Figure S1. Eligibility and inclusion of adults hospitalized with a primary diagnosis of bacterial or unspecified pneumonia, MarketScan Commercial Claims and Encounters and Centers for Medicare & Medicaid Services databases, 2013-2020 [6].

 

 aReasons for exclusion are not mutually exclusive

bIn accordance with the Centers for Medicare & Medicaid Services data use agreement and for consistency in presentation, actual number and corresponding percent of total were not displayed when cell sizes ≤10

Abbreviations: d/c, discharge; HIV, human immunodeficiency virus; LOS, length of stay; LOT, length of therapy; NA, not available

Figure S2. Eligibility and inclusion of adults hospitalized for community-acquired pneumonia, PINC AI Healthcare Database, 2013-2020



Table S1. International Classification of Disease 9th and 10th revision (ICD-9-CM and ICD-10-CM) codes for primary diagnosis of bacterial or unspecified pneumonia, 2013-2020

|  |  |
| --- | --- |
| 2013-September 2015 | ICD-9-CM |
|  | 481, 482.0, 482.1, 482.2, 482.30, 482.31, 482.32, 482.39, 482.40, 482.41, 482.42, 482.49, 482.82, 482.83, 482.84, 482.89, 482.9, 483.0, 483.1, 483.8, 485, 486 |
| October 2015-2020 | ICD-10-CM |
|  | J13, J14, J15.211 , J15.212 , J15.3 , J15.4 , J15.7, J15.9, J16.0, J16.8, J18.0 , J18.1, J18.8, J18.9 |

Table S2. Characteristics of adults hospitalized for community-acquired: inpatient prediction cohorts. PINC AI Healthcare Database, 2013-2020

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Aged 18-64 Years, Private Insurance | Aged ≥65 Years, Medicare Insurance |
|  |  | n= 82,535 | n=145,434 |
| Category | Value | No. | (%) | No. | (%) |
| Age, y | 18-44 | 22,588 | 27.37 | — |  |
|  | 45-64 | 59,947 | 72.63 | — |  |
|  | 65-84 | — |  | 114,288 | 78.58 |
|  | 85+ | — |  | 31,146 | 21.42 |
| Sex |  |  |  |  |  |
|  | Male | 37,936 | 45.96 | 69,465 | 47.76 |
|  | Female | 44,590 | 54.03 | 75,954 | 52.23 |
| Race |  |  |  |  |  |
|  | White | 61,702 | 74.76 | 122,092 | 83.95 |
|  | Black | 10,904 | 13.21 | 9,680 | 6.66 |
|  | Other | 8,897 | 10.78 | 12,501 | 8.60 |
|  | Unknown | 1,032 | 1.25 | 1,161 | 0.80 |
| Intensive care unit stay |  |  |  |  |
|  | Any stay | 5,564 | 6.74 | 8,155 | 5.61 |
|  | No stay | 76,971 | 93.26 | 137,279 | 94.39 |
| LOS, d |  |  |  |  |  |
|  | 2 | 26,104 | 31.63 | 41,309 | 28.40 |
|  | 3 | 22,438 | 27.19 | 39,388 | 27.08 |
|  | 4 | 13,671 | 16.56 | 26,070 | 17.93 |
|  | 5 | 8,075 | 9.78 | 15,619 | 10.74 |
|  | 6 | 5,017 | 6.08 | 9,578 | 6.59 |
|  | 7 | 3,176 | 3.85 | 6,134 | 4.22 |
|  | 8 | 1,979 | 2.40 | 3,618 | 2.49 |
|  | 9 | 1,260 | 1.53 | 2,262 | 1.56 |
|  | 10 | 815 | 0.99 | 1,456 | 1.00 |
| Diagnosis-related group |  |  |  |  |
|  | 193: Simple pneumonia and pleurisy with MCC | 22,692 | 27.49 | 54,205 | 37.27 |
|  | 194: Simple pneumonia and pleurisy with CC | 34,856 | 42.23 | 61,784 | 42.48 |
|  | 195: Simple pneumonia and pleurisy without CC/MCC | 20,916 | 25.34 | 24,982 | 17.18 |
|  | Other | 4,071 | 4.93 | 4,463 | 3.07 |
| Hospitals |  |  |  |  |  |
| Hospital census region |  |  |  |  |
|  | Northeast | 11,205 | 13.58 | 17,864 | 12.28 |
|  | South | 42,026 | 50.92 | 70,816 | 48.69 |
|  | Midwest | 18,995 | 23.01 | 32,866 | 22.60 |
|  | West | 10,309 | 12.49 | 23,888 | 16.43 |
| Hospital size, number of beds |  |  |  |
|  | 1-199 | 21,154 | 25.63 | 39,994 | 27.50 |
|  | 200-299 | 17,396 | 21.08 | 30,268 | 20.81 |
|  | 300-499 | 24,834 | 30.09 | 43,981 | 30.24 |
|  | ≥ 500 | 19,151 | 23.20 | 31,191 | 21.45 |
| Procedures |  |  |  |  |
|  | Hemodialysis | 679 | 0.82 | 3,331 | 2.29 |
|  | Mechanical ventilation | 487 | 0.59 | 557 | 0.38 |
| Discharge quarter |  |  |  |  |
|  | January-March | 26,744 | 32.40 | 46,782 | 32.17 |
|  | April-June | 19,979 | 24.21 | 36,658 | 25.21 |
|  | July-September | 16,184 | 19.61 | 27,239 | 18.73 |
|  | October-December | 19,628 | 23.78 | 34,755 | 23.90 |
|  |  |  |  |  |  |

Abbreviations: MCC, Major Complications/Comorbidities; CC, Complications/Comorbidities.

Figure S3a. Prediction modela of inpatient length of therapy in adults hospitalized for community-acquired pneumonia by year and length of stay, PINC AI Database, 2013-2020.



 [6]

a A linear regression model with total inpatient length of therapy (LOT) as a continuous outcome was fitted to estimate inpatient LOT for each value of length of stay (LOS). The LOS variables were included in the model as 8 dummy variables to indicate each LOS category (3 days, 4 days, … 10 days) with a 2-day stay as a referent category. Overall, 16 models were fitted for each age group and year. The model fit was assessed using R-square, which ranged between 0.69 and 0.80.

Table S3. Prediction model estimates of inpatient length of therapy in adults hospitalized for community-acquired pneumonia by year and length of stay, PINC AI Database, 2013-2020.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| year | Cohort | Estimated length of therapy | 95% Confidence Interval | Length of Stay |
| 2013 | 18-64 years | 2.61 | 2.59 | 2.64 | 2 |
| 2013 | 18-64 years | 3.53 | 3.46 | 3.60 | 3 |
| 2013 | 18-64 years | 4.50 | 4.43 | 4.57 | 4 |
| 2013 | 18-64 years | 5.42 | 5.34 | 5.50 | 5 |
| 2013 | 18-64 years | 6.36 | 6.27 | 6.45 | 6 |
| 2013 | 18-64 years | 7.34 | 7.24 | 7.45 | 7 |
| 2013 | 18-64 years | 8.17 | 8.05 | 8.29 | 8 |
| 2013 | 18-64 years | 9.09 | 8.94 | 9.24 | 9 |
| 2013 | 18-64 years | 10.09 | 9.93 | 10.25 | 10 |
| 2013 | ≥65 years | 2.53 | 2.51 | 2.56 | 2 |
| 2013 | ≥65 years | 3.44 | 3.38 | 3.50 | 3 |
| 2013 | ≥65 years | 4.37 | 4.31 | 4.44 | 4 |
| 2013 | ≥65 years | 5.32 | 5.25 | 5.39 | 5 |
| 2013 | ≥65 years | 6.23 | 6.15 | 6.30 | 6 |
| 2013 | ≥65 years | 7.12 | 7.03 | 7.21 | 7 |
| 2013 | ≥65 years | 7.99 | 7.89 | 8.09 | 8 |
| 2013 | ≥65 years | 8.69 | 8.57 | 8.82 | 9 |
| 2013 | ≥65 years | 9.48 | 9.34 | 9.62 | 10 |
| 2014 | 18-64 years | 2.64 | 2.62 | 2.67 | 2 |
| 2014 | 18-64 years | 3.55 | 3.48 | 3.62 | 3 |
| 2014 | 18-64 years | 4.53 | 4.46 | 4.60 | 4 |
| 2014 | 18-64 years | 5.47 | 5.39 | 5.55 | 5 |
| 2014 | 18-64 years | 6.43 | 6.34 | 6.53 | 6 |
| 2014 | 18-64 years | 7.39 | 7.29 | 7.50 | 7 |
| 2014 | 18-64 years | 8.27 | 8.14 | 8.40 | 8 |
| 2014 | 18-64 years | 8.95 | 8.82 | 9.09 | 9 |
| 2014 | 18-64 years | 9.85 | 9.68 | 10.03 | 10 |
| 2014 | ≥65 years | 2.58 | 2.55 | 2.60 | 2 |
| 2014 | ≥65 years | 3.46 | 3.39 | 3.52 | 3 |
| 2014 | ≥65 years | 4.40 | 4.33 | 4.46 | 4 |
| 2014 | ≥65 years | 5.33 | 5.26 | 5.40 | 5 |
| 2014 | ≥65 years | 6.27 | 6.18 | 6.35 | 6 |
| 2014 | ≥65 years | 7.21 | 7.12 | 7.31 | 7 |
| 2014 | ≥65 years | 7.89 | 7.78 | 8.01 | 8 |
| 2014 | ≥65 years | 8.64 | 8.51 | 8.77 | 9 |
| 2014 | ≥65 years | 9.33 | 9.17 | 9.48 | 10 |
| 2015 | 18-64 years | 2.66 | 2.64 | 2.69 | 2 |
| 2015 | 18-64 years | 3.57 | 3.50 | 3.64 | 3 |
| 2015 | 18-64 years | 4.54 | 4.47 | 4.61 | 4 |
| 2015 | 18-64 years | 5.51 | 5.42 | 5.59 | 5 |
| 2015 | 18-64 years | 6.44 | 6.34 | 6.53 | 6 |
| 2015 | 18-64 years | 7.35 | 7.24 | 7.46 | 7 |
| 2015 | 18-64 years | 8.09 | 7.96 | 8.22 | 8 |
| 2015 | 18-64 years | 8.86 | 8.71 | 9.01 | 9 |
| 2015 | 18-64 years | 9.89 | 9.70 | 10.08 | 10 |
| 2015 | ≥65 years | 2.62 | 2.59 | 2.64 | 2 |
| 2015 | ≥65 years | 3.48 | 3.42 | 3.54 | 3 |
| 2015 | ≥65 years | 4.45 | 4.38 | 4.51 | 4 |
| 2015 | ≥65 years | 5.38 | 5.31 | 5.45 | 5 |
| 2015 | ≥65 years | 6.28 | 6.20 | 6.36 | 6 |
| 2015 | ≥65 years | 7.22 | 7.13 | 7.31 | 7 |
| 2015 | ≥65 years | 7.82 | 7.71 | 7.93 | 8 |
| 2015 | ≥65 years | 8.74 | 8.61 | 8.87 | 9 |
| 2015 | ≥65 years | 9.71 | 9.56 | 9.87 | 10 |
| 2016 | 18-64 years | 2.67 | 2.64 | 2.70 | 2 |
| 2016 | 18-64 years | 3.58 | 3.51 | 3.66 | 3 |
| 2016 | 18-64 years | 4.51 | 4.43 | 4.59 | 4 |
| 2016 | 18-64 years | 5.48 | 5.38 | 5.57 | 5 |
| 2016 | 18-64 years | 6.33 | 6.22 | 6.43 | 6 |
| 2016 | 18-64 years | 7.28 | 7.16 | 7.41 | 7 |
| 2016 | 18-64 years | 8.12 | 7.97 | 8.26 | 8 |
| 2016 | 18-64 years | 8.94 | 8.76 | 9.12 | 9 |
| 2016 | 18-64 years | 9.56 | 9.36 | 9.75 | 10 |
| 2016 | ≥65 years | 2.61 | 2.58 | 2.64 | 2 |
| 2016 | ≥65 years | 3.54 | 3.47 | 3.60 | 3 |
| 2016 | ≥65 years | 4.44 | 4.36 | 4.51 | 4 |
| 2016 | ≥65 years | 5.32 | 5.24 | 5.41 | 5 |
| 2016 | ≥65 years | 6.25 | 6.16 | 6.35 | 6 |
| 2016 | ≥65 years | 7.08 | 6.98 | 7.19 | 7 |
| 2016 | ≥65 years | 7.61 | 7.49 | 7.74 | 8 |
| 2016 | ≥65 years | 8.63 | 8.48 | 8.78 | 9 |
| 2016 | ≥65 years | 9.21 | 9.04 | 9.39 | 10 |
| 2017 | 18-64 years | 2.71 | 2.68 | 2.74 | 2 |
| 2017 | 18-64 years | 3.62 | 3.54 | 3.70 | 3 |
| 2017 | 18-64 years | 4.61 | 4.52 | 4.70 | 4 |
| 2017 | 18-64 years | 5.47 | 5.36 | 5.57 | 5 |
| 2017 | 18-64 years | 6.35 | 6.23 | 6.47 | 6 |
| 2017 | 18-64 years | 6.98 | 6.84 | 7.12 | 7 |
| 2017 | 18-64 years | 7.90 | 7.73 | 8.07 | 8 |
| 2017 | 18-64 years | 8.75 | 8.54 | 8.95 | 9 |
| 2017 | 18-64 years | 9.95 | 9.70 | 10.19 | 10 |
| 2017 | ≥65 years | 2.67 | 2.64 | 2.69 | 2 |
| 2017 | ≥65 years | 3.57 | 3.51 | 3.64 | 3 |
| 2017 | ≥65 years | 4.49 | 4.42 | 4.56 | 4 |
| 2017 | ≥65 years | 5.42 | 5.34 | 5.50 | 5 |
| 2017 | ≥65 years | 6.34 | 6.24 | 6.43 | 6 |
| 2017 | ≥65 years | 7.03 | 6.92 | 7.14 | 7 |
| 2017 | ≥65 years | 7.88 | 7.74 | 8.02 | 8 |
| 2017 | ≥65 years | 8.53 | 8.37 | 8.69 | 9 |
| 2017 | ≥65 years | 9.61 | 9.40 | 9.83 | 10 |
| 2018 | 18-64 years | 2.71 | 2.67 | 2.74 | 2 |
| 2018 | 18-64 years | 3.62 | 3.54 | 3.70 | 3 |
| 2018 | 18-64 years | 4.59 | 4.50 | 4.68 | 4 |
| 2018 | 18-64 years | 5.49 | 5.39 | 5.59 | 5 |
| 2018 | 18-64 years | 6.34 | 6.23 | 6.46 | 6 |
| 2018 | 18-64 years | 7.34 | 7.21 | 7.48 | 7 |
| 2018 | 18-64 years | 8.08 | 7.92 | 8.23 | 8 |
| 2018 | 18-64 years | 8.58 | 8.38 | 8.77 | 9 |
| 2018 | 18-64 years | 9.42 | 9.17 | 9.67 | 10 |
| 2018 | ≥65 years | 2.68 | 2.66 | 2.71 | 2 |
| 2018 | ≥65 years | 3.57 | 3.51 | 3.64 | 3 |
| 2018 | ≥65 years | 4.52 | 4.46 | 4.59 | 4 |
| 2018 | ≥65 years | 5.43 | 5.35 | 5.51 | 5 |
| 2018 | ≥65 years | 6.31 | 6.22 | 6.40 | 6 |
| 2018 | ≥65 years | 7.13 | 7.02 | 7.23 | 7 |
| 2018 | ≥65 years | 7.76 | 7.63 | 7.88 | 8 |
| 2018 | ≥65 years | 8.40 | 8.24 | 8.56 | 9 |
| 2018 | ≥65 years | 8.81 | 8.63 | 8.99 | 10 |
| 2019 | 18-64 years | 2.75 | 2.71 | 2.78 | 2 |
| 2019 | 18-64 years | 3.68 | 3.60 | 3.76 | 3 |
| 2019 | 18-64 years | 4.60 | 4.51 | 4.69 | 4 |
| 2019 | 18-64 years | 5.57 | 5.47 | 5.67 | 5 |
| 2019 | 18-64 years | 6.40 | 6.29 | 6.51 | 6 |
| 2019 | 18-64 years | 7.19 | 7.06 | 7.32 | 7 |
| 2019 | 18-64 years | 7.99 | 7.83 | 8.16 | 8 |
| 2019 | 18-64 years | 8.72 | 8.53 | 8.91 | 9 |
| 2019 | 18-64 years | 9.73 | 9.50 | 9.97 | 10 |
| 2019 | ≥65 years | 2.75 | 2.72 | 2.77 | 2 |
| 2019 | ≥65 years | 3.63 | 3.57 | 3.70 | 3 |
| 2019 | ≥65 years | 4.55 | 4.49 | 4.62 | 4 |
| 2019 | ≥65 years | 5.51 | 5.44 | 5.59 | 5 |
| 2019 | ≥65 years | 6.39 | 6.30 | 6.47 | 6 |
| 2019 | ≥65 years | 7.21 | 7.11 | 7.31 | 7 |
| 2019 | ≥65 years | 7.84 | 7.72 | 7.96 | 8 |
| 2019 | ≥65 years | 8.58 | 8.43 | 8.73 | 9 |
| 2019 | ≥65 years | 9.36 | 9.18 | 9.55 | 10 |
| 2020 | 18-64 years | 2.70 | 2.67 | 2.74 | 2 |
| 2020 | 18-64 years | 3.65 | 3.55 | 3.75 | 3 |
| 2020 | 18-64 years | 4.56 | 4.45 | 4.66 | 4 |
| 2020 | 18-64 years | 5.57 | 5.45 | 5.70 | 5 |
| 2020 | 18-64 years | 6.33 | 6.19 | 6.47 | 6 |
| 2020 | 18-64 years | 7.10 | 6.93 | 7.26 | 7 |
| 2020 | 18-64 years | 7.74 | 7.55 | 7.93 | 8 |
| 2020 | 18-64 years | 8.53 | 8.30 | 8.75 | 9 |
| 2020 | 18-64 years | 9.15 | 8.86 | 9.44 | 10 |
| 2020 | ≥65 years | 2.73 | 2.70 | 2.76 | 2 |
| 2020 | ≥65 years | 3.62 | 3.54 | 3.69 | 3 |
| 2020 | ≥65 years | 4.60 | 4.52 | 4.68 | 4 |
| 2020 | ≥65 years | 5.48 | 5.39 | 5.58 | 5 |
| 2020 | ≥65 years | 6.36 | 6.26 | 6.47 | 6 |
| 2020 | ≥65 years | 7.12 | 7.00 | 7.24 | 7 |
| 2020 | ≥65 years | 7.65 | 7.50 | 7.81 | 8 |
| 2020 | ≥65 years | 8.23 | 8.06 | 8.41 | 9 |
| 2020 | ≥65 years | 8.81 | 8.59 | 9.03 | 10 |

Table S4. Distribution of length of antibiotic therapy among adults hospitalized with uncomplicated community-acquired pneumonia, 2013-2020

18-64 years, MarketScan

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Year | N | Min | Q1 | Mean | Median | Q3 | Max |
| Inpatient Length of Therapy |  |  |  |  |  |  |  |
|  | 2013 | 8,888 | 2.6 | 2.6 | 4.3 | 3.5 | 5.4 | 10.1 |
|  | 2014 | 8,741 | 2.6 | 2.6 | 4.3 | 3.5 | 5.5 | 9.9 |
|  | 2015 | 6,221 | 2.7 | 2.7 | 4.2 | 3.6 | 5.5 | 9.9 |
|  | 2016 | 5,978 | 2.7 | 2.7 | 4.3 | 3.6 | 5.5 | 9.6 |
|  | 2017 | 4,280 | 2.7 | 2.7 | 4.2 | 3.6 | 4.6 | 9.9 |
|  | 2018 | 4,247 | 2.7 | 2.7 | 4.2 | 3.6 | 4.6 | 9.4 |
|  | 2019 | 3,844 | 2.7 | 2.7 | 4.2 | 3.7 | 4.6 | 9.7 |
|  | 2020 | 2,890 | 2.7 | 2.7 | 4.2 | 3.7 | 4.6 | 9.2 |
|  | Total | 45,089 | 2.6 | 2.7 | 4.2 | 3.6 | 5.4 | 10.1 |
| Post-discharge Length of Therapy |  |  |  |  |  |  |  |
|  | 2013 | 8,888 | 0.0 | 3.0 | 5.5 | 6.0 | 7.0 | 28.0 |
|  | 2014 | 8,741 | 0.0 | 3.0 | 5.5 | 5.0 | 7.0 | 28.0 |
|  | 2015 | 6,221 | 0.0 | 3.0 | 5.6 | 6.0 | 7.0 | 28.0 |
|  | 2016 | 5,978 | 0.0 | 3.0 | 5.6 | 5.0 | 7.0 | 28.0 |
|  | 2017 | 4,280 | 0.0 | 3.0 | 5.3 | 5.0 | 7.0 | 28.0 |
|  | 2018 | 4,247 | 0.0 | 3.0 | 5.1 | 5.0 | 7.0 | 28.0 |
|  | 2019 | 3,844 | 0.0 | 3.0 | 5.0 | 5.0 | 7.0 | 28.0 |
|  | 2020 | 2,890 | 0.0 | 2.0 | 4.6 | 5.0 | 7.0 | 28.0 |
|  | Total | 45,089 | 0.0 | 3.0 | 5.4 | 5.0 | 7.0 | 28.0 |
| Total Length of Therapy |  |  |  |  |  |  |  |
|  | 2013 | 8,888 | 2.6 | 7.5 | 9.8 | 9.6 | 12.4 | 37.1 |
|  | 2014 | 8,741 | 2.6 | 7.5 | 9.8 | 9.6 | 12.5 | 37.0 |
|  | 2015 | 6,221 | 2.7 | 7.6 | 9.9 | 9.7 | 12.5 | 36.1 |
|  | 2016 | 5,978 | 2.7 | 7.6 | 9.8 | 9.7 | 12.3 | 36.9 |
|  | 2017 | 4,280 | 2.7 | 7.6 | 9.5 | 9.6 | 11.6 | 36.7 |
|  | 2018 | 4,247 | 2.7 | 6.7 | 9.3 | 8.7 | 11.3 | 34.3 |
|  | 2019 | 3,844 | 2.7 | 6.7 | 9.2 | 8.7 | 10.7 | 36.0 |
|  | 2020 | 2,890 | 2.7 | 6.7 | 8.8 | 8.6 | 10.7 | 37.2 |
|  | Total | 45,089 | 2.6 | 7.5 | 9.6 | 9.6 | 11.6 | 37.2 |

CMS, ≥ 65 years

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Year | N | Min | Q1 | Mean | Median | Q3 | Max |
| Inpatient Length of Therapy |  |  |  |  |  |  |  |
|  | 2013 | 63,115 | 2.5 | 3.4 | 4.3 | 3.4 | 5.3 | 9.5 |
|  | 2014 | 58,833 | 2.6 | 2.6 | 4.3 | 3.5 | 5.3 | 9.3 |
|  | 2015 | 59,156 | 2.6 | 2.6 | 4.3 | 3.5 | 5.4 | 9.7 |
|  | 2016 | 53,227 | 2.6 | 2.6 | 4.2 | 3.5 | 5.3 | 9.2 |
|  | 2017 | 41,210 | 2.7 | 2.7 | 4.1 | 3.6 | 4.5 | 9.6 |
|  | 2018 | 47,553 | 2.7 | 2.7 | 4.1 | 3.6 | 4.5 | 8.8 |
|  | 2019 | 46,805 | 2.7 | 2.7 | 4.2 | 3.6 | 4.6 | 9.4 |
|  | 2020 | 31,029 | 2.7 | 2.7 | 4.2 | 3.6 | 4.6 | 8.8 |
|  | Total | 400,928 | 2.5 | 2.7 | 4.2 | 3.6 | 5.3 | 9.7 |
| Post-Discharge Length of Therapy |  |  |  |  |  |  |  |
|  | 2013 | 63,115 | 0.0 | 3.0 | 5.3 | 5.0 | 7.0 | 28.0 |
|  | 2014 | 58,833 | 0.0 | 3.0 | 5.3 | 5.0 | 7.0 | 28.0 |
|  | 2015 | 59,156 | 0.0 | 3.0 | 5.3 | 5.0 | 7.0 | 28.0 |
|  | 2016 | 53,227 | 0.0 | 3.0 | 5.2 | 5.0 | 7.0 | 28.0 |
|  | 2017 | 41,210 | 0.0 | 3.0 | 5.0 | 5.0 | 7.0 | 28.0 |
|  | 2018 | 47,553 | 0.0 | 3.0 | 4.9 | 5.0 | 7.0 | 28.0 |
|  | 2019 | 46,805 | 0.0 | 3.0 | 4.6 | 5.0 | 7.0 | 28.0 |
|  | 2020 | 31,029 | 0.0 | 2.0 | 4.4 | 5.0 | 7.0 | 28.0 |
|  | Total | 400,928 | 0.0 | 3.0 | 5.1 | 5.0 | 7.0 | 28.0 |
| Total Length of Therapy |  |  |  |  |  |  |  |
|  | 2013 | 63,115 | 2.5 | 7.4 | 9.7 | 9.5 | 11.4 | 37.5 |
|  | 2014 | 58,833 | 2.6 | 7.5 | 9.6 | 9.5 | 11.4 | 37.3 |
|  | 2015 | 59,156 | 2.6 | 7.5 | 9.6 | 9.6 | 11.4 | 37.7 |
|  | 2016 | 53,227 | 2.6 | 7.4 | 9.4 | 9.4 | 11.4 | 36.6 |
|  | 2017 | 41,210 | 2.7 | 7.0 | 9.2 | 8.7 | 10.7 | 37.6 |
|  | 2018 | 47,553 | 2.7 | 6.7 | 9.0 | 8.6 | 10.6 | 36.8 |
|  | 2019 | 46,805 | 2.7 | 6.7 | 8.8 | 8.6 | 10.6 | 37.4 |
|  | 2020 | 31,029 | 2.7 | 6.6 | 8.6 | 7.7 | 10.5 | 36.8 |
|  | Total | 400,928 | 2.5 | 7.3 | 9.3 | 9.4 | 11.3 | 37.7 |

Table S5. Proportion of total length of therapy by setting and age, MarketScan and CMS, 2013-2020

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
| 18-64y, private insurance |  |  |  |  |  |  |  |  |
| Inpatient  | 51.0% | 51.0% | 49.8% | 49.9% | 50.9% | 51.6% | 52.8% | 54.9% |
| Post-discharge | 49.0% | 49.0% | 50.2% | 50.1% | 49.1% | 48.4% | 47.2% | 45.1% |
| ≥65y, Medicare insurance |  |  |  |  |  |  |  |  |
| Inpatient  | 44.7% | 44.9% | 44.5% | 44.4% | 44.9% | 46.0% | 47.4% | 48.7% |
| Post-discharge | 55.3% | 55.1% | 55.5% | 55.6% | 55.1% | 54.0% | 52.6% | 51.3% |

Table S6. Distribution of post-discharge prescriptions in days -1 to +3 following discharge among adults hospitalized for community-acquired pneumonia, 2013-2020

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Number of post-discharge prescriptions | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|  | % of Patients with Private Insurance, 18-64 years |
| 0 | 20.3 | 20.1 | 17.9 | 17.2 | 18.3 | 18.2 | 19.0 | 21.1 |
| 1 | 63.1 | 62.6 | 64.8 | 64.7 | 62.6 | 61.8 | 58.6 | 56.6 |
| 2 | 15.9 | 16.4 | 16.9 | 17.5 | 18.4 | 19.4 | 21.6 | 21.6 |
| ≥3 | 0.7 | 0.9 | 0.4 | 0.6 | 0.7 | 0.6 | 0.8 | 0.8 |
|  | % of Patients with Medicare Insurance, ≥ 65 years |
| 0 | 17.7 | 18.5 | 17.3 | 17.1 | 17 | 17.6 | 18.3 | 21.2 |
| 1 | 67.3 | 66.5 | 67 | 66 | 64 | 62.2 | 59.2 | 54.4 |
| 2 | 14.5 | 14.6 | 15.3 | 16.4 | 18.5 | 19.6 | 21.9 | 23.7 |
| ≥3 | 0.5 | 0.4 | 0.4 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 |

Table S7. Presence of post-discharge antibiotic prescriptions by length of stay in adults hospitalized for CAP, 2013-2020

|  |  |  |
| --- | --- | --- |
| LOS | 18-64y, private insurance | ≥65y, Medicare insurance |
| (days) | 0 outpatient ab fills n= | ≥1 outpatient ab fills n= | 0 outpatient ab fills n= | ≥1 outpatient ab fills n= |
|  | No. | % | No. | % | No. | % | No. | % |
| 2 | 1962 | 14.0% | 12079 | 86.0% | 11736 | 10.2% | 102763 | 89.8% |
| 3 | 1855 | 15.4% | 10163 | 84.6% | 12997 | 12.0% | 95086 | 88.0% |
| 4 | 1360 | 18.1% | 6160 | 81.9% | 12044 | 16.8% | 59712 | 83.2% |
| 5 | 990 | 22.3% | 3443 | 77.7% | 9879 | 22.8% | 33496 | 77.2% |
| 6 | 792 | 27.3% | 2107 | 72.7% | 8367 | 31.5% | 18171 | 68.5% |
| 7 | 664 | 35.3% | 1216 | 64.7% | 6777 | 40.3% | 10032 | 59.7% |
| 8 | 423 | 38.4% | 679 | 61.6% | 4588 | 46.2% | 5345 | 53.8% |
| 9 | 328 | 44.4% | 411 | 55.6% | 3220 | 52.9% | 2865 | 47.1% |
| 10 | 227 | 49.7% | 230 | 50.3% | 2273 | 59.0% | 1577 | 41.0% |
| Total | 8601 | 19.1% | 36488 | 80.9% | 71881 | 17.9% | 329047 | 82.1% |