***Supplemental Table 1:*** ICD9-CM and ICD10-CM codes utilized for patient selection.

|  |  |  |
| --- | --- | --- |
| **Diagnosis** | **ICD10-CM** | **ICD9-CM** |
| **Bladder** **cancer** | C67x, D090 | 188x , 2337 |
| **Procedure** | **ICD10-CM** | **ICD9-CM** |
| **Cystectomy** | 0TTB0ZZ, 0TTB4ZZ, 0TTB8ZZ | 577.1, 577.9, 577 |
| **Ileal conduit**  (ICD10 includes minimally invasive and open) | 0T1607C, 0T160JC, 0T160KC, 0T160ZC, 0T1707C, 0T170JC, 0T170KC, 0T170ZC, 0T1747C, 0T174JC, 0T174KC, 0T174ZC, 0T1807C, 0T180JC, 0T180KC, 0T180ZC, 0T1847C, 0T184JC, 0T184KC, 0T184ZC | 565.1 |
| **Laparoscopic procedure** | -- | 5421, 5451 |
| **Robot-assisted procedure** | 8E0W8CZ, 8E0W7CZ, 8E0W4CZ | 174x |
| **Complications** | **ICD9/ICD10 Diagnosis Codes** | **ICD9/ICD10 Procedure Codes** |
| **Cardiac** | 402.01, 402.11, 402.91, 42.75, 99.71, 410xx, 428xx  I11.0, I11.9, I46.9, I97.710, I97.790, I97.88, I97.89, I21x | -- |
| **Vascular** | 415.1, 451.2, 451.81, 451.9, 453.8, 453.9, 997.2, 999.2, 444.22, 444.81, 436, 4511x, 433xx, 437xx, 434xx  I26.90, I26.99, T80.0XXA, T81.718A , T81.72XA , T82.817A , T82.818A, I80.219, I80.9, I82.A19, I82.B19,I82.C19, I82.890, I82.290, I82.91, T81.719A, T81.72XA, T80.1XXA, I74.3, I74.5, I67.89, I97.811, I82.6xx, I67xx | -- |
| **Respiratory** | 518.0, 514, 518.4, 481, 485, 486, 518.5, 518.81, 518.82, 799.1, 997.3, 466xx, 480xx,482xx, 483xx  J98.11, J98.19, J18.2, J81.1, J81.0, J13, J18.1, J18.9, J18.0, J95.821, J96.00, J95.1, J95.2, J95.3, J95.822, J96.20, J96.90, J80 , R06.03, R09.2, J95.851, J95.89, J95.859 , J95.88, J20.9, J20.9, J15xx | -- |
| **Genitourinary** | 590.2, 590.9, 591, 593.3, 593.4, 593.5,593.81, 593.82, 596.1, 596.2, 997.5, 901.x, 590.8x  N15.1 , N15.9, N13.30, N13.5, N13.8 , N13.4, N28.0, N28.89, N32.1, N32.2, N99.89, N10 , N11, N12, N13, N14, N15, N16 | 55.02, 55.03, 55.12, 55.93, 55.94, 59.93, 97.61, 97.62, 56.1, 56.41, 56.74, 56.75, 56.81, 56.84, 56.86, 56.89, 56.91  0T9000Z,0T9070Z , 0T9080Z, 0T9100Z, 0T9170Z , 0T9180Z , 0T9040Z , 0T9140Z, 0TC03ZZ, 0TC04ZZ , 0TC13ZZ, 0TC14ZZ , 0T9370Z, 0T9380Z, 0T9470Z, 0T9480Z, 0T25X0Z, 0T25X0Z, 0T29X0Z , 0T29XYZ, 0T760ZZ , 0T763ZZ , 0T764ZZ, 0T767ZZ , 0T768ZZ, 0T770ZZ, 0T773ZZ , 0T774ZZ , 0T777ZZ, 0T778ZZ , 0TC67ZZ, 0TC77ZZ, 0TQ60ZZ, 0TQ63ZZ , 0TQ64ZZ , 0TQ67ZZ , 0TQ68ZZ , 0TQ70ZZ , 0TQ73ZZ, 0TQ74ZZ , 0TQ77ZZ , 0TQ78ZZ, 0TR607Z, 0TR60JZ , 0TR60KZ, 0TR647Z, 0TR64JZ |
| **Wound** | 998.3, 998.6, 567.xx, 998.5x  T81.30XA , T81.32XA, T81.31XA, T8133XA, K65.9, K6.7, K65.8, K68.11 | 54.61, 54.91, 54.0, 59.19, 54.1x  0WQFXZZ , 0D9830Z, 0D983ZZ, 0D9930Z , 0D993ZZ , 0D9A30Z , 0D9A3ZZ, 0D9B30Z, 0D9B3ZZ, 0D9E30Z , 0D9E3ZZ , 0D9E3ZZ , 0D9H3ZZ, 0W9F00Z , 0W9F0ZZ , 0W9H00Z , 0W9H0ZZ , 0W9H40Z, 0W9H4ZZ, 0DJD0ZZ, 0WJG0ZZ , 0WJJ0ZZ, 0W3G0ZZ , 0W3H0ZZ , 0WJG0ZZ , 0WJH0ZZ , 0WJJ0ZZ, 0D9W0ZZ, 0W9G00Z, 0W9G0ZZ , 0WCJ0ZZ , 0WCR0ZZ |
| **Miscellaneous medical** | 584.xx, 586, 785.5x, 995.0, 995.4, 998.0, 999.4, 999.5, 999.6,999.7, 999.8, 457.8, 560.1, 560.8x, 560.9, 997.4, 353.0, 354.2, 723.4, 955.1, 955.3, 955.7, 955.8, 955.9, 531.xx, 532.xx, 533.xx, 782.4, 573.8, 560.8x  N19, T78.2XXA, T88.2XXA, T81.10XA, T81.19XA, T81.12XA, T81.11XA, T88.8XXA, I89.8, R17, K76.1, K76.89, R65.21, T80xx, K56, K91xx, R57xx, K25xx, K26xx, N17xx | -- |
| **Miscellaneous surgical** | 599.1, 596.1, 596.6, 565.1, 569.3, 569.83, 569.4x, 998.1x, 998.83, 998.9, 998.2, 998.4, 998.7, 604.0, 956.0, 956.1, 956.4,  956.5, 956.8, 956.9, 902.50, 902.51, 902.52, 902.53, 902.54, 902.59  N360, K625, K631 , T8189XA, T819XXA, D7811, D7812, E3611, E3612, G9748,T8161XA, T8169XA, N454, S7400XA, S7410XA, S7420XA, S8420XA, S9430XA, S748X9A, S84809A, S948X9A, S7490XA, S8490XA, S9490XA, S35513A, S358X9A, D7802, E3602, E89811, G9732, G9752, I9742, I97620, J95831, J9562, K9162, K91841, L7602, L7622, M96811 , M96831, N9961, N99820 | 46.03, 46.04, 46.10, 46.11, 46.14, 48.4x, 48.5, 48.6x, 48.7x, 48.9x  0D1K0Z4, 0D1K4Z4 , 0D1K8Z4, 0D1L0Z4, 0D1L4Z4 , 0D1L8Z4 , 0D1N0Z4 , 0D1N4Z4, 0DBE0ZZ , 0DBF0ZZ , 0DBG0ZZ , 0DBK0ZZ, 0DBL0ZZ, 0DBM0ZZ , 0DBN0ZZ, 0D1H0Z4 , 0D1H4Z4, 0D1H8Z4, 0D1K0Z4 , 0D1K4Z4 , 0D1K8Z4, 0H87XZZ , 0D1N0Z4,0DTP0ZZ , 0DTP4ZZ, 0DTP7ZZ , 0DTP8ZZ , 0D1N0Z4 , 0DTP4ZZ, 0DTP0ZZ, 0DTP4ZZ , 0DTP7ZZ , 0DTP8ZZ, 0DTN0ZZ , 0DTN4ZZ, 0DSP7ZZ, 0DSP8ZZ, 0DQP0ZZ, 0DQP3ZZ, 0DQP4ZZ , 0DQP7ZZ, 0DQP8ZZ, 0DNP0ZZ, 0DNP3ZZ, 0DNP4ZZ,0DNP7ZZ, 0DNP8ZZ |

***Supplemental Table 2***: Patient demographics at urban non-teaching and rural hospitals.

|  |  |  |
| --- | --- | --- |
|  | N | Median Adjusted Cost, $ (IQR) |
| Total Study Population | 810 |  |
| Age in Years, median (IQR) | 71 (65-78) | 22,808 (11,846) |
| Race, N (%) |  |  |
| White | 689 (85.1) | 22,824 (11,569) |
| African American | 16 (2.0) | 20,626 (9,774) |
| Other/Unknown | 105 (13.0) | 23,311 (11,385) |
| Sex, N (%) |  |  |
| Male | 641 (79.1) | 22,310 (11,313) |
| Female | 169 (21.9) | 24,639 (14,035) |
| Discharge quarter, N (%) |  |  |
| Q2 (Apr-Jun) | 206 (25.4) | 24,250 (14,668) |
| Q3 (Jul-Sep) | 203 (25.1) | 22,492 (10,650) |
| Q4 (Oct-Dec) | 185 (22.8) | 22,520 (11,780) |
| Q1 (Jan-Mar) | 216 (26.7) | 22,530 (10,302) |
| Insurance, N (%) |  |  |
| Medicaid | 31 (3.8) | 23,159 (6,026) |
| Medicare | 590 (72.8) | 22,568 (12,232) |
| Private | 159 (19.6) | 23,373 (11,946) |
| Self-Pay | 12 (1.5) | 21,338 (8,235) |
| Unknown | 18 (2.2) | 21,526 (17,006) |
| AHRQ Elixhauser Score, median (IQR) | 7 (0-14) |  |
| Length of Stay in Days, median (IQR) | 7 (6-9) |  |
| Inpatient Complication, N (%) |  |  |
| No Inpatient Complications | 345 (43.6) | 20,616 (9,100) |
| Any Inpatient Complication | 425 (52.4) | 25,224 (13,214) |
| Region, N (%) |  |  |
| East North Central | 117 (14.4) | 24,848 (12,767) |
| East South Central | 55 (7.0) | 17,844 (9,800) |
| Mid-Atlantic | 61 (7.5) | 21,122 (10,599) |
| Mountain | 107 (13.2) | 23,427 (13,414) |
| New England | 24 (3.0) | 24,953 (14,135) |
| Pacific | 109 (13.5) | 30,240 (14,864) |
| South Atlantic | 167 (20.6) | 20,508 (8,014) |
| West North Central | 83 (10.2) | 21,962 (12,620) |
| West South Central | 87 (10.7) | 23,168 (8,478) |

***Supplemental Table 3:*** Linear regression analysis of patient and hospital factors associated with cost variation at urban non-teaching and rural hospitals.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Univariable Analysis** | | | **Multivariable Analysis** | | |
|  | **Coefficient ($)** | **95% CI** | ***p*** | **Coefficient ($)** | **95% CI** | ***p*** |
| **Age (Years)** | | | | | | |
|  | 37 | -47 to 121 | 0.386 | -67 | -154 to 20 | 0.134 |
| **Race** | | | | | | |
| White | Reference |  |  | Reference |  |  |
| African American | -1813 | -7335 to 3710 | 0.52 | -947 | -5609 to 3715 | 0.69 |
| Other race | 3024 | 736 to 5312 | 0.01 | 2165 | 160 to 4170 | **0.034** |
| **Gender** | | | | | | |
| Male | Reference |  |  | Reference |  |  |
| Female | 3573 | 1693 to 5452 | <0.001 | 2172 | 551 to 3792 | **0.009** |
| **Discharge Quarter** | | | | | | |
| Q2 (Apr-Jun) | Reference |  |  | Reference |  |  |
| Q3 (Jul-Sep) | -1718 | -3884 to 448 | 0.12 | -607 | -2428 to 1214 | 0.513 |
| Q4 (Oct-Dec) | -1662 | -3880 to 556 | 0.142 | -842 | -2712 to 1027 | 0.377 |
| Q1 (Jan-Mar) | -322 | -2455 to 1811 | 0.767 | -450 | -2244 to 1344 | 0.622 |
| **Insurance** | | | | | | |
| Medicaid | Reference |  |  | Reference |  |  |
| Medicare | 2172 | -1866 to 6211 | 0.291 | 3552 | -114 to 7218 | 0.058 |
| Private Insurance | 2503 | -1800 to 6807 | 0.254 | 3835 | 176 to 7493 | 0.04 |
| Self-Pay | -1480 | -8932 to 5971 | 0.697 | -335 | -6627 to 5957 | 0.917 |
| Unknown Insurance | -627 | -7122 to 5868 | 0.85 | 437 | -5073 to 5947 | 0.876 |
| **AHRQ Elixhauser Score** | | | | | | |
|  | 248 | 170 to 325 | <0.001 | 139 | 69 to 209 | **<0.001** |
| **Inpatient Complications** | | | | | | |
|  | 5664 | 4156 to 7172 | <0.001 | 2096 | 644 to 3548 | **0.005** |
| **Length of Stay (Days)** | | | | | | |
|  | 1880 | 1605 to 2155 | <0.001 | 1475 | 1188 to 1762 | **<0.001** |
| **Region** | | | | | | |
| East North Central | Reference |  |  | Reference |  |  |
| East South Central | -7903 | -11281 to -4524 | <0.001 | -7227 | -10232 to -4221 | **<0.001** |
| Mid-Atlantic | -3270 | -6533 to -7 | 0.05 | -3708 | -6598 to -819 | **0.012** |
| Mountain | -630 | -3394 to 2134 | 0.655 | -610 | -3117 to 1897 | 0.633 |
| New England | 1360 | -3270 to 5991 | 0.564 | -100 | -4240 to 4039 | 0.962 |
| Pacific | 6131 | 3380 to 8882 | <0.001 | 6183 | 3729 to 8637 | **<0.001** |
| South Atlantic | -5385 | -7876 to -2894 | <0.001 | -4477 | -6695 to -2260 | **<0.001** |
| West North Central | -2332 | -5298 to 633 | 0.123 | -2870 | -5553 to -186 | 0.036 |
| West South Central | -2824 | -5749 to 101 | 0.058 | -2264 | -4863 to 335 | 0.088 |