

## SUPPLEMENTAL MATERIALS

**eTable 1. List of Variable and Endpoint Codes\***

Variable	Code(s)	Code Description†
Atrial fibrillation	I48	ICD-10 Diagnosis
Acute kidney injury	N00, N00.1, N00.2, N00.3, N00.4, N00.5, N00.6, N00.7, N00.8, N00.9, N01, N01.0, N01.1, N01.2, N01.3, N01.4, N01.5, N01.6, N01.7, N01.8, N01.9, N17, N17.0, N17.1, N17.2, N17.8, N17.9	ICD-10 Diagnosis
Stage 5 CKD or need for dialysis	N185, N186, Z992, Z49, Z452, Z940, I120, 90935-90999	ICD-10 Diagnosis and Procedure
Ischemic stroke	I63	ICD-10 Diagnosis
Intracranial hemorrhage	I60-I62	ICD-10 Diagnosis
Systemic embolism	I74	ICD-10 Diagnosis
Major bleeding	Per the Cunningham algorithm for bleeding-related hospitalization	ICD-10 Diagnosis and Procedure
Major adverse limb event	00.55, 17.56, 39.50, or 39.90, 39.25, 39.26, 39.39, 84.13, 84.14, 84.15, 84.16, 84.17	ICD-9 Procedure†
Mitral stenosis	I05, I08.0, I08.1, I08.3, I08.8, I08.9, I34.2, Q23.2	ICD-10 Diagnosis
Mechanical heart valve	Z95.2-Z95.4	ICD-10 Diagnosis
Heart valve complications	T82.0, T82.22, T82.827, T82.837, T82.847, T82.857, T82.867, T82.897, T82.9	ICD-10 Diagnosis
Aortic valve replacement	33405, 33406, 33410, 33411, 33412, 33413	CPT-4 Procedure
Transcatheter aortic valve replacement	33361-33369	CPT-4 Procedure
Pulmonary valve replacement	33475	CPT-4 Procedure
Mitral valve replacement	33430	CPT-4 Procedure
Tricuspid valve replacement	33465	CPT-4 Procedure
Valvotomy/valvuloplasty for mitral stenosis	33420, 33422, 33425, 33426, 33427, 92987	CPT-4 Procedure
Heart failure	I09.9, I11.0, I13.0, I13.2, I25.5, I42.0, I42.5-I42.9, I43.X, I50.X, P29.0	ICD-10 Diagnosis
Hypertension	I10.X, I11.X-I13.X, I15.X, I16.X	ICD-10 Diagnosis
Diabetes mellitus	E10.0, E10.1, E10.9, E11.0, E11.1, E11.9, E12.0, E12.1, 12.9, E13.0, E13.1, E13.9, E10.2-E10.8, E11.2-E11.8, E12.2-E12.8, E13.2-E13.8, E14.0-E14.9	ICD-10 Diagnosis
Stroke	I60.X, I61.X, I62.X, I63.X	ICD-10 Diagnosis
Transient ischemic attack	G45.0, G45.1, G45.2, G45.4, G45.8, G45.9	ICD-10 Diagnosis
Peripheral arterial disease	E08.51, E08.52, E09.51, E09.52, E10.51, E10.52, E11.51, E11.52, E13.51, E13.52, I70.0, I70.1, I70.201, I70.202, I70.203, I70.208, I70.209, I70.211, I70.212, I70.213, I70.218, I70.219, I70.221, I70.222, I70.223, I70.228, I70.229, I70.231, I70.232, I70.233, I70.234, I70.235, I70.238, I70.239, I70.241, I70.242, I70.243, I70.244, I70.245, I70.248, I70.249, I70.25, I70.291, I70.292, I70.293, I70.298, I70.299, I70.92, I73.81, I73.89, I73.9, I79.1, I79.8	ICD-10 Diagnosis
Myocardial infarction	I21, I21.0, I21.01, I21.02, I21.09, I21.1, I21.11, I21.19, I21.2, I21.21, I21.29, I21.3, I21.4, I22, I22.0, I22.1, I22.2, I22.8, I22.9,	ICD-10 Diagnosis

	I23, I23.0, I23.1, I23.2, I23.3, I23.4, I23.5, I23.6, I23.7, I23.8, I25.2	
Percutaneous coronary intervention	Z98.61, Z95.5, 92920, 92921, 92924, 92925, 92928, 92929, 92933, 92934, 92937, 92938, 92941, 92943, 92944, 02700D6, 02700DZ, 02700T6, 02700TZ, 02700Z6, 02700ZZ, 02703D6, 02703DZ, 02703T6, 02703TZ, 02703Z6, 02703ZZ, 02704D6, 02704DZ, 02704T6, 02704TZ, 02704Z6, 02704ZZ, 02710D6, 02710DZ, 02710T6, 02710TZ, 02710Z6, 02710ZZ, 02713D6, 02713DZ, 02713T6, 02713TZ, 02713Z6, 02713ZZ, 02714D6, 02714DZ, 02714T6, 02714TZ, 02714Z6, 02714ZZ, 02720D6, 02720DZ, 02720T6, 02720TZ, 02720Z6, 02720ZZ, 02723D6, 02723DZ, 02723T6, 02723TZ, 02723Z6, 02723ZZ, 02724D6, 02724DZ, 02724T6, 02724TZ, 02724Z6, 02724ZZ, 02730D6, 02730DZ, 02730T6, 02730TZ, 02730Z6, 02730ZZ, 02733D6, 02733DZ, 02733T6, 02733TZ, 02733Z6, 02733ZZ, 02734D6, 02734DZ, 02734T6, 02734TZ, 02734Z6, 02734ZZ, C9600, C9601, C9602, C9603, C9604, C9605, C9606, C9607, C9608, 0270046, 027004Z, 0270346, 027034Z, 0270446, 027044Z, 0271046, 027104Z, 0271346, 027134Z, 0271446, 027144Z, 0272046, 027204Z, 0272346, 027234Z, 0272446, 027244Z, 0273046, 027304Z, 0273346, 027334Z, 0273446, 027344Z	ICD-10 Diagnosis and Procedure
Coronary artery bypass grafting	566, 567, 33510, 33511, 33512, 33513, 33514, 33516, 33517, 33518, 33519, 33520, 33521, 33522, 33523, 33525, 33528, 33530, 33533, 33534, 33535, 33536, 35600, 4110F, 75762, 75764, 75766, 75767, 93551, C9604, C9605, G8158, G8159, G8160, G8161, G8162, G8163, G8164, G8165, G8166, G8167, G8170, G8171, G8172, G8497, G8544, G8573, G8574, I2570, I25700, I25701, I25708, I25709, I2571, I25710, I25711, I25718, I25719, I2572, I25720, I25721, I25728, I25729, I2573, I25730, I25731, I25738, I25739, I2579, I25790, I25791, I25798, I25799, I25810, T82211, T82211A, T82211D, T82211S, T82212, T82212A, T82212D, T82212S, T82213, T82213A, T82213D, T82213S, T82218, T82218A, T82218D, T82218S, Z951, 0210093, 0210098, 0210099, 021009C, 021009F, 021009W, 02100A3, 02100A8, 02100A9, 02100AC, 02100AF, 02100AW, 02100J3, 02100J8, 02100J9, 02100JC, 02100JF, 02100JW, 02100K3, 02100K8, 02100K9, 02100KC, 02100KF, 02100KW, 02100Z3, 02100Z8, 02100Z9, 02100ZC, 02100ZF, 0210344, 02103D4, 0210444, 0210493, 0210499, 0210499, 021049F, 021049W, 02104A3, 02104A8, 02104A9, 02104AC, 02104AF, 02104AW, 02104D4, 02104J3, 02104J8, 02104J9, 02104JC, 02104JF, 02104JW, 02104K3, 02104K8, 02104K9, 02104KC, 02104KF, 02104KW, 02104Z3, 02104Z8, 02104Z9, 02104ZC, 02104ZF, 0211093, 0211098, 0211099, 021109C, 021109F, 021109W, 02110A3, 02110A8, 02110A9, 02110AC, 02110AF, 02110AW, 02110J3, 02110J8, 02110J9, 02110JC, 02110JF, 02110JW, 02110K3, 02110K8, 02110K9, 02110KC, 02110KF, 02110KW, 02110Z3, 02110Z8, 02110Z9, 02110ZC, 02110ZF, 0211344, 02113D4, 0211444, 0211493, 0211498, 0211499, 021149C, 021149F, 021149W, 02114A3, 02114A8, 02114A9, 02114AC, 02114AF, 02114AW, 02114D4, 02114J3, 02114J8, 02114J9, 02114JC, 02114JF, 02114JW, 02114K3, 02114K8, 02114K9, 02114KC,	ICD-10 Procedure

	<p>02114KF, 02114KW, 02114Z3, 02114Z8, 02114Z9, 02114ZC, 02114ZF, 0212093, 0212098, 0212099, 021209C, 021209F, 021209W, 02120A3, 02120A8, 02120A9, 02120AC, 02120AF, 02120AW, 02120J3, 02120J8, 02120J9, 02120JC, 02120JF, 02120JW, 02120K3, 02120K8, 02120K9, 02120KC, 02120KF, 02120KW, 02120Z3, 02120Z8, 02120Z9, 02120ZC, 02120ZF, 0212344, 02123D4, 0212444, 0212493, 0212498, 0212499, 21249C, 021249F, 021249W, 02124A3, 02124A8, 02124A9, 02124AC, 02124AF, 02124AW, 02124D4, 02124J3, 02124J8, 02124J9, 02124JC, 02124JF, 02124JW, 02124K3, 02124K8, 02124K9, 02124KC, 02124KF, 02124KW, 02124Z3, 02124Z8, 02124Z9, 02124ZC, 02124ZF, 0213093, 0213098, 0213099, 021309C, 021309F, 021309W, 02130A3, 02130A8, 02130A9, 02130AC, 02130AF, 02130AW, 02130J3, 02130J8, 02130J9, 02130JC, 02130JF, 02130JW, 02130K3, 02130K8, 02130K9, 02130KC, 02130KF, 02130KW, 02130Z3, 02130Z8, 02130Z9, 02130ZC, 02130ZF, 213344, 02133D4, 0213444, 0213493, 0213498, 0213499, 021349C, 021349F, 021349W, 02134A3, 02134A8, 02134A9, 02134AC, 02134AF, 02134AW, 02134D4, 02134J3, 02134J8, 02134J9, 02134JC, 02134JF, 02134JW, 02134K3, 02134K8, 02134K9, 02134KC, 02134KF, 02134KW, 02134Z3, 02134Z8, 02134Z9, 02134ZC, 02134ZF, 0210498, B2020ZZ, B2021ZZ, B202YZZ, B2030ZZ, B2031ZZ, B203YZZ, B212010, B2120ZZ, B212110, B2121ZZ, B212Y10, B212YZZ, B213010, B2130ZZ, B213110, B2131ZZ, B213Y10, B213YZZ, B22300Z, B2230ZZ, B22310Z, B2231ZZ, B223YoZ, B223YZZ, B223Z2Z, B223ZZZ, B233YoZ, B233YZZ, B233ZZZ</p>	
Gastrointestinal bleeding	Per Cunningham Algorithm cross-walked using CMS General Equivalence Mapping from cms.gov	ICD-10 Diagnosis
Chronic kidney disease	<p>No7.1, No7.2, No7.3, No7.4, No7.5, No7.6, No7.7, No7.8, No7.9, No8, N13.1, N13.2, N13.30, N13.39, N14.0, N14.1, N14.2, N14.3, N14.4, N15.0, N15.8, N15.9, N16, N17.0, N17.1, N17.2, N17.8, N17.9, N18.1, N18.2, N18.3, N18.4, N18.5, N18.6, N18.9, N19, N25.0, N25.1, N25.81, N25.89, N25.9, N26.1, N26.9, Q61.02, Q61.11, Q61.19, Q61.2, Q61.3, Q61.4, Q61.5, Q61.8, Q62.0, Q62.2, Q62.10, Q62.11, Q62.12, Q62.31, Q62.32, Q62.39, R94.4, M10.379, M10.38, M10.39, M32.14, M32.15, M35.04, No0.0, No0.1, No0.2, No0.3, No0.4, No0.5, No0.6, No0.7, No0.8, No0.9, No1.0, No1.1, No1.2, No1.3, No1.4, No1.5, No1.6, No1.7, No1.8, No1.9, No2.0, No2.1, No2.2, No2.3, No2.4, No2.5, No2.6, No2.7, No2.8, No2.9, No3.0, No3.1, No3.2, No3.3, No3.4, No3.5, No3.6, No3.7, No3.8, No3.9, No4.0, No4.1, No4.2, No4.3, No4.4, No4.5, No4.6, No4.7, No4.8, No4.9, No5.0, No5.1, No5.2, No5.3, No5.4, No5.5, No5.6, No5.7, No5.8, No5.9, No6.0, No6.1, No6.2, No6.3, No6.4, No6.5, No6.6, No6.7, No6.8, No6.9, No7.0, A18.11, A52.75, B52.0, C64.1, C64.2, C64.9, C68.9, D30.00, D30.01, D30.02, D41.00, D41.01, D41.02, D41.10, D41.11, D41.12, D41.20, D41.21, D41.22, D59.3, E08.21, E08.22, E08.29, E08.65, E09.21, E09.22, E09.29, E10.21, E10.22, E10.29, E10.65, E11.21, E11.22, E11.29, E11.65, E13.21, E13.22, E13.29, E74.8, I12.0, I13.11, I13.2, I70.1,</p>	ICD-10 Diagnosis

	I72.2, K76.7, M10.30, M10.311, M10.312, M10.319, M10.321, M10.322, M10.329, M10.331, M10.332, M10.339, M10.341, M10.342, M10.349, M10.351, M10.352, M10.359, M10.361, M10.362, M10.369, M10.371, M10.372, N18.6, N18.3, N18.4	
End-stage renal disease	N18.5, N18.6	ICD-10 Diagnosis
Liver disease	K730, K731, K732, K738, K739, B150, B159, B160, B161, B162, B169, B170, B1710, B1711, B172, B178, B178, B179, B180, B181, B182, B188, B189, K7030, K740, K7460, K7469	ICD-10 Diagnosis
Coagulopathy	D65-D68.x, D69.1, D69.3-D69.6	ICD-10 Diagnosis
Gastroesophageal reflux disease	K21, K21.9, R12	ICD-10 Diagnosis
Upper gastrointestinal testing	0355T, 3130F, 3132F, 43200, 43201, 43202, 43204, 43205, 43219, 43220, 43226, 43233, 43234, 43235, 43236, 43237, 43238, 43239, 43241, 43242, 43245, 43248, 43249, 43257, 43259, 44360, 44361, 44363, 44364, 44365, 44366, 44369, 44370, 44372, 44373, 44376, 44377, 44378, 44379, 44380, 44381, 44382, 44384, 76975, 91110, 91111, 92612, 92613, A4270, C1749, C9703, G0193, S2215	ICD-10 Procedure
Anemia	D50.0, D50.1, D50.8, D50.9, D51.0, D51.1, D51.2, D51.3, D51.8, D51.9, D52.0, D52.1, D52.8, D52.9, D53.0, D53.1, D53.2, D53.8, D53.9, D55.0, D55.1, D55.2, D55.3, D55.8, D55.9, D56.0, D56.1, D56.2, D56.3, D56.4, D56.5, D56.8, D56.9, D57.00, D57.01, D57.02, D57.1, D57.20, D57.211, D57.212, D57.219, D57.3, D57.40, D57.411, D57.412, D57.419, D57.80, D57.811, D57.812, D57.819, D58.0, D58.1, D58.2, D58.8, D58.9, D59.0, D59.1, D59.2, D59.3, D59.4, D59.5, D59.6, D59.8, D59.9, D60.0, D60.1, D60.8, D60.9, D61.01, D61.09, D61.1, D61.2, D61.3, D61.810, D61.811, D61.818, D61.82, D61.89, D61.9, D62, D63.0, D63.1, D63.8, D64.0, D64.1, D64.2, D64.3, D64.4, D64.81, D64.89, D64.9	ICD-10 Diagnosis
Asthma	J45, J45.2, J45.20, J45.21, J45.22, J45.3, J45.30, J45.31, J45.32, J45.4, J45.40, J45.41, J45.42, J45.5, J45.50, J45.51, J45.52, J45.9, J45.90, J459.01, J459.02, J459.09, J45.99, J45.990, J45.991, J45.998	ICD-10 Diagnosis
Chronic obstructive pulmonary disease	J44, J44.0, J44.1, J44.9	ICD-10 Diagnosis
Sleep apnea	G47.3, G47.30, G47.31, G47.32, G47.33, G47.34, G47.35, G47.36, G47.37, G47.39	ICD-10 Diagnosis
Smoker	F17.20, F17.200, F17.201, F17.203, F17.208, F17.209, F17.21, F17.210, F17.211, F17.213, F17.218, F17.219, F17.29, F17.290, F17.291, F17.293, F17.298, F17.299, Z72.0	ICD-10 Diagnosis
Hemorrhoids	K64.0, K64.1, K64.2, K64.3, K64.4, K64.8, K64.9	ICD-10 Diagnosis
Alcohol abuse	K700, K7010, K7011, K702, K7030, K7031, K7040, K7041, K7041, K709	ICD-10 Diagnosis
Anxiety	F06.4, F40.00, F40.01, F40.02, F40.10, F40.11, F40.210, F40.218, F40.220, F40.228, F40.230, F40.231, F40.232, F40.233, F40.240, F40.241, F40.242, F40.243, F40.248, F40.290, F40.291, F40.298, F40.8, F40.9, F41.0, F41.1, F41.3, F41.8, F41.9, F42, F42.2, F42.3, F42.4, F42.8, F42.9, F43.0, F43.10, F43.11, F43.12, F44.9, F45.8, F48.8, F48.9, F93.8, F99, R45.2, R45.5, R45.6, R45.7	ICD-10 Diagnosis
Depression	F20.4, F31.3-F31.5, F32.x, F33.x, F34.1, F41.2, F43.2	ICD-10 Diagnosis

Psychosis	F20.x, F22.x-F25.x, F28.x, F29.x, F30.2, F31.2, F31.5	ICD-10 Diagnosis
Obesity	E66.01, E66.09, E66.1, E66.2, E66.8, E66.9, Z68.30, Z68.31, Z68.32, Z68.33, Z68.34, Z68.35, Z68.36, Z68.37, Z68.38, Z68.39, Z68.41, Z68.42, Z68.43, Z68.44, Z68.45	ICD-10 Diagnosis
Osteoarthritis	M05.00, M05.011, M05.012, M05.019, M05.021, M05.022, M05.029, M05.031, M05.032, M05.039, M05.041, M05.042, M05.049, M05.051, M05.052, M05.059, M05.061, M05.062, M05.069, M05.071, M05.072, M05.079, M05.09, M05.20, M05.211, M05.212, M05.219, M05.221, M05.222, M05.229, M05.231, M05.232, M05.239, M05.241, M05.242, M05.249, M05.251, M05.252, M05.259, M05.261, M05.262, M05.269, M05.271, M05.272, M05.279, M05.29, M05.30, M05.311, M05.312, M05.319, M05.321, M05.322, M05.329, M05.331, M05.332, M05.339, M05.341, M05.342, M05.349, M05.351, M05.352, M05.359, M05.361, M05.362, M05.369, M05.371, M05.372, M05.379, M05.39, M05.40, M05.411, M05.412, M05.419, M05.421, M05.422, M05.429, M05.431, M05.432, M05.439, M05.441, M05.442, M05.449, M05.451, M05.452, M05.459, M05.461, M05.462, M05.469, M05.471, M05.472, M05.479, M05.49, M05.50, M05.511, M05.512, M05.519, M05.521, M05.522, M05.529, M05.531, M05.532, M05.539, M05.541, M05.542, M05.549, M05.551, M05.552, M05.559, M05.561, M05.562, M05.569, M05.571, M05.572, M05.579, M05.59, M05.60, M05.611, M05.612, M05.619, M05.621, M05.622, M05.629, M05.631, M05.632, M05.639, M05.641, M05.642, M05.649, M05.651, M05.652, M05.659, M05.661, M05.662, M05.669, M05.671, M05.672, M05.679, M05.69, M05.70, M05.711, M05.712, M05.719, M05.721, M05.722, M05.729, M05.731, M05.732, M05.739, M05.741, M05.742, M05.749, M05.751, M05.752, M05.759, M05.761, M05.762, M05.769, M05.771, M05.772, M05.779, M05.79, M05.80, M05.811, M05.812, M05.819, M05.821, M05.822, M05.829, M05.831, M05.832, M05.839, M05.841, M05.842, M05.849, M05.851, M05.852, M05.859, M05.861, M05.862, M05.869, M05.871, M05.872, M05.879, M05.89, M05.9, M06.00, M06.011, M06.012, M06.019, M06.021, M06.022, M06.029, M06.031, M06.032, M06.039, M06.041, M06.042, M06.049, M06.051, M06.052, M06.059, M06.061, M06.062, M06.069, M06.071, M06.072, M06.079, M06.08, M06.09, M06.1, M06.20, M06.211, M06.212, M06.219, M06.221, M06.222, M06.229, M06.231, M06.232, M06.239, M06.241, M06.242, M06.249, M06.251, M06.252, M06.259, M06.261, M06.262, M06.269, M06.271, M06.272, M06.279, M06.28, M06.29, M06.30, M06.311, M06.312, M06.319, M06.321, M06.322, M06.329, M06.331, M06.332, M06.339, M06.341, M06.342, M06.349, M06.351, M06.352, M06.359, M06.361, M06.362, M06.369, M06.371, M06.372, M06.379, M06.38, M06.39, M06.80, M06.811, M06.812, M06.819, M06.821, M06.822, M06.829, M06.831, M06.832, M06.839, M06.841, M06.842, M06.849, M06.851, M06.852, M06.859, M06.861, M06.862, M06.869, M06.871, M06.872, M06.879, M06.88, M06.89, M06.9, M08.00, M08.011, M08.012, M08.019, M08.021,	ICD-10 Diagnosis

	<p>Mo8.022, Mo8.029, Mo8.031, Mo8.032, Mo8.039, Mo8.041, Mo8.042, Mo8.049, Mo8.051, Mo8.052, Mo8.059, Mo8.061, Mo8.062, Mo8.069, Mo8.071, Mo8.072, Mo8.079, Mo8.08, Mo8.09, Mo8.1, Mo8.20, Mo8.211, Mo8.212, Mo8.219, Mo8.221, Mo8.222, Mo8.229, Mo8.231, Mo8.232, Mo8.239, Mo8.241, Mo8.242, Mo8.249, Mo8.251, Mo8.252, Mo8.259, Mo8.261, Mo8.262, Mo8.269, Mo8.271, Mo8.272, Mo8.279, Mo8.28, Mo8.29, Mo8.3, Mo8.40, Mo8.411, Mo8.412, Mo8.419, Mo8.421, Mo8.422, Mo8.429, Mo8.431, Mo8.432, Mo8.439, Mo8.441, Mo8.442, Mo8.449, Mo8.451, Mo8.452, Mo8.459, Mo8.461, Mo8.462, Mo8.469, Mo8.471, Mo8.472, Mo8.479, Mo8.48, Mo8.80, Mo8.811, Mo8.812, Mo8.819, Mo8.821, Mo8.822, Mo8.829, Mo8.831, Mo8.832, Mo8.839, Mo8.841, Mo8.842, Mo8.849, Mo8.851, Mo8.852, Mo8.859, Mo8.861, Mo8.862, Mo8.869, Mo8.871, Mo8.872, Mo8.879, Mo8.88, Mo8.89, Mo8.90, Mo8.911, Mo8.912, Mo8.919, Mo8.921, Mo8.922, Mo8.929, Mo8.931, Mo8.932, Mo8.939, Mo8.941, Mo8.942, Mo8.949, Mo8.951, Mo8.952, Mo8.959, Mo8.961, Mo8.962, Mo8.969, Mo8.971, Mo8.972, Mo8.979, Mo8.98, Mo8.99, M15.0, M15.1, M15.2, M15.3, M15.4, M15.8, M15.9, M16.0, M16.10, M16.11, M16.12, M16.2, M16.30, M16.31, M16.32, M16.4, M16.50, M16.51, M16.52, M16.6, M16.7, M16.9, M17.0, M17.10, M17.11, M17.12, M17.2, M17.30, M17.31, M17.32, M17.4, M17.5, M17.9, M18.0, M18.10, M18.11, M18.12, M18.2, M18.30, M18.31, M18.32, M18.4, M18.50, M18.51, M18.52, M18.9, M19.011, M19.012, M19.019, M19.021, M19.022, M19.029, M19.031, M19.032, M19.039, M19.041, M19.042, M19.049, M19.071, M19.072, M19.079, M19.111, M19.112, M19.119, M19.121, M19.122, M19.129, M19.131, M19.132, M19.139, M19.141, M19.142, M19.149, M19.171, M19.172, M19.179, M19.211, M19.212, M19.219, M19.221, M19.222, M19.229, M19.231, M19.232, M19.239, M19.241, M19.242, M19.249, M19.271, M19.272, M19.279, M19.90, M19.91, M19.92, M19.93, M45.0, M45.1, M45.2, M45.3, M45.4, M45.5, M45.6, M45.7, M45.8, M45.9, M47.011, M47.012, M47.013, M47.014, M47.015, M47.016, M47.019, M47.021, M47.022, M47.029, M47.10, M47.11, M47.12, M47.13, M47.20, M47.21, M47.22, M47.23, M47.24, M47.25, M47.26, M47.27, M47.28, M47.811, M47.812, M47.813, M47.814, M47.815, M47.816, M47.817, M47.818, M47.819, M47.891, M47.892, M47.893, M47.894, M47.895, M47.896, M47.897, M47.898, M47.899, M47.9, M48.8X1, M48.8X2, M48.8X3, M48.8X4, M48.8X5, M48.8X6, M48.8X7, M48.8X8, M48.8X9</p>	
Back pain	M54.5, M54.6, M54.8, M548.9, M54.9	ICD-10 Diagnosis
Joint pain and stiffness	<p>M255, M2550, M25511, M25512, M25519, M25521, M25522, M25529, M25531, M25532, M25539, M25551, M25552, M25559, M25561, M25562, M25569, M25571, M25572, M25579, M256, M2560, M25611, M25612, M25619, M25621, M25622, M25629, M25631, M25632, M25639, M25641, M25642, M25649, M25651, M25652, M25659, M25661, M25662, M25669, M25671, M25672, M25673</p>	ICD-10 Diagnosis

Headache	G43.001, G43.009, G43.011, G43.019, G43.101, G43.109, G43.111, G43.119, G43.401, G43.409, G43.411, G43.419, G43.501, G43.509, G43.511, G43.519, G43.601, G43.609, G43.611, G43.619, G43.701, G43.709, G43.711, G43.719, G43.A0, G43.B0, G43.C0, G43.D0, G43.A1, G43.B1, G43.C1, G43.D1, G43.801, G43.809, G43.811, G43.819, G43.821, G43.829, G43.831, G43.839, G43.901, G43.909, G43.911, G43.919, G44.001, G44.009, G44.011, G44.019, G44.021, G44.029, G44.031, G44.039, G44.041, G44.049, G44.051, G44.059, G44.091, G44.099, G44.1, G44.201, G44.209, G44.211, G44.219, G44.221, G44.229, G44.301, G44.309, G44.311, G44.319, G44.321, G44.329, G44.40, G44.41, G44.51, G44.52, G44.53, G44.59, G44.81, G44.82, G44.83, G44.84, G44.85, G44.89	ICD-10 Diagnosis
Diverticulitis	K57.00, K57.10, K57.12, K57.20, K57.30, K57.32, K57.40, K57.50, K57.52, K57.80, K57.90, K57.92	ICD-10 Diagnosis
Crohns or ulcerative colitis	K5000, K50011, K50012, K50012, K50013, K50013, K50014, K50014, K50018, K50019, K5010, K50111, K50112, K50112, K50113, K50113, K50114, K50114, K50118, K50119, K5080, K50811, K50812, K50812, K50813, K50813, K50814, K50814, K50818, K50819, K5100, K51011, K51012, K51012, K51013, K51013, K51014, K51014, K51018, K51019, K5120, K51211, K51212, K51212, K51213, K51213, K51214, K51214, K51218, K51219, K5130, K51311, K51312, K51312, K51313, K51313, K51314, K51314, K51318, K51319, K5140, K51411, K51412, K51412, K51413, K51413, K51414, K51414, K51418, K51419, K5150, K51511, K51512, K51512, K51513, K51513, K51514, K51514, K51518, K51519, K5180, K51811, K51812, K51812, K51813, K51813, K51814, K51814, K51818, K51819, K5190, K51911, K51912, K51912, K51913, K51913, K51914, K51914, K51918, K51919	ICD-10 Diagnosis
Helicobacter pylori	B9681	
Hypothyroidism	E00.x-E03.x, E89.0	ICD-10 Diagnosis
Solid tumor	C00.x-C26.x, C30.x-C34.x, C37.x-C41.x, C43.x, C45.x-58.x, C60.x-C76.x, C97.x	ICD-10 Diagnosis
Lymphoma	C81.x-C85.x, C88.x, C96.x, C90.0, C90.2	ICD-10 Diagnosis
Metastatic cancer	C77.x-C80.x	ICD-10 Diagnosis

\*Code position and associated healthcare encounter for endpoints-of-interest are described further in the main publication text.

†Any ICD-9 codes were converted to ICD-10 using the Centers for Medicare and Medicaid Services (CMS) General Equivalence Mappings (GEMs) files available at: <https://www.cms.gov/Medicare/Coding/ICD10/2018-ICD-10-CM-and-GEMs.html> (Last accessed on May 17, 2019).

**eTable 2. List of Oral Anticoagulant Coding**

<b>Variable (Oral Anticoagulant)</b>	<b>Code/Name</b>	<b>Description</b>
Warfarin	Warfarin	Generic drug name
Apixaban	Apixaban	Generic drug name
Dabigatran	Dabigatran	Generic drug name
Edoxaban	Edoxaban	Generic drug name
Rivaroxaban	Rivaroxaban	Generic drug name
Betrixaban	Betrixaban	Generic drug name



eTable 3. List of Co-Medication Codes/Names

Variable (Medication)	Code/Name	Description
Aspirin	Acetaminophen/Aluminum Hydroxide/Aspirin/Caffeine, Acetaminophen/Aspirin, Acetaminophen/Aspirin, Buffered, Acetaminophen/Aspirin/Caffeine, Acetaminophen/Aspirin/Caffeine/Codeine Phosphate, Acetaminophen/Aspirin/Caffeine/Salicylamide, Acetaminophen/Atropine Sulfate/Pamabrom, Aluminum Hydroxide/Aspirin/Magnesium Hydroxide, Aspirin, Aspirin/Caffeine/Propoxyphene Hydrochloride, Aspirin/Calcium Carbonate, Aspirin/Carisoprodol, Aspirin/Carisoprodol/Codeine Phosphate, Aspirin/Citric Acid/Sodium Bicarbonate, Aspirin/Codeine Phosphate, Aspirin/Diphenhydramine Citrate, Aspirin/Diphenhydramine Hydrochloride, Aspirin/Dipyridamole, Aspirin/Ethoheptazine Citrate/Meprobamate, Aspirin/Hydrocodone Bitartrate, Aspirin/Magnesium Oxide, Aspirin/Meprobamate, Aspirin/Methocarbamol, Aspirin/Oxycodone Hydrochloride, Aspirin/Oxycodone Hydrochloride, Aspirin/Pentazocine Hydrochloride, Aspirin/Pheniramine/Phenylpropanolamine/Pyrilamine, Aspirin/Phenylpropanolamine, Aspirin/Phenylpropanolamine Bitartrate, Aspirin/Phenylpropanolamine Hydrochloride, Aspirin/Phenyltoloxamine Citrate, Aspirin/Propoxyphene Hydrochloride, Aspirin/Propoxyphene Napsylate	Generic drug name
P2Y12 Inhibitors	Clopidogrel Hydrogen Sulfate, Prasugrel Hydrochloride, Ticagrelor, Ticlopidine Hydrochloride	Generic drug name
NSAIDs	Acetaminophen;Ibuprofen;Simethicone;Zinc Oxide, Diclofenac Epolamine, Diclofenac Potassium, Diclofenac Sodium, Diflunisal, Diphenhydramine Citrate/Ibuprofen, Diphenhydramine Hydrochloride/Ibuprofen, Diphenhydramine Hydrochloride/Magnesium Salicylate, Esomeprazole Magnesium/Naproxen, Etodolac, Famotidine/Ibuprofen, Fenoprofen Calcium, Flurbiprofen, Hydrocodone Bitartrate/Ibuprofen, Ibuprofen, Ibuprofen Lysine, Ibuprofen/Oxycodone Hydrochloride, Ibuprofen/Pseudoephedrine Hydrochloride, Indomethacin, Ketoprofen, Lansoprazole;Naproxen, Magnesium Salicylate, Meclofenamate Sodium, Mefenamic Acid, Meloxicam, Nabumetone, Naproxen, Naproxen Sodium, Naproxen Sodium/Pseudoephedrine Hydrochloride, Naproxen Sodium/Sumatriptan Succinate, Oxaprozin, Piroxicam, Salsalate, Sunlindac, Tolmetin Sodium	Generic drug name
COX-2-specific NSAIDs	Celecoxib	Generic drug name

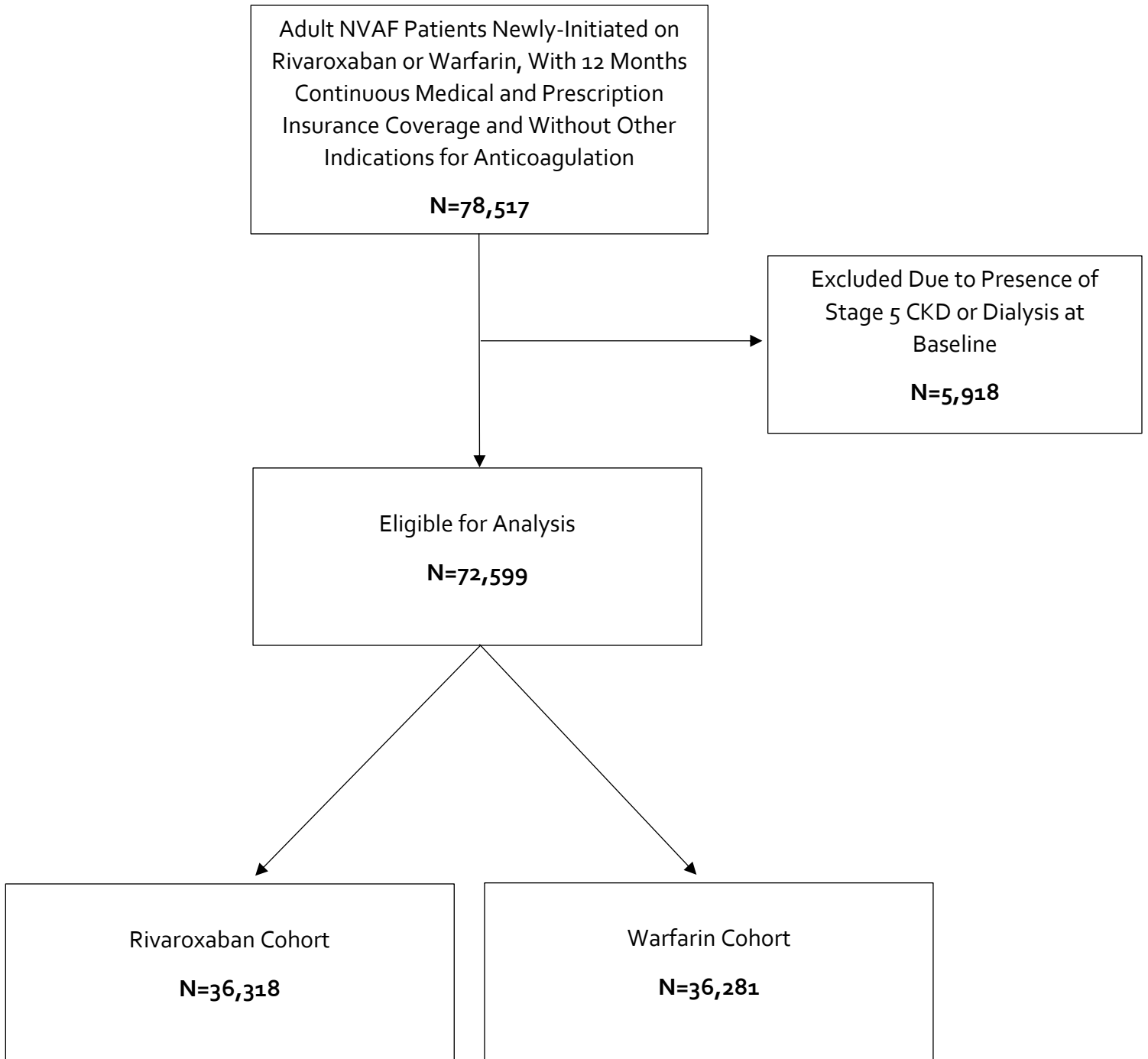
ACE inhibitors or ARBs	Amlodipine Besylate/Benazepril Hydrochloride, Amlodipine Besylate/HCTZ/Olmesartan Medoxomil, Amlodipine Besylate/Hydrochlorothiazide/Valsartan, Amlodipine Besylate/Olmesartan Medoxomil, Amlodipine Besylate/Telmisartan, Amlodipine Besylate/Valsartan, Azilsartan Medoxomil, Azilsartan Medoxomil/Chlorthalidone, Benazepril Hydrochloride, Benazepril Hydrochloride/Hydrochlorothiazide, Candesartan Cilexetil, Candesartan Cilexetil/Hydrochlorothiazide, Captopril, Captopril/Hydrochlorothiazide, Enalapril Maleate, Enalapril Maleate/Hydrochlorothiazide, Eprosartan Mesylate, Eprosartan Mesylate/Hydrochlorothiazide, Fosinopril Sodium, Fosinopril Sodium/Hydrochlorothiazide, Hydrochlorothiazide/Irbesartan, Hydrochlorothiazide/Lisinopril, Hydrochlorothiazide/Losartan Potassium, Hydrochlorothiazide/Moexipril Hydrochloride, Hydrochlorothiazide/Olmesartan Medoxomil, Hydrochlorothiazide/Quinapril Hydrochloride, Hydrochlorothiazide/Telmisartan, Hydrochlorothiazide/Valsartan, Irbesartan, Lisinopril, Losartan Potassium, Moexipril Hydrochloride, Olmesartan Medoxomil, Perindopril Erbumine, Quinapril Hydrochloride, Ramipril, Telmisartan, Trandolapril, Trandolapril/Verapamil Hydrochloride, Valsartan	Generic drug name
$\beta$ -blockers	Acebutolol Hydrochloride, Atenolol, Atenolol/Chlorthalidone, Bendroflumethiazide/Nadolol, Betaxolol Hydrochloride, Bisoprolol Fumarate, Bisoprolol Fumarate/Hydrochlorothiazide, Carvedilol, Hydrochlorothiazide/Metoprolol Succinate, Hydrochlorothiazide/Metoprolol Tartrate, Hydrochlorothiazide/Propranolol Hydrochloride, Labetalol Hydrochloride, Metoprolol Succinate, Metoprolol Tartrate, Nadolol, Nebivolol Hydrochloride, Penbutolol Sulfate, Pindolol, Propranolol Hydrochloride, Sotalol Hydrochloride, Timolol	Generic drug name
Diltiazem	Diltiazem Hydrochloride	Generic drug name
Verapamil	Trandolapril/Verapamil Hydrochloride, Verapamil Hydrochloride	Generic drug name
Dihydropyridine calcium channel blockers	Aliskiren/Amlodipine Besylate, Aliskiren/Amlodipine Besylate/Hydrochlorothiazide, Amlodipine Besylate, Amlodipine Besylate/Atorvastatin Calcium, Amlodipine Besylate/Benazepril Hydrochloride, Amlodipine Besylate/HCTZ/Olmesartan Medoxomil, Amlodipine Besylate/Hydrochlorothiazide/Valsartan, Amlodipine Besylate/Olmesartan Medoxomil, Amlodipine Besylate/Telmisartan, Amlodipine Besylate/Valsartan, Felodipine, Isradipine, Nifedipine, Nisoldipine	Generic drug name
Loop diuretic	Bumetanide, Ethacrynic Acid, Furosemide, Torsemide	Generic drug name

Thiazide diuretic	Aliskiren/Amlodipine Besylate/Hydrochlorothiazide, Aliskiren/Hydrochlorothiazide, Amiloride Hydrochloride/Hydrochlorothiazide, Amlodipine Besylate/Hydrochlorothiazide/Valsartan, Atenolol/Chlorthalidone, Azilsartan Medoxomil/Chlorthalidone, Benazepril Hydrochloride/Hydrochlorothiazide, Bisoprolol Fumarate/Hydrochlorothiazide, Candesartan Cilixetil/Hydrochlorothiazide, Captopril/Hydrochlorothiazide, Chlorothiazide, Chlorothiazide Sodium, Chlorothiazide/Methyldopa, Chlorothiazide/Reserpine, Chlorthalidone, Chlorthalidone/Clonidine Hydrochloride, Cryptenamine/Methyclothiazide, Deserpidine/Hydrochlorothiazide, Enalapril Maleate/Hydrochlorothiazide, Eprosartan Mesylate/Hydrochlorothiazide, Fosinopril Sodium/Hydrochlorothiazide, Guanethidine Monosulfate/Hydrochlorothiazide, Hydralazine Hydrochloride/Hydrochlorothiazide, Hydrochlorothiazide, Hydrochlorothiazide/Lisinopril, Hydrochlorothiazide/Losartan Potassium, Hydrochlorothiazide/Methyldopa, Hydrochlorothiazide/Metoprolol Succinate, Hydrochlorothiazide/Metoprolol Tartrate, Hydrochlorothiazide/Moexipril Hydrochloride, Hydrochlorothiazide/Olmesartan Medoxomil, Hydrochlorothiazide/Propranolol Hydrochloride, Hydrochlorothiazide/Quinapril Hydrochloride, Hydrochlorothiazide/Reserpine, Hydrochlorothiazide/Spirolactone, Hydrochlorothiazide/Telmisartan, Hydrochlorothiazide/Triamterene, Hydrochlorothiazide/Valsartan, Indapamide, Methyclothiazide, Metolazone	Generic drug name
Digoxin	Digoxin	Generic drug name
Amiodarone	Amiodarone Hydrochloride	Generic drug name
Dronedarone	Dronedarone Hydrochloride	Generic drug name
Other antiarrhythmic drugs	Disopyramide Phosphate, Dofetilide, Flecainide Acetate, Mexiletine, Procainamide Hydrochloride, Propafenone Hydrochloride, Quinidine Gluconate, Sotalol Hydrochloride	Generic drug name
Statins	Amlodipine Besylate/Atorvastatin Calcium, Atorvastatin Calcium, Atorvastatin Calcium/Ezetimibe, Ezetimibe/Simvastatin, Fluvastatin Sodium, Lovastatin, Lovastatin/Niacin, Niacin/Simvastatin, Pitavastatin Calcium, Pravastatin Sodium, Rosuvastatin Calcium, Simvastatin, Simvastatin/Sitagliptin Phosphate	Generic drug name

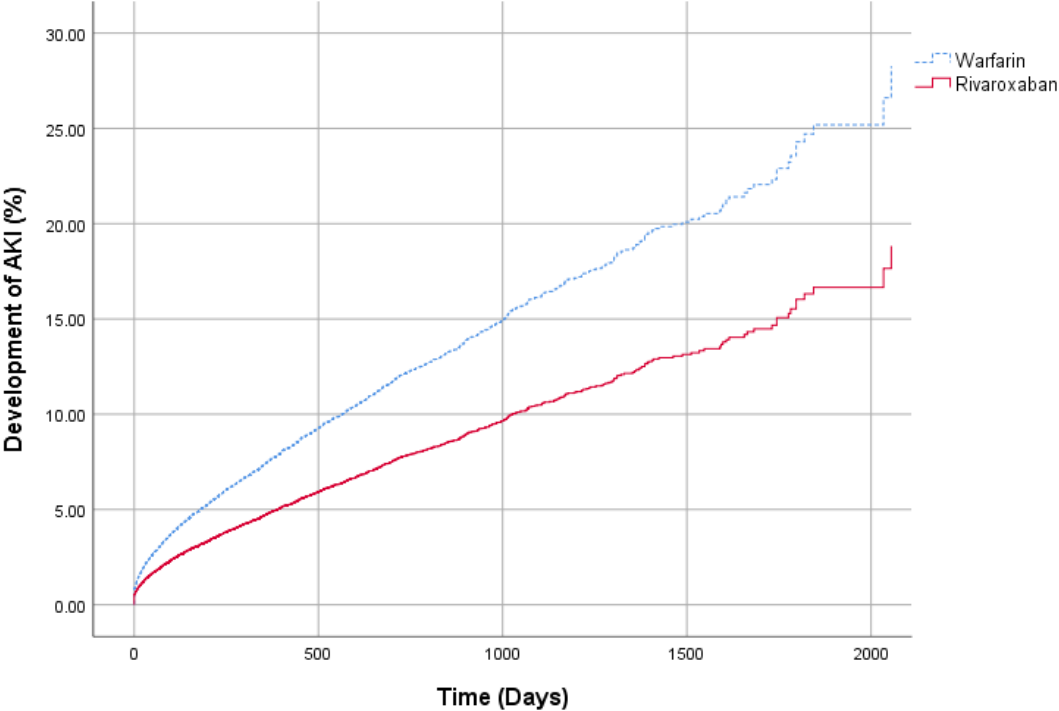
Other cholesterol lowering drugs	Cholestyramine, Colesevelam, Colestipol Hydrochloride, Ezetimibe, Fenofibrate, Gemfibrozil, Lomitapide Mesylate, Niacin, Omega-3-Acid Ethyl Esters	Generic drug name
Metformin	Alogliptin Benzoate/Metformin Hydrochloride, Glipizide/Metformin Hydrochloride, Glyburide/Metformin Hydrochloride, Linagliptin/Metformin Hydrochloride, Metformin Hydrochloride, Metformin Hydrochloride/Pioglitazone Hydrochloride, Metformin Hydrochloride/Repaglinide, Metformin Hydrochloride/Rosiglitazone Maleate, Metformin Hydrochloride/Saxagliptin Hydrochloride, Metformin Hydrochloride/Sitagliptin Phosphate	Generic drug name
Sulfonylureas or glinides	Chlorpropamide, Gliclazide, Glimepiride, Glimepiride/Rosiglitazone Maleate, Glipizide, Glipizide/Metformin Hydrochloride, Glyburide, Glyburide/Metformin Hydrochloride, Metformin Hydrochloride/Repaglinide, Nateglinide, Repaglinide, Tolazamide, Tolbutamide	Generic drug name
Thiazolidinediones	Alogliptin Benzoate/Pioglitazone Hydrochloride, Glimepiride/Pioglitazone Hydrochloride, Glimepiride/Rosiglitazone Maleate, Metformin Hydrochloride/Pioglitazone Hydrochloride, Metformin Hydrochloride/Rosiglitazone Maleate, Pioglitazone Hydrochloride, Rosiglitazone Maleate	Generic drug name
Dipeptidyl peptidase-4 inhibitors	Alogliptin Benzoate, Linagliptin, Saxagliptin Hydrochloride, Simvastatin/Sitagliptin Phosphate, Sitagliptin Phosphate	Generic drug name
Glucagon-like peptide-1 agonists	Exenatide, Liraglutide, Lixisenatide, Albiglutide, Dulaglutide, Semaglutide	Generic drug name
Insulin	Insulin Aspart, Recombinant, Insulin Aspart/Insulin Aspart Protamine, Insulin Beef Isophane (NPH), Insulin Beef, Regular/Insulin Pork Isophane (NPH), Insulin Beef Regular/Insulin Pork Regular, Insulin Beef Regular/Insulin Pork Zinc (Lente), Insulin Beef Zinc (Lente), Insulin Beef Zinc, Extended (Ultralente), Insulin Beef Zinc, Prompt (Semilente), Insulin Bovine, Insulin Detemir, Insulin Glargine, Recombinant, Insulin Glulisine, Insulin Human Inhaled, Insulin Human Isophane (NPH), Insulin Human Isophane (NPH)/Insulin Human Regular, Insulin Human Regular, Insulin Human Regular, Buffered, Insulin Human Zinc (Lente), Insulin Human Zinc, Extended (Ultralente), Insulin Lispro, Recombinant, Insulin Lispro/Insulin Lispro Protamine, Insulin Pork Isophane (NPH), Insulin Pork Regular, Insulin Pork Zinc (Lente)	Generic drug name
Benzodiazepines	Alprazolam, Amitriptyline Hydrochloride/Chlordiazepoxide, Chlordiazepoxide, Chlordiazepoxide Hydrochloride, Chlordiazepoxide	Generic drug name

	Hydrochloride/Clidinium Bromide, Clonazepam, Clorazepate Dipotassium, Diazepam, Lorazepam, Oxazepam	
SSRIs or SNRIs	Citalopram Hydrobromide, Desvenlafaxine, Desvenlafaxine Succinate, Duloxetine, Escitalopram Oxalate, Fluoxetine Hydrochloride, Fluoxetine Hydrochloride/Olanzapine, Fluvoxamine Maleate, Levomilnacipran Hydrochloride, Milnacipran Hydrochloride, Paroxetine Hydrochloride, Sertraline Hydrochloride, Venlafaxine Hydrochloride, Vilazodone Hydrochloride, Vortioxetine Hydrobromide	Generic drug name
Other antidepressants	Amitriptyline Hydrochloride, Amitriptyline Hydrochloride, Amitriptyline Hydrochloride/Chlordiazepoxide, Amitriptyline Hydrochloride/Perphenazine, Amoxapine, buPROPion hydrobromide, Bupropion Hydrochloride, Clomipramine Hydrochloride, Desipramine Hydrochloride, Doxepin Hydrochloride, Imipramine Hydrochloride, Mirtazapine, Nefazodone Hydrochloride, Nortriptyline Hydrochloride, Protriptyline Hydrochloride, Trazodone Hydrochloride, Trimipramine Maleate, Vilazodone Hydrochloride	Generic drug name
Proton pump inhibitors	Dexlansoprazole, Esomeprazole Magnesium, Lansoprazole, Omeprazole, Omeprazole Magnesium, Omeprazole Sodium, Omeprazole/Sodium Bicarbonate, Pantoprazole Sodium, Rabeprazole Sodium	Generic drug name
Histamine-2 receptor antagonists	Calcium Carbonate/Famotidine/Magnesium Hydroxide, Cimetidine, Famotidine, Nizatidine, Ranitidine Bismuth Citrate, Ranitidine Hydrochloride	Generic drug name
Systemic corticosteroids	Cortisone Acetate, Dexamethasone, Fludrocortisone Acetate, Hydrocortisone, Methylprednisolone, Prednisolone, Prednisone	Generic drug name

**eFigure 1. Flow Diagram of Patient Inclusion and Exclusion**



eFigure 2. Kaplan–Meier Curve for Development of Acute Kidney Injury



eFigure 3. Kaplan–Meier Curve for Development of Stage 5 Chronic Kidney Disease or Need for Dialysis

