**Appendix 1**

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| Retained endovascular and neurosurgical procedures | CPP procedure codes | 50.02, 50.11, 50.52, 50.71-2, 50.79, 50.81, 51.51-2, 51.59 |
| CCI procedure codes | 3.JW.10.VA, 3.JW.10.VX, 3.JX.10.VX, 1.JW.51.SZ, 1.JW.80.SZ, 1.JE.51.LA, 2.AX.13.HA, 1.JW.51.GP, 1.JW.87.SZ, 1.JE.51.GQ, 1.JX.51.GP, 1.JW.76.SZ, 1.JW.57.LA |
| Diagnostic and procedure codes for severity of neurological injury | ICD 9 diagnostic codes | 331.3-4, 342.02, 342.1, 342.9, 342.91-2, 344, 344.1, 344.4, 344.49, 344.8-9, 344.61, 352.2-3, 352.5, 378.8, 379.4, 780.01, 780.02-3, 780.09, 784.3 |
| ICD 10 diagnostic codes | G46.3, G52.3, G81.0-1, G81.9, G82.0-2, G82.4-5, G83.0-2, G83.8-9, G91.0-3, G91.8-9, G94.1-2, H47.1, H49.0-2, H49.8-9, H50.9, H51.8-9, H53.2, H57.0, R40.2, , Z98.2 |
| CPP procedure codes | 13.62, 14.09, 15.29, 15.32, 15.34, 15.39, 15.42-3, 15.94 |
| CCI procedure codes | 1.AC.53.SZ, 1.AN.52.SZ, 1.AA.52.SZ, 1.AB.52.DA, 1.AC.53.SE, 1.AC.52.HA, 1.AA.52.SE, 1.AN.53.SZ, 1.AA.53.SZ, 1.AN.54.SZ, 1.AX.52.MB, 1.AC.55.DA, 1.AC.52.MB, 1.AC.54.MJ, 1.AB.52.SE, 1.AX.52.HA, 1.AB.52.SZ, 1.AC.55.SZ, 1.AC.54.ME, 1.AX.52.LA, 1.AC.54.HA, 1.AP.52.MJ, 1.AC.54.MP, 1.AC.52.MJ, 1.AC.52.MJ, 1.AC.52.MP, 1.AX.52.ME |
| Trauma codes | ICD 9 diagnostic codes | 800.13, 801.06, 801.12, 801.14-6, 801.21, 801.31, 802, 802.2, 802.4, 802.6, 802.8, 805, 805.01, 807.01-2, 808.2, 812, 816, 820, 820.8, 825.25, 831, 835, 838, 838.1, 851.05, 851.16, 852.01-2, 852.05-6,, 852.09, 852.16, 853.01-2, 854.19, 860.2, 861.2, 873, 873.1, 901, 907.2, 910, 911.9, 913, 916, 920.9, 921.2-3, 926.1, 942.3, 943.3, 944.3, 945.3, 946.3, 956.3, 958.4, 958.7, 959.8 |
| ICD 10 diagnostic codes | V2.5, V7, V10, V10.1-3, V10.5, V10.8, V12, V12.5-7, V13, V13.8, V14.8, V15, V15.1-2, V15.5, V15.8, V17.4, V27, V42.8, V43.1, V43.3-4, V43.6, V44.2, V45, V45.1-2, V45.8, V46.1, V47.2, V53.7, V55, V57.1-2, V57.3, V57.8-9, V58.3-4, V58.8-9, V59.4, V59.8-9, V62.8, V63.2, V64.2, V65.3, V65.8, V67.9, V68.9, V74.8, Z91.6, X58, X59.0, X59.9, X62, W01, W06, W07, W18-9, W22.0, W27, W44, W80, T06.8, T07, T23.3, T31.0, Y60.8, Y65.4, Y71.2, Y83.3, Y83.5, Y83.9, Y84.0, Y84.5, S0, S0.1, S0.3-5, S0.8, S0.9, S1, S1.1, S1.3, S1.5, S1.8, S2, S2.1-4, S2.6, S2.8, S4.5, S5, S5.8, S6, S6.1-6, S6.8-9, S9.9, S10.8, S12.2, S12.7, S14, S14.1, S20.2, S22,S22.1, S22.2-4, S25, S26.8, S27, S27.2-4, S27.8, S30, S30.1, S30.8, S32, S32.5, S32.7, S35.4, S36, S36.1, S37, S37.2, S39.9, S40, S42, S46, S51.8, S60, S61.9, S62.5-6, S63.5, S70, S72.1-3, S80.8, S81.9, S82, S82.1-2, S82.5-6, S82.8, S83.2, S90.3, S90.7, S92, S92.1, S92.2-3, S92.7, S93.3, S96 |
| Pre-existing conditions | Myocardial infarction ICD 9 diagnostic codes | 410.0, 410.9, 412.9 |
| Myocardial infarction ICD 10 diagnostic codes | I21.0, I21.4, I21.49, I21.9, I22.9, I25.2 |
| Congestive heart failure ICD 9 diagnostic codes | 402.0, 402.9, 402.91, 404.0, 425.4, 425.6, 425.9, 428.0, 428.1, 428.9  |
| Congestive heart failure ICD 10 diagnostic codes | I25.5, I42.0, I42.9, I50.0-1, I50.9, I51.3 |
| Chronic pulmonary disease ICD 9 diagnostic codes | 490.0, 490.9, 491.0, 491.9, 492.9, 493.9, 496.0, 496.9 |
| Chronic pulmonary disease ICD 10 diagnostic codes | J40, J44.0-1, J44.8, J44.9, J45.9, J61 |
| Cerebrovascular diseaseICD 9 diagnostic codes | 430.9, 431.0, 431.9, 432.1, 432.9, 433.1, 433.9, 434.0-1, 434.9, 437.1 |
| Cerebrovascular diseaseICD 10 diagnostic codes | I60.8-9, I61, I61.1, I61.4-5, I61.8-9, I62, I62.9, I63.2-5, I63.9, I64, I65.2, I67.2, I68, I69.3 |
| DementiaICD 9 diagnostic codes | 290.0-4, 290.9 |
| DementiaICD 10 diagnostic codes | F03, F05.1, G30.1  |
| DiabetesICD 9 diagnostic codes | 250, 250.1-6, 250.9 |
| DiabetesICD 10 diagnostic codes | E10.3, E10.41, E11.23, E11.28, E11.3, E11.41, E11.5, E11.52, E11.63-4, E11.7, E11.71, E11.78, E11.9, E13.9, E14.9 |
| DyslipidemiaICD 9 diagnostic codes | 272.0, 272.2, 272.4, 272.7-9 |
| DyslipidemiaICD 10 diagnostic codes | E78.0, E78.5, E78.8 |
| Hemiplegia or paraplegiaICD 9 diagnostic codes | 342.9, 344.0, 344.1, 344.6, 344.9  |
| Hemiplegia or paraplegiaICD 10 diagnostic codes | G81.9, G82.1, G83.1-2, G83.9 |
| HypertensionICD 9 diagnostic codes | 401.0, 401.1, 401.9, 405.0, 405.9 |
| HypertensionICD 10 diagnostic codes | I10.0 |
| Liver diseaseICD 9 diagnostic codes | 570.9, 571, 571.2, 571.4, 571.5-6, 571.8-9, 572.2-3, 573.3, 573.8-9 |
| Liver diseaseICD 10 diagnostic codes | K70.1, K70.3, K72.9, K73.9, K74.4, K74.6, K76.0, K76.6 |
| Malignancy ICD 9 diagnostic codes | 141.9, 143.9, 145.6, 145.9, 146.1, 146.9, 153, 153.1, 153.9, 154, 154.1, 155, 155.2, 156.9, 157, 157.9, 158, 161-2, 162.9, 163.9, 170.7, 172.9, 173.8, 174, 174.2, 174.4, 174.9, 182-3, 183.2, 183.8, 184.4, 184.9, 185.9, 188.1, 188.4, 188.9, 189, 191, 191.9, 192.9, 194.9, 196, 196.2, 196.8-9, 197.5-7, 198.3, 199.1, 200.1, 202, 202.8-9, 203, 203.9, 204.1, 205.1, 208.9, 218.9, 238.6 |
| Malignancy ICD 10 diagnostic codes | C19, C20, C22, C25, C25.9, C34.1, C48.2, C50.4, C50.8, C54.1, C61, C71.2, C77.2, C78, C78.6, C79.3, C82.9, C83, C83.3, C83.7, C91.1, C92.8, C96.7 |
| Peptic ulcer disease ICD 9 diagnostic codes | 531.0, 531.9, 533.9  |
| Peripheral vascular disease ICD 9 diagnostic codes | 440.2, 440.8, 440.9, 443.9 |
| Peripheral vascular disease ICD 10 diagnostic codes | I70.0, I70.2, I70.8, I70.9, I73.1, I73.9 |
| Renal disease ICD 9 diagnostic codes | 403.9, 585.0, 585.9, 586.9 |
| Renal disease ICD 10 diagnostic codes | N18.4, N18.5, N18.9, N19, I12, Z49.1, Z99.2 |
| Rheumatic disease ICD 9 diagnostic codes | 710.0, 710.9 |
| Rheumatic disease ICD 10 diagnostic codes | M32.9, M35.3 |

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| Medical complications | Acute bronchitis ICD 10 diagnostic codes | J20.1, J20.2, J20.8, J21.9 |
| Acute myocardial infarction ICD 9 diagnostic codes | 410, 410.9, 411.9 |
| Acute myocardial infarction ICD 10 diagnostic codes | I21-2, I21.4, I21.9 |
| Acute renal failure ICD 9 diagnostic codes | 584.9, 586.9 |
| Acute renal failure ICD 10 diagnostic codes | N17.0, N17.8-9, N18.4, N19, N23 |
| Anemia ICD 9 diagnostic codes | 280.9, 281.2, 282.4, 285.1, 285.8-9,  |
| Anemia ICD 10 diagnostic codes | D50.0, D50.8-.9, D51.0, D52.9, D53.9, D59.1, D59.9, D61.9, D62, D63.0, D63.8, D64.8-9 |
| Cardiac arrest ICD 9 diagnostic codes | 997.17 |
| Cardiac arrest ICD 10 diagnostic codes | I46.0 |
| Cardiac arrythmia ICD 9 diagnostic codes | 426.1, 426.3-5, 427.1, 427.3, 427.5-6, 427.8, 427.9 |
| Cardiac arrythmia ICD 10 diagnostic codes | I44.0-3, I45.0, I45.2, I45.6, I47.1-2, I48.0-1, I48.3-4, I48.9, I49.0, I49.3, I49.5, I49.8-9, R00.0-1 |
| Coagulation defect ICD 9 diagnostic codes | 286-7, 287.4-5, 287.9 |
| Coagulation defect ICD 10 diagnostic codes | D65, D68.2-3, D68.5-6, D68.80-1, D68.9, D69.5-6, D69.9 |
| Diabetes Insipidus ICD 9 diagnostic codes | 253.5 |
| Diabetes Insipidus ICD 10 diagnostic codes | E23.2 |
| Dialysis ICD 10 diagnostic codes | Z99.2, Z49.1 |
| Fluid and electrolyte imbalance ICD 9 diagnostic codes | 276.0-3, 276.5-9 |
| Fluid and electrolyte imbalance ICD 10 diagnostic codes | E22.2, E87.0-1, E87.5-8 |
| Gangrene ICD 9 diagnostic codes | 785.4 |
| Gangrene ICD 10 diagnostic codes | R02 |
| Gastrointestinal hemorrhage ICD 9 diagnostic codes | 562.1, 578.0-1, 578.9 |
| Gastrointestinal hemorrhage ICD 10 diagnostic codes | I98.2, K25.4, K26.4, K27.0, K29.0, K55.2, K62.5, K66.1, K92.1-2 |
| Heart failure ICD 9 diagnostic codes | 428.1 |
| Heart failure ICD 10 diagnostic codes | I44.7, I45.1, I50.1 |
| Intestinal obstruction ICD 9 diagnostic codes | 560.9 |
| Intestinal obstruction ICD 10 diagnostic codes | K56.0, K56.2, K56.4, K56.6-7 |
| Hemothorax ICD 10 diagnostic codes | J94.2, R04.2, R04.8 |
| Hypotension ICD 9 diagnostic codes | 458.0, 458.9 |
| Hypotension ICD 10 diagnostic codes | I95.2, I95.8, I95.9 |
| Liver disease ICD 9 diagnostic codes | 571.4, 571.8, 573.1, 573.3, 573.8-9 |
| Liver disease ICD 10 diagnostic codes | B18.1, R74.0, I82.0, K70.1, K70.3, K72.9, K74.6, K76.0, K76.4, K76.6-8 |
| Malnutrition ICD 9 diagnostic codes | 263.8-9, 783.2, 799.4 |
| Malnutrition ICD 10 diagnostic codes | E16.0, E41, E43, E44.1, E46, E53.8, E78.1, R63.0, R63.4, R64, Z86.3 |
| Pleural effusion ICD 10 diagnostic codes | J90 |
| Pneumonia ICD 9 diagnostic codes | 481.9, 482.0, 482.2, 482.4, 482.8-9, 484.7, 485.9, 486.9 |
| Pneumonia ICD 10 diagnostic codes | J10.0, J12.1-2, J13-4, J15.0-2, J15.5, J156, J158-9, J69.0, J170, J189 |
| Pneumothorax ICD 9 diagnostic codes | 512.9, 512.91, 512.98 |
| Pneumothorax ICD 10 diagnostic codes | J93.9 |
| Pulmonary edema ICD 10 diagnostic codes | J18.1, J81 |
| Urinary tract infection ICD 9 diagnostic codes | 590.1, 590.8, 595.9, 599.0 |
| Urinary tract infection ICD 10 diagnostic codes | N10, N16.4, N39.0 |
| Respiratory failure ICD 9 diagnostic codes | 786.0, 786.3, 799.0-1, 518.81-2 |
| Respiratory failure ICD 10 diagnostic codes | J18.0, J80, J96.0-1, J96.9, R06.8, R09.2 |
| Sepsis ICD 9 diagnostic codes | 380, 388, 389 |
| Sepsis ICD 10 diagnostic codes | A40.3, A40.8-9, A41.0-2, A41.5, A41.8-9 |
| Shock ICD 9 diagnostic codes | 785.5, 785.51, 785.59 |
| Shock ICD 10 diagnostic codes | R57.0-2, R57.8-9, T81.1 |
| Pressure ulcer ICD 9 diagnostic codes | 707.0 |
| Pressure ulcer ICD 10 diagnostic codes | L89.2, L89.9 |
| Venous embolism ICD 9 diagnostic codes | 415.1, 451.1, 451.8 |
| Venous embolism ICD 10 diagnostic codes | I26.9, I80.2 |