disease and Angina

- Coding Guideline I.C.9.b.
- ICD-10-CM has combination codes for atherosclerotic heart disease with angina pectoris.
- Subcategories
  - I25.11, Atherosclerotic heart disease of native coronary artery with angina pectoris
  - I25.7, Atherosclerosis of coronary artery bypass graft(s) and coronary artery of transplanted heart with angina pectoris.

# QUESTIONS?

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## Reference Links

- <http://www.aapc.com/>
- <http://www.ahacentraloffice.com/ahacentraloffice/shtml/Products.shtml>
- <http://ahima.org/>
- <http://www.cms.gov/ICD9ProviderDiagnosticCodes/>
- <https://www.cahabagba.com/>
- [https://www.cahabagba.com/part\\_b/policies\\_medical\\_review/lcd\\_active.htm](https://www.cahabagba.com/part_b/policies_medical_review/lcd_active.htm)
- <http://www.cms.gov/nationalcorrectcodinitiated/>
- <http://my.clevelandclinic.org/heart/disorders/congenital/pfo.aspx>
- <http://www.nhlbi.nih.gov/health/health-topics/by-alpha/>

## Reference Links

- <http://www.compliance-institute.org/pastCIs/2003/presos1/2-MONDAY%204-28/13-The%20ABCs%20of%20ABNs/GA%20Modifier%20Chart.pdf>
- <http://www.compliance-institute.org/pastCIs/2003/presos1/2-MONDAY%204-28/13-The%20ABCs%20of%20ABNs/GY%20Modifier%20Chart.pdf>
- <http://www.compliance-institute.org/pastCIs/2003/presos1/2-MONDAY%204-28/13-The%20ABCs%20of%20ABNs/GZ%20Modifier%20Chart.pdf>

## Terms

- ABN – Advance Beneficiary Notice
- ASD – Atrial Septal Defect is a form of congenital heart defect that enables blood flow between the left and right atria via the interatrial septum.
- Anaphylactic shock is a severe hypersensitivity or allergic reaction. Causes include allergy to insect stings, medicines or foods (such as nuts, berries, seafood, etc).
- AVM –Arteriovenous malformation or AVM is an abnormal connection between veins and arteries, usually congenital. Pulmonary fistula is a condition in which an abnormal connection (fistula) develops between an artery and vein in the lungs. As a result, blood passes through the lungs without receiving enough oxygen.

## Terms

- Common Cardiovascular Abbreviations
  - ECA: External carotid artery
  - CCA: common carotid artery
  - ICA: Internal carotid artery
  - IVC: inferior vena cava
  - LIMA: Left Internal mammary artery
  - OM: obtuse marginal artery
  - SVC superior vena cava

## Terms

- Coarctation of aorta – is a narrowing of the aorta, the large blood vessel that branches off your heart and delivers oxygen-rich blood to your body. When this occurs, your heart must pump harder to force blood through the narrow part of your aorta.
- Embolus – a clot or other plug, usually part or all of a thrombus, brought by the blood from another vessel and forced into a smaller one, thus obstructing circulation.
- LCD- Local Coverage Determination
- NCD – National Coverage Determination

## Terms

- Saddle Embolus – an embolus situated at the bifurcation of a large artery, usually the terminal aorta, blocking both branches.