

## Appendix A

### Summary of Condition Codes and Associated Accuracy Based on Expert Coding

<b>Elixhauser Comorbidity Measure (ECM) Based on Version 3.4/2009</b>					
<b>Comorbidity or Classification</b>	<b>ICD-9-CM Code Range</b>	<b>Prevalence</b>	<b>Sensitivity</b>	<b>Specificity</b>	<b>Positive Predictive Value</b>
Adverse Drug Events (ADE)	960–979, E930–E949	13.3%	4.2%	99.4%	99.4%
Anemia (Deficiency) including acute blood loss anemia <sup>b</sup>	280.1–280.9 285.21–285.29 285.9	32.0%	29.3%	100.0%	100.0%
Blood Loss Anemia–chronic blood loss and anemia of pregnancy <sup>b, c</sup>	280.0 648.20–648.24	0.6%	0.0%	100.0%	NA
CA Primary–Solid Tumor without Metastasis <sup>d</sup>	140.0–172.9 174.0–175.9 179–195.8, 209.00–209.24, 209.25–209.3, 258.01–258.03	10.5%	26.3%	98.8%	71.4%
CA Secondary (Metastatic Cancer) <sup>c, d</sup>	196.0–199.1, 789.51	0.6%	0.0%	100.0%	NA
Chronic Peptic Ulcer Disease (includes bleeding only if obstruction is also present) <sup>c, d</sup>	531.41, 531.51, 531.61, 531.70, 531.71, 531.91, 532.41, 532.51, 532.61, 532.70, 532.71, 532.91, 533.41, 533.51, 533.61, 533.70, 533.71, 533.91, 534.41, 534.51, 534.61, 534.70, 534.71, 534.91	1.7%	0.0%	98.9%	0.0%
Coagulation deficiency <sup>c, d</sup>	286.0–286.9, 287.1–287.3–287.5, 289.84, 649.30–649.34	1.7%	0.0%	100.0%	NA
Complications <sup>c, e</sup>	996–999	7.1%	0.0%	100.0%	0%
Congestive Heart Failure <sup>d, f</sup>	398.91, 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93 428.0–428.9	100%	NA	NA	NA
Chronic Obstructive Pulmonary Disease (COPD) <sup>d</sup>	490–492.8 493.00–493.92 494–494.1 495.0–505 506.4	34.8%	68.3%	96.6%	91.5%
Depression <sup>d</sup>	300.4, 301.12 309.00, 309.1 311	14.9%	7.4%	100.0%	100.0%

Diabetes Mellitus without Chronic Complications <sup>d</sup>	249.00–249.31, 250.00–250.33 648.00–648.04	33.7%	88.5%	78.3%	67.5%
Diabetes Mellitus with Chronic Complications <sup>d</sup>	249.40–249.91, 250.40–250.93, 775.1	17.7%	15.6%	99.3%	83.3%
Drug Dependence and Abuse <sup>b</sup>	292.0 292.82–292.89 292.9 304.00–304.93 305.20–305.93 648.30–648.34	9.9%	38.9%	100.0%	100.0%
ETOH (Alcohol) Abuse <sup>b</sup>	291.0– 291.3 291.5 291.8 291.81, 291.82 291.89 291.9 303.00–303.93 305.00–305.03	16.0%	31.0%	100.0%	100.0%
Fluid and Electrolyte Disorders <sup>a</sup>	276.0–276.9	40.3%	17.8%	99.1%	92.9%
Heart Valve (Valvular) Disease <sup>d</sup>	093.20–093.24 394.0–397.1 397.9 424.0–424.99 746.3–726.6 V42.2 V43.3	42.0%	14.5%	98.1%	84.6%
HIV and AIDS (Acquired Immunodeficiency Syndrome) <sup>c, d</sup>	042–044.9	1.1%	0.0%	100.0%	NA
HTN-Hypertension <sup>d</sup>	401.1, 401.9 642.00–642.24	34.8%	68.3%	61.0%	48.3%
HTN-Hypertension (complicated) <sup>d</sup>	401.0, 402.00– 405.99, 437.2, 642.10–624.24, 642.70–642.94	41.4%	16.0%	98.1%	85.7%
Hypothyroidism <sup>d</sup>	243–244.2, 244.8 244.9	5.0%	66.7%	98.3%	66.7%
Liver Disease, Including Acute or Chronic Viral <sup>b</sup>	070.22, 070.23, 070.33, 070.44, 070.54, 456.0, 456.1, 456.20, 456.21, 571.0, 571.2, 571.3, 571.40–571.49, 571.5, 571.6, 571.8, 571.9, 572.3, 572.8, V42.7	9.9%	66.7%	98.8%	85.7%

Lymphoma <sup>d</sup>	200.00–202.38 202.50–203.01, 203.02– 203.82, 203.8–203.81 238.6, (plasmacytoma) 273.3 (macroglobulinemia )	1.7%	33.3%	100.0%	100.0%
Obesity <sup>d</sup>	278.0, 278.00, 278.01,649.10– 649.14,793.91, V85.30–V85.4, V85.54	29.3%	7.5%	100.0%	100.0%
Other Neuro Disorders <sup>b, c</sup>	330.1–331.9, 332.0, 333.4, 333.5, 333.71–333.79, 333.85, 333.94, 443.0–335.9, 338.0, 340, 341.1–341.9, 345.00–345.11, 345.2–345.3, 345.40–345.91, 347.00–347.01, 347.10–347.11, 649.40–649.44, 768.7, 780.3, 780.31, 780.32, 780.39,780.97 784.3, 784.3	3.9%	0.0%	99.4%	0.0%
Paralysis <sup>d</sup>	342.0–344.9 438.20–438.53, 780.72	8.3%	33.3%	99.4%	83.3%
Psychoses <sup>d</sup>	295.00–298.9 299.10 299.11	8.8%	56.3%	99.4%	90.0%
Pulmonary Circulation Disorders <sup>b</sup>	415.11–415.19, 416.0–416.9 417.9	27.1%	14.3%	99.2%	87.5%
Peripheral Vascular Disease <sup>b</sup>	440.0–440.9, 441.00–441.9, 442.0–442.9, 443.1–443.9, 447.1, 57.1, 557.9, V43.4	16.0%	31.0%	98.7%	81.8%

Renal Failure <sup>d</sup>	403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 585.3, 585.4, 585.5, 585.6, 585.9, 586, V42.0, V45.1, V45.11, V45.12, V56.0–V56.32, V56.8	48.1%	14.9%	98.9%	92.9%
Rheumatoid arthritis/collagen vascular diseases <sup>c, d</sup> connective tissue disorders	701.0– 710.0–710.9, 714.0– 714.9– 720.0–720.9, 725	2.2%	0.0%	100.0%	NA
Weight Loss <sup>d</sup>	260–263.9, 783.21–783.22	3.3%	16.7%	100.0%	100.0%

<sup>a</sup> Acute condition.

<sup>b</sup> Acute and chronic conditions.

<sup>c</sup> These conditions were never coded in our corpus by the original coding professionals (indicated by “NA”).

<sup>d</sup> Chronic condition.

<sup>e</sup> Not in original ECM.

<sup>f</sup> Note that this condition is one of the ECM comorbid conditions, but in this case the cohort was determined based on these codes so the accuracy measures are not provided.