

## ***Episode-of-Care for Chronic Management of Coronary Artery Disease over 1-year Period***

### **Measure Description**

Resource use and costs associated with management of coronary artery disease (CAD) care over a one-year period. Patients are identified with a diagnosis of CAD in the year prior to the measurement year and the resource use and costs associated with CAD during the measurement year are assessed.

### **Required Data Elements**

Administrative claims data

### **Calculation**

For patients meeting inclusion criteria, determine CAD-related resource use and costs over a one-year period in the measurement year. Prices from a standard price list will be applied to the CAD-related resource use to estimate the costs of the episode of care related to CAD. Resources will be defined for ten categories: 1) inpatient facility; 2) evaluation and management; 3) procedures; 4) imaging; 5) tests; 6) DME; 7) other drugs and services; 8) medications; 9) outpatient facility; and 9) other. Population will be stratified based on whether patients were revascularized (e.g., percutaneous coronary intervention [PCI] or coronary artery by-pass graft [CABG]). For inpatient facility costs, the standard cost is based on a per diem cost for a DRG and will be multiplied by the length of stay for the event. Hospitalizations will be included as CAD related if and only if the primary diagnosis code for the hospitalization is CAD related. For each of the other resource use categories, standardized prices will be assigned to each type of utilization that is defined as CAD related. Episodes with \$0 costs in the measurement period will be excluded.

### **Episode Definition**

CAD-related costs

### **Rationale**

The Institute of Medicine and AQA have identified angina/coronary artery disease (CAD) as one of 20 conditions that should be considered priority areas in need of quality improvement based on its relevance to a significant volume of patients, its impact on those patients, and the perception of opportunity to significantly improve the quality and efficiency of related care. Approximately 7 million people in the U.S. were living with angina during 2007, and there are 400,000 new angina cases annually.<sup>1</sup> CAD had also

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<sup>1</sup> “What is Angina?” National Heart Lung and Blood Institute. November 2007. <http://www.nhlbi.nih.gov>. Accessed Jan. 21, 2009.

been previously identified as a priority area in other national initiatives including AHRQ's Medical Expenditure Panel Survey and the VA's Quality Enhancement Research Initiative.<sup>2</sup> In addition, the costs of treatment for CAD patients can be very high in some cases – one study noted, “U.S. healthcare expenditures in the treatment of patients with acute chest pain total \$10 billion to \$12 billion annually, despite the fact that most of these patients do not have acute coronary syndromes.”<sup>3</sup> Furthermore, these costs can vary dramatically from one provider to the next as well as across regions because of variations in practice patterns.

CAD is a chronic condition, and therefore the measurement period will be a one-year period following a year in which the patient had at least one E&M visit with a CAD-specific diagnosis – this measure's inclusion criteria are intended to increase the measure's sensitivity, given that many CAD patients may see their physician regarding their CAD only once during the year. Patients who underwent a revascularization during the prior year are included in a separate measure. Patients with more severe confounding comorbidities such as acute myocardial infarction, acute coronary syndrome, or vasculitis observed during the year prior to the measurement year will be excluded from the measure.

This measure will be attributed at the individual physician level because the patient's cardiologist or primary care doctor will be responsible for the vast majority of the patient's CAD-related evaluation, management, and treatment decisions during the measurement period. To the extent this individual physician is responsible for more than 70 percent of the patient's E&M visits, this physician will be the only one attributed the episode. If more than one physician is responsible for at least 30 percent of the patient's E&M care, each of those physicians would be attributed the full costs of the episode. If no physician was responsible for at least 30 percent of the patient's E&M care, then the episode would not be attributed to any physician.

## Measures

- CAD-related resource use / costs
  - Inpatient Facility
  - Evaluation and Management
  - Procedures
  - Imaging
  - Tests
  - DME
  - Other drugs and services
  - Exceptions / Unclassified
  - Other
  - Pharmacy

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<sup>2</sup> Priority Areas for National Action: Transforming Health Care Quality. Institute of Medicine. Karen Adams and Janet Corrigan Editors. March 10, 2003.

<sup>3</sup> S. Wood. “Multislice CT Angiography Offers Effective Evaluation of Chest Pain in ED.” Medscape. [www.medscape.com/viewarticle/552469](http://www.medscape.com/viewarticle/552469)

- Outpatient Facility

### **Eligible Population**

<b>Age</b>	Age $\geq$ 18 yrs
<b>Enrollment Criteria</b>	Continuous medical and pharmacy benefit enrollment for at least one year preceding the measurement year and during the measurement year, with no more than one gap in enrollment of more than 45 days during each year of continuous enrollment.
<b>Inclusion Criteria</b>	Patients included in the measure must have at least one ambulatory visit for CAD in the year prior to the measurement year (See Table CAD-A for codes).
<b>Exclusion</b>	<p>Patients with any of the following diagnoses in the year prior to the measurement year will be excluded (See Table CAD-F for codes):</p> <ul style="list-style-type: none"> <li>Acute coronary syndrome (ACS)</li> <li>Acute myocardial infarction (AMI)</li> </ul> <p>Patients with revascularization (coronary artery bypass graft [CABG] or percutaneous coronary intervention [PCI]) in the year prior the trigger revascularization (See Table CAD-F for codes)</p> <p>Persons with any of the following diagnoses in the measurement year or the year prior to measurement are excluded (see Table CAD-F for codes):</p> <ul style="list-style-type: none"> <li>active cancer; end stage renal disease (ESRD); dialysis; organ transplant;</li> <li>HIV/AIDS; pregnancy;</li> <li>vasculitis</li> </ul>

**Table CAD-A: Diagnostic Codes to Identify CAD Patients (trigger diagnoses)**

Description	ICD-9 Code
CAD/coronary atherosclerosis (Other forms of chronic ischemic heart disease)	414.xx
Coronary atherosclerosis	414.0
Of unspecified type of vessel, native or graft	414.00
Of native coronary artery	414.01
Of autologous biological bypass graft	414.02
Of nonautologous biological bypass graft	414.03
Of artery bypass graft	414.04
Of unspecified type of bypass graft	414.05
Of native coronary artery of transplanted heart	414.06

Of bypass graft (artery) (vein) of transplanted heart	414.07
Aneurysm and dissection of heart	414.1
Aneurysm of heart (wall)	414.10
Aneurysm of coronary vessels	414.11
Dissection of coronary artery	414.12
Other aneurysm of heart	414.19
Chronic total occlusion of coronary artery	414.2
Coronary atherosclerosis due to lipid rich plaque	414.3
Other specified forms of chronic ischemic heart disease	414.8
Chronic ischemic heart disease, unspecified	414.9

These ICD-9 codes, present in a primary or secondary diagnostic field, will be used to identify CAD patients during the measurement period, regardless of corresponding CPT codes.

**Table CAD-B: Codes to identify clinically relevant services during a CAD episode**

**Table CAD-B1: Diagnostic codes to identify clinically relevant services during a CAD episode**

Description	ICD-9 Code
Hypertensive disease	
Essential hypertension	401
Malignant	401.0
Benign	401.1
Unspecified	401.9
Hypertensive heart disease	402
Malignant	402.0
Without heart failure	402.00
With heart failure	402.01
Benign	402.1
Without heart failure	402.10
With heart failure	402.11
Unspecified	402.9
Without heart failure	402.90
With heart failure	402.91
Hypertensive chronic kidney disease	403.xx
Hypertensive heart and chronic kidney disease	404.x
Secondary hypertension	405.x
Ischemic heart disease	
Acute myocardial infarction	410.x
Other acute and subacute forms of ischemic heart disease	411
Postmyocardial infarction syndrome	411.0
Intermediate coronary syndrome	411.1
Other	411.8
Acute coronary occlusion without myocardial infarction	411.81
Other (Coronary insufficiency [acute]), Subendocardial ischemia	411.89
Old myocardial infarction	412
Angina pectoris	413
Angina decubitus	413.0

Other and unspecified angina pectoris	413.9
Other forms of chronic ischemic heart disease	414
Coronary atherosclerosis	414.0
Of unspecified type of vessel, native or graft	414.00
Of native coronary artery	414.01
Of autologous biological bypass graft	414.02
Of nonautologous biological bypass graft	414.03
Of artery bypass graft	414.04
Of unspecified type of bypass graft	414.05
Of native coronary artery of transplanted heart	414.06
Of bypass graft (artery) (vein) of transplanted heart	414.07
Aneurysm and dissection of heart	414.1
Aneurysm of heart (wall)	414.10
Aneurysm of coronary vessels	414.11
Dissection of coronary artery	414.12
Other aneurysm of heart	414.19
Chronic total occlusion of coronary artery	414.2
Coronary atherosclerosis due to lipid rich plaque	414.3
Other specified forms of chronic ischemic heart disease	414.8
Chronic ischemic heart disease, unspecified	414.9
Other forms of heart disease	
Cardiomyopathy	425.x
Conduction disorders	426
Atrioventricular block, complete	426.0
Atrioventricular block, other and unspecified	426.1x
Other left bundle branch block	426.3
Right bundle block	426.4
Bundle branch block, other and unspecified	426.5x
Other heart block	426.6
Other specified conduction disorders	426.8
Other	426.89
Conduction disorder, unspecified	426.9
Cardiac dysrhythmias	427
Paroxysmal supraventricular tachycardia	427.0
Paroxysmal ventricular tachycardia	427.1
Paroxysmal tachycardia, unspecified	427.2
Atrial fibrillation and flutter	427.3x
Ventricular fibrillation and flutter	427.4x
Cardiac arrest	427.5
Premature beats	427.6x
Other specified cardiac dysrhythmias	427.8x
Cardiac dysrhythmia, unspecified	427.9
Heart failure	428
Congestive heart failure, unspecified	428.0
Left heart failure	428.1
Systolic heart failure	428.2x
Diastolic heart failure	428.3x
Combined systolic and diastolic heart failure	428.4x
Heart failure, unspecified	428.9
Ill-defined descriptions and complications of heart disease	429
Myocardial degeneration	429.1

*Draft specifications—subject to change. Not for citation or distribution.*

Cardiovascular disease, unspecified	429.2
Cardiomegaly	429.3
Functional disturbances following cardiac surgery	429.4
Rupture of chordae tendineae	429.5
Rupture of papillary muscle	429.6
Certain sequelae of myocardial infarction, not elsewhere classified	429.7x
Other ill-defined heart diseases	429.8
Other disorders of papillary muscle	429.81
Hyperkinetic heart disease	429.82
Other	429.89
Heart disease, unspecified	429.9
<b>Cerebrovascular disease</b>	
Intracerebral hemorrhage	431
Other and unspecified intracranial hemorrhage	432
Unspecified intracranial hemorrhage	432.9
Occlusion and stenosis of precerebral arteries	433
Basilar artery	433.0
Carotid artery	433.1
Vertebral artery	433.2
Multiple and bilateral	433.3
Other specified precerebral artery	433.8
Unspecified precerebral artery	433.9
Occlusion of cerebral arteries	434
Cerebral thrombosis	434.0
Cerebral embolism	434.1
Cerebral artery occlusion, unspecified	434.9
Transient cerebral ischemia	435
Basilar artery syndrome	435.0
Vertebral artery syndrome	435.1
Subclavian steal syndrome	435.2
Vertebrobasilar artery syndrome	435.3
Other specified transient cerebral ischemias	435.8
Unspecified transient cerebral ischemia	435.9
Acute, but ill-defined, cerebrovascular disease	436
Other and ill-defined cerebrovascular disease	437
Cerebral atherosclerosis	437.0
Other generalized ischemic cerebrovascular disease	437.1
Hypertensive encephalopathy	437.2
Other	437.8
Unspecified late effects of cerebrovascular disease	438.9
<b>Diseases of arteries, arterioles, and capillaries</b>	
Atherosclerosis	440
Aortic aneurysm and dissection	441.xx
Other peripheral vascular disease	443
Other arterial dissection	443.2
Dissection of carotid artery	443.21
Dissection of iliac artery	443.22
Dissection of renal artery	443.23
Dissection of vertebral artery	443.24
Dissection of other artery	443.29
Other specified peripheral vascular diseases	443.8

Peripheral angiopathy in diseases classified elsewhere	443.81
Other	443.89
Peripheral vascular disease, unspecified	443.9
Arterial embolism and thrombosis	444
Of abdominal aorta	444.0
Of thoracic aorta	444.1
Of arteries of the extremities	444.2x
Of other specified artery	444.8x
Of unspecified artery	444.9
Atheroembolism	445
Of extremities	445.0
Of other sites	445.8
Kidney	445.81
Other site	445.89
Other disorders of arteries and arterioles	447
Other specified disorders of arteries and arterioles	447.8
Unspecified disorders of arteries and arterioles	447.9
<b>Diseases of veins and lymphatics, and other diseases of circulatory system</b>	
Hypotension	458
Orthostatic hypotension	458.0
Chronic hypotension	458.1
Iatrogenic hypotension	458.2
Other specific hypotension	458.8
Hypotension, unspecified	458.9
Other disorders of circulatory system	459
Hemorrhage, unspecified	459.0
Other specified disorders of circulatory system	459.8
Unspecified circulatory system disorder	459.9
Symptoms involving cardiovascular system	785
Tachycardia, unspecified	785.0
Palpitations	785.1
Other abnormal heart sounds	785.3
Shock without mention of trauma	785.5x
Other symptoms involving cardiovascular system	785.9
Nonspecific abnormal results of function studies, Cardiovascular	794.3x
Abnormal function study, unspecified	794.30
Abnormal electrocardiogram (ECG) (EKG)	794.31
Other	794.39
Fluid overload	276.6
Abnormal coagulation profile	790.92
Long-term use anticoagulants	V58.61
Mechanical complication of cardiac device, implant, and graft	996.0
Unspecified device, implant, and graft	996.00
Due to cardiac pacemaker (electrode)	996.01
Due to heart valve prosthesis	996.02
Due to coronary bypass graft	996.03
Due to automatic implantable cardiac defibrillator	996.04

Mechanical complication of other vascular device, implant, and graft	996.1
Chest Pain	786.50, 786.51, 786.52, 786.59
Other specified gastritis with hemorrhage	535.41
Abnormal chest sounds	786.7
Tietze's disease	733.6

These ICD-9 codes, present in any, will be used to identify CAD-related services during the measurement period, regardless of corresponding CPT codes.

**Table CAD-B2: Evaluation and Management Codes**

Description	CPT Codes
General physician office visits	99201-99205, 99211-99215
Preventive medicine/screening	99394-99397, 99401-99404, 99411, 99412, 99420, 99429, 99384-99387
Observation care	99217-99220
Emergency dept care	99281-99285
Home health	99341-99345, 99347-99350
Skilled nursing facility	99304-99310, 99315, 99316, 99318, 99324-99328, 99334-99337
Office consultation	99241-99245
Unlisted	99455, 99456

These codes will be used to help identify those services that should be categorized as “E&M” during our analyses. Such services, when present in the identification (pre-measurement) period, are used to identify patients for the measure’s denominator. When present during the measurement period, these services are counted to determine the provider or providers to whom the episode will be attributed.

**Table CAD-C: Codes to identify diagnostic procedures relevant to a CAD episode**

Description	CPT	HCPCs	ICD-9 Procedure
Stress testing			
Cardiovascular stress test	93015, 93016, 93017, 93018		
Cardiac drug stress test	93024		
Cardiac CT			
Computed tomography wo dye qual calc		0144T	
Computed tomography wo dye qual calc		0145T	
Stress Cardiac MR			
Cardiac MRI for morphology and function w/o contrast	75563		

material(s), followed by contrast material(s) and further sequences; with stress imaging			
Cardiac MRI for morphology and function w/o contrast material(s), followed by contrast material(s) and further sequences; with flow/velocity quantification and stress	75564		
Stress Positron Emission Tomography			
Heart image (Pet), single	78491		
Heart image (Pet), multiple	78492		
Single photon emission computed tomography (SPECT)			
Single photon emission computed tomography (SPECT)	78460,78461, 78469, 78494		
Heart image (3d), single	78464		
Heart image (3d), multiple	78465		
Heart wall motion add-on	78478		
Heart function add-on	78480		
Tc99m sestamibi		A9500	
Tc99m tetrofosmin		A9502	
TL201 thallium		A9505	
Adenosine injection		J0152	
Dipyridamole injection		J1245	
Inj dobutamine HCL/250 mg		J1250	
Vascular ultrasound			
Us exam, chest	76604		
Angiography			
Computed tomographic angiography of coronary arteries w/wo dye		0146T	
Computed tomographic angiography of coronary arteries w/wo, quan calcium		0147T	
CCTA w/wo, strxr		0148T	
CCTA w/wo, strxr quan calc		0149T	
CCTA w/wo, disease strxr		0150T	
CT heart funct add-on		0151T	
Ct angiography, chest	71275		
Mri angio chest w or w/o dye	71555		
Ct angio abdominal arteries	75635		
Cath placement, angiography	93508		
Angiocardiology using contrast material			88.5
Angiocardiology, not otherwise specified			88.50
Angiocardiology of venae cavae			88.51
Angiocardiology of right heart structures			88.52
Angiocardiology of left heart structures			88.53
Combined right and left heart angiocardiology			88.54
Coronary arteriography using a single catheter			88.55
Coronary arteriography using two catheters			88.56
Other and unspecified coronary arteriography			88.57

Negative-contrast cardiac roentgenography			88.58
Intra-operative fluorescence vascular angiography			88.59
<b>Enhanced External Counterpulsation (EECP)</b>			
Cardioassist, external	92971		
Extrnl counterpulse, per tx		G0166	
<b>Electrocardiogram</b>			
Electrocardiogram, complete	93000		
Electrocardiogram, tracing	93005		
Rhythm ECG with report	93040		
Rhythm ECG, tracing	93041		
Rhythm ECG, report	93042		
ECG monitor/report, 24 hrs	93224, 93225, 93226, 93227, 93230, 93231, 93232, 93233, 93235, 93236, 93237		
ECG record/review	93268		
ECG recording	93270		
ECG/monitoring and analysis	93271		
ECG/review, interpret only	93272		
ECG/signal-averaged	93278		
Remote 30 day ECG rev/report	93228		
Remote 30 day ECG tech supp	93229		
Transmission of ECG	93012		
Report on transmitted ECG	93014		
Home ECG monitoring global 24 h		S0345	
Home ECG monitoring tech 24 hr		S0346	
Home ECG monitoring prof 24 hr		S0347	
64 lead ECG w i&r		0178T	
64 lead ECG w tracing		0179T	
64 lead ECG with i&r only		0180T	
12-lead ECG preformed		3130F	
Admin ECG contrast agent	93352		
Intracardiac ECG (ice)	93662		
<b>Chest x-ray</b>			
Chest x-ray	71010, 71015, 71020, 71021, 71022, 71030, 71035		
Chest x-ray and fluoroscopy	71023, 73024		
<b>Cardiac enzymes</b>			
Assay of troponin, quant	84484		
Assay of troponin, qual	84512		
Assay of myoglobin	83874		
<b>Echocardiogram</b>			

Echocardiogram	93303, 93304, 93305, 93306, 93307, 93308, 93312, 93313, 93314, 93315, 93317, 93318, 93320, 93321, 93325, 93350	A9900	
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These procedure codes will be used to identify CAD-related services during the measurement period, regardless of corresponding ICD-9 diagnosis codes.

**Table CAD-D: Codes to identify therapeutic procedures relevant to a CAD episode**

Description	CPT	HCPCs	ICD-9 Procedure
Phase II cardiac rehabilitation	93797, 93798		
<b>Catheterizations</b>			
Left heart catheterization	93510, 93511, 93524		
Rt & Lt heart catheters	93526, 93527, 93528		
Rt, Lt heart catheterization	93529		
Rt heart cath, congenital	93530		
R & l heart cath, congenital	93531, 93532, 93533		
Injection, cardiac cath	93539, 93540, 93545		
Imaging, cardiac cath	93555, 93556		
<b>Percutaneous coronary intervention (PCI)</b>			
Percutaneous transluminal coronary angioplasty [PTCA] or coronary atherectomy			00.66
Other removal of coronary artery obstruction			36.09
Insertion of non-drug-eluting coronary artery stent(s)			36.06
Insertion of drug-eluting coronary artery stent(s)			36.07
Open chest coronary artery angioplasty			36.03
Insert intracoronary stent	92980, 92981		
Coronary artery dilation	92982, 92984		
Coronary atherectomy	92995, 92996		
Drug-eluting stents, single		G0290, G0291	
<b>Coronary artery bypass graft (CABG)</b>			
Single internal mammary-coronary artery bypass			36.15
Double internal mammary-coronary artery bypass			36.16
CABG, vein, single	33510		
CABG, vein, two	33511		
CABG, vein, three	33512		
CABG, vein, four	33513		

CABG, vein, five	33514		
CABG, vein, six or more	33516		
CABG, artery-vein, single	33517		
CABG, artery-vein, two	33518		
CABG, artery-vein, three	33519		
CABG, artery-vein, four	33521		
CABG, artery-vein, five	33522		
CABG, art-vein, six or more	33523		
Coronary artery, bypass/reop	33530		
CABG, arterial, single	33533		
CABG, arterial, two	33534		
CABG, arterial, three	33535		
CABG, arterial, four or more	33536		
<b>Cardiac monitors</b>			
Cardiac monitors	93290, 93297, 93299		
<b>Defibrillators</b>			
Icd device interrogat remote	93295		
Pm/icd remote tech serv	93296		
Icm device interrogat remote	93297		
Ilr device interrogat remote	93298		
Icm/ilr remote tech serv	93299		
Implantation of cardiac resynchronization defibrillator, total system			00.51
Implantation or replacement of automatic cardioverter/defibrillator, total system			37.94
Implantation or replacement of cardiac resynchronization defibrillator pulse generator device only			00.54
Replacement of automatic cardioverter/defibrillator lead(s) only			37.97
Implantation of automatic cardioverter/defibrillator pulse generator only			37.96
Automatic implantable cardioverter/defibrillator (AICD) check			89.49
Implantation of cardiac resynchronization pacemaker without mention of defibrillation, total system			00.50
Implantation of automatic cardioverter/defibrillator lead(s) only			37.95
Revision or relocation of cardiac device pocket			37.79
Cardiac stress tests, pacemaker and defibrillator checks			89.4
<b>Pacemakers</b>			
X-ray & pacemaker insertion	71090		
Analyze pacemaker system	93724		
Insertion of heart pacemaker	33206, 33207, 33208		
Insertion of pulse generator	33212, 33213		

Upgrade of pacemaker system	33214		
Reposition of pacing-defib lead	33215		
Insert lead pace-defib, one	33216		
Insert lead pace-defib, dual	33217		
Repair lead pace-defib, one	33218		
Repair lead pace-defib, dual	33220		
Revise pocket, pacemaker	33222		
Revise pocket, pacing-defib	33223		
Insert pacing lead & connect	33224		
L ventric pacing lead add-on	33225		
Reposition l ventric lead	33226		
Removal of pacemaker system	33233, 33234		
Removal of pacemaker electrode	33235		
Remove electrode/thoracotomy	33236, 33237, 33238		
Insert pulse generator	33240		
Remove pulse generator	33241		
Remove eltrd/thoracotomy	33243		
Remove eltrd/ transven	33244		
Eltrd/insert pace-defib	33249		
Revision or removal of pacemaker device			37.89
Artificial pacemaker rate check			89.45
Insertion of temporary transvenous pacemaker system			37.78
Implantation of cardiac resynchronization pacemaker without mention of defibrillation, total system			00.50
Insertion, replacement, removal, and revision of pacemaker device			37.8
Revision of lead			37.75
Insertion, revision, replacement, and removal of leads; insertion of temporary pacemaker system; or revision of cardiac device pocket			37.7
Implantation of diaphragmatic pacemaker			34.85
<b>Injections</b>			
Tirofiban hcl, 6.25 mg		C9109	
Injection, argatroban		C9121	
Abciximab injection		J0130	
Adenosine injection		J0152	
Injection anistreplase 30 u		J0350	
Aprotonin, 10,000 kiu		J0365	
Bivalirudin		J0583	
Digoxin injection		J1160	
Digoxin immune fab (ovine)		J1162	
Dipyridamole injection		J1245	

Inj dobutamine HCL/250 mg		J1250	
Eptifibatide injection		J1327	
Inj heparin sodium per 10 u		J1642	
Inj heparin sodium per 1000u		J1644	
Dalteparin sodium		J1645	
Inj enoxaparin sodium		J1650	
Fondaparinux sodium		J1652	
Tinzaparin sodium injection		J1655	
Reteplase injection		J2993	
Inj streptokinase /250000 IU		J2995	
Alteplase recombinant		J2997	
Tenecteplase injection		J3100	
Tirofiban hydrochloride		J3245	
Tirofiban HCl		J3246	
Injection torse mide 10 mg/ml		J3265	
Urokinase 5000 IU injection		J3364	
Urokinase 250,000 IU inj		J3365	

These ICD-9 codes, present in any field, will be used to identify related services during the measurement period.

**Table CAD-E: Prescription medications related to CAD episode (all during the measurement period)**

Description	Medication		
ACE inhibitors	benazepril	captopril	enalapril
	Fosinopril	lisinopril	moexipril
	perindopril	quinapril	ramipril
	trandolapril		
Beta blockers	metoprolol	carvedilol	bisoprolol
ARBs	candesartan	eprosartan	irbesartan
	losartan	olmesartan	telmisartan
	valsartan		
Antihyperlipidemics (e.g., statins)			
Anti-platelets	clopidogrel bisulfate		
Calcium channel blockers			
Nitrates			
all CV combination products (e.g., ACE inhibitors + statins)			
Anticoagulants	warfarin	heparin	
Ranolazine			
ADP antagonists			
Anti-arrythmics			

Diuretics	
Zetia	
Welchol	

**Table CAD-F: Codes to Identify Exclusions**

**Table CAD-F1: Diagnoses of Acute Myocardial Infarction (AMI) or Acute Coronary Syndrome (ACS) before the measurement year**

Description	ICD-9
Acute Myocardial Infarction (AMI)	410.xx
Acute Coronary Syndrome (ACS)	411.xx
Other acute and subacute forms of ischemic heart disease	411
Postmyocardial infarction syndrome	411.0
Intermediate coronary syndrome	411.1
Other	411.8
Acute coronary occlusion without myocardial infarction	411.81
Other (Coronary insufficiency [acute]), Subendocardial ischemia	411.89

Exclude patients who had any claim for AMI or ACS during the 12-month period prior to measurement year.

2. Revascularization before the measurement year

Description	CPT	HCPCS	ICD-9 Procedure
Coronary artery bypass graft (CABG)			
Single internal mammary-coronary artery bypass			36.15
Double internal mammary-coronary artery bypass			36.16
CABG, vein, single	33510		
CABG, vein, two	33511		
CABG, vein, three	33512		
CABG, vein, four	33513		
CABG, vein, five	33514		
CABG, vein, six or more	33516		
CABG, artery-vein, single	33517		
CABG, artery-vein, two	33518		
CABG, artery-vein, three	33519		
CABG, artery-vein, four	33521		
CABG, artery-vein, five	33522		
CABG, art-vein, six or more	33523		
Coronary artery, bypass/reop	33530		
CABG, arterial, single	33533		
CABG, arterial, two	33534		
CABG, arterial, three	33535		
CABF, arterial, four or more	33536		
Percutaneous coronary intervention (PCI)			

Percutaneous transluminal coronary angioplasty [PTCA] or coronary atherectomy			00.66
Other removal of coronary artery obstruction			36.09
Insertion of non-drug-eluting coronary artery stent(s)			36.06
Insertion of drug-eluting coronary artery stent(s)			36.07
Open chest coronary artery angioplasty			36.03
Insert intracoronary stent+	92980, 92981		
Coronary artery dilation	92982, 92984		
Coronary atherectomy	92995, 92996		
Drug-eluting stents, single		G0290, G0291	

Exclude patients who had a revascularization (CABG or PCI) during the 12 months before the measurement year.

Exclude patients with any of the following during the measurement year or year prior to the measurement year.

**Table CAD-F3: Active Cancer Treatment**

Descripti on	ICD-9-CM Diagnosis
Cancer	140-208, 230-239

*WITH*

Description	CPT	ICD-9-CM Procedure	UB Revenue
Treatment	38230, 38240-38242, 77261-77799, 79000-79999, 96400-96549	41.0, 41.91, 92.2	028x, 033x, 0342, 0344, 0973

**Table CAD-F4: ESRD**

Description	CPT	HCPCS	ICD-9- CM Diagnosis	ICD-9-CM Procedure	UB Revenue	UB Type of Bill	POS
ESRD (including renal dialysis)	36145, 36800- 36821, 36831- 36833, 90919- 90921, 90923- 90925, 90935, 90937, 90939, 90940, 90945, 90947, 90989, 90993, 90997, 90999, 99512	G0257, G0311- G0319, G0321- G0323, G0325- G0327, G0392, G0393, S9339	585.5, 585.6, V42.0, V45.1, V56	38.95, 39.27, 39.42, 39.43, 39.53, 39.93, 39.94, 39.95, 54.98	080x, 082x-085x, 088x	72x	65

**Table CAD-F5: Organ Transplant**

Description	CPT	HCPCS	ICD-9-CM Procedure	UB Revenue
Organ transplant	32850-32856, 33930-33945, 44132-44137, 44715-44721, 47133-47147, 48160, 48550-48556, 50300-50380	S2152, S2053-S2055, S2060, S2061, S2065	33.5, 33.6, 37.5, 41.94, 46.97, 50.5, 52.8, 55.6	0362, 0367, 0810-0813, 0819

**Table CAD-F6: HIV-AIDS**

Description	ICD-9-CM Diagnosis
HIV	042

**Table CAD-F7: Pregnancy**

Description	CPT	ICD-9-CM Diagnosis
Normal Pregnancy		V22.x
Treat ectopic pregnancy	59120, 59121, 59130, 59135, 59136, 59140, 59150, 59151	
D & c after delivery	59160	
Insertion of cervical dilator	59200	
Episiotomy or vaginal repair	59300	
Revision of cervix	59320, 59325	
Repair of uterus	59350	
Obstetrical care	59400, 59409, 59410	
Antepartum manipulation	59412	
Deliver placenta	59414	
Antepartum care only	59425, 59426	
Care after delivery	59510, 59514, 59515, 59525	
Vbac delivery	59610, 59612, 59614	
Attempted vbac delivery	59618, 59620, 59622	
Treatment of miscarriage	59812, 59820, 59821	
Treat uterus infection	59830	
Abortion	59840, 59841, 59850, 59851, 59852, 59855, 59856, 59857, 59866	
Remove cerclage suture	59871	
Fetal invas px w/us	59897	
Laparo proc, ob care/deliver	59898	
Maternity care procedure	59899	
Ob us < 14 wks	76801, 76802	
Ob us >= 14 wks	76805, 76810	
Ob us	76811, 76812, 76813, 76814, 76815, 76816,	

Transvaginal us	76817	
Fetal biophys profile	76818, 76819	
Umbilical artery echo	76820	
Middle cerebral artery echo	76821	
Echo exam of fetal heart	76825	
Anesth	01958, 01960,01961	
Complications of pregnancy, childbirth, and the puerperium		630-676

**Table CAD-F8: Other diagnoses to identify patients for exclusion from CAD measure**

Description	ICD-9
Vasculitis	
Polyarteritis nodosa and allied conditions	446.xx
Arteritis, unspecified	447.6

#### **Risk Adjustment Method**

Comorbid conditions identified as HCCs in 12 months preceding event date using inpatient and outpatient ICD-9 codes.

#### **Episode Severity / Disease Staging**

Patients included in the chronic coronary artery disease measure will be stratified by whether they are with and w/out CHF

#### **Outlier Methodology**

All individuals are included in the analysis with costs winsorized at the 2<sup>nd</sup> and 98<sup>th</sup> percentile.

#### **Level of Measurement/Analysis**

Measurement will take place at the level of the individual physician. All E&M codes for CAD care on separate dates during the measurement year will be identified (for acute care, count only one claim per event). Then if < 30% of visits are to the same provider, there will be no attribution; if  $\geq 30\%$  to  $\leq 70\%$  of visits are to the same provider, there will be attribution to multiple providers; and if > 70% of visits are to the same provider, there will be attribution to a single provider.

*Note: Portions of these measure specifications are based on existing HEDIS measure specifications and the work of Prometheus.*

***Draft specifications—subject to change. Not for citation or distribution.***