

Supplemental Tables

Appendix A. CPT and ICD-9/10 Codes for Diagnostic and Treatment Procedures Inclusion Criteria

Procedure	CPT	Category	Description
CT	70450	Diagnose	Computed tomography, head or brain; without contrast material
CT	70496	Diagnose	Computed tomographic angiography, head, with contrast material(s), including noncontrast images, if performed, and image postprocessing
Procedure	ICD-9/10	Category	Description
CT	87.03	Diagnose	Computerized Tomography of the Head
CT	B325ZZZ	Diagnose	Computerized Tomography of Bilateral Common Carotid Arteries
CT	B328ZZZ	Diagnose	Computerized Tomography of Bilateral Internal Carotid Arteries
CT	B32GZZZ	Diagnose	Computerized Tomography of Bilateral Vertebral Arteries
CT	B32RZZZ	Diagnose	Computerized Tomography of Intracranial Arteries
Procedure	CPT	Category	Description
MRI	70551	Diagnose	Magnetic resonance (eg, proton) imaging, brain (including brain stem); without contrast material
MRI	70544	Diagnose	Magnetic resonance angiography, head; without contrast material(s)
MRI	70545	Diagnose	Magnetic resonance angiography, head; with contrast material(s)
MRI	70546	Diagnose	Magnetic resonance angiography, head; without contrast material(s), followed by contrast material(s) and further sequences
Procedure	ICD-9/10	Category	Description
MRI	88.91	Diagnose	MRI of brain and brain stem
MRI	B335Y	Diagnose	MR with/without contrast
MRI	B338Y	Diagnose	MR with/without contrast
MRI	B33GY	Diagnose	MR with/without contrast
MRI	B33RY	Diagnose	MR (carotid, vertebral, intracranial arteries), with/without contrast
Procedure	CPT	Category	Description

Ultrasound	93880	Diagnose	Duplex scan of extracranial arteries, complete bilateral study
Ultrasound	93882	Diagnose	Duplex scan of extracranial arteries, unilateral or limited study
Ultrasound	93886	Diagnose	Transcranial Doppler study of the intracranial arteries; complete study
Ultrasound	93888	Diagnose	Transcranial Doppler study of the intracranial arteries; limited study
Ultrasound	93890	Diagnose	Transcranial Doppler study of the intracranial arteries; vasoreactivity study
Ultrasound	93892	Diagnose	Transcranial Doppler study of the intracranial arteries; emboli detection without intravenous microbubble injection
Ultrasound	93893	Diagnose	Transcranial Doppler study of the intracranial arteries; emboli detection with intravenous microbubble injection
Procedure	ICD-9/10	Category	Description
Ultrasound	88.71	Diagnose	Diagnostic ultrasound of head and neck
Ultrasound	B343ZZZ	Diagnose	Ultrasonography of Right Common Carotid Artery
Ultrasound	B344ZZZ	Diagnose	Ultrasonography of Left Common Carotid Artery
Ultrasound	B345ZZZ	Diagnose	Ultrasonography of Bilateral Common Carotid Arteries
Ultrasound	B346ZZZ	Diagnose	Ultrasonography of Right Internal Carotid Artery
Ultrasound	B347ZZZ	Diagnose	Ultrasonography of Left Internal Carotid Artery
Ultrasound	B348ZZZ	Diagnose	Ultrasonography of Bilateral Internal Carotid Arteries
Ultrasound	B34RZZZ	Diagnose	Ultrasonography of Intracranial Arteries
Procedure	CPT	Category	Description
Angiography	75650	Diagnose	Computed tomography, head or brain; without contrast material
Angiography	75665	Diagnose	Angiography, carotid, cerebral, unilateral, radiological supervision and interpretation
Angiography	75671	Diagnose	Angiography, carotid, cerebral, bilateral, radiological supervision and interpretation

Angiography	75676	Diagnose	Angiography, carotid, cervical, unilateral, radiological supervision and interpretation
Angiography	75680	Diagnose	Angiography, carotid, cervical, bilateral, radiological supervision and interpretation
Angiography	75685	Diagnose	Angiography, vertebral, cervical and/or intracranial, radiological supervision and interpretation
Angiography	36215	Diagnose or Treat	Selective catheter placement, arterial system, thoracic or brachiocephalic family (code range)
Angiography	36216	Diagnose or Treat	Selective catheter placement, arterial system, thoracic or brachiocephalic family (code range)
Angiography	36217	Diagnose or Treat	Selective catheter placement, arterial system, thoracic or brachiocephalic family (code range)
Angiography	36218	Diagnose or Treat	Selective catheter placement, arterial system, thoracic or brachiocephalic family (code range)
Angiography	36221	Diagnose	Non-selective catheter placement, thoracic aorta, with angiography of the extracranial carotid, vertebral, and/or intracranial vessels, unilateral or bilateral, and all associated radiological supervision and interpretation, includes angiography of the cervicocerebral arch, when performed
Angiography	36222	Diagnose	Selective catheter placement, common carotid or innominate artery, unilateral, any approach, with angiography of the ipsilateral extracranial carotid circulation and all associated radiological supervision and interpretation, includes angiography of the cervicocerebral arch, when performed
Angiography	36223	Diagnose	Selective catheter placement, common carotid or innominate artery, unilateral, any approach, with angiography of the ipsilateral intracranial carotid circulation and all associated radiological

			supervision and interpretation, includes angiography of the extracranial carotid and cervicocerebral arch, when performed
Angiography	36224	Diagnose	Selective catheter placement, internal carotid artery, unilateral, with angiography of the ipsilateral intracranial carotid circulation and all associated radiological supervision and interpretation, includes angiography of the extracranial carotid and cervicocerebral arch, when performed
Angiography	36225	Diagnose	Selective catheter placement, subclavian or innominate artery, unilateral, with angiography of the ipsilateral vertebral circulation and all associated radiological supervision and interpretation, includes angiography of the cervicocerebral arch, when performed
Angiography	36226	Diagnose	Selective catheter placement, vertebral artery, unilateral, with angiography of the ipsilateral vertebral circulation and all associated radiological supervision and interpretation, includes angiography of the cervicocerebral arch, when performed
Angiography	36228	Diagnose	Selective catheter placement, each intracranial branch of the internal carotid or vertebral arteries, unilateral, with angiography of the selected vessel circulation and all associated radiological supervision and interpretation (eg, middle cerebral artery, posterior inferior cerebellar artery)
Procedure	ICD-9/10	Category	Description
Angiography	88.41	Diagnose	Arteriography of cerebral arteries
Angiography	B3130ZZ	Diagnose	Fluoroscopy of Right Common Carotid Artery using High Osmolar Contrast

Angiography	B3131ZZ	Diagnose	Fluoroscopy of Right Common Carotid Artery using Low Osmolar Contrast
Angiography	B313YZZ	Diagnose	Fluoroscopy of Right Common Carotid Artery using Other Contrast
Angiography	B3140ZZ	Diagnose	Fluoroscopy of Left Common Carotid Artery using High Osmolar Contrast
Angiography	B3141ZZ	Diagnose	Fluoroscopy of Left Common Carotid Artery using Low Osmolar Contrast
Angiography	B314YZZ	Diagnose	Fluoroscopy of Left Common Carotid Artery using Other Contrast
Angiography	B3150ZZ	Diagnose	Fluoroscopy of Bilateral Common Carotid Arteries using High Osmolar Contrast
Angiography	B3151ZZ	Diagnose	Fluoroscopy of Bilateral Common Carotid Arteries using Low Osmolar Contrast
Angiography	B315YZZ	Diagnose	Fluoroscopy of Bilateral Common Carotid Arteries using Other Contrast
Angiography	B3160ZZ	Diagnose	Fluoroscopy of Right Internal Carotid Artery using High Osmolar Contrast
Angiography	B3161ZZ	Diagnose	Fluoroscopy of Right Internal Carotid Artery using Low Osmolar Contrast
Angiography	B316YZZ	Diagnose	Fluoroscopy of Right Internal Carotid Artery using Other Contrast
Angiography	B3170ZZ	Diagnose	Fluoroscopy of Left Internal Carotid Artery using High Osmolar Contrast
Angiography	B3171ZZ	Diagnose	Fluoroscopy of Left Internal Carotid Artery using Low Osmolar Contrast
Angiography	B317YZZ	Diagnose	Fluoroscopy of Left Internal Carotid Artery using Other Contrast
Angiography	B3180ZZ	Diagnose	Fluoroscopy of Bilateral Internal Carotid Arteries using High Osmolar Contrast
Angiography	B3181ZZ	Diagnose	Fluoroscopy of Bilateral Internal Carotid Arteries using Low Osmolar Contrast
Angiography	B318YZZ	Diagnose	Fluoroscopy of Bilateral Internal Carotid Arteries using Other Contrast

Angiography	B31D0ZZ	Diagnose	Fluoroscopy of Right Vertebral Artery using High Osmolar Contrast
Angiography	B31D1ZZ	Diagnose	Fluoroscopy of Right Vertebral Artery using Low Osmolar Contrast
Angiography	B31DYZZ	Diagnose	Fluoroscopy of Right Vertebral Artery using Other Contrast
Angiography	B31F0ZZ	Diagnose	Fluoroscopy of Left Vertebral Artery using High Osmolar Contrast
Angiography	B31F1ZZ	Diagnose	Fluoroscopy of Left Vertebral Artery using Low Osmolar Contrast
Angiography	B31FYZZ	Diagnose	Fluoroscopy of Left Vertebral Artery using Other Contrast
Angiography	B31G0ZZ	Diagnose	Fluoroscopy of Bilateral Vertebral Arteries using High Osmolar Contrast
Angiography	B31G1ZZ	Diagnose	Fluoroscopy of Bilateral Vertebral Arteries using Low Osmolar Contrast
Angiography	B31GYZZ	Diagnose	Fluoroscopy of Bilateral Vertebral Arteries using Other Contrast
Angiography	B31Q0ZZ	Diagnose	Fluoroscopy of Cervico-Cerebral Arch using High Osmolar Contrast
Angiography	B31Q1ZZ	Diagnose	Fluoroscopy of Cervico-Cerebral Arch using Low Osmolar Contrast
Angiography	B31QYZZ	Diagnose	Fluoroscopy of Cervico-Cerebral Arch using Other Contrast
Angiography	B31R0ZZ	Diagnose	Fluoroscopy of Intracranial Arteries using High Osmolar Contrast
Angiography	B31R1ZZ	Diagnose	Fluoroscopy of Intracranial Arteries using Low Osmolar Contrast
Angiography	B31RYZZ	Diagnose	Fluoroscopy of Intracranial Arteries using Other Contrast
Procedure	CPT	Category	Description
Endovascular thrombectomy	37184	Treat	Primary percutaneous transluminal mechanical thrombectomy, noncoronary, arterial or arterial bypass graft, incl fluoroscopic guidance and intraprocedural pharmacological thrombolytic injection(s); initial vessel
Endovascular thrombectomy	61645	Treat	Percutaneous arterial transluminal mechanical thrombectomy and/or infusion for thrombolysis, intracranial, any method, including diagnostic angiography, fluoroscopic guidance, catheter

			placement, and intraprocedural pharmacological thrombolytic injection(s)
Endovascular thrombectomy	35301	Treat	Thromboendarterectomy, including patch graft if performed, carotid, vertebral, subclavian, by neck incision
Procedure	ICD-9/10	Category	Description
Endovascular thrombectomy	39.74	Treat	Endovascular removal of obstruction from head and neck
Endarterectomy	38.12	Treat	Endarterectomy, other vessels of head and neck
Endovascular thrombectomy	03CG3Z-	Treat	Extirpation of matter from intracranial artery, percutaneous approach
Endovascular thrombectomy	03C(H,J)3Z-	Treat	Extirpation of matter from common carotid artery, percutaneous approach
Endovascular thrombectomy	03C(K,L)3Z-	Treat	Extirpation of matter from internal carotid artery, percutaneous approach
Endovascular thrombectomy	03C(P,Q)3Z-	Treat	Extirpation of matter from vertebral artery, percutaneous approach
Procedure	CPT	Category	Description
Thrombolysis	37195	Treat	Thrombolysis, cerebral, by intravenous infusion
Thrombolysis	37201	Treat	Transcatheter therapy, infusion for thrombolysis other than coronary
Thrombolysis	75896	Treat	Transcatheter therapy, infusion, any method (eg, thrombolysis other than coronary), radiological supervision and interpretation
Thrombolysis	37211	Treat	Transcatheter therapy arterial infusion for thrombolysis other than coronary, any method, including radiological supervision and interpretation, initial treatment day
Thrombolysis	37213	Treat	Transcatheter therapy arterial or venous infusion for thrombolysis other than coronary, any method, including radiological supervision and interpretation, continued treatment on a subsequent day during course of thrombolytic therapy, including follow-up catheter contrast injection, position

			change, or exchange, when performed
Thrombolysis	37214	Treat	Transcatheter therapy arterial or venous infusion for thrombolysis other than coronary, any method, including radiological supervision and interpretation, continued treatment on a subsequent day during course of thrombolytic therapy, including follow-up catheter contrast injection, position change, or exchange, when performed, cessation of thrombolysis including removal of catheter and vessel closure by any method
Procedure	ICD-9/10	Category	Description
Thrombolysis	99.10	Treat	Injection or infusion of thrombolytic agent
Thrombolysis	03CH0ZZ	Treat	Extirpation of Matter from Right Common Carotid Artery, Open Approach
Thrombolysis	03CJ0ZZ	Treat	Extirpation of Matter from Left Common Carotid Artery, Open Approach
Thrombolysis	03CK0ZZ	Treat	Extirpation of Matter from Right Internal Carotid Artery, Open Approach
Thrombolysis	03CL0ZZ	Treat	Extirpation of Matter from Left Internal Carotid Artery, Open Approach
Thrombolysis	3E03317	Treat	Introduction of Other Thrombolytic into Peripheral Vein, Percutaneous Approach
Thrombolysis	3E05317	Treat	Introduction of Other Thrombolytic into Peripheral Artery, Percutaneous Approach
Procedure	CPT	Category	Description
Angioplasty and stenting	37215	Treat	Transcatheter placement of intravascular stent(s), cervical carotid artery, open or percutaneous, including angioplasty when performed and radiological supervision and interpretation, with distal embolic protection

Angioplasty and stenting	37216	Treat	Transcatheter placement of intravascular stent(s), cervical carotid artery, open or percutaneous, including angioplasty when performed and radiological supervision and interpretation, without distal embolic protection
Angioplasty and stenting	61630	Treat	Balloon angioplasty, intracranial (eg, atherosclerotic stenosis), percutaneous
Angioplasty and stenting	61635	Treat	Transcatheter placement of intravascular stent(s), intracranial (eg, atherosclerotic stenosis), including balloon angioplasty, if performed
Procedure	ICD-9/10	Category	Description
Angioplasty and stenting	00.61	Treat	Percutaneous angioplasty of extracranial vessels
Angioplasty and stenting	00.62	Treat	Percutaneous angioplasty of intracranial vessels
Angioplasty and stenting	00.63	Treat	Percutaneous insertion of carotid artery stent(s)
Angioplasty and stenting	00.64	Treat	Percutaneous insertion of other extracranial artery stent(s)
Angioplasty and stenting	00.65	Treat	Percutaneous insertion of intracranial vascular stent(s)
Angioplasty and stenting	037G3Z	Treat	Dilation of Intracranial Artery, Percutaneous Approach
Angioplasty and stenting	037G3(D,E,F,G)-	Treat	Dilation, intracranial artery, with intraluminal device, percutaneous approach
Angioplasty and stenting	037(H,J)3Z-	Treat	Dilation, common carotid artery, percutaneous approach
Angioplasty and stenting	037(H,J)3(D,E,F,G)-	Treat	Dilation, common carotid artery, with intraluminal device, percutaneous approach
Angioplasty and stenting	037(K,L)3Z-	Treat	Dilation, internal carotid artery, percutaneous approach
Angioplasty and stenting	037(K,L)3(D,E,F,G)-	Treat	Dilation, internal carotid artery, with intraluminal device, percutaneous approach
Procedure	CPT	Category	Description
Surgical, Evacuation of blood	61108	Treat	Twist drill hole(s) for subdural, intracerebral, or ventricular

			puncture, for evacuation and/or drainage of subdural hematoma
Surgical, Evacuation of blood	61154	Treat	Burr hole(s) with evacuation and/or drainage of hematoma, extradural or subdural
Surgical, Evacuation of blood	61156	Treat	Burr hole(s) with aspiration of hematoma or cyst, intracerebral
Surgical, Evacuation of blood	61314	Treat	Craniectomy or craniotomy for evacuation of hematoma, infratentorial, extradural or subdural
Surgical, Evacuation of blood	61315	Treat	Craniectomy or craniotomy for evacuation of hematoma, infratentorial, intracerebellar
Surgical, Occlusion/ embolization of vessel	75894	Treat	Transcatheter therapy, embolization, any method, radiological supervision and interpretation
Procedure	ICD-9/10	Category	Description
Surgical, Evacuation of blood	01.09	Treat	Other cranial puncture
Surgical, Evacuation of blood	01.24	Treat	Other craniotomy
Surgical, Evacuation of blood	01.31	Treat	Incision of cerebral meninges
Surgical, Evacuation of blood	01.39	Treat	Other incision of brain
Surgical, Evacuation of blood	0090-0Z	Treat	Drainage of brain with drainage device, via open, percutaneous, endoscopic approach
Surgical, Evacuation of blood	009(3,4,5)-0Z	Treat	Drainage of intracranial epidural, subdural, subarachnoid space, with drainage device, via open, percutaneous, neuroendoscopic approach
Surgical, Evacuation of blood	0090-ZZ	Treat	Drainage of brain, via open, percutaneous, endoscopic approach
Surgical, Evacuation of blood	009(3,4,5)-ZZ	Treat	Drainage of intracranial epidural, subdural, subarachnoid space, via open, percutaneous, neuroendoscopic approach

Surgical, Evacuation of blood	009C0-ZZ	Treat	Extirpation of matter from brain, via open, percutaneous, endoscopic approach
Surgical, Evacuation of blood	00C(3,4,5)-ZZ	Treat	Extirpation of matter from intracranial epidural, subdural, subarachnoid space, via open, percutaneous, neuroendoscopic approach

Appendix B. Inclusion and Exclusion Coding

Coding for inclusion	ICD 9	ICD 10
Ischemic stroke	433.x1, 434.x1	I63.#
Hemorrhagic stroke	430, 431, 432.x	I60.##, I61.#, I62.##
Coding for variables of interest		
Chronic Kidney Disease Stage 1	585.1	N18.1
Chronic Kidney Disease Stage 2	585.2	N18.2
Chronic Kidney Disease Stage 3	585.3	N18.3
Chronic Kidney Disease Stage 4	585.4	N18.4
Chronic Kidney Disease Unspecified	249.4, 250.4, 585.9	E08.22, E09.22, E10.22, E11.22, E13.22, I12.9, I13.0, I13.10, N18.9
Acute Kidney Injury	584.9	N17.9
Coding for exclusion from the high-risk patient cohort	ICD 9	ICD 10
Chronic Kidney Disease Stage 5	585.5	N18.5
End-stage renal disease	585.6	N18.6

Appendix C. Elixhauser Comorbidity Index

Comorbidity	ICD-9 Coding	ICD-10 Coding
Congestive Heart Failure	398.91, 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, 425.4–425.9, 428.x	I09.9#, I11.0#, I13.0#, I13.2#, I25.5#, I42.0#, I42.5#, I42.6#, I42.7#, I42.8#, I42.9#, I43.#, I50.#, P29.0#
Cardiac Arrhythmia	426.0, 426.13, 426.7, 426.9, 426.10, 426.12, 427.0–427.4, 427.6–427.9, 785.0, 996.01, 996.04, V45.0, V53.3	I44.1#, I44.2#, I44.3#, I45.6#, I45.9#, I47.#, I48.#, I49.#, R00.0#, R00.1#, R00.8#, T82.1#, Z45.0#, Z95.0#
Valvular Disease	093.2, 394.x–397.x, 424.x, 746.3–746.6, V42.2, V43.3	A52.0#, I05.#, I06.#, I07.#, I08.#, I09.1#, I09.8#, I34.#, I35.#, I36.#, I37.#, I38.#, I39.#, Q23.0#, Q23.1#, Q23.2#, Q23.3#, Z95.2#, Z95.4#
Pulmonary Circulation Disorders	415.0, 415.1, 416.x, 417.0, 417.8, 417.9	I26.#, I27.#, I28.0#, I28.8#, I28.9#
Peripheral Vascular Disorders	093.0, 437.3, 440.x, 441.x, 093.0, 437.3, 440.x, 441.x, 443.1–443.9, 447.1, 557.1, 557.9, V43.4	I70.#, I71.#, I73.1#, I73.8#, I73.9#, I77.1#, I79.0#, I79.2#, K55.1#, K55.8#, K55.9#, Z95.8#, Z95.9#
Hypertension (Uncomplicated)	401.x	I10.#
Hypertension (Complicated)	402.x–405.x	I11.#, I12.#, I13.#, I15.#
Paralysis	334.1, 342.x, 343.x, 344.0–344.6, 344.9	G04.1#, G11.4#, G80.1#, G80.2#, G81.#, G82.#, G83.0#, G83.1#, G83.2#, G83.3#, G83.4#, G83.9#

Comorbidity	ICD-9 Coding	ICD-10 Coding
Other Neurological Disorders	331.9, 332.0, 332.1, 333.4, 333.5, 333.92, 334.x–335.x, 336.2, 340.x, 341.x, 345.x, 348.1, 348.3, 780.3, 784.3	G10.#, G11.#, G12.#, G13.#, G20.#, G21.#, G22.#, G25.4#, G25.5#, G31.2#, G31.8#, G31.9#, G32.#, G35.#, G36.#, G37.#, G40.#, G41.#, G93.1#, G93.4#, R47.0#, R56.#
Chronic Pulmonary Disease	416.8, 416.9, 490.x –505.x, 506.4, 508.1, 508.8	I27.8#, I27.9#, J40.#, J41.#, J42.#, J43.#, J44.#, J45.#, J46.#, J47.#, J60.#, J61.#, J62.#, J63.#, J64.#, J65.#, J66.#, J67.#, J68.4#, J70.1#, J70.3#
Diabetes (Uncomplicated)	250.0–250.3	E10.0#, E10.1#, E10.9#, E11.0#, E11.1#, E11.9#, E12.0#, E12.1#, E12.9#, E13.0#, E13.1#, E13.9#, E14.0#, E14.1#, E14.9#
Diabetes (Complicated)	250.4–250.9	E10.2#, E10.3#, E10.4#, E10.5#, E10.6#, E10.7#, E10.8#, E11.2#, E11.3#, E11.4#, E11.5#, E11.6#, E11.7#, E11.8#, E12.2#, E12.3#, E12.4#, E12.5#, E12.6#, E12.7#, E12.8#, E13.2#, E13.3#, E13.4#, E13.5#, E13.6#, E13.7#, E13.8#, E14.2#, E14.3#, E14.4#, E14.5#, E14.6#, E14.7#, E14.8#
Hypothyroidism	240.9, 243.x, 244.x, 246.1, 246.8	E00.#, E01.#, E02.#, E03.#, E89.0#
Renal Failure	403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 585.x, 586.x, 588.0, V42.0, V45.1, V56.x	I12.0#, I13.1#, N18.#, N19.#, N25.0#, Z49.0#, Z49.1#, Z49.2#, Z94.0#, Z99.2#

Comorbidity	ICD-9 Coding	ICD-10 Coding
Liver Disease	070.22, 070.23, 070.32, 070.33, 070.44, 070.54, 070.6, 070.9, 456.0–456.2, 570.x, 571.x, 572.2–572.8, 573.3, 573.4, 573.8, 573.9, V42.7	B18.#, I85.#, I86.4#, I98.2#, K70.#, K71.1#, K71.3#, K71.4#, K71.5#, K71.7#, K72.#, K73.#, K74.#, K76.0#, K76.2#, K76.3#, K76.4#, K76.5#, K76.6#, K76.7#, K76.8#, K76.9#, Z94.4#
Peptic Ulcer Disease (excluding bleeding)	531.7, 531.9, 532.7, 532.9, 533.7, 533.9, 534.7, 534.9	K25.7#, K25.9#, K26.7#, K26.9#, K27.7#, K27.9#, K28.7#, K28.9#
AIDS/HIV	042.x–044.x	B20.#, B21.#, B22.#, B24.#
Lymphoma	200.x–202.x, 203.0, 238.6	C81.#, C82.#, C83.#, C84.#, C85.#, C88.#, C96.#, C90.0#, C90.2#
Metastatic Cancer	196.x–199.x	C77.#, C78.#, C79.#, C80.#
Solid Tumor without Metastasis	140.x–172.x, 174.x–195.x	C0#, C1#, C20.#, C21.#, C22.#, C23.#, C24.#, C25.#, C26.#, C30.#, C31.#, C32.#, C33.#, C34.#, C37.#, C38.#, C39.#, C40.#, C41.#, C43.#, C45.#, C46.#, C47.#, C48.#, C49.#, C50.#, C51.#, C52.#, C53.#, C54.#, C55.#, C56.#, C57.#, C58.#, C6#, C70.#, C71.#, C72.#, C73.#, C74.#, C75.#, C76.#, C97.#
Rheumatoid Arthritis Collagen	446.x, 701.0, 710.0–710.4, 710.8, 710.9, 711.2, 714.x, 719.3, 720.x, 725.x, 728.5, 728.89, 729.30	L94.0#, L94.1#, L94.3#, M05.#, M06.#, M08.#, M12.0#, M12.3#, M30.#, M31.0#, M31.1#, M31.2#, M31.3#, M32.#, M33.#, M34.#, M35.#, M45.#, M46.1#, M46.8#, M46.9#
Coagulopathy	286.x, 287.1, 287.3–287.5	D65.#, D66.#, D67.#, D68.#, D69.1#, D69.3#, D69.4#, D69.5#, D69.6#

Comorbidity	ICD-9 Coding	ICD-10 Coding
Obesity	278	E66.#
Weight Loss	260.x–263.x, 783.2, 799.4	E40.#, E41.#, E42.#, E43.#, E44.#, E45.#, E46.#, R63.4#, R64#
Fluid and Electrolyte Disorders	253.6, 276.x	E22.2#, E86.#, E87.#
Blood Loss Anemia	280	D50.0#
Deficiency Anemia	280.1–280.9, 281.x	D50.8#, D50.9#, D51.#, D52.#, D53.#
Alcohol Abuse	265.2, 291.1–291.3, 291.5–291.9, 303.0, 303.9, 305.0, 357.5, 425.5, 535.3, 571.0–571.3, 980.x, V11.3	F10.#, E52, G62.1#, I42.6, K29.2#, K70.0#, K70.3#, K70.9#, T51.#, Z50.2#, Z71.4#, Z72.1#
Drug Abuse	292.x, 304.x, 305.2–305.9, V65.42	F11.#, F12.#, F13.#, F14.#, F15.#, F16.#, F18.#, F19.#, Z71.5#, Z72.2#
Psychoses	293.8, 295.x, 296.04, 296.14, 296.44, 296.54, 297.x, 298.x	F20.#, F22.#, F23.#, F24.#, F25.#, F28.#, F29.#, F30.2#, F31.2#, F31.5#
Depression	296.2, 296.3, 296.5, 300.4, 309.x, 311	F20.4#, F31.3#, F31.4#, F31.5#, F32.#, F33.#, F34.1#, F41.2#, F43.2#