

Supplemental Digital Content 1, Table 1. ICD-9 Codes for Postoperative Complications

<i>Postoperative Complication</i>	<i>Code</i>
Arrhythmia	427 except 427.5
Heart failure	428
Cerebral ischemia	433-436, 997.02
Myocardial ischemia	411, 413
Myocardial infarction	410.10, 410.11, 410.20-410.21, 410.30-410.31, 410.40-410.41, 410.50-410.51, 410.60, 410.90-410.91, 997.1
Cardiac arrest	427.5
Renal failure	584
UTI	599.0, 997.5
Pneumonia	478-487.0
Bleeding	719.15, 998.1
Sepsis	995.91, 995.92
DVT	453.4, 453.9
Pulmonary embolus	415.11, 415.19
Non-ischemic cerebral event	430-432

Considered a postoperative complication if there were 2 inpatient or outpatient records of the corresponding ICD-9 code that were newly incident in the period POD2-POD90. The same codes were also used to determine early postoperative complications occurring POD0-1.

DVT=deep vein thrombosis, ICD-9=International Classification of Diseases (ninth revision), POD=postoperative day, UTI=urinary tract infection

Supplemental Digital Content 1, Table 2. CCS Codes for Determination of Surgical Type

<i>Surgery Type</i>	<i>CCS Codes</i>	<i>Excluded ICD-9 Codes*</i>
General	10-12, 27, 34, 35, 53, 65-67, 71-75, 78-81, 84-87, 89-90, 94, 96, 99, 166-167, 170, 175-176, 184	06.11, 06.13, 06.19, 07.11, 41.32, 41.38-41.39, 41.91-41.92, 41.98
Ophthalmology, Plastics, Otolaryngology	13-17, 19-24, 26, 28-30, 33, 144, 160, 172	76.71, 76.73, 76.75, 76.78, 76.93
Vascular	51-52, 55-57, 59, 60-61	
Orthopedic	142-143, 145-154, 157-158, 161-162, 164	79.00-79.09, 79.40-79.42, 79.45-79.46, 79.72, 79.73, 79.75-79.78
Urologic, Gynecologic	100-106, 112-115, 118, 119-129, 132, 134	672, 674, 67.31-67.33, 67.39
Neurosurgery	1-3, 6, 9	
Thoracic	36, 38, 39-40, 42	34.04, 34.25, 34.91
Cardiac	43, 44, 49, 50	

*Within some CCS categories, certain ICD-9 codes were excluded since they represented non-surgical procedures

CCS=clinical classifications software procedural code developed for ICD-9-CM (International Classification of Diseases, ninth revision, clinical modification), ICD-9=International Classification of Diseases (ninth revision)

Supplemental Digital Content 3, Table 3. ICD-9 Codes for Preoperative Comorbidities

<i>Preoperative Diagnosis</i>	<i>Codes</i>
Ischemic heart disease	409-415
Valvular disease	424, 932, V422, V434, 393-398, 423.9-424.4, 429.0, 746.3-746.6
Diabetes mellitus	248.9-249.4, 249.9-250.4, 648.0, 249.3-250.0, 250.3-251.0, 775.1
Peripheral vascular disease	439-444, 444.21, 444.22, 447.1, 449, 557.1, 557.9, V435
Heart failure	428, 398.91, 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93
Cerebral ischemia	430-432, 435-436, 433.01, 433.11, 433.21, 433.31, 433.81, 433.91, 434.01, 434.11, 434.91
Dyslipidemia	272
Chronic kidney disease	403.01, 403.11, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 585.2-587, V420, V451, V560-V562, V568
Hypertension	401.1, 401.9, 642.0, 401.0, 401-406, 437.2, 642.1, 642.2, 642.7, 642.9
Metastatic cancer	195-200, 209.7, 789.51
Non-metastatic cancer	139-176, 178-196, 208.9-209.4, 258.0
Lymphoma	199.99-202.39, 202.49-203.9, 238.6, 273.4
Fluid or electrolyte disorder	276
Obesity	278.0, 649.1, 793.91, V853, V8553
Morbid obesity	278.01, V854, V8554
Paralysis	341-345, 438.1-438.6, 780.72
Drug abuse	292.0, 292.8, 292.9, 304, 648.4
Liver disease	702.2, 702.3, 703.3, 704.4, 705.4, 455.9-456.3, 571.0, 571.1-572.0, 572.3, 572.8, 573.5, V427
Weight loss	259.9-264, 783.21, 783.22
Chronic peptic ulcer disease	531.41, 531.51, 531.61, 531.7, 531.9, 532.41, 532.51, 532.61, 532.7, 532.9, 533.41, 533.51, 533.61, 533.7, 533.9, 534.41, 534.51, 534.61, 534.7, 534.9
Neurologic disease	329-332, 332.0, 333.4, 333.5, 333.7, 333.85, 333.94, 334, 335, 338.0, 340, 345, 347, 649.4, 768.7, 780.3, 780.97, 784.3, 341.0-342.0
Pulmonary circulatory disease	415.12, 417.9, 416
Chronic pulmonary disease	490-495, 494.9-495.7, 495.7-506.8
Hypothyroidism	243, 243-245
Alcohol abuse	290-292, 303, 305.0
Tobacco use	305.1, 989.84, V1582
Psychosis	294-299, 299.1
Depression	300.4, 301.12, 309.0, 309.1, 311
HIV/AIDS	041-045, 795.71, V08
Hepatitis C	704.1, 704.4, 705.1, 707.0, 707.1

Considered a preoperative comorbidity if there were 2 inpatient or outpatient records of the corresponding ICD-9 code in the 12 months prior to the surgical date.

ICD-9=International Classification of Diseases (ninth revision)