Supplementary Table 1. ICD-9-CM diagnosis codes for congenital heart disease.

Diagnosis Codes: 7450-7459, 7460-7469, 7470-7479, 74500-74599, 74600-74599, 74700-74749

Supplementary Table 2. ICD-9-CM diagnosis codes for charlson comorbidities.

|  |  |
| --- | --- |
| Comorbidities | ICD-9-CM |
| Myocardial infarction | 410.x, 412.x |
| Congestive heart failure  | 398.91, 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, 425.4-425.9, 428.x |
| Peripheral vascular disease  | 093.0, 437.3, 440.x, 441.x, 443.1-443.9, 447.1, 557.1, 557.9, V43.4 |
| Cerebrovascular disease  | 362.34, 430.x-438.x |
| Dementia | 290.x, 294.1, 331.2 |
| Chronic pulmonary disease  | 416.8, 416.9, 490.x-505.x, 506.4, 508.1, 508.8 |
| Rheumatic disease  | 446.5, 710.0-710.4, 714.0-714.2, 714.8, 725.x |
| Peptic ulcer disease  | 531.x-534.x |
| Mild liver disease  | 070.22, 070.23, 070.32, 070.33, 070.44, 070.54, 070.6, 070.9, 570.x, 571.x, 573.3, 573.4, 573.8, 573.9, V42.7 |
| Diabetes without chronic complication  | 250.0-250.3, 250.8, 250.9 |
| Diabetes with chronic complication | 250.4-250.7 |
| Hemiplegia or paraplegia  | 334.1, 342.x, 343.x, 344.0-344.6, 344.9 |
| Renal disease  | 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582.x, 583.0-583.7, 585.x, 586.x, 588.0, V42.0, V45.1, V56.x |
| Any malignancy, including lymphoma and leukemia, except malignant neoplasm of skin | 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582.x, 583.0-583.7, 585.x, 586.x, 588.0, V42.0, V45.1, V56.x |
| Moderate or severe disease liver | 456.0-456.2, 572.2-572.8 |
| Metastatic solid tumor  | 196.x-199.x |
| AIDS/HIV  | 042.x-044.x |

Supplementary Table 3. ICD-9-CM diagnosis codes for complications.

|  |
| --- |
| **Cardiac**  |

|  |
| --- |
| Myocardial infarction |
| 410 | Acute myocardial infarction |
| Heart failure |
| 428.21 | Acute systolic heart failure |
| 428.23 | Acute on chronic systolic heart failure |
| 428.31 | Acute diastolic heart failure |
| 428.33 | Acute on chronic diastolic heart failure |
| 428.41 | Acute combined systolic and diastolic heart failure |
| 428.43 | Acute on chronic combined systolic and diastolic heart failure |
| 785.51 | Cardiogenic shock |
| Arrhythmia |  |
| 427 | Cardiac dysrhythmias |

|  |
| --- |
|  |
| **Pulmonary** |

|  |
| --- |
| *Pneumonia* |
| 481 | Pneumococcal pneumonia (Streptococcus pneumoniae pneumonia) |
| 482 | Other bacterial pneumonia |
| 482.1 | Pneumonia due to pseudomonas |
| 482.2 | Pneumonia due to Haemophilus influenzae (H. influenzae) |
| 482.3 | Pneumonia due to streptococcus |
| 482.31 | Pneumonia due to streptococcus, group A |
| 482.32 | Pneumonia due to streptococcus, group B |
| 482.39 | Pneumonia due to other streptococcus |
| 482.4 | Pneumonia due to staphylococcus |
| 482.41 | Methicillin susceptible pneumonia due to Staphylococcus aureus |
| 482.49 | Other Staphylococcus pneumonia |
| 482.81 | Pneumonia due to anaerobes |
| 482.82 | Pneumonia due to Escherichia coli (E. coli) |
| 482.83 | Pneumonia due to other gram-negative bacteria |
| 482.84 | Pneumonia due to Legionnaires' disease |
| 482.89 | Pneumonia due to other specified bacteria |
| 482.9 | Bacterial pneumonia, unspecified |
| 485 | Bronchopneumonia, organism unspecified |
| 486 | Pneumonia, organism unspecified |
| *Respiratory failure* |  |
| 518.81 | Acute respiratory failure |
| 518.84 | Acute and chronic respiratory failure |
| 799.1 | Respiratory arrest |

|  |
| --- |
|  |
| **Renal** |

|  |
| --- |
| *Acute kidney injury* |
| 584.5 | Acute kidney failure with lesion of tubular necrosis |
| 584.6 | Acute kidney failure with lesion of renal cortical necrosis |
| 584.7 | Acute kidney failure with lesion of renal medullary (papillary) necrosis |
| 584.8 | Acute kidney failure with other specified pathological lesion in kidney |
| 584.9 | Acute kidney failure, unspecified |
| 997.5 | Urinary complication of surgical care (includes acute renal failure due to procedure, acute renal insufficiency specified as due to procedure, acute tubular necrosis due to procedure) |
|  *Urinary tract infection* |
| 590.8 | Pyelonephritis |
| 599 | Urinary tract infection |
| 996.64 | Infection and inflammatory reaction due to indwelling urinary catheter |

|  |
| --- |
|  |
| **Neurological** |

|  |  |
| --- | --- |
| *Paraplegia* |  |
| 344.1 | Paraplegia |
| 344.3 | Monoplegia of lower limb |
|  Spinal cord ischemia |
| 336.1 | Vascular myelopathies applies to acute infarction of spinal cord |
|  *Stroke* |  |
| 431 | Intracerebral hemorrhage |
| 433.01 | Occlusion and stenosis of basilar artery with cerebral infarction |
| 433.21 | Occlusion and stenosis of vertebral artery with cerebral infarction |
| 433.11 | Occlusion and stenosis of carotid artery with cerebral infarction |
| 433.31 | Occlusion and stenosis of multiple and bilateral precerebral arteries with cerebral infarction |
| 433.81 | Occlusion and stenosis of other specified precerebral artery with cerebral infarction |
| 433.91 | Occlusion and stenosis of unspecified precerebral artery with cerebral infarction |
| 434.01 | Cerebral thrombosis with cerebral infarction |
| 434.11 | Cerebral embolism with cerebral infarction |
| 434.91 | Cerebral artery occlusion, unspecified with cerebral infarction |
| 437.1 | Other generalized ischemic cerebrovascular disease |
| 997.02 | Iatrogenic cerebrovascular infarction or hemorrhage |

|  |
| --- |
|  |
| **Gastrointestinal** |

|  |
| --- |
| *Bowel ischemia* |
| 557 | Acute vascular insufficiency of intestine |
|  *Ileus* |  |
| 537.2 | Chronic duodenal ileus |
| 560.1 | Paralytic ileus |

|  |
| --- |
|  |
| **Wound**  |

|  |
| --- |
| *Wound complications* |
| 998.13 | Seroma complicating a procedure |
| 998.3 | Disruption of operation wound |
| 998.3 | Disruption of wound, unspecified |
| 998.31 | Disruption of internal operation (surgical) wound |
| 998.32 | Disruption of external operation (surgical) wound |
| 998.51 | Infected postoperative seroma |
| 998.83 | Nonhealing surgical wound |

|  |
| --- |
|  |
| **Sepsis** |

|  |  |
| --- | --- |
| 38 | Septicemia |
| 995.91 | Sepsis |
| 995.92 | Severe sepsis |

|  |
| --- |
|  |
| **Hemorrhage/transfusion** |

|  |  |
| --- | --- |
| 285.1 | Acute posthemorrhagic anemia |
| 99.04 | Transfusion of packed cells |
| 998.1 | Hemorrhage or hematoma complicating a procedure not elsewhere classified |
| 99.06 | Transfusion of coagulation factors |
| 998.11 | Hemorrhage complicating a procedure |
| 998.12 | Hematoma complicating a procedure |
| 39.41 | Control of hemorrhage following vascular surgery |
| 39.98 | Control of hemorrhage, not otherwise specified |