

SUPPLEMENTAL MATERIAL

Table S1. Charlson Comorbidity Index and ICD-10-CM codes.

Comorbidity	Points	ICD 10-CM codes
Myocardial infarction	1	I25.2
Congestive heart failure	1	I09.81, I25.5, I42.0, I42.5 - I42.9, I43.x, I50.x
Peripheral vascular disease	1	I70.x, I71.x, I72.x, I73.1, I73.8, I73.9, I77.1, I77.7, I79.0, I79.1, I79.8, I79.2, K55.1, K55.8, K55.9, Z95.8, Z95.9
Cerebrovascular disease	1	I69.x, Z86.73
Dementia	1	F01.5, F02.8, F03.9, G30.x, G31.1, G31.8, G31.9
Chronic pulmonary disease	1	I27.8, I27.9, J40.x - J47.x, J60.x - J67.x, J68.4, J70.1, J70.3, J84, J96.1
Rheumatic disease	1	L94.0, L94.1, L94.3, M05.x, M06.x, M08.x, M12.0, M12.3, M30.x, M31.0 - M31.3, M32.x - M35.x, M45.x, M46.5, M46.1, M46.8, M46.9, M48.8, M49.8
Peptic ulcer disease	1	K25.5, K25.7, K25.9, K26.5, K26.7, K26.9, K27.5, K27.7, K27.9, K28.5, K28.7, K28.9
Mild liver disease	1	B18.x, K70.0 - K70.3, K70.9, K71.3 - K71.5, K71.7, K73.x, K74.x, K76.0, K76.0, K76.4, K76.8, K76.9, Z94.4
Diabetes without chronic complication	1	E08.9, E09.9, E10.9, E11.9, E13.9
Diabetes with chronic complication	2	E08.2-E08.8, E09.x, E10.2 - E10.8, E11.2 - E11.8, E12.2 - E12.8, E13.2 - E13.8
Hemiplegia	2	G04.1, G11.4, G80.1, G80.2, G81.x, G82.x, G83.0 - G83.5, G83.8, G83.9, I69.x, R53.2
Renal disease	2	I12.0, I13.1, N18.x, N19.x, N25.0, Z49.0 - Z49.2
Cancer	2	C00.x - C26.x, C30.x - C34.x, C37.x - C41.x, C43.x, C45.x - C58.x, C60.x - C76.x, C81.x - C85.x, C88.x, C90.x - C96.x
Moderate or severe liver disease	3	I85.0, I86.4, K72.1, K72.9, K76.5, K76.6, K76.7
Metastatic solid tumor	6	C77.x - C80.x, R18.0
AIDS	6	B20

ICD-10-CM: International Classification of Diseases, Tenth Revision, Clinical Modification. AIDS: acquired immune deficiency syndrome.

Table S2. Elixhauser Classification System and ICD-10-CM codes.

Comorbidity	Points	ICD-10-CM codes
Congestive heart failure	7	I09.81, I25.5, I42.0, I42.5 - I42.9, I43.x, I50.x
Cardiac arrhythmias	5	I44.1 - I44.3, I45.6, I45.9, I47.x - I49.x, R00.0, R00.1, R00.8, Z95.0
Valvular disease	-1	A52.0, I05.x - I08.x, I09.1, I09.8, I34.x - I39.x, Q23.0 - Q23.3, Z95.2 - Z95.4
Pulmonary circulation disorders	4	I26.x, I27.x, I28.0, I28.8, I28.9
Peripheral vascular disorders	2	I70.x, I71.x, I72.x, I73.1, I73.8, I73.9, I77.1, I77.7, I79.0, I79.1, I79.8, I79.2, K55.1, K55.8, K55.9, Z95.8, Z95.9
Hypertension	0	I10.x, I11.x - I13.x, I15.x
Paralysis	7	G04.1, G11.4, G80.1, G80.2, G81.x, G82.x, G83.0 - G83.5, G83.8, G83.9, I69.x, R53.2
Neurodegenerative disorders	6	E75.0, E75.1, E75.2, E75.4, F84.2, G10.x - G13.x, G20.x - G21.x, G24.0, G24.2, G24.8, G25.4, G25.5, G30.0, G31.0, G31.1, G31.2, G31.8, G31.9, G32.8, G35.x - G37.x, G80.3
Chronic pulmonary disease	3	I27.8, I27.9, J40.x - J47.x, J60.x - J67.x, J68.4, J70.1, J70.3, J84, J96.1
Diabetes, uncomplicated	0	E08.9, E09.9, E10.9, E11.9, E13.9
Diabetes, complicated	0	E08.2-E08.8, E09.x, E10.2 - E10.8, E11.2 - E11.8, E12.2 - E12.8, E13.2 - E13.8
Hypothyroidism	0	E00.x - E03.x
Renal failure	5	I12.0, I13.1, N18.x, N25.0, Z49.0, Z49.3, Z91.1, Z99.2
Liver disease	11	B18.x, I85.x, K70.x, K71.1, K71.3 - K71.5, K71.7, K72.x - K74.x, K75.4, K75.8, K76.0, K76.2 - K76.9, Z94.4
Peptic ulcer disease, no bleeding	0	K25.5, K25.7, K25.9, K26.5, K26.7, K26.9, K27.5, K27.7, K27.9, K28.5, K28.7, K28.9
AIDS/HIV	0	B20
Lymphoma	9	C81.x - C86.x, C88.x, C90.0, C90.2, C90.3, C96.x, D47.Z9
Metastatic cancer	12	C77.x - C80.x, R18.0
Solid tumor without metastasis	4	C00.x - C26.x, C30.x - C34.x, C37.x - C41.x, C43.x, C45.x - C58.x, C60.x - C76.x, D03.1-D03.9, E31.2
Rheumatoid arthritis/collagen, vascular disease	0	L94.0, L94.1, L94.3, M05.x, M06.x, M08.x, M12.0, M12.3, M30.x, M31.0 - M31.3, M32.x - M35.x, M45.x, M46.5, M46.1, M46.8, M46.9, M48.8, M49.8
Coagulopathy	3	D66 - D68.x, D69.1, D69.3 - D69.6

Obesity	-4	E66.x, Z68.3, Z68.4, Z68.5
Weight loss	6	E40.x - E46.x, R63.4, R63.6
Fluid and electrolytes disorders	5	E22.2
Blood loss anemia	-2	D50.0
Deficiency anemia	-2	D501, D50.8, D50.9, D51.x - D53.x, D63.1, D63.8
Alcohol misuse	0	F10, E52, G62.1, I42.6, K29.2, K70.0, K70.3, K70.9, T51.x, Z71.4
Drug abuse	-7	F11.x - F16.x, F18.x, F19.x, Z71.5
Psychosis	0	F20.x, F22.x - F25.x, F28.x, F29.x, F30.1, F30.2, F31.2, F31.6, F44.8
Depression	-3	F20.4, F31.3 - F31.5, F32.x, F33.x, F34.1, F41.2, F43.2

ICD-10-CM: International Classification of Diseases, Tenth Revision, Clinical Modification. AIDS/HIV: acquired immune deficiency syndrome and human immunodeficiency virus infection.

Table S3. 10-CM codes for in-hospital major adverse events.

Adverse Events	ICD-10-CM codes
Post procedural hemorrhage	D7821, D7822, D7831, D7832, E89810, E89811, E89820, E89821, G9751, G9752, G9761, G9762, H59311, H59312, H59313, H59319, H59321, H59322, H59323, H59329, H59331, H59332, H59333, H59339, H59341, H59342, H59343, H59349, H9541, H9542, H9551, H9552, I97610, I97611, I97618, I9762, I97620, I97621, I97630, I97631, I97638, J95830, J95831, J95860, J95861, K91840, K91841, K91870, K91871, L7621, L7631, M96830, M96840, N99820, N99821, N99840, N9984
Cardiac complications	I2101, I2102, I2109, I2111, I2119, I2121, I2129, I213, I214, I219, I21A1, I21A9, I220, I221, I222, I228, I229, I469, I97710, I97790, I9788, I9789, I312, I314, I442, 0W9D30Z, 0W9D3ZX, 0W9D3ZZ, 0W9D40Z, 0W9D4ZX, 0W9D4ZZ, 02HK3JZ, 02HK3MZ, 02HL3JZ, 02HL3MZ, 02H63JZ, 02H73JZ, 02HK3JZ, 02HL3JZ, 5A1213Z, 5A1223Z, 0JH60PZ, 0JH60PZ, 0JH63PZ, 0JH63PZ, 0JH80PZ, 0JH80PZ, 0JH83PZ, 0JH83PZ, 0JH604Z, 0JH634Z, 0JH804Z, 0JH834Z, 0JH605Z, 0JH635Z, 0JH805Z, 0JH835Z, 0JH606Z, 0JH636Z, 0JH806Z, 0JH836Z, T8111XA, 028D0ZZ, 02QD0ZZ, 02890ZZ, 02Q90ZZ, 02QF0ZZ, 02QG0ZZ, 02QH0ZZ, 02QJ0ZZ, 02BK0ZZ, 02NK0ZZ, 02NL0ZZ, 02QF0ZZ, 02QA0ZZ, 02B50ZZ, 02RM0JZ, 02U50JZ, 02UM0JZ, 02U50JZ, 02RM0JZ, 02UM0JZ, 02QF0ZZ, 02QG0ZZ, 02QH0ZZ, 02QJ0ZZ, 02U50JZ, 02UM0JZ, 02RM07Z, 02RM0KZ, 02U507Z, 02U508Z, 02U50KZ, 02UM07Z, 02UM0KZ, 02U507Z, 02U508Z, 02U50KZ, 02RM07Z, 02RM0KZ, 02UM07Z, 02RK07Z, 02RK0KZ, 02RL07Z, 02RL0KZ, 02U607Z, 02U608Z, 02U707Z, 02U708Z, 02U70KZ, 02UK0KZ, 02UL0KZ, 02Q50ZZ, 02QM0ZZ, 02Q50ZZ, 02QM0ZZ, 02QB0ZZ, 02QC0ZZ, 02U50JZ, 021609P, 021609Q, 021609R, 02160AP, 02160AQ, 02160AR, 02160JP, 02160JQ, 02160JR, 02160KP, 02160KQ, 02160KR, 02160ZP, 02160ZQ, 02160ZR, 02W50JZ, 02WF07Z, 02WF08Z, 02WF0JZ, 02WF0KZ, 02WG07Z, 02WG08Z, 02WG0JZ, 02WG0KZ, 02WH07Z, 02WH08Z, 02WH0JZ, 02WH0KZ, 02WJ07Z, 02WJ08Z, 02WJ0JZ, 02WJ0KZ, 02WM0JZ, 02Q50ZZ, 02QM0ZZ, 021K0Z5, 021L0Z5, 02B60ZZ, 02B70ZZ, 02BK0ZZ, 02BL0ZZ, 02B60ZZ, 02B70ZZ, 02BK0ZZ, 02BL0ZZ
Post-procedural stroke or transient ischemic attack	I6322, I63139, I63239, I63019, I63119, I63219, I6359, I6359, I6320, I6330, I6340, I6350, I6300, I63011, I63012, I63019, I6302, I63031, I63032, I63039, I6309, I6320, I63211, I63212, I63219, I63549, I6359, I638, I639, H3400, H3401, H3402, H3403, H3410, H3411, H3412, H3413, H34211, H34212, H34213, H34219, H34231, H34232, H34233, H34239, G450, G451, G458, G459, G9781, G9782, I97811, I97821
Vascular complications	T1490, D7811, D7811, D7812, E3611, E3612, G9748, G9749, H59219, H59229, H9531, H9532, I9751, I9752, J957, J9572, K9171, K9172, L7611, L7612, M96820, M96821, N9971, N9972, T888XXA, S15009A, S15309A, S15209A, S158XXA, S090XX, S158XXA, S159XXA, S2500XA, S25109A, S2520XA, S25309A, S25409, S25409A, S25509A, S25809A, S2590XA, S3500XA, S3510XA, S35299A, S35219A, S35229A, S35239A, S35339A, S35349A, S35319A, S35329A, S358X9A, S35403A, S35406A, S35516A, S35513A, S35533A, S35536A, S3559XA, S358X9A, S3590XA, S45809A, S45009A, S45209A, S45109A, S55109A, S65109A, S55009A, S65009A, S65209A, S65309A, S65409A, S65509A, S45809A, S55809A, S65809A, S45909A, S55909A, S65909A, S75009A, S75109A, S75209A, S85309A, S85409A, S85009A, S85509A, S85109A, S85139A, S85809A, S85169A, S95109A, S75809A, S95809A, S75909A, S85909A, S95902A
Acute kidney injury	N170, N171, N172, N178, N179, N990, R34

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