

SUPPLEMENTAL MATERIAL

Table S1. International Classification of Diseases, Ninth Revision (ICD-9-CM), Current Procedural Terminology, 4th edition (CPT-4), Healthcare Common Procedure Coding System (HCPCS), and Federally Qualified Healthcare Revenue Center (FQHC) codes used to identify peripheral artery disease and provider specialty visits in claims.

Code Type	Codes
ICD-9-CM	<p>249.70, 249.71, 250.70, 250.71, 250.72, 250.73, 440.20, 440.21, 440.22, 440.23, 440.24, 440.29, 440.30, 440.31, 440.32, 440.4, 440.8, 440.9, 443.1, 443.22, 443.81, 443.89, 443.9, 444.22, 444.81, 445.02</p> <p>* 38.08, 38.16, 38.18, 38.38, 38.48, 39.25, 39.29, 39.49, 39.50, 39.56, 39.57, 39.58, 39.90, 84.10, 84.12, 84.13, 84.14, 84.15, 84.16, 84.17, 84.18, 84.3, 84.91</p>
HCPCS/CPT-4	<p>27295, 27590, 27591, 27592, 27594, 27596, 27598, 27599, 27880, 27881, 27882, 27888, 27889, 28800, 28805, 28810, 28820, 28825, 35221, 35226, 35256, 35286, 35302, 35303, 35304, 35305, 35306, 35331, 35351, 35355, 35361, 35363, 35371, 35372, 35381, 35452, 35454, 35456, 35459, 35470, 35472, 35473, 35474, 35480, 35481, 35482, 35483, 35485, 35490, 35491, 35492, 35493, 35495, 35500, 35521, 35533, 35537, 35538, 35539, 35540, 35541, 35546, 35548, 35549, 35551, 35556, 35558, 35563, 35565, 35566, 35583, 35585, 35587, 35621, 35623, 35646, 35647, 35651, 35654, 35656, 35661, 35663, 35665, 35666, 35671, 35681, 35682, 35700, 35875, 35876, 35879, 35881, 35883, 35884, 35903</p> <p>* 35683, 35686, 35571, 72191, 72198, 73706, 73725, 74175, 74185, 75630, 75631, 75635, 75710, 75711, 75712, 75716, 75717, 75718, 93922, 93924, 93925, 93926, 93978, 99201, 99202, 99203, 99204, 99205, 99211, 99212, 99213, 99214, 99215, 99216, 99241, 99242, 99243, 99244, 99245, 99385, 99386, 99387, 99395, 99396, 99397</p>
Revenue Center Codes	<p>*0320,0321,0322,0323,0324,0329,0360,0361,0370,0371,0372,0379,0402,0490,0499,0510,0517,0519,0520,0521,0610,0616,0710,0760,0761,0762,0769,0921</p>
Provider Specialty Codes	<p>Primary Care Provider 01, 08, 11, 50, 70</p>

Cardiology 06

* Must be accompanied with a PAD-related ICD-9-CM code

ICD-9-CM Diagnosis Codes for PAD: Definitions	
Description	Code
Atherosclerosis:	
of native arteries of the extremities	440.2x
of bypass graft of the extremities	440.3x
of other specified arteries	440.8x
Generalized and unspecified atherosclerosis: arteriosclerotic vascular disease NOS Peripheral vascular disease, unspecified	440.9x 443.9x
Chronic total occlusion of artery of the extremities	440.4
Arterial embolism and thrombosis of lower extremity	444.22
Embolism and thrombosis of iliac artery	444.81
Atheroembolism of lower extremity	445.02
Diabetes with peripheral circulatory disorders, Type II or unspecified type, not stated as uncontrolled	250.70
Diabetes with peripheral circulatory disorders, Type I (Juvenile type), not stated as uncontrolled	
Diabetes with peripheral circulatory disorders, Type II or unspecified type, uncontrolled	250.71
Diabetes with peripheral circulatory disorders, Type I (Juvenile type), uncontrolled	250.72
	250.73

ICD-9-CM Surgical/Intervention Procedure Codes for PAD: Definitions	
Description	Code
Amputation of lower limb	84.1x
Amputation not otherwise specified	
Aorta-iliac-femoral bypass	84.91
Other (peripheral) vascular shunt or bypass	39.25
Incision of lower limb arteries	

Endarterectomy, abdominal arteries	39.29
Endarterectomy, lower limb arteries	
Resection of vessel with anastomosis, lower limb arteries	38.08
Resection of vessel with replacement, lower limb arteries	
Other excision of vessels, lower limb arteries	38.16
Other revision of vascular procedure	38.18
Angioplasty or atherectomy of other non-coronary vessel(s)	38.38
Insertion of non-drug-eluting peripheral vessel stent(s)	38.48
Repair of blood vessel with tissue patch graft	38.68
Repair of blood vessel with synthetic patch graft	39.49
Repair of blood vessel with unspecified type of patch graft	39.50
	39.90
	39.56
	39.57
	39.58

CPT-4 codes for PAD-related surgical or intervention procedures: Definitions	
Description	Code
Repair blood vessel lower extremity; direct	
with vein graft	35226
with graft other than vein	35256
	35286
Thromboendarterectomy, including patch graft, if performed; superficial femoral artery	
popliteal artery	35302
tibioperoneal trunk artery	
tibial or peroneal artery, initial vessel	35303
each additional tibial or peroneal artery	35304
	35305
	35306
Thromboendarterectomy, with or without patch graft; abdominal aorta (35331); iliac (35351); iliofemoral (35355); combined aortoiliac (35361); combined aortoiliofemoral (35363); common femoral (35371); deep (profunda) femoral (35372); femoral and/or popliteal, and/or tibioperoneal (35381)	
	35331
	35351
	35355

	35361
	35363
	35371
	35372
	35381
In-situ vein bypass; aortofemoral-popliteal (only femoral-popliteal portion in-situ) femoral-popliteal femoral-anterior tibial, posterior tibial, or peroneal artery popliteal-tibial, peroneal	35582
	35583
	35585
	35587
Bypass graft, with vein; axillary-femoral axillary-femoral-femoral aortoiliac aortobi-iliac aortofemoral aortobifemoral aortoiliac or bi-iliac aortofemoral or bifemoral aortoiliofemoral, unilateral aortoiliofemoral, bilateral aortofemoral-popliteal femoral-popliteal femoral-femoral ilioiliac iliofemoral femoral-anterior tibial, posterior tibial, peroneal artery or other distal vessels popliteal-tibial,-peroneal artery or other distal vessels	35521
	35533
	35537
	35538
	35539
	35540
	35541
	35546
	35548
	35549
	35551
	35556
	35558
	35563

	35565 35566 35571
Percutaneous: aortic iliac femoral-popliteal tibioperoneal trunk and branches	35491 35492 35493 35495
Transluminal peripheral atherectomy, Open: aortic iliac femoral-popliteal tibioperoneal trunk and branches	35481 35482 35483 35485
Transluminal balloon angioplasty, percutaneous; tibioperoneal trunk and branches, each vessel aortic iliac femoral-popliteal	35470 35472 35473 35474
Transluminal balloon angioplasty, open; aortic (35452); iliac (35454); femoral-popliteal (35456); tibioperoneal trunk and branches (35459);	35452 35454 35456 35459
Bypass graft, with other than vein; axillary-femoral axillary-popliteal or –tibial aortoiliac	35621

aortobi-iliac	35623
aortoiliac or bi-iliac	
aortofemoral or bifemoral	35637
aortofemoral	35638
aortofemoral-popliteal	
axillary-femoral-femoral	35641
femoral-popliteal	
femoral-femoral	35646
ilioiliac	
iliofemoral	35647
femoral-anterior tibial, posterior tibial, or peroneal artery	35651
popliteal-tibial or -peroneal artery	
	35654
	35656
	35661
	35663
	35665
	35666
	35671
Exploration, reoperation, femoral-popliteal or femoral (popliteal) -anterior tibial, posterior tibial, peroneal artery or other distal vessels, more than one month after original operation (List separately in addition to code for primary procedure)	35700
Exploration (not followed by surgical repair), with or without lysis of artery;	
femoral artery	35721
popliteal artery	35741
Thrombectomy of arterial or venous graft, with revision of arterial or venous graft	35876
Revision, lower extremity arterial bypass, without thrombectomy, open;	
with vein patch angioplasty	35879
with segmental vein interposition	35881
Revision, femoral anastomosis of synthetic arterial bypass graft in groin, open;	

with non autogenous patch graft (e.g., Dacron, ePTFE, bovine pericardium)	35883
with autogenous vein patch graft	35884
Primary percutaneous transluminal mechanical thrombectomy, noncoronary, arterial or arterial bypass graft, including fluoroscopic guidance and intra procedural pharmacological thrombolytic injection(s); initial vessel	37184
second and all subsequent vessel(s) within the same vascular family (List separately in addition to code for primary mechanical thrombectomy procedure)	37185
Secondary percutaneous transluminal thrombectomy (e.g., non primary mechanical, snare basket, suction technique), noncoronary, arterial or arterial bypass graft, including fluoroscopic guidance and intra procedural pharmacological thrombolytic injections, provided in conjunction with another percutaneous intervention other than primary mechanical thrombectomy (List separately in addition to code for primary procedure)	37186
Transcatheter placement of an intravascular stent(s), (except coronary, carotid, and vertebral vessel), percutaneous; initial vessel (37205)	37205
each additional vessel (List separately in addition to code for primary procedure)	37206
Transcatheter placement of an intravascular stent(s), (except coronary, carotid, and vertebral vessel), open; each additional vessel (List separately in addition to code for primary procedure)	37208
Disarticulation;	
of hip	27295
at knee	27598
of ankle	27889
Amputation, thigh, through femur, any level	27590

immediate fitting technique including first cast	27591
open, circular (guillotine)	27592
leg, through tibia and fibula	27880
with immediate fitting technique including application of first cast	27881
open, circular (guillotine)	27882
ankle, through malleoli of tibia and fibula (e.g., Syme, Pirogoff type procedures), with plastic closure and resection of nerves	27888
foot; midtarsal (e.g., Chopart type procedure)	28800
transmetatarsal	28805

CPT-4 codes for PAD-related diagnostic procedures: Definitions	
Description	Code
Aortography: abdominal plus bilateral iliofemoral lower extremity, catheter, by serialography, radiological complete procedure	75630 75631
Angiography, extremity, unilateral, radiological supervision and interpretation complete procedure	75710 75711
bilateral; by serialography, complete procedure	75712
radiological	75716
without serialography; complete procedure	75717
by serialography, complete procedure	75718
Arterial duplex of the lower extremities, unilateral	93925
bilateral	93926

aorta	93978
CT Angiogram Abdomen with & w/o contrast	74175
Pelvis	72191
Lower Extremity	73706
abdominal aorta and bilateral iliofemoral lower extremity runoff	75635
MRA abdomen images from the diaphragm to the umbilicus or iliac crest	74185
Pelvis	72198
Lower extremity w/ or w/o contrast	73725
Non-invasive physiologic studies of lower extremity arteries, single level, bilateral	93922
at rest and following treadmill stress testing, complete bilateral study	93924

Other PAD-related codes: Definitions	
Description	Code
Chronic total occlusion of artery of the extremities	440.4
Arterial embolism and thrombosis of lower extremity	444.22
Embolism and thrombosis of iliac artery	444.81
Atheroembolism of lower extremity	445.02
Diabetes with peripheral circulatory disorders, Type II or unspecified type, not stated as uncontrolled	250.70
Diabetes with peripheral circulatory disorders, Type I (Juvenile type), not stated as uncontrolled	
Diabetes with peripheral circulatory disorders, Type II or unspecified type, uncontrolled	250.71
Diabetes with peripheral circulatory disorders, Type I (Juvenile type), uncontrolled	250.72
	250.73
Endarterectomy, abdominal arteries	38.16

Table S2. Characteristics of fee-for-service participants without an incident PAD diagnosis (N=10,566) and those with an incident PAD diagnosis in the outpatient (N=873) or inpatient setting (N=213). The Atherosclerosis Risk in Communities Study, 2002-2010.

	PAD status	
	No PAD (N=10,566)	Positive PAD (N=1086)
Mean Age at Diagnosis, SD	NA	74.8 (4.8)
Sex, % Female	57.4 (56.4, 58.3)	55.5 (52.5, 58.5)
Race, % Black	27.9 (27.1, 28.8)	27.1 (24.4, 29.7)
Median household income, %		
Low (<\$35,000)	34.5 (33.6, 35.4)	54.1 (50.5, 57.0)
Mid (\$35,000-\$49,999)	19.4 (18.7, 20.2)	18.9 (16.3, 21.6)
High (≥ \$50,000)	46.1 (45.2, 47.1)	27.1 (24.4, 29.7)
Education, < High School, %	22.2 (21.4, 23.0)	28.2 (25.4, 31.1)
Diabetes*, %	20.0 (19.2, 20.7)	43.0 (39.6, 46.4)
Smoking History[†], %	66.4 (65.5, 67.3)	68.6 (65.8, 71.4)
Hyperlipidemia[‡], %	70.9 (70.1, 71.8)	75.3 (72.8, 77.9)
Hypertension[§], %	52.4 (51.4, 53.4)	84.1 (81.8, 86.3)
Obesity[#], %	39.8 (38.8, 40.7)	50.1 (47.1, 53.1)
History of CHD^{**}, %	11.6 (11.0, 12.2)	17.2 (14.7, 19.5)
History of Stroke^{††}, %	8.3 (7.8, 8.9)	11.0 (9.0, 12.9)
History of Heart Failure^{‡‡}, %	16.2 (15.5, 16.9)	21.0 (18.5, 23.6)
End Stage Renal Disease^{§§}	0.7 (0.5, 0.9)	0.4 (0.2, 0.7)
Self-Rated Health, Poor^{###}	27.0 (26.1, 27.8)	28.7 (25.7, 31.6)

*Diabetes defined as self-reported history of physician-diagnosed diabetes at any of the four clinic visits or diabetes medication during two weeks prior to visit or fasting glucose ≥ 126 mg/dl fasting or a nonfasting blood glucose ≥ 200 mg/dl; [†] Smoking History is defined as any history or no history; [‡] Hyperlipidemia defined as total cholesterol ≥ 240 mg/dl ; [§] Hypertension defined as

systolic blood pressure \geq 140 mm Hg or diastolic blood pressure \geq 90 mm Hg or antihypertensive medication usage during two weeks prior to any of the four clinic visits; # Obesity defined as body mass index \geq 30 kg/m² ; ** History of CHD (coronary heart disease) defined as history of myocardial infarction, coronary revascularization during any time during follow-up but prior to incident PAD diagnosis date; **History of stroke defined as prevalent or incident stroke prior to incident PAD diagnosis date; ** History of Heart Failure defined as prevalent or incident heart failure prior to incident PAD diagnosis date; §§ End-stage renal disease defined as eGFR <15.0 mL/min/m² using the CKD-EPI equation; ## Self-rated health defined as poor, fair, good, excellent

Table S3. Characteristics of fee-for-service participants with an incident PAD diagnosis in the outpatient (N=873) by sex and race. The Atherosclerosis Risk in Communities Study, 2002-2010.

	Incident Outpatient PAD			
	Females	Males	Black	White
Median household income, %				
Low (<\$35,000)	62.2	42.2	81.4	43.4
Mid (\$35,000-\$49,999)	18.3	20.4	8.9	23.1
High (≥ \$50,000)	19.5	37.3	9.7	33.5
Education, < High School, %	30.6	24.9	45.8	21.6
Mean age at diagnosis, SD	74.9 (4.9)	75.1 (4.9)	73.5 (4.8)	75.5 (4.8)

Table S4. Characteristics of fee-for-service participants with an incident PAD diagnosis in the inpatient (N=213) by sex and race. The Atherosclerosis Risk in Communities Study, 2002-2010.

	Incident Inpatient PAD			
	Females	Males	Black	White
Median household income, %				
Low (<\$35,000)	69.7	42.5	80.4	45.8
Mid (\$35,000-\$49,999)	12.1	22.1	10.7	20.0
High (≥ \$50,000)	18.2	35.4	8.9	34.2
Education, < High School, %	28.3	28.3	43.6	23.1
Mean age at diagnosis, SD	74.4 (4.7)	74.4 (4.5)	73.9 (4.6)	74.6 (4.6)

Table S5. International Classification of Diseases, Ninth Revision (ICD-9-CM to identify concomitant diseases.

Disease	Codes
Ischemic heart disease	410.00, 410.01, 410.02, 410.10, 410.11, 410.12, 410.20, 410.21, 410.22, 410.30, 410.31, 410.32, 410.40, 410.41, 410.42, 410.50, 410.51, 410.52, 410.60, 410.61, 410.62, 410.70, 410.71, 410.72, 410.80, 410.81, 410.82, 410.90, 410.91, 410.92, 411.0, 411.1, 411.81, 411.89, 412.0, 413.0, 413.1, 413.9, 414.00, 414.01, 414.02, 414.03, 414.04, 414.05, 414.06, 414.07, 414.12, 414.2, 414.3, 414.4, 414.8, 414.9
Myocardial infarction	410, 410.0, 410.00, 410.01, 410.11, 410.21, 410.31, 410.31, 410.41, 410.51, 410.61, 410.71, 410.81, 410.91
Atrial fibrillation	427.31, 427.32
Heart failure	398.91, 402.01, 402.11, 402.91, 404.01, 404.11, 404.91, 404.03, 404.13, 404.93, 428, 428.0, 428.1, 428.20, 428.21, 428.22, 428.23, 428.30, 428.31, 428.32, 428.33, 428.40, 428.41, 428.42, 428.43, 428.9
Stroke	430, 431, 433.01, 433.11, 433.21, 433.31, 433.81, 433.91, 434.00, 434.01, 434.10, 434.11, 434.90, 434.91, 435.0, 435.1, 435.3, 435.8, 435.9, 436, 997.02
Chronic kidney disease	016.00, 016.01, 016.03, 016.04, 016.05, 016.06, 095.4, 189.0, 189.9, 223.0, 236.91, 249.40, 249.41, 250.40, 250.41, 250.42, 250.43, 271.4, 274.10, 283.11, 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 440.1, 442.1, 572.4, 580.0, 580.4, 580.81, 580.89, 580.9, 581.0, 581.1, 581.2, 581.3, 581.81, 581.89, 581.9, 582.0, 582.1, 582.2, 582.4, 582.81, 582.89, 582.9, 583.0, 583.1, 583.2, 583.4, 583.6, 583.7, 583.81, 583.89, 583.9, 584.5, 584.6, 584.7, 584.8, 584.9, 585, 585.1, 585.2, 585.3, 585.4, 585.5, 585.6, 585.9, 586, 587, 588.0, 588.1, 588.81, 588.89, 588.9, 591, 753.12, 753.14, 753.15, 753.16, 753.17, 753.19, 753.20, 753.21, 753.22, 753.23, 753.29, 794.4
Diabetes mellitus	249.00, 249.01, 249.10, 249.11, 249.20, 249.21, 249.30, 249.31, 249.40, 249.41, 249.50, 249.51, 249.60, 249.61, 249.70, 249.71, 249.80, 249.81, 249.90, 249.91, 250.00, 250.01, 250.02, 250.03, 250.10, 250.11, 250.12, 250.13, 250.20, 250.21, 250.22, 250.23, 250.30, 250.31, 250.32, 250.33, 250.40, 250.41, 250.42, 250.43, 250.50, 250.51, 250.52, 250.53, 250.60, 250.61, 250.62, 250.63, 250.70, 250.71, 250.72, 250.73, 250.80, 250.81, 250.82, 250.83, 250.90, 250.91, 250.92, 250.93, 357.2, 362.01, 362.02, 362.03, 362.04, 362.05, 362.06, 366.41