**SUPPLEMENTARY MATERIALS**

**eTable 1.** ICD-9 and ICD-10 codes used to define cirrhosis, cirrhosis complications and other clinical covariates

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|  |  |  |
| --- | --- | --- |
| **eTable 1. ICD-9 and ICD-10 codes used to define cirrhosis, cirrhosis complications and other clinical covariates** | | |
| **Disease** | **ICD-10 Code**  **(started 10/1/2015)** | **ICD-9 Code** |
| Cirrhosis | K74.6x, K70.3x, K74.3, K74.4, K74.5 | 571.5, 571.6, 571.2 |
| *Cirrhosis complications* | | |
| Ascites | R18.8, K70.31, K70.11 | 789.59, 789.50 |
| Hepatic encephalopathy | B15.0, B16.0, B16.2, B17.11, B19.0, B19.11, B19.21, K70.41, K72.01, K72.11, K72.91 | 070.71, 070.4x, 070.0, 070.2x, 070.6, 348.3x, 572.2 |
| Varices w/out bleeding | I85.00, I85.10, I86.4 | 456.1, 456.21 |
| Varices with bleeding | I85.01, I85.11 | 456.0, 456.20 |
| HCC | C22.0, C22.8, C22.9 | 155.0 |
| Other decompensated cirrhosis (used for cirrhosis definition) | K70.4x, K76.6, K72.9x, K72.1x, K76.7, K76.81, K65.2 | 567.23, 572.3, 572.4, 572.8, 782.4 |
| Acute kidney injury | N17.x | 584.x |
| *Additional clinical covariates* | | |
| Chronic obstructive pulmonary disease | J40.x-J44.x | 490, 491.x, 492.x, 493.2x, 496 |
| Congestive heart failure | I50.x | 428.x |
| Anxiety | F06.4, F40.x, F41.x, F42.x, F43.1x, F48.8, F48.9, R45.2-R45.8x | 293.84, 300.x, 308.x, 309.81, 313.x |
| Depression/mood disorders | F06.3x, F30.x, F31.x, F32.x, F33.x, F34.x, F39, R45.86 | 293.83, 296.x, 300.4, 311 |
| Alcohol use disorder | F10.x, G62.1, I42.6, K29.2x, K70.x, O99.31x, P04.3, Q86.0 | 291.x, 303.x, 305.x, 980.0, 357.5, 425.5, 535.3x, 790.3, V11.3, 292.2x |

**eTable 2. VA costs**

|  |
| --- |
| The cost of encounters at VA facilities included in our analyses were derived from the VA Managerial Cost Accounting (MCA) system which is an activity-based cost allocation system that maps VA expenditures from payroll and the general ledger into individual patient encounters. The process consists of assigning provider effort to departments based on activity reports, distributing overhead costs to patient care departments based on a step-down approach, and assigning costs to intermediate components of an encounter based on relative value units. The costs contained in MCA data are representations of the value of resources necessary to provide care for patients. In this way, these are costs from the provider or healthcare system perspective and these costs may not be reflective of costs in other healthcare systems. They are also distinct from payer perspective costs which are what is represented in claims data from public payers such as Medicare or Medicaid or a number of private payers in the US. The price that payers pay for certain healthcare encounters is based on specific negotiations between the payer and provider and may not be reflective of the number of actual resources that went into producing that particular encounter.  Payer perspective data also played a role in our analyses as we also obtained information from VA Fee Basis data that represents the price paid for healthcare services obtained in non-VA facilities but paid for by the VA. |

**eTable 3: Incremental Cost of Cirrhosis: Results from multivariable models**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Year 1** | | **Year 2** | | **Year 3** | | | **Year 4** | | |
| **Primary variables** | **Incremental Cost (95%CI)** | **p-value** | **Incremental Cost (95%CI)** | **p-value** | **Incremental Cost (95%CI)** | **p-value** | **Incremental Cost (95%CI)** | | p-value |
| **Study groups** |  |  |  |  |  |  |  | |  |
| Controls | ref |  | ref |  | ref |  | ref | |  |
| Cirrhosis-patients | 35,029 (32,473-37,585) | 0.00 | 17,629 (16,020-19,238) | 0.00 | 15,995 (14,190-17,799) | 0.00 | 14,216 (12,351-16,080) | | 0.00 |
| **Age in years** |  |  |  |  |  |  |  | |  |
| Age <55yr | ref |  | ref |  | ref |  | ref | |  |
| Age 55-<60yr | 3,143 (1,235-5,051) | 0.00 | 4,191 (2,641-5,742) | 0.00 | 211 (-1,675-2,096) | 0.83 | 3,795 (1,762-5,827) | | 0.00 |
| Age 60-<65yr | 3,572 (1,758-5,387) | 0.00 | 4,612 (3,147-6,076) | 0.00 | 1,397 (-390-3,183) | 0.13 | 5,626 (3,647-7,606) | | 0.00 |
| Age 65-<70yr | -1,520 (-3,313-273) | 0.10 | 1,439 (53-2,825) | 0.04 | -819 (-2,383-745) | 0.31 | 566 (-1,103-2,236) | | 0.51 |
| Age 70-<75yr | -4,268 (-6,403--2,133) | 0.00 | 674 (-1,126-2,474) | 0.46 | 1,167 (-931-3,265) | 0.28 | 2,072 (-123-4,266) | | 0.06 |
| Age 75 + | -1,810 (-3,950-329) | 0.10 | 1,747 (-153-3,646) | 0.07 | 794 (-1,082-2,670) | 0.41 | 2,323 (-169-4,814) | | 0.07 |
| **Sex** |  |  |  |  |  |  |  | |  |
| Men | ref |  | ref |  | ref |  | ref | |  |
| Women | 3,710 (-532-7,951) | 0.09 | 2,855 (-730-6,440) | 0.12 | 1,909 (-1,854-5,671) | 0.32 | 1,184 (-2,662-5,030) | | 0.55 |
| **Race/ethnicity** |  |  |  |  |  |  |  | |  |
| White | ref |  | ref |  | ref |  | ref | |  |
| African American | 1,048 (-1,922-4,018) | 0.49 | -730 (-2,917-1,457) | 0.51 | -71 (-2,634-2,492) | 0.96 | -487 (-3,144-2,171) | | 0.72 |
| Hispanic | 3,318 (1,526-5,110) | 0.00 | 2,025 (583-3,467) | 0.01 | 2,008 (392-3,623) | 0.02 | 2,471 (692-4,250) | | 0.01 |
| Other | 1,976 (-1,704-5,655) | 0.29 | 2,364 (-833-5,561) | 0.15 | 1,653 (-1,831-5,138) | 0.35 | 2,520 (-1,350-6,390) | | 0.20 |
| **Priority status** |  |  |  |  |  |  |  | |  |
| 1-3 | ref |  | ref |  | ref |  | ref | |  |
| 4-5 | 9,506 (7,932-11,080) | 0.00 | 4,736 (3,467-6,004) | 0.00 | 4,198 (2,784-5,612) | 0.00 | 3,246 (1,684-4,809) | | 0.00 |
| 6-8 | 90 (-1,086-1,267) | 0.88 | -1,228 (-2,239--218) | 0.02 | -848 (-2,016-320) | 0.16 | -1,620 (-2,899--341) | | 0.01 |
| **Insurance** |  |  |  |  |  |  |  | |  |
| VA-Private | ref |  | ref |  | ref |  | ref | |  |
| VA only | 5,088 (3,516-6,661) | 0.00 | 2,200 (865-3,534) | 0.00 | 1,123 (-375-2,622) | 0.14 | -158 (-1,659-1,344) | | 0.84 |
| VA-Medicare | 6,189 (4,898-7,481) | 0.21 | 4,742 (3,697-5,787) | 0.00 | 3,713 (2,555-4,871) | 0.00 | 5,125 (3,805-6,446) | | 0.00 |
| VA-Medicaid | 6,306 (656-11,956) | 0.68 | 4,701 (161-9,240) | 0.04 | 3,248 (-1,612-8,108) | 0.19 | 5,876 (-103-11,855) | | 0.05 |
| **Deyo index** |  |  |  |  |  |  |  | |  |
| 0 | ref |  | ref |  | ref |  | ref | |  |
| 1-2 | 4,353 (2,947-5,759) | 0.00 | 5,576 (4,573-6,579) | 0.00 | 7,588 (6,265-8,911) | 0.00 | 6,903 (5,475-8,330) | | 0.00 |
| 3 or more | 18,145 (13,859-22,431) | 0.00 | 22,551 (19,305-25,798) | 0.00 | 23,667 (19,746-27,588) | 0.00 | 21,242 (17,501-24,984) | | 0.00 |
| **Depression** | 15,819 (13,400-18,237) | 0.00 | 10,664 (8,919-12,410) | 0.00 | 8,202 (6,352-10,052) | 0.00 | 8,706 (6,480-10,932) | | 0.00 |
| **Anxiety** | 8,454 (5,243-11,665) | 0.00 | 6,867 (4,557-9,178) | 0.00 | 4,414 (2,112-6,716) | 0.00 | 6,235 (3,395-9,076) | | 0.00 |

**eTable 4. Incremental Cost of Caring for Patients with Cirrhosis who survived the full year interval**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** |
|  | **Incremental cost (95%CI)** | **Incremental cost (95%CI)** | **Incremental cost (95%CI)** | **Incremental cost (95%CI)** |
| **Total Costs $** | 28,428 (26,295-30,561) | 14,798 (13,194-16,402) | 14,235 (12,408-16,063) | 13,245 (11,408-15,081) |
| **Inpatient $** | 13,073 (12,338-13,807) | 4,816 (4,455-5,176) | 4,921 (4,489-5,353) | 5,459 (4,998-5,919) |
| **Outpatient $** | 14,072 (12,806-15,337) | 9,333 (8,123-10,543) | 8,883 (7,522-10,244) | 7,131 (5,820-8,441) |
| **Pharmacy $** | 8,138 (7,563-8,713) | 5,438 (5,007-5,869) | 5,332 (4,959-5,706) | 3,715 (3,406-4,024) |
| **Outside Care $** | 1,839 (1,331-2,346) | -414 (-807--21) | -613 (-1,021--205) | -807 (-1,289- -325) |

All models adjusted for age, sex, race/ethnicity, socioeconomic status, dual health insurance, and comorbidity (Deyo index, depression, anxiety)

**eTable 5: Incremental Cost of Caring for Patients with Cirrhosis with VA-only insurance *versus* patients with dual (VA-Medicare, VA-Provite) insurance.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Incremental cost (95%CI)** | | | |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** |
| **VA-only Insurance** | | | | |
| **Total Costs $** | 32,972 (27,677-38,268) | 16,301 (13,015-19,587) | 13,766 (9,883-17,649) | 12,158 (8,637-15,680) |
| **Inpatient $** | 17,607 (16,257-18,958) | 6,572 (5,909-7,234) | 5,256 (4,557-5,956) | 5,465 (4,605-6,325) |
| **Outpatient $** | 13,780 (11,062-16,497) | 8,817 (6,580-11,054) | 8,085 (5,317-10,853) | 6,009 (3,657-8,361) |
| **Pharmacy $** | 7,519 (6,681-8,357) | 5,109 (4,441-5,777) | 4,973 (4,040-5,906) | 3,090 (2,582-3,599) |
| **Outside Care $** | 3,057 (1,925-4,189) | 222 (-441-885) | -571 (-1,356-213) | -138 (-953-676) |
| **VA-Medicare Insurance** | | | | |
| **Total Costs $** | 35,753 (32,686-38,821) | 17,689 (15,594-19,785) | 17,748 (15,853-19,644) | 15,665 (13,174-18,156) |
| **Inpatient $** | 20,015 (18,924-21,106) | 8,385 (7,778-8,992) | 7,945 (7,266-8,624) | 7,954 (7,231-8,677) |
| **Outpatient $** | 13,887 (12,239-15,536) | 8,674 (7,191-10,156) | 9,254 (7,939-10,568) | 7,044 (5,268-8,820) |
| **Pharmacy $** | 8,313 (7,761-8,865) | 5,589 (4,992-6,187) | 5,945 (5,396-6,494) | 4,371 (3,916-4,826) |
| **Outside Care $** | 2,201 (1,494-2,908) | -1,333 (-1,981--684) | -1,159 (-1,731--586) | -1,769 (-2,601--937) |
| **VA-private Insurance.** | | | | |
| **Total Costs $** | 34,845 (29,861-39,829) | 17,817 (15,293-20,341) | 14,354 (11,692-17,017) | 13,071 (11,030-15,113) |
| **Inpatient $** | 23,358 (21,782-24,935) | 9,418 (8,470-10,365) | 7,040 (6,213-7,866) | 6,266 (5,255-7,277) |
| **Outpatient $** | 9,979 (7,632-12,326) | 7,723 (6,196-9,250) | 6,711 (5,003-8,419) | 6,043 (4,843-7,244) |
| **Pharmacy $** | 7,567 (6,598-8,537) | 4,952 (4,309-5,596) | 4,003 (3,371-4,635) | 3,092 (2,458-3,725) |
| **Outside Care $** | 2,598 (1,430-3,766) | 796 (106-1,485) | 777 (138-1,417) | 556 (-29-1,141) |