

**Table 1**

## ICD-9-CM Coding Algorithms for Charlson Index Comorbidities

| <b>Comorbidity</b>   | <b>Codes</b>   |
|--|--|
| Myocardial infarction  | 410.x, 412.x   |
| Congestive heart failure   | 398.91, 402.01, 402.11, 402.91,<br>404.01, 404.03, 404.11, 404.13, 404.91,<br>404.93, 425.4–425.9, 428.x                                       |
| Peripheral vascular disease  | 093.0, 437.3, 440.x, 441.x,<br>443.1–443.9, 447.1, 557.1,<br>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   |
| Hemiplegia/paraplegia  | 334.1, 342.x, 343.x, 344.0–344.6, 344.9  |
| Rheumatic disease  | 446.5, 710.0–710.4, 714.0–714.2,<br>714.8, 725.x   |
| Peptic ulcer disease   | 531.x–534.x  |
| Mild liver disease   | 070.22, 070.23, 070.32, 070.33,<br>070.44, 070.54, 070.6, 070.9,<br>570.x, 571.x, 573.3, 573.4, 573.8,<br>573.9, V42.7                         |
| Diabetes without chronic complication  | 250.0–250.3, 250.8, 250.9  |
| Diabetes with chronic complication   | 250.4–250.7  |
| Renal disease  | 403.01, 403.11, 403.91, 404.02, 404.03,<br>404.12, 404.13, 404.92, 404.93, 582.x, 583.0–<br>583.7, 585.x, 586.x, 588.0, V42.0, V45.1,<br>V56.x |
| Any malignancy, including lymphoma and leukemia, except malignant neoplasm of skin | 140.x–172.x, 174.x–195.8,<br>200.x–208.x, 238.6  |
| Moderate or severe liver disease   | 456.0–456.2, 572.2–572.8   |
| Metastatic solid tumor   | 196.x–199.x  |
| AIDS/HIV   | 042.x–044.x  |

*Source:* Quan, H., V. Sundararajan, P. Halfon, et al. “Coding Algorithms for Defining Comorbidities in ICD-9-CM and ICD-10 Administrative Data.” *Medical Care* 43 (2005): 1130–39.