

Supplementary Table S1: Codes Used to Identify Baseline Comorbidities and Incident Outcomes

Outcome	ICD-9	ICD-10
Hypoglycemia	251.0, 251.1, 251.2, 962.3, 250.8 without concurrent 259.8, 272.7, 681.XX, 682.XX, 686.9X, 707.1–707.9, 709.3, 730.0–730.2, or 731.8) (Ginde algorithm).	E08.641, E08.649, E09.641, E09.649, E10.641, E10.649, E11.641, E11.649, E13.641, E13.649, E16.0, E16.1, E16.2, T38.3X1A, T38.3X1D, T38.3X1S, T38.3X2A, T38.3X2D, T38.3X2S, T38.3X3A, T38.3X3D, T38.3X3S, T38.3X4A, T38.3X4D, T38.3X4S, T38.3X5A, T38.3X5D, T38.3X5S
Hyperglycemia	250.10, 250.12, 250.20, 250.22, 250.30, 250.32, 250.02, 250.92	E08.00, E08.01, E08.10, E08.11, E08.65, E09.00, E09.01, E09.10, E09.11, E09.65, E10.10, E10.11, E10.65, E11.00, E11.01, E11.10, E11.11, E11.65, E13.00, E13.01, E13.10, E13.11, E13.65
Falls	E880-E888	W00XXXXA-W19XXXXA
Angina (Coronary Artery Disease)	413.0, 413.1, 413.9, 411.1, 411.81, 411.89	I20.0, I20.1, I20.8, I20.9, I25.111, I25.118, I25.119, I25.701, I25.708, I25.709, I25.711, I25.718, I25.719, I25.721, I25.728, I25.729, I25.731, I25.738, I25.739, I25.751, I25.758, I25.759, I25.761, I25.768, I25.769, I25.791, I25.798, I25.799
Myocardial infarction (Coronary Artery Disease)	410.XX	I21.01, I21.02, I21.09, I21.11, I21.19, I21.21, I21.29, I21.3, I21.4, I21.9, I22.0, I22.1, I22.2, I22.8, I22.9
Systolic Heart Failure (Congestive Heart Failure)	428.0, 428.1, 428.2, 428.20, 428.21, 428.22, 428.23, 428.4, 428.40, 428.41, 428.42, 428.43	I50.1, I50.20, I50.21, I50.22, I50.23, I50.40, I50.41, I50.42, I50.43, I50.82, I50.84
Non-Systolic Heart Failure (Congestive Heart Failure)	428.3, 428.30, 428.31, 428.32, 428.33, 402.01, 402.11, 402.91	I09.81; I11.0; I13.2; I50.30; I50.31; I50.32; I50.33; I50.810; I50.811; I50.812; I50.813; I50.814; I50.83; I50.89; I50.9
Stroke	430, 431, 433.X1, 434.X1, 436	G46.x, I60, I60.x, I60.xx, I61.x, I61.xx, I63.xx, I63.xxx, I64
Infection	I330, I339, I38, I39, I400, J00-J06, J09-J18, J20-J22, J85-J86, K61, K651, K681, K630, K750, L00-L08, M86, M00-M02, M600, M650, M710, M726, N300, N10, N390, N493, N410-N414, R7881, O85, R6520, R6521, O0882, O0337, R652, O0387, O0487, O0737, A00-A09, A15-A19, A20-A28, A30-A49, A50-A64, A65-A69, A70-A74, A75-A79, A80-A89, A90-A99, B00-B09, B10-B10, B15-B19, B25-B34, B35-B49, B50-B64, B65-B83, B85-B89, B95-B97, B99-B99	4210, 4219, 42490, 42499, 42291, 42292, 460-466, 480-488, 466 and 041, 466 and 079, 513, 566, 567, 567, 99859, 555X and 5695, 556X and 5695, 5720, 680-686, 69581, 52800, 5283, 730, 711 and 041, 711, 7140 and 3596, 7140 and 3571, 7140, 716 and 7131, 7280, 04081, 72789, 72789, 72886, 5950, 59010, 59011, 5990, 6084, 601X, 77183, 7907, 67022, 67024, 99592, 78552 and 99592, 6390, 63401, 99592, 63400, 63402, 63502, 6380, 001-009, 010-018, 020-027, 030-041, 045-049, 050-059, 060-066, 070-079, 080-088, 090-099, 100-104, 110-118, 120-129, 130-136

Foot Ulcer	440.23, 707.10, 707.14, 707.15, 892.X; 040.0, 785.4, 440.24; 730.0-730.2	I70.234, I70.235, I70.244, I70.245, I70.334, I70.335, I70.434, I70.435, I70.443, I70.445, I70.534, I70.535, I70.543, I70.545, I70.634, I70.635, I70.644, I70.645, I70.734, I70.735, I70.744, I70.745, L97.4, L97.4x, L97.4xx, L97.5, L97.5x, L97.5xx, E11.621, E11.622
Peripheral Vascular Disease	250.7X, 440.2X, 440.3X, 440.4, 440.8, 440.9, 443.81, 443.9, 444.22, 444.81, 447.1	I70.2XX, I70.3XX, I70.4XX, I70.45, I70.49X, I170.5XX, I70.6XX, I70.7XX, I70.8, I70.9X, I73.9, I74.3, I74.5, I77.1, I79.8, E11.51, E11.52, E0851, E0852, E0951, E0952, E1051, E1052, E1151, E1152, E1351, E1352
Atrial Fibrillation	427.31, 427.32	I48, I48.x, I48.xx
End-Stage Renal Disease	585.5, 585.6 and KP ESRD registry	N18.5, N18.6 and KP ESRD registry
Liver Disease	571.X, 571.XX 070.2 070.3 070.42 070.52 V02.61 070.7 070.41 070.44 070.51 070.54 V02.62 273.4, 570, 572.X, 573.X, 275.X, 275.XX, 453.0 576.1	I85.00, I85.01, I85.10, I85.11, K70.30, K70.31, K70.40, K70.41, K72.00 K72.01, K72.10, K72.11, K72.90, K72.91, K73.0, K73.1, K73.2, K73.8, K73.9, K74.3, K74.4, K74.5, K74.60, K74.69, K75.2, K75.3, K75.4, K75.81, K75.89, K75.9, K76.6, K76.7, B18.0, B18.1, B18.2, B18.8, B18.9, B19.X, B19.XX, K71.11, K76.81, K70.9, A06.4, B15.0, B16.0, B16.2, B17.11, K70.10, K70.11
Chronic Obstructive Pulmonary Disease	490-492.xx, 494.xx, 496.xx	J44.9, J44.1, J44.9, J41.0, J41.1, J41.8, J42, J43.0, J43.1, J43.2, J43.8, J43.9, J44.0, J98.2, J98.3
Depression	296.20-296.25, 296.30-296.35, 300.4, 311	F32.0-F32.9, F33.0-F33.3, F33.8, F33.9, F34.1, F41.2, F43.21, F31.30, F31.31, F31.32, F31.4, F31.5, F31.6X, F31.7X, F31.81
Dementia	290.X, 290.XX, 331.0, 331.11, 331.19, 331.2, 331.6, 331.7, 331.8X, 331.9	F01, F01.x, F01.xx, F02, F02.x, F02.xx, F03, F03.x, F03.xx, G30, G30.x, G30.xx, G31, G31.x, G31.xx, R41.81, G13.2, G13.8
Proliferative Diabetic Retinopathy	362.02	E08.35XX, E09.35XX, E10.35XX, E11.35XX, E13.35XX
Cancer	KP SEER/TUMOR REGISTRY	KP SEER/TUMOR REGISTRY
Hypertension	401.0, 401.1, 401.9	I10
Osteoarthritis (Arthritis)	715.XX	M15.X, M16.X, M16.XX, M17.X, M17.XX, M18.X, M18.XX, M19.XX, M19.XXX
Rheumatoid Arthritis (Arthritis)	714.X, 714.XX	M05.X, M05.XX, M05.XXX, M06.X, M06.XX, M06.XXX
Thyroid Disease	240-246	E00-E07
Urinary Incontinence	788.3, 788.30, 788.39	R32, R39.8, N39.492, N39.49

Procedures

Peripheral Vascular Disease	39.50, 39.90, 00.55, 17.56	CPT: 35583, 35556, 35585, 35654
Carotid Procedure	38.11, 38.12	CPT: 35301, 35390, 35501, 35506, 35507, 35508, 35509
Amputation	84.11-84.17	Z89.4, Z89.4x, Z89.4xx, Z89.5, Z89.5x, Z89.5xx, Z89.6, Z89.6x, Z89.6xx CPT: 27598, 27880, 27881, 27882, 27884, 27886, 27888, 27889, 28800, 28805, 28820, 28825, 28810, 27290, 27295, 27290, 27295, 27598, 27880-27882, 27884, 27886, 27888-27889, 28800, 28805, 28820, 28825, 28810 (CPT code)
PTCA	V45.82, 36.0X, 00.66	Z95.5, Z98.61 CPT: 92980, 92981, 92982, 92984, 92995, 92996
CABG	414.0X, V45.81, 36.1x, 36.2	I25.70X, I25.71X, I25.72X, I25.73X, I25.79X, I25.81X, I25.82X, T82.211D, T82.211S, T82.212D, T82.212S, T82.213D, T82.213S, T82.218D, T82.218S, Z95.1 CPT: 33533, 33534, 33535, 33536, 33572, 33510, 33511, 33512, 33513, 33514, 33516, 33517, 33518, 33519, 33521, 33522, 33523, 33530

Supplementary Table S2. Comparison of latent class model performance statistics.

Number of classes	LOG LIKELIHOOD	DEGREES OF FREEDOM	G_SQUARE D	AIC	BIC	CAIC	ABIC	ENTROPY
1	-809695.9090	524268	139611.1777	139649.1777	139830.9920	139849.9920	139770.6093	1.0000
2	-777459.2918	524248	75137.9433	75215.9433	75589.1410	75628.1410	75465.1977	0.6950
3	-772105.9797	524228	64431.3192	64549.3192	65113.9004	65172.9004	64926.3963	0.6004
4	-769424.6369	524208	59068.6335	59226.6335	59982.5982	60061.5982	59731.5334	0.6685
5	-767657.4553	524188	55534.2702	55732.2702	56679.6184	56778.6184	56364.9929	0.6474
6	-766373.9689	524168	52967.2976	53205.2976	54344.0292	54463.0292	53965.8430	0.6194
7	-765810.9650	524148	51841.2896	52119.2896	53449.4048	53588.4048	53007.6579	0.6482
8	-765267.0547	524128	50753.4692	51071.4692	52592.9677	52751.9677	52087.6602	0.6433
9	-764720.5815	524108	49660.5227	50018.5227	51731.4048	51910.4048	51162.5365	0.6503
10	-764260.2305	524088	48739.8206	49137.8206	51042.0862	51241.0862	50409.6572	0.6460

Supplementary Table S3. Comparison of outcome C-statistics by alternative latent class models.

Number of classes	Outcomes	19 vars	LCA 2	LCA 3	LCA 4	LCA 5	LCA 6	LCA 7	LCA 8	LCA 9	LCA 10
1	Death	0.75	0.67	0.68	0.69	0.70	0.70	0.70	0.70	0.71	0.71
2	Infection	0.70	0.64	0.65	0.66	0.66	0.66	0.67	0.67	0.67	0.67
3	Hypoglycemia	0.64	0.59	0.60	0.61	0.61	0.61	0.61	0.62	0.62	0.62
4	Hyperglycemia	0.62	0.56	0.57	0.58	0.59	0.59	0.59	0.59	0.59	0.59
5	Microvascular complications	0.77	0.67	0.67	0.68	0.69	0.70	0.70	0.71	0.71	0.72
6	Macrovascular complications	0.70	0.64	0.65	0.65	0.66	0.66	0.66	0.67	0.67	0.67
7	Non-mortality events	0.71	0.64	0.66	0.66	0.67	0.67	0.67	0.67	0.68	0.68
8	Non-mortality events excluding hypoglycemia	0.71	0.65	0.66	0.66	0.67	0.67	0.68	0.68	0.68	0.68
9	Combination	0.73	0.66	0.67	0.68	0.69	0.69	0.69	0.69	0.70	0.70

Supplementary Figure S1. Comparison of outcome C-statistics by alternative latent class models.

