Skilled Nursing Facility Healthcare-Associated Infections Requiring Hospitalization for the Skilled Nursing Facility Quality Reporting Program

Technical Report

February 2021

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

1 INTRODUCTION

The *Improving Post-Acute Care Transformation Act of 2014* (IMPACT Act) requires the Secretary to specify resource use measures, on which post-acute care (PAC) providers, including skilled nursing facilities, are required to submit necessary data specified by the Secretary. The Centers for Medicare and Medicaid Services (CMS) has contracted with Acumen, LLC and RTI International to develop the SNF HAI measure under the *Quality Measure & Assessment Instrument Development & Maintenance & QRP* contract (75FCMC18D0015, Task Order 75FCMC19F0003).

Monitoring the occurrence of HAIs among SNF residents can provide valuable information about a SNF's quality of care. Most HAIs are preventable as they are often the result of poor processes and structures of care. A report from OIG (2014) estimated that one in four adverse events among SNF residents are due to HAIs, and more than half of all HAIs are potentially preventable.[1] Typically, HAIs result from inadequate patient management following a medical intervention, such as surgery or device implementation, or poor adherence to protocol and antibiotic stewardship guidelines.[2,3,4] Several provider characteristics are also related to HAIs including staffing levels (e.g., high turnover, low staff-to-resident ratios, etc.), facility structure characteristics (e.g., national chain membership, high occupancy rates, etc.), and adoption or lack thereof of infection surveillance and prevention policies.[5,6,7,8,9,10] Inadequate prevention and treatment of HAIs is likely to result in poor health care outcomes for residents and wasteful resource use. For example, HAIs are associated with longer lengths of stay, use of higher-intensity care, increased mortality, and high health care costs.[11,12,13,14] Given the wasteful resource use and economic burden that HAIs present, as well as the fact that there are currently no NQF endorsed measures that capture several types of severe infections attributable to the SNF setting in one composite score, the SNF HAI measure has the potential to provide actionable data on infection rates that can target quality improvement.

Preventing and reducing HAIs is crucial for delivering safe and high-quality care across health care systems and has been a priority objective across federal, state, and local levels. The SNF HAI measure fulfills the Making Care Safer by Reducing Harm Caused in the Delivery of

---

[1] Office of Inspector General. (2014). Adverse events in skilled nursing facilities: National incidence among Medicare beneficiaries. Retrieved from https://oig.hhs.gov/oei/reports/oei-06-11-00370.pdf

[2] Beganovic, M., & Laplante, K. (2018). Communicating with Facility Leadership; Metrics for Successful Antimicrobial Stewardship Programs (Asp) in Acute Care and Long-Term Care Facilities. Rhode Island medical journal (2013), 101(5) (2018), 45–49.

[3] Cooper, D., McFarland, M., Petrilli, F., & Shells, C. (2019). Reducing inappropriate antibiotics for urinary tract infections in long-term care: A replication study. Journal of Nursing Care Quality, 34(1), 16–21. http://dx.doi.org/10.1097/NCQ.0000000000000343

[4] Feldstein, D., Sloane, P. D., & Feltner, C. (2018). Antibiotic stewardship programs in nursing homes: A systematic review. Journal of the American Medical Directors Association, 19(2), 110–116. http://dx.doi.org/10.1016/j.jamda.2017.06.019

Care within CMS's Meaningful Measure framework. Additionally, the SNF HAI measure aligns with the Office of Disease Prevention and Health Promotion's National Action Plan to Prevent Health Care-Associated Infections, with specific attention to HAIs in long-term care facilities.[15]

The purpose of the SNF HAI measure is to estimate the risk-standardized rate of HAIs that are acquired during SNF care and result in hospitalization in one composite score. Unlike other HAI measures that target specific infections, this measure targets all HAIs that are serious enough to require transfer to an acute care hospital. It is important to recognize that HAIs in SNFs are not considered "never-events." The goal of this risk-adjusted measure is to identify SNFs that have notably higher rates of HAIs acquired during SNF care, when compared to their peers and to the national average HAI rate. Implementation of the SNF HAI measure provides information about a facility's adeptness in infection prevention and management. The measure is actionable as it has the potential to hold providers accountable as well as encourage them to improve the quality of care they deliver. Further, this measure promotes patient safety and increases the transparency of quality of care in the SNF setting.

Input from a variety of stakeholders has been taken into consideration throughout the SNF HAI measure development process. Feedback was sought and considered from a Technical

[5] Castle, N., Engberg, J. B., Wagner, L. M., & Handler, S. (2017). Resident and facility factors associated with the incidence of urinary tract infections identified in the Nursing Home Minimum Data Set. Journal of Applied Gerontology, 36(2), 173–194. http://dx.doi.org/10.1177/0733464815584666

[6] Crnich, C. J., Jump, R., Trautner, B., Sloane, P. D., & Mody, L. (2015). Optimizing antibiotic stewardship in nursing homes: A narrative review and recommendations for improvement. Drugs & Aging, 32(9), 699–716. http://dx.doi.org/10.1007/s40266-015-0292-7

[7] Dick, A. W., Bell, J. M., Stone, N. D., Chastain, A. M., Sorbero, M., & Stone, P. W. (2019). Nursing home adoption of the National Healthcare Safety Network Long-term Care Facility Component. American Journal of Infection Control, 47(1), 59–64. http://dx.doi.org/10.1016/j.ajic.2018.06.018

[8] Refer to footnote 4

[9] Gucwa, A. L., Dolar, V., Ye, C., & Epstein, S. (2016). Correlations between quality ratings of skilled nursing facilities and multidrug-resistant urinary tract infections. American Journal of Infection Control, 44(11), 1256–1260. http://dx.doi.org/10.1016/j.ajic.2016.03.015

[10] Travers, J. L., Stone, P. W., Bjarnadottir, R. I., Pogorzelska-Maziarz, M., Castle, N. G., & Herzig, C. T. (2016). Factors associated with resident influenza vaccination in a national sample of nursing homes. American Journal of Infection Control, 44(9), 1055–1057. http://dx.doi.org/10.1016/j.ajic.2016.01.019

[11] Refer to footnote 1

[12] Centers for Disease Control and Prevention (2009). The Direct Medical Costs of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention. Retrieved from https://www.cdc.gov/hai/pdfs/hai/scott_costpaper.pdf

[13] Ouslander, J. G., Diaz, S., Hain, D., & Tappen, R. (2011). Frequency and diagnoses associated with 7- and 30-day readmission of skilled nursing facility patients to a nonteaching community hospital. Journal of the American Medical Directors Association, 12(3), 195–203. http://dx.doi.org/10.1016/j.jamda.2010.02.015

[14] Zimlichman, E., Henderson, D., Tamir, O., Franz, C., Song, P., Yamin, C. K., . . . Bates, D. W. (2013). Health care-associated infections: A meta-analysis of costs and financial impact on the US health care system. JAMA Internal Medicine, 173(22), 2039–2046. Retrieved from https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/1733452

[15] Office of Inspector General. (2014). Adverse events in skilled nursing facilities: National incidence among Medicare beneficiaries. Retrieved from https://oig.hhs.gov/oei/reports/oei-06-11-00370.pdf

Expert Panel (TEP), the NQF Measure Applications Partnership (MAP), and a public comment.[16,17,18]

This report presents the SNF HAI technical measure specifications. Section 2 provides an overview of the measure and is a high-level summary of the key features of the measure that are described in detail in the remaining sections of the document. Section 3 describes the methodology used to construct the SNF HAI measure including its data sources, study population, measure outcome, regression model, and steps for calculating the final measure score. Section 4 discusses SNF HAI measure testing including the measure's reportability, variability, reliability, and validity testing results. Appendix A displays the ICD-10 codes used to identify HAI conditions included in the measure. Appendix B presents the results of the risk adjustment model. Lastly, Appendix C details a flow chart for calculating the measure.

---

[16] CMS. (2019). *Final Technical Expert Panel Summary Report: Development of a Healthcare-Associated Infections Quality Measure for the Skilled Nursing Facility Quality Reporting Program.*
https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/NursingHomeQualityInits/Downloads/SNF-HAI-Final-TEP-Report-7-15-19_508C.pdf

[17] CMS. (2020). *Skilled Nursing Facility Healthcare-Associated Infections Requiring Hospitalizations for the Skilled Nursing Facility Quality Reporting Program Public Comment Summary Report.*
https://www.cms.gov/files/document/snf-hai-public-comment-summary-report.pdf

[18] NQF. (2021). *MAP 2020-2021 Final Recommendations.*
https://www.qualityforum.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=94650

2 OVERVIEW

This section provides an overview of basic descriptive information on the SNF HAI measure, summarizing the key points contained in the rest of the document. A more detailed explanation of the measure specifications is available in Section 3.

2.1 Measure Name

Skilled Nursing Facility Healthcare-Associated Infections Requiring Hospitalization

2.2 Measure Type

Outcome Measure

2.3 Care Setting

SNF

2.4 Data Sources

Medicare FFS Part A claims, Medicare eligibility files

2.5 Brief Description of Measure

The Skilled Nursing Facility Healthcare-Associated Infections Requiring Hospitalization measure estimates the risk-standardized rate of HAIs that are acquired during SNF care and result in hospitalization. SNF HAIs that are acquired during SNF care and result in hospitalization are identified using the principal diagnosis on the Medicare inpatient (IP) claims of SNF residents. The hospitalization must occur during the period beginning on day four after SNF admission and within three days after SNF discharge or the end of active SNF care. The measure is risk-adjusted to allow for comparison based on residents with similar characteristics across SNFs. Since HAIs are not considered never-events, the measure's objective is to identify SNFs that have higher HAI rates than their peers.

The risk-adjusted HAI rate for each SNF is the product of the standardized risk ratio (SRR) for a given SNF (j) and the national average observed rate of HAIs for all SNFs ($\bar{Y}$). The SRR is a provider-level ratio that measures the excess HAIs by comparing the predicted to expected number of HAIs.

$$SRR_j = \frac{\text{Predicted Value}_j}{\text{Expected Value}_j}$$

Risk-adjusted rate of HAIs = $SRR_j * \bar{Y}$

Overall, lower SNF HAI scores indicate better quality of care among SNF providers.

3 MEASURE SPECIFICATIONS

This section describes the methodology used to construct the SNF HAI measure. Section 3.1 describes the study window for the SNF HAI measure. Section 3.2 summarizes the various data sources used to calculate the measure score. Section 3.3 details the study population used for the measure denominator and Section 3.4 defines the HAI outcome used for the measure numerator. Note that the measure does not have a simple form for the numerator and denominator because risk adjustment is incorporated into the measure calculation rather than applied after the observed rate is calculated. Section 3.5 describes the regression model and variables used for risk adjustment. Section 3.6 presents the steps involved in calculating the final measure score.

3.1 Measure Time Period

The measure is calculated using one fiscal year of data. All SNF stays that end during the fiscal year time period, except those that meet the exclusion criteria (refer to Section 3.3.2 for details), are included in the measure.

3.2 Data Sources

This measure uses data from the Medicare Enrollment Database (EDB) and SNF, inpatient claims from the CMS Common Working File (CWF). The EDB file provides information on residents' date of birth, demographics, original reason for Medicare enrollment, and periods of Medicare enrollment information. IP claims provide hospitalization information and diagnoses, as well as variables used for risk adjustment including residents' prior acute care utilization. IP claims are used to identify patient comorbidities for risk adjustment. This measure is calculated entirely using administrative data. There will be no additional data collection or submission burden for SNF providers.

3.3 Denominator

The study population is Medicare Part A FFS SNF stays that ended during the measure time period. To calculate the measure denominator, the number of eligible SNF stays are counted, then risk adjustment is applied. The final measure denominator is the adjusted denominator.

3.3.1 Stay Construction

Acumen used final action Medicare Part A claims from the CWF. Part A SNF and IP stays are constructed similarly. Stays are constructed by linking claims that share the same beneficiary identifier, facility CMS Certification Number (CCN), and admission date. To

implement study restrictions and apply risk adjustment, stays created from SNF claims are linked to other Medicare claims and enrollment data using the beneficiary identifier.

3.3.2 Eligible Stays

The eligible stays for this measure are all Medicare FFS SNF stays that do not meet the exclusion criteria during the measurement period. Residents who died during the SNF stay or during the post-discharge window (three days after SNF discharge or the end of active SNF care) and residents with an ongoing SNF stay by the end of the measure period are included in the denominator. SNF stays are excluded from the denominator if they meet one or more of the following criteria:

- Resident is less than 18 years old at time of SNF admission.
  Rationale: Residents under 18 years old are not included in the target population for this measure because there are few pediatric SNF residents and they may have different patterns of care than adults.

- The SNF length of stay was shorter than four days.
  Rationale: HAIs that require hospitalization beginning day four after SNF admission will be identified as SNF HAIs. This helps exclude pre-existing infections from being included in the measure. SNF stays shorter than four days are not long enough for identifying SNF HAIs.

- Residents who were not continuously enrolled in Part A FFS Medicare during the SNF stay, 12 months prior to the measure period, and three days after the end of SNF stay.
  Rationale: Certain risk adjustment elements for this measure require information on acute inpatient claims for one year prior to the SNF admission, and acute care utilization must be observable in the observation window following the end of SNF care. Residents without Part A coverage or who are enrolled in Medicare Advantage plans will have incomplete inpatient claims.

- Residents who did not have Part A short-term acute care hospital stay within 30 days prior to the SNF admission date. The short-term stay must have positive payment and positive length of stay.
  Rationale: This measure requires information from the prior short-term acute care hospital stay in the elements used for risk adjustment.

- Residents who were transferred to a federal hospital from the SNF as determined by the status code on the SNF claim.
  Rationale: Residents who are transferred to federal hospitals will have incomplete inpatient claims.

- Residents who received care from a provider located outside of the United States, Puerto Rico, or a U.S. territory as determined from the first two characters of the SNF CMS Certification Number.
  Rationale: Residents who received care from foreign providers may have incomplete inpatient claims, and these providers may not be subject to the same policy decisions related to the measure outcome.

- SNF stays in which data were missing on any variable used in the measure construction or risk adjustment. This also includes stays where Medicare did not pay for the stay, which is identified by non-positive payment on the SNF claim.
  Rationale: The measure calculation requires accurate and complete information from the SNF stay, prior short-term acute-care hospital stays, and resident characteristics used for risk adjustment.

- SNF stays from swing beds in critical access hospitals.
  Rationale: Critical access hospitals are not required to submit quality data under the SNF QRP. Therefore, claims-based quality measures exclude swing bed stays in critical access hospitals.

3.3.3 Adjusted Denominator

The measure denominator is the risk adjusted "expected" number of SNF stays with the measure outcome. The calculation of the "expected" number of stays starts with the total eligible SNF stays which is then risk-adjusted for resident characteristics excluding the SNF effect. The "expected" number of stays with the measure outcome represents the predicted number of stays with the measure outcome if the same SNF residents were treated in the "average" SNF. Refer to section 3.5.1 for details on risk adjustment and to section 3.6.1 (Step 4) for the calculation of expected number of SNF stays with HAI.

3.4 Numerator

To calculate the measure numerator, first count the outcome and then apply risk-adjustment. The final measure numerator is the adjusted numerator.

3.4.1 Measure Outcome

The number of stays with an HAI acquired during SNF care and resulting in an inpatient hospitalization. The hospitalization must occur during the period beginning on day four after SNF admission and within three days of SNF discharge or the end of active SNF care. Emergency department visits and observation stays are excluded from the numerator.

3.4.2 HAI Definition

The HAI definition was developed with input from a Technical Expert Panel and subject matter experts with clinical expertise specific to infectious diseases and the SNF population. See Appendix A (columns A – C) for the list of HAI conditions. The HAI definition includes conditions selected based on the following conceptual criteria:

- Infections that are likely to be acquired during SNF care and severe enough to require hospitalization (e.g., life-threatening methicillin-resistant Staphylococcus aureus infections)

- Infections related to invasive (not implanted) medical devices (e.g., infections associated with catheters, insulin pumps, and central lines; infection of tracheostomy stoma)

The HAI definition excludes infections that meet any of the following criteria:

- Chronic infections (e.g. chronic viral hepatitis B with or without delta-agent)

- Infections that typically require a long period of time to present (e.g. typhoid arthritis)

- Infections that are likely related to the prior hospital stay (e.g. postprocedural retroperitoneal abscess)

- Sequela and subsequent encounter codes (e.g. sequelae of inflammatory diseases of central nervous system)

- Codes that include "causing disease classified elsewhere" (e.g. meningitis in bacterial diseases classified elsewhere)

- Codes likely to represent secondary infection, where the primary infection would likely already be coded (e.g. viral endocarditis, pericarditis, myocarditis or cardiomyopathy)

- Infections likely to be community acquired (e.g. echinococcus granulosus infection of liver)

- Infections common in other countries and/or acquired through animal contact (e.g. subacute and chronic melioidosis)

- Pre-existing infections that fall within the Center for Disease Control and Prevention's (CDC) National Healthcare Safety Network (NHSN) Repeat Infection Timeframe (RIT) of 14 days.[19] The HAI measure applies a slight modification to the

---

[19] Center for Disease Control and Prevention. (2020). Identifying Healthcare-associated Infections (HAI) for NHSN Surveillance. Retrieved from https://www.cdc.gov/nhsn/pdfs/pscmanual/2psc_identifyinghais_nhsncurrent.pdf

CDC NHSN's RIT. Rather than using the date of infection identification (i.e., lab diagnosis date) as Day 1, HAI uses the prior IP discharge date as Day 1 since discharge indicates clinical stability. See Appendix A (columns D and E) for conditions that are considered as pre-existing when identified in any diagnosis field on the prior qualifying hospital claim and when linked to the principal diagnosis codes (column B) on the re-hospitalization claim

3.4.3 HAI Identification

HAIs are identified using the principal diagnosis code and the Present on Admission (POA) indicators on the re-hospitalization claim within a specified incubation window. The HAI definition applies a repeat infection timeline of 14 days to exclude pre-existing infections from the numerator count. The repeat infection timeline is defined as the number of days between inpatient stays, which is calculated by taking the difference between the discharge date of the most proximal IP stay prior to SNF admission and the admission date of the readmitting IP stay. Pre-existing infections are determined using all of the diagnosis codes on the prior IP claim immediately preceding the SNF admission. The pre-existing infection recorded in the prior proximal hospitalization must be a diagnosis that is related to the HAI recorded in the re-hospitalization. If the number of days between the re-hospitalization and the prior proximal hospitalization is less than 14 days and a pre-existing infection is recorded in any of the diagnosis codes for the prior IP stay, then the HAI is excluded from the numerator.

HAIs are identified using the following steps:

Step 1: Identify IP readmissions beginning on day four of SNF stay and within three days after SNF discharge or the end of active SNF care.

Step 2: Search for HAI diagnosis in the principal diagnosis field of the readmitting IP claim.

- See Appendix A (columns A – C) for the list of HAI diagnosis codes.

- If HAI diagnosis is found and it is marked as POA proceed with Step 3.

- If no HAI diagnosis is found, or if the HAI diagnosis is not marked as POA, then the readmission does not count toward the numerator.

Step 3: Calculate the number of days between IP stays to apply repeat infection timeline.

- Subtract the prior IP discharge date from the IP re-hospitalization admission date.

- If the number of days is less than 14 days, then search for HAI-related conditions in the prior IP stay. Proceed to Step 4.

- If the number of days is 14 days or greater, then do not account for diagnosis information recorded in prior IP stay. The case counts as an HAI and it is included in the numerator.

Step 4: If the number of days is less than 14 days, search for HAI-related condition in all diagnosis codes of the prior IP stay.

- See Appendix A (columns D and E) for conditions that are considered as pre-existing.

- If a pre-existing condition is found, then exclude case from numerator.

- If a pre-existing condition is not found, then include case in the numerator.

3.4.4 Adjusted Numerator

The final numerator is a risk-adjusted estimate of the number of SNF stays predicted to have an HAI that is acquired during SNF care and results in hospitalization. This estimate starts with the observed count of the measure outcome, which is then risk-adjusted for resident characteristics and a statistical estimate of the SNF effect beyond resident case mix. The SNF effect captures variation in the measure outcome across SNFs, which helps isolate the differences in measure performance that are due to provider-specific behavior and characteristics. Refer to section 3.5.1 for details on risk adjustment and to section 3.6.1 (Step 4) for the calculation of predicted number of SNF stays with HAI.

3.5 Risk Adjustment

The purpose of risk adjustment is to account for risk factor differences across SNFs, when comparing quality of care between them. In other words, risk adjustment "levels the playing field" and allows for fairer quality-of-care comparisons across SNFs by controlling for differences in resident case-mix. Risk adjustment is particularly important for outcome measures because resident outcomes may be determined by factors such as age, gender, and health status that go beyond the quality of care delivered by SNFs. See Appendix B for risk adjustment model results.

3.5.1 Statistical Risk Model

The statistical risk model is a hierarchical logistic regression model, which predicts the probability of an HAI that is acquired during SNF care and results in hospitalization. Risk adjusters are predictor variables in the model. Resident characteristics related to each stay and a marker for the specific SNF are included in the equation. The equation is hierarchical in that both individual resident characteristics, as well as clustering of residents into SNFs, are accounted for.

The model estimates both the average predictive effect of resident characteristics across all SNFs, and the degree to which each SNF has an effect on the outcome that differs from that of the average SNF. The SNF effect can be assumed to be randomly distributed around the average (according to a normal distribution). When computing the SNF effect, hierarchical modeling accounts for the known predictors of the outcome, on average, such as resident characteristics, the observed SNF rate for this outcome, and the number of SNF stays eligible for the measure. The estimated SNF effect is primarily determined by the SNF's own data if the number of stays is relatively large, as the estimate would be relatively precise. The estimated SNF effect is adjusted toward the average if the number of stays is small, as small samples yield less precise estimates.

We used the following model:

Let Y_{ij}, denote the outcome (equal to 1 if the resident i has an HAI that is acquired during SNF care and results in hospitalization) for a resident i at SNF j; Z_{ij} denotes a set of risk factors. We assume the outcome is related linearly to the covariates via a logit function with dispersion:

$$\text{logit}(P(Y_{ij} = 1 \mid Z_{ij}, \alpha_j)) = \log\left(\frac{P(Y_{ij} = 1 \mid Z_{ij}, \alpha_j)}{1 - P(Y_{ij} = 1 \mid Z_{ij}, \alpha_j)}\right) = \alpha_j + \beta * Z_{ij}$$

$$\alpha_j = \mu + \omega_j \ ; \ \omega_j \sim N(0, \tau^2)$$

where $Z_{ij} = (Z_{ij1}, Z_{ij2}, ... Z_{ijk})$ is a set of k resident-level covariates. α_j represents the SNF specific intercept of the j-th SNF which is assumed to follow a normal distribution with mean μ and variance τ^2, independent of Z_{ij}.

The estimated equation is used twice in the measure. The sum of the probabilities of HAIs, including both the effects of resident characteristics and SNFs, is the "predicted number" of HAIs that are acquired during SNF care and result in hospitalization after adjusting for case mix. The same equation is used without the SNF effect to compute the "expected number" for the same residents at a SNF whose quality is at the national average level. The ratio of the predicted-to-expected number of HAIs measure the degree to which the number of HAIs that are acquired during SNF care and result in hospitalization are higher or lower than what would otherwise be expected. This ratio is called the standardized risk ratio, which is then multiplied by the overall observed rate of the measure outcome in the target population (all SNF stays included in the measure) to obtain the risk adjusted rate of HAIs that are acquired during SNF care and result in hospitalization, for each SNF.

3.5.2 Variables

The risk adjustment model includes the following variables:

- *Age and Sex Category*

  Information on age and sex were obtained from the Medicare enrollment database. Age was calculated as of the admission date of the SNF stay using the beneficiary's date of birth as listed in the Medicare enrollment database.

- *Original Reason for Medicare Entitlement*

  Information on reason for Medicare entitlement was obtained from the Medicare enrollment database and re-categorized into two groups: i) Age and disabled or ii) End-stage renal disease (ESRD).

- *Surgery Category (Prior Proximal IP Stay)*

  Procedures from the prior proximal IP stay (if present on the prior proximal hospital claim) were grouped using the Clinical Classification Software (CCS) for ICD-10 procedures developed by the Agency for Healthcare Research and Quality (AHRQ)[20] and then categorized into surgical categories as defined in the Hospital-Wide All-Cause Unplanned Readmission measure[21].

- *Dialysis but not ESRD (Prior Proximal IP Stay)*

  Prior dialysis treatment was identified using revenue center codes on the prior proximal IP claim. This definition of dialysis utilization excludes ESRD patients, who are defined as beneficiaries with ESRD as their reason for Medicare eligibility in the month of admission of the prior proximal IP stay.

- *Principal Diagnosis Category (Prior Proximal IP Stay)*

  The principal diagnosis on the prior proximal hospital claim were grouped into CCS diagnoses categories using the CCS for ICD-10 diagnoses developed by AHRQ[22].

- *HCC Comorbidities*

  Comorbidities are obtained from the secondary diagnosis codes on the prior short-term claim and all diagnosis codes from earlier claims up to one year before SNF admission.

---

[20] HCUP Clinical Classifications Software (CCS) for ICD-10-PCS. Healthcare Cost and Utilization Project (HCUP). 2019. Agency for Healthcare Research and Quality, Rockville, MD. https://www.hcup-us.ahrq.gov/toolssoftware/ccsr/ccsr_archive.jsp. Accessed Feb 18, 2020.

[21] Surgery categories were developed for the Hospital-Wide All-Cause Unplanned Readmission measure and are available in SAS programs that are maintained and available upon request.

[22] HCUP Clinical Classifications Software (CCS) for ICD-10-CM. Healthcare Cost and Utilization Project (HCUP). 2019. Agency for Healthcare Research and Quality, Rockville, MD. https://www.hcup-us.ahrq.gov/toolssoftware/ccsr/ccsr_archive.jsp. Accessed Feb 18, 2020.

Comorbidities are grouped using CMS Hierarchical Condition Categories (HCC) software.

- *Length of Stay (Prior Proximal IP Stay)*
  The length of stay of the prior proximal IP stay is the total number of days of care from admission to discharge as obtained from the prior proximal hospital claim. It includes the admission date but excludes the day of discharge. In the case of a missing discharge date, the last day of the stay (latest thru date on the IP claim) is counted. Length of stay is transformed into a categorical variable to account for nonlinearity.

- *ICU/CCU Utilization (Prior Proximal IP Stay)*
  Prior intensive care and coronary care utilization was identified using revenue center codes on the prior proximal hospital claim.

- *Number of Prior IP Stays*
  The count of prior short-term discharges within a one-year lookback from the SNF admission date, excluding the most proximal hospitalization claim prior to the SNF admission.

3.6 Measure Calculation

The SNF HAI measure score is a risk-adjusted rate calculated at the facility-level. A lower score indicates better performance in prevention and management of HAIs. For each SNF, the risk-adjusted HAI rate is the product of the standardized risk ratio (SRR) for a given SNF and the national average observed rate of HAIs for all SNF stays. The SRR is a provider-level ratio that measures excess HAIs by comparing the predicted to expected number of HAIs. The predicted and expected number of HAIs are estimated by the risk adjustment model. Refer to Appendix C to see measure calculation steps in a flow chart.

3.6.1 Steps Used in Calculation

Step 1: Identify residents meeting the denominator (eligible stays) criteria.

Step 2: Identify residents meeting the numerator criteria (i.e., HAIs that are acquired during SNF care and result in hospitalization, beginning day four after SNF admission and within three days of SNF discharge or the end of active SNF care). An HAI is excluded from the numerator if it is a pre-existing infection. A pre-existing infection is defined as an HAI that was reported in any of the diagnosis code fields on the most proximal hospitalization claim prior to the SNF admission with a discharge date that is less than 14 days from the admission date of the readmitting inpatient (IP) stay. The pre-existing infection recorded in the prior proximal

hospitalization must be a diagnosis that is related to the HAI recorded in the re-hospitalization as defined in Appendix A columns D and E.

Step 3: Identify presence or absence of risk adjustment variables for each resident.

Step 4: Calculate the predicted and expected number of HAIs that are acquired during SNF care and result in hospitalization for each SNF using the hierarchical logistic regression model. The predicted number is the sum of the predicted probability of HAI for each SNF based on the specific provider's performance with its observed case-mix, including the SNF effect. The expected number is the sum of the predicted probability of HAI for each SNF based on the average provider's performance and its given case-mix, excluding the SNF effect.

To calculate the predicted number of HAIs (pred$_j$) for provider j, we sum the predicted probabilities of HAI for all stays at provider j:

$$\text{Predicted Value}_j = \sum \frac{\exp(\widehat{\alpha_j} + \hat{\beta} * Z_{ij})}{\exp(\widehat{\alpha_j} + \hat{\beta} * Z_{ij}) + 1}$$

To calculate the expected number (exp$_j$) for provider j, we sum the predicted probabilities of HAI for all stays at provider j:

$$\text{Expected Value}_j = \sum \frac{\exp(\hat{\mu} + \hat{\beta} * Z_{ij})}{\exp(\hat{\mu} + \hat{\beta} * Z_{ij}) + 1}$$

Step 5: Calculate the standardized risk ratio for each SNF as the ratio of the predicted to expected number of HAIs that are acquired during SNF care and result in hospitalization. The standardized risk ratio is a measure of excess or reduced HAIs for a given SNF.

To calculate the provider-wide standardized risk ratio for provider j (SRR$_j$), we used:

$$SRR_j = \frac{\text{Predicted Value}_j}{\text{Expected Value}_j} = \frac{\sum logit^{-1}(\widehat{\alpha_j} + \hat{\beta} * Z_{ij})}{\sum logit^{-1}(\hat{\mu} + \hat{\beta} * Z_{ij})}$$

Step 6: Calculate the risk-adjusted rate of HAIs that are acquired during SNF care and result in hospitalization for each SNF, by multiplying the SRR$_j$ (calculated in Step 5) by the overall national observed rate of HAIs, $\bar{Y}$. The national observed rate is the average observed

HAI rate across all SNF stays and is equivalent to the number of total number of stays resulting in an HAI over the total number of SNF stays.

$$Risk\ adjusted\ HAI\ Rate\ =\ SRRj * \bar{Y}$$

4 MEASURE TESTING

The SNF HAI measure underwent measure testing to assess the usability, reliability, and validity. Section 4.1 describes the measure's reportability, Section 4.2 details the measure's variability, Section 4.3 explores the measure's reliability, and Section 4.4 assesses the measure's validity.

4.1 Reportability

Reportability testing examines the total number and proportion of SNFs that would have at least 25 eligible stays for the SNF HAI measure in the reporting period. The SNF QRP requires that all SNFs have at least 25 stays to be eligible for public reporting. In FY 2019, 84.9% of total SNFs (n = 14,102) met this threshold. This indicates high reportability and usability of the measure.

Table 1: Publicly Reportable SNFs, FY 2019

Total Number of SNFs	Percentage of SNFs with ≥ 25 stays
14,102	84.9%

4.2 Variability

Variability testing summarizes the distribution of the facility-level, risk-standardized HAI rate. In FY 2019, the mean risk-adjusted HAI rate among SNFs with at least 25 stays was 5.85% (median: 5.59%, IQR: 4.75% - 6.69%). The risk-adjusted HAI rate among reportable SNFs ranged from a minimum of 2.36% to a maximum of 17.62%. This wide variation indicates there is a performance gap in HAI rates across SNFs.

Table 2: Facility- Level Distribution of Risk-Adjusted SNF HAI Rates, FY 2019

N	Mean score	Std dev.	Minimum	25th percentile	50th percentile	75th percentile	Maximum	Interquartile range
14,102	5.85%	1.53%	2.36%	4.75%	5.59%	6.69%	17.62%	1.94%

4.3   Reliability

Split-half reliability assesses the internal consistency of a quality measure. In split-half testing, stays within a SNF are randomly assigned into two groups and the risk-adjusted HAI rate per facility is calculated for both groups. When a SNF's residents, randomly divided, have a score similar to one another, the quality measure score is more likely to reflect systematic differences in SNF-level quality rather than random variation. To maintain the precision of the estimate, the sample size was doubled using two years of data (FY 2018 and 2019) prior to splitting the sample into two groups. The process only included SNFs with at least 50 stays and was repeated 20 times to rule out extreme values. The Spearman's rank correlation coefficient was used to assess the correlation between the HAI rates of the two groups. The average correlation from the 20 iterations was 0.50, which suggests moderate reliability.

Table 3: Mean Correlation Score for All Facilities and Facilities with ≥ 50 stays, FY 2018 and 2019

All Facilities (n = 16,797)	Facilities with ≥ 50 stays (n = 14,338)
0.48	0.50

4.4   Validity

To test the validity of the measure, model fit and convergent validity were assessed. The model fit statistic determines if the SNF HAI model can accurately predict HAI cases while controlling for differences in resident case-mix. The C-statistic is a measure of model discrimination that judges the model's ability to correctly classify outcomes as negative or positive. Using FY 2019 data, the C-statistic of the model was 0.72, which suggests good model discrimination.

To assess convergent validity, the relationships between the SNF HAI measure and other publicly reported quality measures were examined. Quality measures that reflect similar care processes or outcomes to HAI were examined, with the hypothesis that a facility's HAI percentile ranking should be somewhat consistent with percentile rankings of other related quality measures. Using the Spearman's rank correlation, the SNF HAI measure was compared to SNF QRP claims-based measures (Discharge to Community (DTC) and Potentially Preventable 30-Day Post-Discharge Readmission Measure (PPR)), Nursing Home Quality Initiative (NHQI) short-stay assessment-based measures (Percentage of short-stay residents who were assessed and appropriately given the seasonal influenza vaccine and Percentage of short-

stay residents assessed and appropriately given the pneumococcal vaccine), and Five-Star Quality Rating measures (RN staffing). The analysis was restricted to FYs 2018 and 2019 and only included data from publicly reportable providers with at least 25 stays. As expected, the following measures were negatively correlated with HAI: DTC (-0.45), the Five-star RN Staffing Rating (-0.25), Percentage of short-stay residents who were assessed and appropriately given the seasonal influenza vaccine (-0.11), and Percentage of short-stay residents who were assessed and appropriately given the pneumococcal vaccine (-0.08). Additionally, PPR was positively correlated with SNF HAI (0.12). All Spearman's rank correlations were statistically significant at the alpha level of 0.05.

Table 4: Correlations between SNF HAI and Other Public Reported Measures

Program	Measure	Spearman's Correlation	P-value
NHQI MDS Quality Measures	Percentage of short-stay residents who were assessed and appropriately given the seasonal influenza vaccine	-0.11	<.0001
	Percentage of short-stay residents assessed and appropriately given the pneumococcal vaccine	-0.08	<.0001
Five-Star Quality Rating	RN Staffing Rating	-0.25	<.0001
SNF QRP Claims-based Measures	Rate of successful return to home and community from a SNF (DTC)	-0.45	<.0001
	Rate of potentially preventable hospital readmissions 30 days after discharge from a SNF (PPR)	0.12	<.0001

In addition to the validity testing conducted on the measure, the TEP showed strong support for the face validity of the SNF HAI measure. TEP members agreed with the conceptual and operational definition of the measure. Specifically, the TEP agreed that the measure should focus on infections severe enough to require hospitalization and supported the clinical criteria used to select HAI diagnoses.

APPENDIX A: ICD-10 CODES FOR HAI CONDITIONS

Table 5: ICD-10 codes for Identifying Skilled Nursing Facility Healthcare-Associated Infections Requiring Hospitalization

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care		Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Infections related to devices or stumps	T80211A	Bloodstream infection due to central venous catheter, initial encounter	T80211A	Bloodstream infection due to central venous catheter, initial encounter
			T80212A	Local infection due to central venous catheter, initial encounter
			T80218A	Other infection due to central venous catheter, initial encounter
			T80219A	Unspecified infection due to central venous catheter, initial encounter
	T80212A	Local infection due to central venous catheter, initial encounter	T80212A	Local infection due to central venous catheter, initial encounter
			T80218A	Other infection due to central venous catheter, initial encounter
			T80219A	Unspecified infection due to central venous catheter, initial encounter
	T80218A	Other infection due to central venous catheter, initial encounter	T80218A	Other infection due to central venous catheter, initial encounter
			T80212A	Local infection due to central venous catheter, initial encounter
			T80219A	Unspecified infection due to central venous catheter, initial encounter
	T80219A	Unspecified infection due to central venous catheter, initial encounter	T80219A	Unspecified infection due to central venous catheter, initial encounter

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	**Column B:**	**Column C:**	**Column D:**	**Column E:**
Category	**ICD 10 Code (principal diagnosis)**	**ICD 10 Label (principal diagnosis)**	**ICD 10 Code (principal + comorbid diagnosis)**	**ICD 10 Label (principal + comorbid diagnosis)**
Infections related to devices or stumps	T80219A	Unspecified infection due to central venous catheter, initial encounter	T80218A	Other infection due to central venous catheter, initial encounter
			T80212A	Local infection due to central venous catheter, initial encounter
	T83510A	Infection and inflammatory reaction due to cystostomy catheter, initial encounter	T83510A	Infection and inflammatory reaction due to cystostomy catheter, initial encounter
			T83511A	Infection and inflammatory reaction due to indwelling urethral catheter, initial encounter
			T83512A	Infection and inflammatory reaction due to nephrostomy catheter, initial encounter
			T83518A	Infection and inflammatory reaction due to other urinary catheter, initial encounter
	T83511A	Infection and inflammatory reaction due to indwelling urethral catheter, initial encounter	T83510A	Infection and inflammatory reaction due to cystostomy catheter, initial encounter
			T83511A	Infection and inflammatory reaction due to indwelling urethral catheter, initial encounter
			T83512A	Infection and inflammatory reaction due to nephrostomy catheter, initial encounter
			T83518A	Infection and inflammatory reaction due to other urinary catheter, initial encounter
	T83512A	Infection and inflammatory reaction due to nephrostomy catheter, initial encounter	T83510A	Infection and inflammatory reaction due to cystostomy catheter, initial encounter
			T83511A	Infection and inflammatory reaction due to indwelling urethral catheter, initial encounter

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Infections related to devices or stumps	T83512A	Infection and inflammatory reaction due to nephrostomy catheter, initial encounter	T83512A	Infection and inflammatory reaction due to nephrostomy catheter, initial encounter
			T83518A	Infection and inflammatory reaction due to other urinary catheter, initial encounter
	T83518A	Infection and inflammatory reaction due to other urinary catheter, initial encounter	T83510A	Infection and inflammatory reaction due to cystostomy catheter, initial encounter
			T83511A	Infection and inflammatory reaction due to indwelling urethral catheter, initial encounter
			T83512A	Infection and inflammatory reaction due to nephrostomy catheter, initial encounter
			T83518A	Infection and inflammatory reaction due to other urinary catheter, initial encounter
	T83590A	Infection and inflammatory reaction due to implanted urinary neurostimulation device, initial encounter	T83590A	Infection and inflammatory reaction due to implanted urinary neurostimulation device, initial encounter
			T83591A	Infection and inflammatory reaction due to implanted urinary sphincter, initial encounter
			T83592A	Infection and inflammatory reaction due to indwelling ureteral stent, initial encounter
			T83593A	Infection and inflammatory reaction due to other urinary stents, initial encounter
			T83598A	Infection and inflammatory reaction due to other prosthetic device, implant and graft in urinary system, initial encounter

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Infections related to devices or stumps	T83591A	Infection and inflammatory reaction due to implanted urinary sphincter, initial encounter	T83590A	Infection and inflammatory reaction due to implanted urinary neurostimulation device, initial encounter
			T83591A	Infection and inflammatory reaction due to implanted urinary sphincter, initial encounter
			T83592A	Infection and inflammatory reaction due to indwelling ureteral stent, initial encounter
			T83593A	Infection and inflammatory reaction due to other urinary stents, initial encounter
			T83598A	Infection and inflammatory reaction due to other prosthetic device, implant and graft in urinary system, initial encounter
	T83592A	Infection and inflammatory reaction due to indwelling ureteral stent, initial encounter	T83590A	Infection and inflammatory reaction due to implanted urinary neurostimulation device, initial encounter
			T83591A	Infection and inflammatory reaction due to implanted urinary sphincter, initial encounter
			T83592A	Infection and inflammatory reaction due to indwelling ureteral stent, initial encounter
			T83593A	Infection and inflammatory reaction due to other urinary stents, initial encounter
			T83598A	Infection and inflammatory reaction due to other prosthetic device, implant and graft in urinary system, initial encounter

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	**Column B:**	**Column C:**	**Column D:**	**Column E:**
Category	**ICD 10 Code (principal diagnosis)**	**ICD 10 Label (principal diagnosis)**	**ICD 10 Code (principal + comorbid diagnosis)**	**ICD 10 Label (principal + comorbid diagnosis)**
Infections related to devices or stumps	T83593A	Infection and inflammatory reaction due to other urinary stents, initial encounter	T83590A	Infection and inflammatory reaction due to implanted urinary neurostimulation device, initial encounter
			T83591A	Infection and inflammatory reaction due to implanted urinary sphincter, initial encounter
			T83592A	Infection and inflammatory reaction due to indwelling ureteral stent, initial encounter
			T83593A	Infection and inflammatory reaction due to other urinary stents, initial encounter
			T83598A	Infection and inflammatory reaction due to other prosthetic device, implant and graft in urinary system, initial encounter
	T83598A	Infection and inflammatory reaction due to other prosthetic device, implant and graft in urinary system, initial encounter	T83590A	Infection and inflammatory reaction due to implanted urinary neurostimulation device, initial encounter
			T83591A	Infection and inflammatory reaction due to implanted urinary sphincter, initial encounter
			T83592A	Infection and inflammatory reaction due to indwelling ureteral stent, initial encounter
			T83593A	Infection and inflammatory reaction due to other urinary stents, initial encounter
			T83598A	Infection and inflammatory reaction due to other prosthetic device, implant and graft in urinary system, initial encounter

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Infections related to devices or stumps	T8361XA	Infection and inflammatory reaction due to implanted penile prosthesis, initial encounter	T8361XA	Infection and inflammatory reaction due to implanted penile prosthesis, initial encounter
			T8362XA	Infection and inflammatory reaction due to implanted testicular prosthesis, initial encounter
			T8369XA	Infection and inflammatory reaction due to other prosthetic device, implant and graft in genital tract, initial encounter
	T8362XA	Infection and inflammatory reaction due to implanted testicular prosthesis, initial encounter	T8361XA	Infection and inflammatory reaction due to implanted penile prosthesis, initial encounter
			T8362XA	Infection and inflammatory reaction due to implanted testicular prosthesis, initial encounter
			T8369XA	Infection and inflammatory reaction due to other prosthetic device, implant and graft in genital tract, initial encounter
	T8369XA	Infection and inflammatory reaction due to other prosthetic device, implant and graft in genital tract, initial encounter	T8361XA	Infection and inflammatory reaction due to implanted penile prosthesis, initial encounter
			T8362XA	Infection and inflammatory reaction due to implanted testicular prosthesis, initial encounter
			T8369XA	Infection and inflammatory reaction due to other prosthetic device, implant and graft in genital tract, initial encounter

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:		Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)		ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Infections related to devices or stumps	T8571XA	Infection and inflammatory reaction due to peritoneal dialysis catheter, initial encounter		T8571XA	Infection and inflammatory reaction due to peritoneal dialysis catheter, initial encounter
	T8572XA	Infection and inflammatory reaction due to insulin pump, initial encounter		T8572XA	Infection and inflammatory reaction due to insulin pump, initial encounter
	T86822	Skin graft (allograft) (autograft) infection		T86822	Skin graft (allograft) (autograft) infection
	T880XXA	Infection following immunization, initial encounter		T880XXA	Infection following immunization, initial encounter
	T8740	Infection of amputation stump, unspecified extremity		T8740	Infection of amputation stump, unspecified extremity
	T8741	Infection of amputation stump, right upper extremity		T8741	Infection of amputation stump, right upper extremity
				T8740	Infection of amputation stump, unspecified extremity
	T8742	Infection of amputation stump, left upper extremity		T8742	Infection of amputation stump, left upper extremity
				T8740	Infection of amputation stump, unspecified extremity
	T8743	Infection of amputation stump, right lower extremity		T8743	Infection of amputation stump, right lower extremity
				T8740	Infection of amputation stump, unspecified extremity
	T8744	Infection of amputation stump, left lower extremity		T8744	Infection of amputation stump, left lower extremity
				T8740	Infection of amputation stump, unspecified extremity
Ear/eye infections	B300	Keratoconjunctivitis due to adenovirus		B300	Keratoconjunctivitis due to adenovirus

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Ear/eye infections	B300	Keratoconjunctivitis due to adenovirus	B308	Other viral conjunctivitis
			B309	Viral conjunctivitis, unspecified
	B301	Conjunctivitis due to adenovirus	B301	Conjunctivitis due to adenovirus
			B308	Other viral conjunctivitis
			B309	Viral conjunctivitis, unspecified
	B302	Viral pharyngoconjunctivitis	B302	Viral pharyngoconjunctivitis
			B308	Other viral conjunctivitis
			B309	Viral conjunctivitis, unspecified
	B303	Acute epidemic hemorrhagic conjunctivitis (enteroviral)	B303	Acute epidemic hemorrhagic conjunctivitis (enteroviral)
			B308	Other viral conjunctivitis
			B309	Viral conjunctivitis, unspecified
	B308	Other viral conjunctivitis	B308	Other viral conjunctivitis
			B309	Viral conjunctivitis, unspecified
	B309	Viral conjunctivitis, unspecified	B309	Viral conjunctivitis, unspecified
			B308	Other viral conjunctivitis
	H05011	Cellulitis of right orbit	H05011	Cellulitis of right orbit
	H05012	Cellulitis of left orbit	H05012	Cellulitis of left orbit
	H05013	Cellulitis of bilateral orbits	H05013	Cellulitis of bilateral orbits
	H02019	Cicatricial entropion of unspecified eye, unspecified eyelid	H02019	Cicatricial entropion of unspecified eye, unspecified eyelid
			H05011	Cellulitis of right orbit
			H05012	Cellulitis of left orbit

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Ear/eye infections	H02019	Cicatricial entropion of unspecified eye, unspecified eyelid	H05013	Cellulitis of bilateral orbits
Gastrointestinal infections	A020	Salmonella enteritis	A020	Salmonella enteritis
			A029	Salmonella infection, unspecified
			A0220	Localized salmonella infection, unspecified
			A049	Bacterial intestinal infection, unspecified
			A09	Infectious gastroenteritis and colitis, unspecified
	A021	Salmonella sepsis	A021	Salmonella sepsis
			A029	Salmonella infection, unspecified
			A0220	Localized salmonella infection, unspecified
	A0220	Localized salmonella infection, unspecified	A0220	Localized salmonella infection, unspecified
			A029	Salmonella infection, unspecified
	A0223	Salmonella arthritis	A0223	Salmonella arthritis
			A029	Salmonella infection, unspecified
			A0220	Localized salmonella infection, unspecified

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Gastrointestinal infections	A0224	Salmonella osteomyelitis	A0224	Salmonella osteomyelitis
			A029	Salmonella infection, unspecified
			A0220	Localized salmonella infection, unspecified
	A0225	Salmonella pyelonephritis	A0225	Salmonella pyelonephritis
			A029	Salmonella infection, unspecified
			A0220	Localized salmonella infection, unspecified
	A0229	Salmonella with other localized infection	A0229	Salmonella with other localized infection
			A029	Salmonella infection, unspecified
			A0220	Localized salmonella infection, unspecified
	A028	Other specified salmonella infections	A028	Other specified salmonella infections
			A029	Salmonella infection, unspecified
			A0220	Localized salmonella infection, unspecified
	A029	Salmonella infection, unspecified	A029	Salmonella infection, unspecified
			A0220	Localized salmonella infection, unspecified

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Gastrointestinal infections	A030	Shigellosis due to Shigella dysenteriae	A030	Shigellosis due to Shigella dysenteriae
			A039	Shigellosis, unspecified
	A031	Shigellosis due to Shigella flexneri	A031	Shigellosis due to Shigella flexneri
			A039	Shigellosis, unspecified
	A032	Shigellosis due to Shigella boydii	A032	Shigellosis due to Shigella boydii
			A039	Shigellosis, unspecified
	A033	Shigellosis due to Shigella sonnei	A033	Shigellosis due to Shigella sonnei
			A039	Shigellosis, unspecified
	A038	Other shigellosis	A038	Other shigellosis
			A039	Shigellosis, unspecified
	A039	Shigellosis, unspecified	A039	Shigellosis, unspecified
	A040	Enteropathogenic Escherichia coli infection	A040	Enteropathogenic Escherichia coli infection
			A049	Bacterial intestinal infection, unspecified
			A09	Infectious gastroenteritis and colitis, unspecified

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care		Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A: Category	Column B: ICD 10 Code (principal diagnosis)	Column C: ICD 10 Label (principal diagnosis)	Column D: ICD 10 Code (principal + comorbid diagnosis)	Column E: ICD 10 Label (principal + comorbid diagnosis)
Gastrointestinal infections	A041	Enterotoxigenic Escherichia coli infection	A041	Enterotoxigenic Escherichia coli infection
			A049	Bacterial intestinal infection, unspecified
			A09	Infectious gastroenteritis and colitis, unspecified
	A042	Enteroinvasive Escherichia coli infection	A042	Enteroinvasive Escherichia coli infection
			A049	Bacterial intestinal infection, unspecified
			A09	Infectious gastroenteritis and colitis, unspecified
	A043	Enterohemorrhagic Escherichia coli infection	A043	Enterohemorrhagic Escherichia coli infection
			A049	Bacterial intestinal infection, unspecified
			A09	Infectious gastroenteritis and colitis, unspecified
	A044	Other intestinal Escherichia coli infections	A044	Other intestinal Escherichia coli infections
			A049	Bacterial intestinal infection, unspecified
			A09	Infectious gastroenteritis and colitis, unspecified
	A045	Campylobacter enteritis	A045	Campylobacter enteritis
			A049	Bacterial intestinal infection, unspecified

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care		Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	**Column B:**	**Column C:**	**Column D:**	**Column E:**
Category	**ICD 10 Code (principal diagnosis)**	**ICD 10 Label (principal diagnosis)**	**ICD 10 Code (principal + comorbid diagnosis)**	**ICD 10 Label (principal + comorbid diagnosis)**
Gastrointestinal infections	A045	Campylobacter enteritis	A09	Infectious gastroenteritis and colitis, unspecified
	A046	Enteritis due to Yersinia enterocolitica	A046	Enteritis due to Yersinia enterocolitica
			A049	Bacterial intestinal infection, unspecified
			A09	Infectious gastroenteritis and colitis, unspecified
	A0472	Enterocolitis due to Clostridium difficile, not specified as recurrent	A0472	Enterocolitis due to Clostridium difficile, not specified as recurrent
			A049	Bacterial intestinal infection, unspecified
			A09	Infectious gastroenteritis and colitis, unspecified
	A048	Other specified bacterial intestinal infections	A048	Other specified bacterial intestinal infections
			A049	Bacterial intestinal infection, unspecified
			A09	Infectious gastroenteritis and colitis, unspecified
	A049	Bacterial intestinal infection, unspecified	A049	Bacterial intestinal infection, unspecified
	A073	Isosporiasis	A073	Isosporiasis
			A09	Infectious gastroenteritis and colitis, unspecified
	A074	Cyclosporiasis	A074	Cyclosporiasis

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Gastrointestinal infections	A074	Cyclosporiasis	A09	Infectious gastroenteritis and colitis, unspecified
	A078	Other specified protozoal intestinal diseases	A078	Other specified protozoal intestinal diseases
			A09	Infectious gastroenteritis and colitis, unspecified
	A0811	Acute gastroenteropathy due to Norwalk agent	A0811	Acute gastroenteropathy due to Norwalk agent
			A084	Viral intestinal infection, unspecified
			A09	Infectious gastroenteritis and colitis, unspecified
	A0819	Acute gastroenteropathy due to other small round viruses	A0819	Acute gastroenteropathy due to other small round viruses
			A084	Viral intestinal infection, unspecified
			A09	Infectious gastroenteritis and colitis, unspecified
	A082	Adenoviral enteritis	A082	Adenoviral enteritis
			A084	Viral intestinal infection, unspecified
			A09	Infectious gastroenteritis and colitis, unspecified
	A0831	Calicivirus enteritis	A0831	Calicivirus enteritis
			A084	Viral intestinal infection, unspecified

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Gastrointestinal infections	A0831	Calicivirus enteritis	A09	Infectious gastroenteritis and colitis, unspecified
	A0832	Astrovirus enteritis	A0832	Astrovirus enteritis
			A084	Viral intestinal infection, unspecified
			A09	Infectious gastroenteritis and colitis, unspecified
	A0839	Other viral enteritis	A0839	Other viral enteritis
			A084	Viral intestinal infection, unspecified
			A09	Infectious gastroenteritis and colitis, unspecified
	A084	Viral intestinal infection, unspecified	A084	Viral intestinal infection, unspecified
			A09	Infectious gastroenteritis and colitis, unspecified
	A088	Other specified intestinal infections	A088	Other specified intestinal infections
			A09	Infectious gastroenteritis and colitis, unspecified
	A09	Infectious gastroenteritis and colitis, unspecified	A09	Infectious gastroenteritis and colitis, unspecified
	A329	Listeriosis, unspecified	A329	Listeriosis, unspecified
	A691	Other Vincent's infections	A691	Other Vincent's infections

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Gastrointestinal infections	B150	Hepatitis A with hepatic coma	B150	Hepatitis A with hepatic coma
			B179	Acute viral hepatitis, unspecified
			B199	Unspecified viral hepatitis without hepatic coma
	B159	Hepatitis A without hepatic coma	B159	Hepatitis A without hepatic coma
			B179	Acute viral hepatitis, unspecified
			B199	Unspecified viral hepatitis without hepatic coma
	B169	Acute hepatitis B without delta-agent and without hepatic coma	B169	Acute hepatitis B without delta-agent and without hepatic coma
			B179	Acute viral hepatitis, unspecified
			B1910	Unspecified viral hepatitis B without hepatic coma
			B199	Unspecified viral hepatitis without hepatic coma
	B1710	Acute hepatitis C without hepatic coma	B1710	Acute hepatitis C without hepatic coma
			B179	Acute viral hepatitis, unspecified
			B1920	Unspecified viral hepatitis C without hepatic coma
			B199	Unspecified viral hepatitis without hepatic coma

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care		Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Gastrointestinal infections	B1711	Acute hepatitis C with hepatic coma	B1711	Acute hepatitis C with hepatic coma
			B179	Acute viral hepatitis, unspecified
			B1920	Unspecified viral hepatitis C without hepatic coma
			B199	Unspecified viral hepatitis without hepatic coma
	B178	Other specified acute viral hepatitis	B178	Other specified acute viral hepatitis
			B179	Acute viral hepatitis, unspecified
			B199	Unspecified viral hepatitis without hepatic coma
	B179	Acute viral hepatitis, unspecified	B179	Acute viral hepatitis, unspecified
			B199	Unspecified viral hepatitis without hepatic coma
	B1910	Unspecified viral hepatitis B without hepatic coma	B1910	Unspecified viral hepatitis B without hepatic coma
			B199	Unspecified viral hepatitis without hepatic coma
	B1920	Unspecified viral hepatitis C without hepatic coma	B1920	Unspecified viral hepatitis C without hepatic coma
			B199	Unspecified viral hepatitis without hepatic coma
	B199	Unspecified viral hepatitis without hepatic coma	B199	Unspecified viral hepatitis without hepatic coma

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Gastrointestinal infections	K9402	Colostomy infection	K9402	Colostomy infection
	K9422	Gastrostomy infection	K9422	Gastrostomy infection
Genito-urinary infections	N10	Acute pyelonephritis	N10	Acute pyelonephritis
			N390	Urinary tract infection, site not specified
	N3001	Acute cystitis with hematuria	N3001	Acute cystitis with hematuria
			N390	Urinary tract infection, site not specified
	N3000	Acute cystitis without hematuria	N3000	Acute cystitis without hematuria
			N390	Urinary tract infection, site not specified
	N340	Urethral abscess	N340	Urethral abscess
			N390	Urinary tract infection, site not specified
	N390	Urinary tract infection, site not specified	N390	Urinary tract infection, site not specified
	N410	Acute prostatitis	N410	Acute prostatitis
			N390	Urinary tract infection, site not specified
			N451	Epididymitis

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Genito-urinary infections	N451	Epididymitis	N451	Epididymitis
	N453	Epididymo-orchitis	N453	Epididymo-orchitis
			N451	Epididymitis
	N454	Abscess of epididymis or testis	N454	Abscess of epididymis or testis
			N451	Epididymitis
	N493	Fournier gangrene	N493	Fournier gangrene
			N390	Urinary tract infection, site not specified
	N99511	Cystostomy infection	N99511	Cystostomy infection
			N390	Urinary tract infection, site not specified
	N99521	Infection of incontinent external stoma of urinary tract	N99521	Infection of incontinent external stoma of urinary tract
			N390	Urinary tract infection, site not specified
	N99531	Infection of continent stoma of urinary tract	N99531	Infection of continent stoma of urinary tract
			N390	Urinary tract infection, site not specified
Neurological infections	A390	Meningococcal meningitis	A390	Meningococcal meningitis

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Neurological infections	A390	Meningococcal meningitis	A399	Meningococcal infection, unspecified
			G039	Meningitis, unspecified
	A392	Acute meningococcemia	A392	Acute meningococcemia
			A399	Meningococcal infection, unspecified
			A394	Meningococcemia, unspecified
	A394	Meningococcemia, unspecified	A394	Meningococcemia, unspecified
	A3981	Meningococcal encephalitis	A3981	Meningococcal encephalitis
			A399	Meningococcal infection, unspecified
	A3982	Meningococcal retrobulbar neuritis	A3982	Meningococcal retrobulbar neuritis
			A399	Meningococcal infection, unspecified
	A3989	Other meningococcal infections	A3989	Other meningococcal infections
			A399	Meningococcal infection, unspecified
	A399	Meningococcal infection, unspecified	A399	Meningococcal infection, unspecified
	A850	Enteroviral encephalitis	A850	Enteroviral encephalitis

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:	
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)	
Neurological infections	A850	Enteroviral encephalitis	A86	Unspecified viral encephalitis	
	A851	Adenoviral encephalitis	A851	Adenoviral encephalitis	
			A86	Unspecified viral encephalitis	
	A858	Other specified viral encephalitis	A858	Other specified viral encephalitis	
			A86	Unspecified viral encephalitis	
	A86	Unspecified viral encephalitis	A86	Unspecified viral encephalitis	
			A86	Unspecified viral encephalitis	
	A870	Enteroviral meningitis	A870	Enteroviral meningitis	
			G039	Meningitis, unspecified	
			A879	Viral meningitis, unspecified	
	A871	Adenoviral meningitis	A871	Adenoviral meningitis	
			G039	Meningitis, unspecified	
			A879	Viral meningitis, unspecified	
	A878	Other viral meningitis	A878	Other viral meningitis	

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care		Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Neurological infections	A878	Other viral meningitis	G039	Meningitis, unspecified
			A879	Viral meningitis, unspecified
	A879	Viral meningitis, unspecified	A879	Viral meningitis, unspecified
			G039	Meningitis, unspecified
	G001	Pneumococcal meningitis	G001	Pneumococcal meningitis
			G039	Meningitis, unspecified
			G009	Bacterial meningitis, unspecified
	G002	Streptococcal meningitis	G002	Streptococcal meningitis
			G039	Meningitis, unspecified
			G009	Bacterial meningitis, unspecified
	G003	Staphylococcal meningitis	G003	Staphylococcal meningitis
			G039	Meningitis, unspecified
			G009	Bacterial meningitis, unspecified
	G008	Other bacterial meningitis	G008	Other bacterial meningitis

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care		Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Neurological infections	G008	Other bacterial meningitis	G039	Meningitis, unspecified
			G009	Bacterial meningitis, unspecified
	G009	Bacterial meningitis, unspecified	G009	Bacterial meningitis, unspecified
			G039	Meningitis, unspecified
	G038	Meningitis due to other specified causes	G038	Meningitis due to other specified causes
			G039	Meningitis, unspecified
	G039	Meningitis, unspecified	G039	Meningitis, unspecified
Respiratory infections	A3700	Whooping cough due to Bordetella pertussis without pneumonia	A3700	Whooping cough due to Bordetella pertussis without pneumonia
			A3790	Whooping cough, unspecified species without pneumonia
	A3701	Whooping cough due to Bordetella pertussis with pneumonia	A3701	Whooping cough due to Bordetella pertussis with pneumonia
			A3700	Whooping cough due to Bordetella pertussis without pneumonia
			A3790	Whooping cough, unspecified species without pneumonia
			A3791	Whooping cough, unspecified species with pneumonia
	A3710	Whooping cough due to Bordetella parapertussis without pneumonia	A3710	Whooping cough due to Bordetella parapertussis without pneumonia

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care		Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	**Column B:**	**Column C:**	**Column D:**	**Column E:**
Category	**ICD 10 Code (principal diagnosis)**	**ICD 10 Label (principal diagnosis)**	**ICD 10 Code (principal + comorbid diagnosis)**	**ICD 10 Label (principal + comorbid diagnosis)**
Respiratory infections	A3710	Whooping cough due to Bordetella parapertussis without pneumonia	A3790	Whooping cough, unspecified species without pneumonia
	A3711	Whooping cough due to Bordetella parapertussis with pneumonia	A3711	Whooping cough due to Bordetella parapertussis with pneumonia
			A3710	Whooping cough due to Bordetella parapertussis without pneumonia
			A3790	Whooping cough, unspecified species without pneumonia
			A3791	Whooping cough, unspecified species with pneumonia
	A3780	Whooping cough due to other Bordetella species without pneumonia	A3780	Whooping cough due to other Bordetella species without pneumonia
			A3790	Whooping cough, unspecified species without pneumonia
	A3781	Whooping cough due to other Bordetella species with pneumonia	A3781	Whooping cough due to other Bordetella species with pneumonia
			A3780	Whooping cough due to other Bordetella species without pneumonia
			A3790	Whooping cough, unspecified species without pneumonia
			A3791	Whooping cough, unspecified species with pneumonia
	A3790	Whooping cough, unspecified species without pneumonia	A3790	Whooping cough, unspecified species without pneumonia
	A3791	Whooping cough, unspecified species with pneumonia	A3791	Whooping cough, unspecified species with pneumonia
			A3790	Whooping cough, unspecified species without pneumonia

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Respiratory infections	A481	Legionnaires' disease	A481	Legionnaires' disease
	A482	Nonpneumonic Legionnaires' disease [Pontiac fever]	A482	Nonpneumonic Legionnaires' disease [Pontiac fever]
	B340	Adenovirus infection, unspecified	B340	Adenovirus infection, unspecified
	B341	Enterovirus infection, unspecified	B341	Enterovirus infection, unspecified
	B342	Coronavirus infection, unspecified	B342	Coronavirus infection, unspecified
	J00	Acute nasopharyngitis [common cold]	J00	Acute nasopharyngitis [common cold]
			J069	Acute upper respiratory infection, unspecified
	J09X1	Influenza due to identified novel influenza A virus with pneumonia	J09X1	Influenza due to identified novel influenza A virus with pneumonia
			J1108	Influenza due to unidentified influenza virus with specified pneumonia
			J1100	Influenza due to unidentified influenza virus with unspecified type of pneumonia
	J09X2	Influenza due to identified novel influenza A virus with other respiratory manifestations	J09X2	Influenza due to identified novel influenza A virus with other respiratory manifestations
			J111	Influenza due to unidentified influenza virus with other respiratory manifestations

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Respiratory infections	J09X3	Influenza due to identified novel influenza A virus with gastrointestinal manifestations	J09X3	Influenza due to identified novel influenza A virus with gastrointestinal manifestations
			J112	Influenza due to unidentified influenza virus with gastrointestinal manifestations
	J09X9	Influenza due to identified novel influenza A virus with other manifestations	J09X9	Influenza due to identified novel influenza A virus with other manifestations
			J1189	Influenza due to unidentified influenza virus with other manifestations
	J0130	Acute sphenoidal sinusitis, unspecified	J0130	Acute sphenoidal sinusitis, unspecified
			J069	Acute upper respiratory infection, unspecified
			J00	Acute nasopharyngitis [common cold]
	J0140	Acute pansinusitis, unspecified	J0140	Acute pansinusitis, unspecified
			J069	Acute upper respiratory infection, unspecified
			J00	Acute nasopharyngitis [common cold]
	J020	Streptococcal pharyngitis	J020	Streptococcal pharyngitis
			J069	Acute upper respiratory infection, unspecified
			J029	Acute pharyngitis, unspecified

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	**Column B:**	**Column C:**	**Column D:**	**Column E:**
Category	**ICD 10 Code (principal diagnosis)**	**ICD 10 Label (principal diagnosis)**	**ICD 10 Code (principal + comorbid diagnosis)**	**ICD 10 Label (principal + comorbid diagnosis)**
Respiratory infections	J028	Acute pharyngitis due to other specified organisms	J028	Acute pharyngitis due to other specified organisms
			J069	Acute upper respiratory infection, unspecified
			J029	Acute pharyngitis, unspecified
	J029	Acute pharyngitis, unspecified	J029	Acute pharyngitis, unspecified
			J069	Acute upper respiratory infection, unspecified
	J0300	Acute streptococcal tonsillitis, unspecified	J0300	Acute streptococcal tonsillitis, unspecified
			J069	Acute upper respiratory infection, unspecified
			J020	Streptococcal pharyngitis
			J0390	Acute tonsillitis, unspecified
	J0380	Acute tonsillitis due to other specified organisms	J0380	Acute tonsillitis due to other specified organisms
			J069	Acute upper respiratory infection, unspecified
			J028	Acute pharyngitis due to other specified organisms
			J0390	Acute tonsillitis, unspecified
	J0390	Acute tonsillitis, unspecified	J0390	Acute tonsillitis, unspecified

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care		Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Respiratory infections	J0390	Acute tonsillitis, unspecified	J069	Acute upper respiratory infection, unspecified
	J040	Acute laryngitis	J040	Acute laryngitis
			J069	Acute upper respiratory infection, unspecified
	J0410	Acute tracheitis without obstruction	J0410	Acute tracheitis without obstruction
			J22	Unspecified acute lower respiratory infection
	J0411	Acute tracheitis with obstruction	J0411	Acute tracheitis with obstruction
			J22	Unspecified acute lower respiratory infection
	J042	Acute laryngotracheitis	J042	Acute laryngotracheitis
			J22	Unspecified acute lower respiratory infection
	J050	Acute obstructive laryngitis [croup]	J050	Acute obstructive laryngitis [croup]
			J069	Acute upper respiratory infection, unspecified
	J0510	Acute epiglottitis without obstruction	J0510	Acute epiglottitis without obstruction
			J069	Acute upper respiratory infection, unspecified
	J0511	Acute epiglottitis with obstruction	J0511	Acute epiglottitis with obstruction

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care		Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A: **Category**	Column B: **ICD 10 Code (principal diagnosis)**	Column C: **ICD 10 Label (principal diagnosis)**	Column D: **ICD 10 Code (principal + comorbid diagnosis)**	Column E: **ICD 10 Label (principal + comorbid diagnosis)**
Respiratory infections	J0511	Acute epiglottitis with obstruction	J069	Acute upper respiratory infection, unspecified
	J060	Acute laryngopharyngitis	J060	Acute laryngopharyngitis
			J069	Acute upper respiratory infection, unspecified
	J069	Acute upper respiratory infection, unspecified	J069	Acute upper respiratory infection, unspecified
	J1000	Influenza due to other identified influenza virus with unspecified type of pneumonia	J1000	Influenza due to other identified influenza virus with unspecified type of pneumonia
			J1100	Influenza due to unidentified influenza virus with unspecified type of pneumonia
	J1001	Influenza due to other identified influenza virus with the same other identified influenza virus pneumonia	J1001	Influenza due to other identified influenza virus with the same other identified influenza virus pneumonia
	J1008	Influenza due to other identified influenza virus with other specified pneumonia	J1008	Influenza due to other identified influenza virus with other specified pneumonia
			J1108	Influenza due to unidentified influenza virus with specified pneumonia
	J101	Influenza due to other identified influenza virus with other respiratory manifestations	J101	Influenza due to other identified influenza virus with other respiratory manifestations
			J111	Influenza due to unidentified influenza virus with other respiratory manifestations
	J102	Influenza due to other identified influenza virus with gastrointestinal manifestations	J102	Influenza due to other identified influenza virus with gastrointestinal manifestations
			J112	Influenza due to unidentified influenza virus with gastrointestinal manifestations

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care		Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Respiratory infections	J1081	Influenza due to other identified influenza virus with encephalopathy	J1081	Influenza due to other identified influenza virus with encephalopathy
			J1181	Influenza due to unidentified influenza virus with encephalopathy
	J1082	Influenza due to other identified influenza virus with myocarditis	J1082	Influenza due to other identified influenza virus with myocarditis
			J1182	Influenza due to unidentified influenza virus with myocarditis
	J1083	Influenza due to other identified influenza virus with otitis media	J1083	Influenza due to other identified influenza virus with otitis media
			J1183	Influenza due to unidentified influenza virus with otitis media
	J1089	Influenza due to other identified influenza virus with other manifestations	J1089	Influenza due to other identified influenza virus with other manifestations
			J1189	Influenza due to unidentified influenza virus with other manifestations
	J1100	Influenza due to unidentified influenza virus with unspecified type of pneumonia	J1100	Influenza due to unidentified influenza virus with unspecified type of pneumonia
	J1108	Influenza due to unidentified influenza virus with specified pneumonia	J1108	Influenza due to unidentified influenza virus with specified pneumonia
	J111	Influenza due to unidentified influenza virus with other respiratory manifestations	J111	Influenza due to unidentified influenza virus with other respiratory manifestations
	J112	Influenza due to unidentified influenza virus with gastrointestinal manifestations	J112	Influenza due to unidentified influenza virus with gastrointestinal manifestations
	J1181	Influenza due to unidentified influenza virus with encephalopathy	J1181	Influenza due to unidentified influenza virus with encephalopathy
	J1182	Influenza due to unidentified influenza virus with myocarditis	J1182	Influenza due to unidentified influenza virus with myocarditis

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Respiratory infections	J1183	Influenza due to unidentified influenza virus with otitis media	J1183	Influenza due to unidentified influenza virus with otitis media
	J1189	Influenza due to unidentified influenza virus with other manifestations	J1189	Influenza due to unidentified influenza virus with other manifestations
	J120	Adenoviral pneumonia	J120	Adenoviral pneumonia
			J129	Viral pneumonia, unspecified
			J189	Pneumonia, unspecified organism
			J22	Unspecified acute lower respiratory infection
	J121	Respiratory syncytial virus pneumonia	J121	Respiratory syncytial virus pneumonia
			J210	Acute bronchiolitis due to respiratory syncytial virus
			J129	Viral pneumonia, unspecified
			J189	Pneumonia, unspecified organism
			J22	Unspecified acute lower respiratory infection
	J122	Parainfluenza virus pneumonia	J122	Parainfluenza virus pneumonia
			J129	Viral pneumonia, unspecified
			J189	Pneumonia, unspecified organism

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	**Column B:**	**Column C:**	**Column D:**	**Column E:**
Category	**ICD 10 Code (principal diagnosis)**	**ICD 10 Label (principal diagnosis)**	**ICD 10 Code (principal + comorbid diagnosis)**	**ICD 10 Label (principal + comorbid diagnosis)**
Respiratory infections	J122	Parainfluenza virus pneumonia	J22	Unspecified acute lower respiratory infection
	J123	Human metapneumovirus pneumonia	J123	Human metapneumovirus pneumonia
			J211	Acute bronchiolitis due to human metapneumovirus
			J129	Viral pneumonia, unspecified
			J189	Pneumonia, unspecified organism
			J22	Unspecified acute lower respiratory infection
	J1289	Other viral pneumonia	J1289	Other viral pneumonia
			J129	Viral pneumonia, unspecified
			J189	Pneumonia, unspecified organism
			J22	Unspecified acute lower respiratory infection
	J129	Viral pneumonia, unspecified	J129	Viral pneumonia, unspecified
			J189	Pneumonia, unspecified organism
			J22	Unspecified acute lower respiratory infection
	J13	Pneumonia due to Streptococcus pneumoniae	J13	Pneumonia due to Streptococcus pneumoniae

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	**Column B:**	**Column C:**	**Column D:**	**Column E:**
Category	**ICD 10 Code (principal diagnosis)**	**ICD 10 Label (principal diagnosis)**	**ICD 10 Code (principal + comorbid diagnosis)**	**ICD 10 Label (principal + comorbid diagnosis)**
Respiratory infections	J13	Pneumonia due to Streptococcus pneumoniae	J189	Pneumonia, unspecified organism
			J159	Unspecified bacterial pneumonia
			J22	Unspecified acute lower respiratory infection
	J14	Pneumonia due to Hemophilus influenzae	J14	Pneumonia due to Hemophilus influenzae
			J189	Pneumonia, unspecified organism
			J159	Unspecified bacterial pneumonia
			J22	Unspecified acute lower respiratory infection
	J150	Pneumonia due to Klebsiella pneumoniae	J150	Pneumonia due to Klebsiella pneumoniae
			J189	Pneumonia, unspecified organism
			J159	Unspecified bacterial pneumonia
			J22	Unspecified acute lower respiratory infection
	J151	Pneumonia due to Pseudomonas	J151	Pneumonia due to Pseudomonas
			J189	Pneumonia, unspecified organism
			J159	Unspecified bacterial pneumonia

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Respiratory infections	J151	Pneumonia due to Pseudomonas	J22	Unspecified acute lower respiratory infection
	J1520	Pneumonia due to staphylococcus, unspecified	J1520	Pneumonia due to staphylococcus, unspecified
			J189	Pneumonia, unspecified organism
			J159	Unspecified bacterial pneumonia
			J22	Unspecified acute lower respiratory infection
	J15211	Pneumonia due to Methicillin susceptible Staphylococcus aureus	J15211	Pneumonia due to Methicillin susceptible Staphylococcus aureus
			J1520	Pneumonia due to staphylococcus, unspecified
			J189	Pneumonia, unspecified organism
			J159	Unspecified bacterial pneumonia
			J22	Unspecified acute lower respiratory infection
	J15212	Pneumonia due to Methicillin resistant Staphylococcus aureus	J15212	Pneumonia due to Methicillin resistant Staphylococcus aureus
			J1520	Pneumonia due to staphylococcus, unspecified
			J189	Pneumonia, unspecified organism
			J159	Unspecified bacterial pneumonia

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Respiratory infections	J15212	Pneumonia due to Methicillin resistant Staphylococcus aureus	J22	Unspecified acute lower respiratory infection
	J1529	Pneumonia due to other staphylococcus	J1529	Pneumonia due to other staphylococcus
			J1520	Pneumonia due to staphylococcus, unspecified
			J189	Pneumonia, unspecified organism
			J159	Unspecified bacterial pneumonia
			J22	Unspecified acute lower respiratory infection
	J153	Pneumonia due to streptococcus, group B	J153	Pneumonia due to streptococcus, group B
			J189	Pneumonia, unspecified organism
			J159	Unspecified bacterial pneumonia
			J22	Unspecified acute lower respiratory infection
	J154	Pneumonia due to other streptococci	J154	Pneumonia due to other streptococci
			J189	Pneumonia, unspecified organism
			J159	Unspecified bacterial pneumonia
			J22	Unspecified acute lower respiratory infection

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care		**Principal and Comorbid Diagnoses on Prior Hospital Claim**	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	**ICD 10 Code (principal diagnosis)**	**ICD 10 Label (principal diagnosis)**	**ICD 10 Code (principal + comorbid diagnosis)**	**ICD 10 Label (principal + comorbid diagnosis)**
Respiratory infections	J155	Pneumonia due to Escherichia coli	J155	Pneumonia due to Escherichia coli
			J189	Pneumonia, unspecified organism
			J159	Unspecified bacterial pneumonia
			J22	Unspecified acute lower respiratory infection
	J156	Pneumonia due to other Gram-negative bacteria	J156	Pneumonia due to other Gram-negative bacteria
			J189	Pneumonia, unspecified organism
			J159	Unspecified bacterial pneumonia
			J22	Unspecified acute lower respiratory infection
	J157	Pneumonia due to Mycoplasma pneumoniae	J157	Pneumonia due to Mycoplasma pneumoniae
			J189	Pneumonia, unspecified organism
			J159	Unspecified bacterial pneumonia
			J22	Unspecified acute lower respiratory infection
	J158	Pneumonia due to other specified bacteria	J158	Pneumonia due to other specified bacteria
			J189	Pneumonia, unspecified organism

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	**Column B:**	**Column C:**	**Column D:**	**Column E:**
Category	**ICD 10 Code (principal diagnosis)**	**ICD 10 Label (principal diagnosis)**	**ICD 10 Code (principal + comorbid diagnosis)**	**ICD 10 Label (principal + comorbid diagnosis)**
Respiratory infections	J158	Pneumonia due to other specified bacteria	J159	Unspecified bacterial pneumonia
			J22	Unspecified acute lower respiratory infection
	J159	Unspecified bacterial pneumonia	J159	Unspecified bacterial pneumonia
			J22	Unspecified acute lower respiratory infection
	J168	Pneumonia due to other specified infectious organisms	J168	Pneumonia due to other specified infectious organisms
			J189	Pneumonia, unspecified organism
			J159	Unspecified bacterial pneumonia
			J22	Unspecified acute lower respiratory infection
	J180	Bronchopneumonia, unspecified organism	J180	Bronchopneumonia, unspecified organism
			J22	Unspecified acute lower respiratory infection
	J181	Lobar pneumonia, unspecified organism	J181	Lobar pneumonia, unspecified organism
			J22	Unspecified acute lower respiratory infection
	J182	Hypostatic pneumonia, unspecified organism	J182	Hypostatic pneumonia, unspecified organism
			J22	Unspecified acute lower respiratory infection

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care		Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Respiratory infections	J188	Other pneumonia, unspecified organism	J188	Other pneumonia, unspecified organism
			J22	Unspecified acute lower respiratory infection
	J189	Pneumonia, unspecified organism	J189	Pneumonia, unspecified organism
			J22	Unspecified acute lower respiratory infection
	J200	Acute bronchitis due to Mycoplasma pneumoniae	J200	Acute bronchitis due to Mycoplasma pneumoniae
			J209	Acute bronchitis, unspecified
			J22	Unspecified acute lower respiratory infection
	J201	Acute bronchitis due to Hemophilus influenzae	J201	Acute bronchitis due to Hemophilus influenzae
			J209	Acute bronchitis, unspecified
			J22	Unspecified acute lower respiratory infection
	J202	Acute bronchitis due to streptococcus	J202	Acute bronchitis due to streptococcus
			J209	Acute bronchitis, unspecified
			J22	Unspecified acute lower respiratory infection
	J203	Acute bronchitis due to coxsackievirus	J203	Acute bronchitis due to coxsackievirus

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Respiratory infections	J203	Acute bronchitis due to coxsackievirus	J209	Acute bronchitis, unspecified
			J22	Unspecified acute lower respiratory infection
	J204	Acute bronchitis due to parainfluenza virus	J204	Acute bronchitis due to parainfluenza virus
			J209	Acute bronchitis, unspecified
			J22	Unspecified acute lower respiratory infection
	J205	Acute bronchitis due to respiratory syncytial virus	J205	Acute bronchitis due to respiratory syncytial virus
			J209	Acute bronchitis, unspecified
			J22	Unspecified acute lower respiratory infection
	J206	Acute bronchitis due to rhinovirus	J206	Acute bronchitis due to rhinovirus
			J209	Acute bronchitis, unspecified
			J22	Unspecified acute lower respiratory infection
	J207	Acute bronchitis due to echovirus	J207	Acute bronchitis due to echovirus
			J209	Acute bronchitis, unspecified
			J22	Unspecified acute lower respiratory infection

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Respiratory infections	J208	Acute bronchitis due to other specified organisms	J208	Acute bronchitis due to other specified organisms
			J209	Acute bronchitis, unspecified
			J22	Unspecified acute lower respiratory infection
	J209	Acute bronchitis, unspecified	J209	Acute bronchitis, unspecified
			J22	Unspecified acute lower respiratory infection
	J210	Acute bronchiolitis due to respiratory syncytial virus	J210	Acute bronchiolitis due to respiratory syncytial virus
			J219	Acute bronchiolitis, unspecified
			J209	Acute bronchitis, unspecified
			J205	Acute bronchitis due to respiratory syncytial virus
			J22	Unspecified acute lower respiratory infection
	J211	Acute bronchiolitis due to human metapneumovirus	J211	Acute bronchiolitis due to human metapneumovirus
			J219	Acute bronchiolitis, unspecified
			J209	Acute bronchitis, unspecified
			J22	Unspecified acute lower respiratory infection

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Respiratory infections	J218	Acute bronchiolitis due to other specified organisms	J218	Acute bronchiolitis due to other specified organisms
			J219	Acute bronchiolitis, unspecified
			J209	Acute bronchitis, unspecified
			J208	Acute bronchitis due to other specified organisms
			J22	Unspecified acute lower respiratory infection
	J219	Acute bronchiolitis, unspecified	J219	Acute bronchiolitis, unspecified
			J209	Acute bronchitis, unspecified
			J22	Unspecified acute lower respiratory infection
	J22	Unspecified acute lower respiratory infection	J22	Unspecified acute lower respiratory infection
	J391	Other abscess of pharynx	J391	Other abscess of pharynx
			J069	Acute upper respiratory infection, unspecified
			J029	Acute pharyngitis, unspecified
			J028	Acute pharyngitis due to other specified organisms
	J40	Bronchitis, not specified as acute or chronic	J40	Bronchitis, not specified as acute or chronic

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Respiratory infections	J40	Bronchitis, not specified as acute or chronic	J209	Acute bronchitis, unspecified
			J22	Unspecified acute lower respiratory infection
	J440	Chronic obstructive pulmonary disease with acute lower respiratory infection	J440	Chronic obstructive pulmonary disease with acute lower respiratory infection
	J470	Bronchiectasis with acute lower respiratory infection	J470	Bronchiectasis with acute lower respiratory infection
			J209	Acute bronchitis, unspecified
			J22	Unspecified acute lower respiratory infection
	J852	Abscess of lung without pneumonia	J852	Abscess of lung without pneumonia
	J9502	Infection of tracheostomy stoma	J9502	Infection of tracheostomy stoma
	J95851	Ventilator associated pneumonia	J95851	Ventilator associated pneumonia
			J22	Unspecified acute lower respiratory infection
	U071	2019-nCoV acute respiratory disease	U071	2019-nCoV acute respiratory disease
			B9729	Other coronavirus as the cause of diseases classified elsewhere
	B9729	Other coronavirus as the cause of diseases classified elsewhere	B9729	Other coronavirus as the cause of diseases classified elsewhere
			U071	2019-nCoV acute respiratory disease

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:		Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)		ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Sepsis	A400	Sepsis due to streptococcus, group A		A400 A491 A419	Sepsis due to streptococcus, group A Streptococcal infection, unspecified site Sepsis, unspecified organism
	A401	Sepsis due to streptococcus, group B		A401 A491 A419	Sepsis due to streptococcus, group B Streptococcal infection, unspecified site Sepsis, unspecified organism
	A403	Sepsis due to Streptococcus pneumoniae		A403 A491 A419	Sepsis due to Streptococcus pneumoniae Streptococcal infection, unspecified site Sepsis, unspecified organism
	A408	Other streptococcal sepsis		A408 A409 A419 A491	Other streptococcal sepsis Streptococcal sepsis, unspecified Sepsis, unspecified organism Streptococcal infection, unspecified site
	A409	Streptococcal sepsis, unspecified		A409 A419	Streptococcal sepsis, unspecified Sepsis, unspecified organism
	A4101	Sepsis due to Methicillin susceptible Staphylococcus aureus		A4101	Sepsis due to Methicillin susceptible Staphylococcus aureus
				A412	Sepsis due to unspecified staphylococcus
				A419	Sepsis, unspecified organism
				A4901	Methicillin susceptible Staphylococcus aureus infection, unspecified site
	A4102	Sepsis due to Methicillin resistant Staphylococcus aureus		A4102	Sepsis due to Methicillin resistant Staphylococcus aureus
				A412	Sepsis due to unspecified staphylococcus

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Sepsis	A4102	Sepsis due to Methicillin resistant Staphylococcus aureus	A419	Sepsis, unspecified organism
			A4902	Methicillin resistant Staphylococcus aureus infection, unspecified site
	A411	Sepsis due to other specified staphylococcus	A411	Sepsis due to other specified staphylococcus
			A412	Sepsis due to unspecified staphylococcus
			A419	Sepsis, unspecified organism
	A412	Sepsis due to unspecified staphylococcus	A412	Sepsis due to unspecified staphylococcus
			A419	Sepsis, unspecified organism
	A413	Sepsis due to Hemophilus influenzae	A413	Sepsis due to Hemophilus influenzae
			A492	Hemophilus influenzae infection, unspecified site
			A419	Sepsis, unspecified organism
	A414	Sepsis due to anaerobes	A414	Sepsis due to anaerobes
			A419	Sepsis, unspecified organism
	A4150	Gram-negative sepsis, unspecified	A4150	Gram-negative sepsis, unspecified
			A419	Sepsis, unspecified organism
	A4151	Sepsis due to Escherichia coli [E. coli]	A4151	Sepsis due to Escherichia coli [E. coli]
			A4150	Gram-negative sepsis, unspecified
			A419	Sepsis, unspecified organism
	A4152	Sepsis due to Pseudomonas	A4152	Sepsis due to Pseudomonas
			A4150	Gram-negative sepsis, unspecified
			A419	Sepsis, unspecified organism
	A4153	Sepsis due to Serratia	A4153	Sepsis due to Serratia
			A4150	Gram-negative sepsis, unspecified

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Sepsis	A4153	Sepsis due to Serratia	A419	Sepsis, unspecified organism
	A4159	Other Gram-negative sepsis	A4159	Other Gram-negative sepsis
			A419	Sepsis, unspecified organism
	A4181	Sepsis due to Enterococcus	A4181	Sepsis due to Enterococcus
			A419	Sepsis, unspecified organism
	A4189	Other specified sepsis	A4189	Other specified sepsis
			A419	Sepsis, unspecified organism
	A419	Sepsis, unspecified organism	A419	Sepsis, unspecified organism
	A4901	Methicillin susceptible Staphylococcus aureus infection, unspecified site	A4901	Methicillin susceptible Staphylococcus aureus infection, unspecified site
	A4902	Methicillin resistant Staphylococcus aureus infection, unspecified site	A4902	Methicillin resistant Staphylococcus aureus infection, unspecified site
	A491	Streptococcal infection, unspecified site	A491	Streptococcal infection, unspecified site
			A419	Sepsis, unspecified organism
	A492	Hemophilus influenzae infection, unspecified site	A492	Hemophilus influenzae infection, unspecified site
			A4150	Gram-negative sepsis, unspecified
	A493	Mycoplasma infection, unspecified site	A493	Mycoplasma infection, unspecified site
	B376	Candidal endocarditis	B376	Candidal endocarditis
			B377	Candidal sepsis
	B377	Candidal sepsis	B377	Candidal sepsis
			A419	Sepsis, unspecified organism
	I2601	Septic pulmonary embolism with acute cor pulmonale	I2601	Septic pulmonary embolism with acute cor pulmonale
			A419	Sepsis, unspecified organism

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care		Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Sepsis	I2690	Septic pulmonary embolism without acute cor pulmonale	I2690	Septic pulmonary embolism without acute cor pulmonale
			A419	Sepsis, unspecified organism
	I76	Septic arterial embolism	I76	Septic arterial embolism
			A419	Sepsis, unspecified organism
	R6520	Severe sepsis without septic shock	R6520	Severe sepsis without septic shock
			A419	Sepsis, unspecified organism
	R6521	Severe sepsis with septic shock	R6521	Severe sepsis with septic shock
			A419	Sepsis, unspecified organism
	R7881	Bacteremia	R7881	Bacteremia
			A419	Sepsis, unspecified organism
	A480	Gas gangrene	A480	Gas gangrene
			L089	Local infection of the skin and subcutaneous tissue, unspecified
Skin infections	A4852	Wound botulism	A4852	Wound botulism
			L089	Local infection of the skin and subcutaneous tissue, unspecified
	B86	Scabies	B86	Scabies
			L089	Local infection of the skin and subcutaneous tissue, unspecified
	B870	Cutaneous myiasis	B870	Cutaneous myiasis
			L089	Local infection of the skin and subcutaneous tissue, unspecified
	B871	Wound myiasis	B871	Wound myiasis
			L089	Local infection of the skin and subcutaneous tissue, unspecified
	L00	Staphylococcal scalded skin syndrome	L00	Staphylococcal scalded skin syndrome

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care		Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	**Column B:**	**Column C:**	**Column D:**	**Column E:**
Category	**ICD 10 Code (principal diagnosis)**	**ICD 10 Label (principal diagnosis)**	**ICD 10 Code (principal + comorbid diagnosis)**	**ICD 10 Label (principal + comorbid diagnosis)**
Skin infections	L00	Staphylococcal scalded skin syndrome	L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0103	Bullous impetigo
	L0100	Impetigo, unspecified	L0100	Impetigo, unspecified
			L089	Local infection of the skin and subcutaneous tissue, unspecified
	L0102	Bockhart's impetigo	L0102	Bockhart's impetigo
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0100	Impetigo, unspecified
	L0103	Bullous impetigo	L0103	Bullous impetigo
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0100	Impetigo, unspecified
	L03011	Cellulitis of right finger	L03011	Cellulitis of right finger
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03113	Cellulitis of right upper limb
			L03019	Cellulitis of unspecified finger
	L03012	Cellulitis of left finger	L03012	Cellulitis of left finger
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03114	Cellulitis of left upper limb
			L03019	Cellulitis of unspecified finger
	L03019	Cellulitis of unspecified finger	L03019	Cellulitis of unspecified finger
Skin infections	L03019	Cellulitis of unspecified finger	L089	Local infection of the skin and subcutaneous tissue, unspecified

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care		Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
			L0390	Cellulitis, unspecified
	L03031	Cellulitis of right toe	L03031	Cellulitis of right toe
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03115	Cellulitis of right lower limb
			L03039	Cellulitis of unspecified toe
	L03032	Cellulitis of left toe	L03032	Cellulitis of left toe
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03116	Cellulitis of left lower limb
			L03039	Cellulitis of unspecified toe
	L03039	Cellulitis of unspecified toe	L03039	Cellulitis of unspecified toe
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
	L03111	Cellulitis of right axilla	L03111	Cellulitis of right axilla
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03313	Cellulitis of chest wall
			L03312	Cellulitis of back [any part except buttock]
			L03319	Cellulitis of trunk, unspecified
	L03112	Cellulitis of left axilla	L03112	Cellulitis of left axilla
Skin infections	L03112	Cellulitis of left axilla	L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03313	Cellulitis of chest wall

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
			L03319	Cellulitis of trunk, unspecified
	L03113	Cellulitis of right upper limb	L03113	Cellulitis of right upper limb
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03221	Cellulitis of neck
			L03313	Cellulitis of chest wall
			L03312	Cellulitis of back [any part except buttock]
			L03319	Cellulitis of trunk, unspecified
			L03119	Cellulitis of unspecified part of limb
	L03114	Cellulitis of left upper limb	L03114	Cellulitis of left upper limb
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03221	Cellulitis of neck
			L03313	Cellulitis of chest wall
			L03312	Cellulitis of back [any part except buttock]
			L03319	Cellulitis of trunk, unspecified
			L03119	Cellulitis of unspecified part of limb
	L03115	Cellulitis of right lower limb	L03115	Cellulitis of right lower limb
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03314	Cellulitis of groin
Skin infections	L03115	Cellulitis of right lower limb	L03119	Cellulitis of unspecified part of limb
			L03319	Cellulitis of trunk, unspecified
	L03116	Cellulitis of left lower limb	L03116	Cellulitis of left lower limb

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care		Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03314	Cellulitis of groin
			L03319	Cellulitis of trunk, unspecified
			L03119	Cellulitis of unspecified part of limb
	L03119	Cellulitis of unspecified part of limb	L03119	Cellulitis of unspecified part of limb
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
	L03211	Cellulitis of face	L03211	Cellulitis of face
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03811	Cellulitis of head [any part, except face]
	L03221	Cellulitis of neck	L03221	Cellulitis of neck
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03811	Cellulitis of head [any part, except face]
			L03211	Cellulitis of face
	L03311	Cellulitis of abdominal wall	L03311	Cellulitis of abdominal wall
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
Skin infections	L03311	Cellulitis of abdominal wall	L03313	Cellulitis of chest wall
			L03319	Cellulitis of trunk, unspecified
	L03312	Cellulitis of back [any part except buttock]	L03312	Cellulitis of back [any part except buttock]

	Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care		Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	**Column B:**	**Column C:**	**Column D:**	**Column E:**
Category	**ICD 10 Code (principal diagnosis)**	**ICD 10 Label (principal diagnosis)**	**ICD 10 Code (principal + comorbid diagnosis)**	**ICD 10 Label (principal + comorbid diagnosis)**
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03319	Cellulitis of trunk, unspecified
	L03313	Cellulitis of chest wall	L03313	Cellulitis of chest wall
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03319	Cellulitis of trunk, unspecified
	L03314	Cellulitis of groin	L03314	Cellulitis of groin
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03311	Cellulitis of abdominal wall
			L03319	Cellulitis of trunk, unspecified
	L03315	Cellulitis of perineum	L03315	Cellulitis of perineum
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03314	Cellulitis of groin
			L03312	Cellulitis of back [any part except buttock]
			L03319	Cellulitis of trunk, unspecified
	L03316	Cellulitis of umbilicus	L03316	Cellulitis of umbilicus
			L089	Local infection of the skin and subcutaneous tissue, unspecified
Skin infections	L03316	Cellulitis of umbilicus	L0390	Cellulitis, unspecified
			L03319	Cellulitis of trunk, unspecified
	L03317	Cellulitis of buttock	L03317	Cellulitis of buttock

Column A:	Column B:	Column C:	Column D:	Column E:
Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			**Principal and Comorbid Diagnoses on Prior Hospital Claim**	
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03312	Cellulitis of back [any part except buttock]
			L03319	Cellulitis of trunk, unspecified
	L03811	Cellulitis of head [any part, except face]	L03811	Cellulitis of head [any part, except face]
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
	L03818	Cellulitis of other sites	L03818	Cellulitis of other sites
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
	L03319	Cellulitis of trunk, unspecified	L03319	Cellulitis of trunk, unspecified
			L089	Local infection of the skin and subcutaneous tissue, unspecified
			L0390	Cellulitis, unspecified
			L03221	Cellulitis of neck
	L0390	Cellulitis, unspecified	L0390	Cellulitis, unspecified
			L089	Local infection of the skin and subcutaneous tissue, unspecified
	L0889	Other specified local infections of the skin and subcutaneous tissue	L0889	Other specified local infections of the skin and subcutaneous tissue
			L089	Local infection of the skin and subcutaneous tissue, unspecified
Skin infections	L089	Local infection of the skin and subcutaneous tissue, unspecified	L089	Local infection of the skin and subcutaneous tissue, unspecified
	L303	Infective dermatitis	L303	Infective dermatitis

Principal Diagnosis for Hospitalizations Between Day Four after SNF Admission and Day Three after the End of SNF Care			Principal and Comorbid Diagnoses on Prior Hospital Claim	
Column A:	Column B:	Column C:	Column D:	Column E:
Category	ICD 10 Code (principal diagnosis)	ICD 10 Label (principal diagnosis)	ICD 10 Code (principal + comorbid diagnosis)	ICD 10 Label (principal + comorbid diagnosis)
Unknown site and unknown bugs	B348	Other viral infections of unspecified site	B348	Other viral infections of unspecified site
	B349	Viral infection, unspecified	B349	Viral infection, unspecified
	A488	Other specified bacterial diseases	A488	Other specified bacterial diseases
	A498	Other bacterial infections of unspecified site	A498	Other bacterial infections of unspecified site
	A499	Bacterial infection, unspecified	A499	Bacterial infection, unspecified

Note: FY 2019 ICD-10 codes are presented in this table. A year specific list is used for the measure construction and calculation.

APPENDIX B: RISK ADJUSTMENT MODEL RESULTS

Table 6: SNF HAI Hierarchical Logistic Regression Model Results, FY 2019

Covariate	Number of Stays	Percent of Stays	Estimate	Std Error	P-Value	Odds Ratio	OR Lower 95% CI	OR Higher 95% CI
Intercept			-4.857	0.049	<0.001			
Age and Sex (Reference: Male age 60 to 64)								
Male age 18 to 34	1,475	0.1%	-0.063	0.103	0.539	0.939	0.767	1.149
Male age 35 to 44	5,221	0.3%	-0.063	0.058	0.276	0.939	0.838	1.052
Male age 45 to 54	18,740	1.0%	-0.103	0.036	0.004	0.902	0.840	0.968
Male age 55 to 59	24,582	1.3%	-0.042	0.033	0.205	0.959	0.898	1.023
Male age 65 to 69	84,307	4.6%	0.102	0.026	<0.001	1.107	1.053	1.164
Male age 70 to 74	107,638	5.9%	0.182	0.025	<0.001	1.200	1.142	1.260
Male age 75 to 79	122,755	6.7%	0.279	0.025	<0.001	1.321	1.258	1.389
Male age 80 to 84	127,122	7.0%	0.369	0.026	<0.001	1.446	1.375	1.521
Male age 85 to 89	112,798	6.2%	0.409	0.026	<0.001	1.506	1.430	1.585
Male age 90 to 94	67,137	3.7%	0.452	0.029	<0.001	1.571	1.485	1.662
Male age ≥ 95	20,327	1.1%	0.444	0.038	<0.001	1.560	1.447	1.681
Female age 18 to 34	1,198	0.1%	0.014	0.110	0.897	1.014	0.817	1.259
Female age 35 to 44	4,399	0.2%	0.003	0.063	0.959	1.003	0.887	1.135
Female age 45 to 54	16,127	0.9%	-0.045	0.039	0.241	0.956	0.886	1.031
Female age 55 to 59	21,515	1.2%	0.001	0.035	0.976	1.001	0.934	1.073
Female age 60 to 64	36,511	2.0%	0.018	0.030	0.552	1.018	0.959	1.081
Female age 65 to 69	93,470	5.1%	0.086	0.026	0.001	1.089	1.035	1.146
Female age 70 to 74	143,152	7.9%	0.114	0.025	<0.001	1.121	1.067	1.178
Female age 75 to 79	173,786	9.5%	0.122	0.025	<0.001	1.130	1.076	1.187
Female age 80 to 84	197,514	10.8%	0.152	0.025	<0.001	1.164	1.107	1.223
Female age 85 to 89	200,646	11.0%	0.145	0.026	<0.001	1.156	1.099	1.217
Female age 90 to 94	145,977	8.0%	0.142	0.027	<0.001	1.153	1.093	1.216
Female age ≥ 95	58,565	3.2%	0.124	0.032	<0.001	1.132	1.063	1.205

Covariate	Number of Stays	Percent of Stays	Estimate	Std Error	P-Value	Odds Ratio	OR Lower 95% CI	OR Higher 95% CI
Original Reason for Medicare (Reference: Age)								
Disability/ESRD	458,098	25.1%	0.076	0.010	<0.001	1.078	1.059	1.099
Surgery Category (Prior IP Stay)								
Neurosurgery	15,403	0.8%	0.023	0.041	0.570	1.023	0.945	1.108
Opthalmology	198	0.0%	-0.341	0.394	0.387	0.711	0.328	1.540
Otolaryngology	3,386	0.2%	-0.168	0.082	0.041	0.845	0.719	0.993
Cardio Thoracic	25,544	1.4%	-0.403	0.040	<0.001	0.668	0.618	0.723
Vascular Surgery	18,499	1.0%	-0.062	0.033	0.058	0.940	0.882	1.002
Urology	20,920	1.1%	0.150	0.028	<0.001	1.161	1.099	1.228
Obstetrics/Gynecology	3,031	0.2%	-0.347	0.102	0.001	0.707	0.579	0.863
Orthopedics	301,194	16.5%	-0.170	0.017	<0.001	0.844	0.816	0.872
Plastic Surgery	49,217	2.7%	-0.020	0.020	0.316	0.981	0.944	1.019
General Surgery	79,426	4.4%	-0.012	0.018	0.502	0.988	0.955	1.023
Dialysis but not ESRD (Prior IP Stay) (Reference: No)								
Yes	16,651	0.9%	0.067	0.027	0.011	1.070	1.015	1.127
Principal Diagnosis Clinical Categories (Prior IP Stay) (Reference: Collapsed CCS 10; 22; 36; 37; 53; 56; 86; 87; 88; 124; 167; 181; 183; 184; 191; 195; 203; 247; 254; 255; 256; 652; 654; 655; 663)								
1- Tuberculosis	80	0.0%	1.083	0.387	0.005	2.955	1.385	6.303
2- Septicemia (except in labor)	199,661	11.0%	1.093	0.045	<0.001	2.982	2.731	3.256
3- Bacterial infection; unspecified site	1,966	0.1%	1.268	0.094	<0.001	3.555	2.955	4.278
4- Mycoses	1,356	0.1%	1.541	0.100	<0.001	4.668	3.835	5.682
5- HIV infection	406	0.0%	0.728	0.227	0.001	2.071	1.327	3.230
6- Hepatitis	447	0.0%	1.186	0.190	<0.001	3.274	2.257	4.747
7- Viral infection	1,711	0.1%	1.051	0.120	<0.001	2.860	2.260	3.620
11- Cancer of head and neck	1,220	0.1%	1.063	0.132	<0.001	2.895	2.236	3.749
12- Cancer of esophagus	579	0.0%	1.252	0.156	<0.001	3.497	2.574	4.750
13- Cancer of stomach	796	0.0%	1.012	0.151	<0.001	2.752	2.046	3.702
14- Cancer of colon	4,926	0.3%	0.792	0.083	<0.001	2.207	1.876	2.596

Covariate	Number of Stays	Percent of Stays	Estimate	Std Error	P-Value	Odds Ratio	OR Lower 95% CI	OR Higher 95% CI
15- Cancer of rectum and anus	1,581	0.1%	1.098	0.115	<0.001	2.998	2.390	3.759
16- Cancer of liver and intrahepatic bile duct	700	0.0%	0.779	0.179	<0.001	2.179	1.533	3.098
17- Cancer of pancreas	1,293	0.1%	1.173	0.119	<0.001	3.232	2.559	4.082
18- Cancer of other GI organs; peritoneum	709	0.0%	0.691	0.189	<0.001	1.996	1.379	2.888
19- Cancer of bronchus; lung	4,262	0.2%	1.250	0.075	<0.001	3.489	3.012	4.043
20- Cancer; other respiratory and intrathoracic	68	0.0%	1.301	0.472	0.006	3.675	1.456	9.272
21- Cancer of bone and connective tissue	538	0.0%	1.039	0.205	<0.001	2.826	1.890	4.224
23- Other non-epithelial cancer of skin	374	0.0%	0.990	0.243	<0.001	2.691	1.670	4.336
24- Cancer of breast	861	0.0%	0.861	0.175	<0.001	2.365	1.677	3.336
27- Cancer of ovary	545	0.0%	0.897	0.225	<0.001	2.452	1.577	3.812
28- Cancer of other female genital organs	267	0.0%	0.958	0.334	0.004	2.608	1.356	5.015
32- Cancer of bladder	1,767	0.1%	1.424	0.096	<0.001	4.155	3.440	5.018
33- Cancer of kidney and renal pelvis	1,047	0.1%	0.536	0.170	0.002	1.709	1.225	2.385
34- Cancer of other urinary organs	235	0.0%	1.227	0.256	<0.001	3.412	2.067	5.634
35- Cancer of brain and nervous system	1,316	0.1%	0.830	0.140	<0.001	2.293	1.742	3.017
38- Non-Hodgkin`s lymphoma	1,668	0.1%	1.496	0.095	<0.001	4.463	3.704	5.377
39- Leukemias	982	0.1%	1.282	0.121	<0.001	3.603	2.844	4.564
40- Multiple myeloma	925	0.1%	1.436	0.122	<0.001	4.205	3.308	5.346
41- Cancer; other and unspecified primary	197	0.0%	1.262	0.285	<0.001	3.532	2.018	6.180
42- Secondary malignancies	7,276	0.4%	1.238	0.063	<0.001	3.448	3.047	3.903
43- Malignant neoplasm without specification of site	408	0.0%	1.136	0.201	<0.001	3.113	2.101	4.613
44- Neoplasms of unspecified nature or uncertain behavior	1,382	0.1%	1.105	0.118	<0.001	3.021	2.398	3.805
45- Maintenance chemotherapy; radiotherapy	950	0.1%	1.227	0.123	<0.001	3.411	2.682	4.340

Covariate	Number of Stays	Percent of Stays	Estimate	Std Error	P-Value	Odds Ratio	OR Lower 95% CI	OR Higher 95% CI
48- Thyroid disorders	1,181	0.1%	1.231	0.129	<0.001	3.423	2.659	4.408
51- Other endocrine disorders	5,989	0.3%	1.063	0.073	<0.001	2.894	2.506	3.342
52- Nutritional deficiencies	1,677	0.1%	1.389	0.100	<0.001	4.012	3.300	4.878
54- Gout and other crystal arthropathies	1,734	0.1%	1.008	0.125	<0.001	2.741	2.144	3.505
55- Fluid and electrolyte disorders	28,308	1.6%	1.128	0.051	<0.001	3.088	2.796	3.411
57- Immunity disorders	135	0.0%	1.200	0.337	<0.001	3.321	1.715	6.431
58- Other nutritional; endocrine; and metabolic disorders	5,866	0.3%	1.144	0.070	<0.001	3.139	2.737	3.599
59- Deficiency and other anemia	8,180	0.4%	1.128	0.063	<0.001	3.089	2.732	3.493
60- Acute posthemorrhagic anemia	4,145	0.2%	1.129	0.077	<0.001	3.092	2.660	3.593
61- Sickle cell anemia	97	0.0%	1.420	0.350	<0.001	4.139	2.085	8.216
62- Coagulation and hemorrhagic disorders	3,368	0.2%	1.128	0.083	<0.001	3.089	2.626	3.632
63- Diseases of white blood cells	922	0.1%	1.058	0.139	<0.001	2.882	2.193	3.786
64- Other hematologic conditions	158	0.0%	1.224	0.310	<0.001	3.401	1.852	6.246
76- Meningitis (except that caused by tuberculosis or sexually transmitted disease)	493	0.0%	1.269	0.178	<0.001	3.558	2.509	5.045
77- Encephalitis (except that caused by tuberculosis or sexually transmitted disease)	760	0.0%	1.311	0.140	<0.001	3.712	2.823	4.881
78- Other CNS infection and poliomyelitis	917	0.1%	0.935	0.150	<0.001	2.547	1.898	3.416
79- Parkinson`s disease	5,262	0.3%	0.883	0.082	<0.001	2.418	2.058	2.840
80- Multiple sclerosis	1,165	0.1%	0.948	0.148	<0.001	2.580	1.932	3.446
81- Other hereditary and degenerative nervous system conditions	2,206	0.1%	1.051	0.108	<0.001	2.861	2.313	3.539
82- Paralysis	1,402	0.1%	1.119	0.115	<0.001	3.062	2.445	3.834
83- Epilepsy; convulsions	11,816	0.6%	0.908	0.061	<0.001	2.478	2.199	2.793
84- Headache; including migraine	470	0.0%	0.745	0.260	0.004	2.106	1.265	3.508
85- Coma; stupor; and brain damage	288	0.0%	0.995	0.227	<0.001	2.705	1.732	4.225

Covariate	Number of Stays	Percent of Stays	Estimate	Std Error	P-Value	Odds Ratio	OR Lower 95% CI	OR Higher 95% CI
89- Blindness and vision defects	207	0.0%	0.883	0.367	0.016	2.417	1.177	4.962
90- Inflammation; infection of eye (except that caused by tuberculosis or sexually transmitted disease)	350	0.0%	1.010	0.256	<0.001	2.745	1.661	4.535
91- Other eye disorders	204	0.0%	0.350	0.422	0.406	1.419	0.621	3.243
92- Otitis media and related conditions	174	0.0%	0.764	0.393	0.052	2.146	0.993	4.636
93- Conditions associated with dizziness or vertigo	2,266	0.1%	0.192	0.170	0.259	1.211	0.868	1.690
94- Other ear and sense organ disorders	202	0.0%	0.327	0.458	0.475	1.387	0.565	3.406
95- Other nervous system disorders	37,675	2.1%	0.999	0.049	<0.001	2.717	2.467	2.991
96- Heart valve disorders	8,779	0.5%	0.782	0.080	<0.001	2.185	1.867	2.558
97- Peri-; endo-; and myocarditis; cardiomyopathy (except that caused by tuberculosis or sexually transmitted disease)	2,588	0.1%	0.840	0.096	<0.001	2.317	1.918	2.800
98- Essential hypertension	328	0.0%	0.425	0.386	0.271	1.529	0.717	3.260
99- Hypertension with complications and secondary hypertension	104,598	5.7%	0.854	0.046	<0.001	2.350	2.146	2.573
100- Acute myocardial infarction	25,551	1.4%	0.853	0.054	<0.001	2.347	2.112	2.608
101- Coronary atherosclerosis and other heart disease	9,788	0.5%	0.672	0.076	<0.001	1.958	1.688	2.271
102- Nonspecific chest pain	3,115	0.2%	1.014	0.092	<0.001	2.755	2.302	3.298
103- Pulmonary heart disease	10,516	0.6%	1.041	0.062	<0.001	2.832	2.509	3.197
104- Other and ill-defined heart disease	472	0.0%	1.055	0.213	<0.001	2.873	1.892	4.361
105- Conduction disorders	4,637	0.3%	0.566	0.094	<0.001	1.761	1.463	2.119
106- Cardiac dysrhythmias	31,236	1.7%	0.971	0.051	<0.001	2.640	2.388	2.918
107- Cardiac arrest and ventricular fibrillation	604	0.0%	0.558	0.198	0.005	1.747	1.187	2.574
108- Congestive heart failure; nonhypertensive	9,209	0.5%	0.950	0.065	<0.001	2.585	2.275	2.936
109- Acute cerebrovascular disease	54,706	3.0%	1.068	0.048	<0.001	2.909	2.646	3.199

Covariate	Number of Stays	Percent of Stays	Estimate	Std Error	P-Value	Odds Ratio	OR Lower 95% CI	OR Higher 95% CI
110- Occlusion or stenosis of precerebral arteries	1,722	0.1%	0.832	0.133	<0.001	2.298	1.771	2.984
111- Other and ill-defined cerebrovascular disease	767	0.0%	0.762	0.184	<0.001	2.142	1.494	3.071
112- Transient cerebral ischemia	5,343	0.3%	0.781	0.086	<0.001	2.185	1.845	2.587
113- Late effects of cerebrovascular disease	18,973	1.0%	0.630	0.058	<0.001	1.878	1.677	2.103
114- Peripheral and visceral atherosclerosis	6,224	0.3%	1.061	0.070	<0.001	2.890	2.519	3.317
115- Aortic; peripheral; and visceral artery aneurysms	3,180	0.2%	0.769	0.099	<0.001	2.158	1.778	2.620
116- Aortic and peripheral arterial embolism or thrombosis	1,527	0.1%	0.979	0.127	<0.001	2.661	2.076	3.410
117- Other circulatory disease	9,858	0.5%	0.910	0.065	<0.001	2.484	2.188	2.820
118- Phlebitis; thrombophlebitis and thromboembolism	6,612	0.4%	1.191	0.067	<0.001	3.292	2.885	3.757
119- Varicose veins of lower extremity	507	0.0%	1.247	0.184	<0.001	3.481	2.429	4.989
120- Hemorrhoids	1,151	0.1%	1.318	0.123	<0.001	3.736	2.935	4.756
121- Other diseases of veins and lymphatics	1,548	0.1%	0.958	0.125	<0.001	2.606	2.039	3.330
122- Pneumonia (except that caused by tuberculosis or sexually transmitted disease)	58,854	3.2%	1.216	0.047	<0.001	3.372	3.076	3.697
123- Influenza	6,760	0.4%	1.021	0.071	<0.001	2.777	2.414	3.194
125- Acute bronchitis	3,306	0.2%	0.939	0.097	<0.001	2.558	2.115	3.095
126- Other upper respiratory infections	890	0.0%	1.062	0.161	<0.001	2.892	2.108	3.967
127- Chronic obstructive pulmonary disease and bronchiectasis	28,957	1.6%	1.194	0.050	<0.001	3.301	2.992	3.643
128- Asthma	1,134	0.1%	0.709	0.170	<0.001	2.031	1.456	2.834
129- Aspiration pneumonitis; food/vomitus	22,003	1.2%	1.253	0.051	<0.001	3.500	3.169	3.864
130- Pleurisy; pneumothorax; pulmonary collapse	5,076	0.3%	1.012	0.073	<0.001	2.752	2.386	3.175
131- Respiratory failure; insufficiency; arrest (adult)	41,407	2.3%	1.179	0.048	<0.001	3.251	2.962	3.568

Covariate	Number of Stays	Percent of Stays	Estimate	Std Error	P-Value	Odds Ratio	OR Lower 95% CI	OR Higher 95% CI
132- Lung disease due to external agents	386	0.0%	1.305	0.195	<0.001	3.687	2.515	5.406
133- Other lower respiratory disease	3,527	0.2%	1.241	0.081	<0.001	3.461	2.954	4.054
134- Other upper respiratory disease	960	0.1%	0.859	0.149	<0.001	2.360	1.762	3.161
135- Intestinal infection	10,939	0.6%	1.278	0.057	<0.001	3.589	3.207	4.017
136- Disorders of teeth and jaw	346	0.0%	1.227	0.238	<0.001	3.412	2.138	5.445
137- Diseases of mouth; excluding dental	592	0.0%	1.409	0.159	<0.001	4.091	2.998	5.585
138- Esophageal disorders	4,957	0.3%	0.973	0.076	<0.001	2.645	2.279	3.069
139- Gastroduodenal ulcer (except hemorrhage)	1,422	0.1%	1.018	0.129	<0.001	2.767	2.149	3.564
140- Gastritis and duodenitis	3,382	0.2%	0.996	0.085	<0.001	2.707	2.292	3.197
141- Other disorders of stomach and duodenum	2,866	0.2%	0.927	0.091	<0.001	2.526	2.113	3.020
142- Appendicitis and other appendiceal conditions	933	0.1%	0.847	0.173	<0.001	2.333	1.661	3.277
143- Abdominal hernia	6,650	0.4%	0.660	0.081	<0.001	1.935	1.652	2.266
144- Regional enteritis and ulcerative colitis	1,215	0.1%	1.514	0.111	<0.001	4.545	3.656	5.651
145- Intestinal obstruction without hernia	14,177	0.8%	0.885	0.059	<0.001	2.423	2.159	2.720
146- Diverticulosis and diverticulitis	10,504	0.6%	0.882	0.064	<0.001	2.415	2.129	2.740
147- Anal and rectal conditions	2,027	0.1%	0.967	0.109	<0.001	2.629	2.123	3.255
148- Peritonitis and intestinal abscess	1,016	0.1%	1.037	0.126	<0.001	2.821	2.203	3.613
149- Biliary tract disease	9,360	0.5%	0.997	0.065	<0.001	2.711	2.388	3.078
151- Other liver diseases	7,293	0.4%	1.026	0.067	<0.001	2.789	2.444	3.183
152- Pancreatic disorders (not diabetes)	3,810	0.2%	1.001	0.085	<0.001	2.722	2.305	3.215
153- Gastrointestinal hemorrhage	21,943	1.2%	0.990	0.052	<0.001	2.690	2.428	2.981
154- Noninfectious gastroenteritis	3,799	0.2%	1.172	0.083	<0.001	3.227	2.742	3.799
155- Other gastrointestinal disorders	9,244	0.5%	1.044	0.062	<0.001	2.840	2.516	3.206

Covariate	Number of Stays	Percent of Stays	Estimate	Std Error	P-Value	Odds Ratio	OR Lower 95% CI	OR Higher 95% CI
156- Nephritis; nephrosis; renal sclerosis	339	0.0%	1.434	0.190	<0.001	4.194	2.889	6.088
157- Acute and unspecified renal failure	59,272	3.3%	1.254	0.047	<0.001	3.503	3.196	3.839
158- Chronic kidney disease	292	0.0%	1.158	0.223	<0.001	3.184	2.058	4.926
159- Urinary tract infections	70,267	3.9%	1.275	0.046	<0.001	3.579	3.267	3.919
160- Calculus of urinary tract	783	0.0%	1.249	0.142	<0.001	3.488	2.642	4.606
161- Other diseases of kidney and ureters	1,767	0.1%	1.387	0.099	<0.001	4.002	3.299	4.856
162- Other diseases of bladder and urethra	1,199	0.1%	1.457	0.110	<0.001	4.295	3.460	5.332
163- Genitourinary symptoms and ill-defined conditions	1,708	0.1%	1.531	0.095	<0.001	4.622	3.834	5.570
164- Hyperplasia of prostate	1,287	0.1%	1.369	0.113	<0.001	3.931	3.148	4.908
165- Inflammatory conditions of male genital organs	904	0.0%	1.043	0.143	<0.001	2.837	2.143	3.757
166- Other male genital disorders	194	0.0%	1.121	0.286	<0.001	3.068	1.752	5.373
168- Inflammatory diseases of female pelvic organs	314	0.0%	1.255	0.236	<0.001	3.508	2.209	5.571
173- Menopausal disorders	118	0.0%	1.226	0.377	0.001	3.408	1.628	7.133
175- Other female genital disorders	483	0.0%	1.389	0.186	<0.001	4.009	2.784	5.773
197- Skin and subcutaneous tissue infections	28,398	1.6%	1.125	0.051	<0.001	3.080	2.788	3.403
198- Other inflammatory condition of skin	595	0.0%	1.500	0.154	<0.001	4.480	3.313	6.056
199- Chronic ulcer of skin	7,216	0.4%	1.398	0.058	<0.001	4.047	3.610	4.537
200- Other skin disorders	310	0.0%	1.441	0.207	<0.001	4.223	2.812	6.341
201- Infective arthritis and osteomyelitis (except that caused by tuberculosis or sexually transmitted disease)	8,811	0.5%	1.039	0.061	<0.001	2.828	2.509	3.186
202- Rheumatoid arthritis and related disease	787	0.0%	1.227	0.168	<0.001	3.411	2.453	4.742

Covariate	Number of Stays	Percent of Stays	Estimate	Std Error	P-Value	Odds Ratio	OR Lower 95% CI	OR Higher 95% CI
204- Other non-traumatic joint disorders	3,787	0.2%	0.624	0.111	<0.001	1.866	1.502	2.318
207- Pathological fracture	19,653	1.1%	1.059	0.056	<0.001	2.883	2.584	3.216
208- Acquired foot deformities	382	0.0%	0.698	0.362	0.054	2.010	0.989	4.083
209- Other acquired deformities	3,910	0.2%	0.524	0.126	<0.001	1.688	1.319	2.160
210- Systemic lupus erythematosus and connective tissue disorders	589	0.0%	1.091	0.176	<0.001	2.977	2.109	4.202
211- Other connective tissue disease	12,407	0.7%	1.012	0.062	<0.001	2.752	2.437	3.107
212- Other bone disease and musculoskeletal deformities	1,734	0.1%	0.982	0.137	<0.001	2.670	2.040	3.493
225- Joint disorders and dislocations; trauma-related	1,603	0.1%	0.876	0.149	<0.001	2.400	1.791	3.216
226- Fracture of neck of femur (hip)	118,519	6.5%	1.079	0.044	<0.001	2.941	2.699	3.206
227- Spinal cord injury	971	0.1%	1.493	0.120	<0.001	4.451	3.517	5.633
228- Skull and face fractures	1,847	0.1%	0.572	0.151	<0.001	1.772	1.318	2.384
229- Fracture of upper limb	19,524	1.1%	0.868	0.059	<0.001	2.382	2.121	2.674
230- Fracture of lower limb	40,204	2.2%	0.961	0.050	<0.001	2.613	2.371	2.880
231- Other fractures	54,759	3.0%	0.896	0.049	<0.001	2.450	2.225	2.697
232- Sprains and strains	2,737	0.2%	0.560	0.133	<0.001	1.751	1.348	2.275
233- Intracranial injury	20,768	1.1%	0.887	0.057	<0.001	2.428	2.173	2.713
234- Crushing injury or internal injury	4,354	0.2%	0.806	0.091	<0.001	2.238	1.874	2.674
235- Open wounds of head; neck; and trunk	1,244	0.1%	1.095	0.142	<0.001	2.989	2.265	3.946
236- Open wounds of extremities	1,259	0.1%	1.204	0.132	<0.001	3.334	2.572	4.322
237- Complication of device; implant or graft	61,507	3.4%	1.087	0.046	<0.001	2.966	2.710	3.246
238- Complications of surgical procedures or medical care	34,043	1.9%	1.040	0.049	<0.001	2.828	2.571	3.111
239- Superficial injury; contusion	5,848	0.3%	1.032	0.077	<0.001	2.806	2.412	3.264
240- Burns	741	0.0%	1.139	0.159	<0.001	3.122	2.286	4.265
241- Poisoning by psychotropic agents	658	0.0%	0.643	0.215	0.003	1.903	1.250	2.898

Covariate	Number of Stays	Percent of Stays	Estimate	Std Error	P-Value	Odds Ratio	OR Lower 95% CI	OR Higher 95% CI
244- Other injuries and conditions due to external causes	7,935	0.4%	0.892	0.072	<0.001	2.439	2.119	2.807
245- Syncope	6,402	0.4%	0.796	0.081	<0.001	2.216	1.892	2.595
246- Fever of unknown origin	928	0.1%	1.076	0.148	<0.001	2.933	2.194	3.921
248- Gangrene	3,208	0.2%	1.443	0.074	<0.001	4.235	3.661	4.899
249- Shock	380	0.0%	1.406	0.175	<0.001	4.079	2.894	5.750
250- Nausea and vomiting	781	0.0%	1.214	0.156	<0.001	3.368	2.479	4.576
251- Abdominal pain	962	0.1%	1.098	0.150	<0.001	2.999	2.236	4.022
252- Malaise and fatigue	10,458	0.6%	0.891	0.064	<0.001	2.436	2.151	2.759
253- Allergic reactions	490	0.0%	1.511	0.167	<0.001	4.533	3.266	6.291
257- Other aftercare	9,458	0.5%	0.693	0.065	<0.001	1.999	1.761	2.270
258- Other screening for suspected conditions (not mental disorders or infectious disease)	451	0.0%	1.199	0.203	<0.001	3.317	2.230	4.935
259- Residual codes; unclassified	4,399	0.2%	0.985	0.085	<0.001	2.677	2.268	3.159
650- Adjustment disorders	214	0.0%	0.819	0.348	0.019	2.269	1.147	4.487
651- Anxiety disorders	411	0.0%	0.887	0.254	<0.001	2.428	1.474	3.997
653- Delirium dementia and amnestic and other cognitive disorders	23,476	1.3%	0.930	0.059	<0.001	2.536	2.260	2.844
656- Impulse control disorders NEC	118	0.0%	0.594	0.517	0.251	1.811	0.657	4.991
657- Mood disorders	7,467	0.4%	0.768	0.085	<0.001	2.155	1.826	2.544
660- Alcohol-related disorders	7,107	0.4%	0.656	0.081	<0.001	1.927	1.644	2.258
661- Substance-related disorders	869	0.0%	0.723	0.187	<0.001	2.061	1.428	2.973
662- Suicide and intentional self-inflicted injury	470	0.0%	0.803	0.217	<0.001	2.231	1.458	3.416
670- Miscellaneous mental health disorders	416	0.0%	0.622	0.288	0.031	1.863	1.060	3.274
8_9- Other infections; including parasitic and Sexually transmitted infections (not HIV or hepatitis)	388	0.0%	0.463	0.311	0.136	1.590	0.864	2.924
25_26- Cancer of uterus and cervix	763	0.0%	1.338	0.169	<0.001	3.811	2.739	5.303

Covariate	Number of Stays	Percent of Stays	Estimate	Std Error	P-Value	Odds Ratio	OR Lower 95% CI	OR Higher 95% CI
29_31- Male cancer group	709	0.0%	1.008	0.154	<0.001	2.741	2.025	3.710
46_47- Benign neoplasm of uterus and Other and unspecified benign neoplasm	2,558	0.1%	0.991	0.103	<0.001	2.694	2.201	3.298
49_50- Diabetes mellitus with and without complication	40,086	2.2%	1.124	0.049	<0.001	3.076	2.797	3.383
658_659- Personality disorders and Schizophrenia and other psychotic disorders	8,493	0.5%	0.527	0.084	<0.001	1.694	1.437	1.999
169_172-Endometriosis, Prolapse of female genital organs, Menstrual disorders, and Ovarian cyst	161	0.0%	1.429	0.376	<0.001	4.174	1.997	8.724
205_206-Spondylosis; intervertebral disc disorders; other back problems and Osteoporosis	29,685	1.6%	0.782	0.055	<0.001	2.186	1.964	2.433
213_217- Cardiac and circulatory, Digestive, Genitourinary, Nervous system, and other congenital anomalies	650	0.0%	0.734	0.215	0.001	2.084	1.368	3.176
242_2617- Poisoning by other medications and drugs and nonmedicinal substances, and Adverse effects of medical drugs	3,678	0.2%	0.766	0.092	<0.001	2.151	1.797	2.574
HCC Comorbidities								
HCC1: HIV/AIDS	5,776	0.3%	-0.094	0.055	0.087	0.910	0.818	1.014
HCC2: Septicemia, Sepsis, Systemic Inflammatory Response Syndrome/Shock	375,980	20.6%	0.230	0.009	<0.001	1.258	1.237	1.279
HCC6: Opportunistic Infections	17,903	1.0%	0.140	0.025	<0.001	1.150	1.094	1.209
HCC8: Metastatic Cancer and Acute Leukemia	63,476	3.5%	0.289	0.016	<0.001	1.335	1.293	1.378
HCC9: Lung and Other Severe Cancers	41,514	2.3%	0.179	0.019	<0.001	1.196	1.152	1.242
HCC10: Lymphoma and Other Cancers	33,318	1.8%	0.203	0.022	<0.001	1.225	1.173	1.278

Covariate	Number of Stays	Percent of Stays	Estimate	Std Error	P-Value	Odds Ratio	OR Lower 95% CI	OR Higher 95% CI
HCC11: Colorectal, Bladder, and Other Cancers	27,759	1.5%	0.060	0.024	0.011	1.062	1.014	1.112
HCC12: Breast, Prostate, and Other Cancers and Tumors	43,328	2.4%	0.020	0.020	0.316	1.021	0.981	1.062
HCC17: Diabetes with Acute Complications	21,671	1.2%	-0.006	0.026	0.819	0.994	0.945	1.046
HCC18: Diabetes with Chronic Complications	572,148	31.4%	0.100	0.008	<0.001	1.105	1.088	1.122
HCC19: Diabetes without Complication	260,034	14.3%	0.068	0.009	<0.001	1.070	1.050	1.090
HCC21: Protein-Calorie Malnutrition	350,806	19.2%	0.201	0.008	<0.001	1.223	1.203	1.242
HCC22: Morbid Obesity	222,283	12.2%	0.065	0.010	<0.001	1.068	1.046	1.089
HCC23: Other Significant Endocrine and Metabolic Disorders	148,204	8.1%	0.070	0.011	<0.001	1.072	1.049	1.096
HCC27: End-Stage Liver Disease	33,283	1.8%	0.074	0.024	0.002	1.077	1.028	1.128
HCC28: Cirrhosis of Liver	39,184	2.1%	0.035	0.021	0.101	1.035	0.993	1.080
HCC29: Chronic Hepatitis	12,232	0.7%	-0.015	0.036	0.675	0.985	0.918	1.057
HCC33: Intestinal Obstruction/Perforation	112,419	6.2%	-0.020	0.013	0.114	0.980	0.956	1.005
HCC34: Chronic Pancreatitis	10,643	0.6%	0.018	0.038	0.643	1.018	0.944	1.097
HCC35: Inflammatory Bowel Disease	19,944	1.1%	0.075	0.029	0.009	1.077	1.019	1.140
HCC39: Bone/Joint/Muscle Infections/Necrosis	93,051	5.1%	-0.081	0.015	<0.001	0.922	0.895	0.950
HCC40: Rheumatoid Arthritis and Inflammatory Connective Tissue Disease	122,181	6.7%	0.122	0.013	<0.001	1.130	1.102	1.158
HCC46: Severe Hematological Disorders	17,701	1.0%	0.143	0.029	<0.001	1.154	1.091	1.221
HCC47: Disorders of Immunity	67,850	3.7%	0.047	0.016	0.002	1.049	1.017	1.081
HCC48: Coagulation Defects and Other Specified Hematological Disorders	255,210	14.0%	0.052	0.009	<0.001	1.053	1.035	1.072
HCC54: Drug/Alcohol Psychosis	11,727	0.6%	-0.212	0.043	<0.001	0.809	0.743	0.880
HCC55: Drug/Alcohol Dependence	90,268	5.0%	-0.125	0.016	<0.001	0.882	0.856	0.910

Covariate	Number of Stays	Percent of Stays	Estimate	Std Error	P-Value	Odds Ratio	OR Lower 95% CI	OR Higher 95% CI
HCC57: Schizophrenia	55,164	3.0%	0.105	0.018	<0.001	1.110	1.071	1.151
HCC58: Major Depressive, Bipolar, and Paranoid Disorders	124,175	6.8%	-0.017	0.013	0.177	0.983	0.958	1.008
HCC70: Quadriplegia	26,170	1.4%	0.287	0.020	<0.001	1.333	1.281	1.387
HCC71: Paraplegia	17,513	1.0%	0.255	0.026	<0.001	1.291	1.226	1.359
HCC72: Spinal Cord Disorders/Injuries	22,758	1.2%	0.120	0.027	<0.001	1.127	1.068	1.190
HCC73: Amyotrophic Lateral Sclerosis and Other Motor Neuron Disease	1,398	0.1%	0.109	0.097	0.261	1.116	0.922	1.350
HCC74: Cerebral Palsy	7,140	0.4%	0.181	0.046	<0.001	1.198	1.096	1.311
HCC75: Myasthenia Gravis/Myoneural Disorders and Guillain-Barre Syndrome/Inflammatory and Toxic Neuropathy	19,217	1.1%	-0.029	0.029	0.319	0.972	0.919	1.028
HCC76: Muscular Dystrophy	1,747	0.1%	0.292	0.087	0.001	1.339	1.129	1.589
HCC77: Multiple Sclerosis	16,195	0.9%	0.217	0.031	<0.001	1.242	1.168	1.320
HCC78: Parkinson's and Huntington's Diseases	86,020	4.7%	0.096	0.015	<0.001	1.101	1.069	1.134
HCC79: Seizure Disorders and Convulsions	140,505	7.7%	0.055	0.012	<0.001	1.057	1.033	1.081
HCC80: Coma, Brain Compression/Anoxic Damage	56,212	3.1%	0.123	0.017	<0.001	1.131	1.094	1.170
HCC82: Respirator Dependence/Tracheostomy Status	23,786	1.3%	0.266	0.022	<0.001	1.305	1.250	1.363
HCC83: Respiratory Arrest	606	0.0%	0.273	0.134	0.042	1.314	1.010	1.708
HCC84: Cardio-Respiratory Failure and Shock	494,864	27.2%	0.075	0.008	<0.001	1.077	1.060	1.095
HCC85: Congestive Heart Failure	764,804	42.0%	0.058	0.008	<0.001	1.060	1.044	1.077
HCC86: Acute Myocardial Infarction	137,852	7.6%	-0.054	0.012	<0.001	0.947	0.926	0.969
HCC87: Unstable Angina and Other Acute Ischemic Heart Disease	89,340	4.9%	-0.030	0.014	0.034	0.970	0.944	0.998
HCC88: Angina Pectoris	24,921	1.4%	-0.076	0.028	0.006	0.927	0.878	0.979
HCC96: Specified Heart Arrhythmias	720,104	39.5%	0.067	0.007	<0.001	1.070	1.054	1.085
HCC99: Cerebral Hemorrhage	29,093	1.6%	0.042	0.024	0.088	1.042	0.994	1.094

Covariate	Number of Stays	Percent of Stays	Estimate	Std Error	P-Value	Odds Ratio	OR Lower 95% CI	OR Higher 95% CI
HCC100: Ischemic or Unspecified Stroke	83,631	4.6%	0.029	0.016	0.073	1.029	0.997	1.062
HCC103: Hemiplegia/Hemiparesis	170,581	9.4%	0.064	0.012	<0.001	1.067	1.042	1.092
HCC104: Monoplegia, Other Paralytic Syndromes	13,384	0.7%	0.004	0.037	0.921	1.004	0.933	1.080
HCC106: Atherosclerosis of the Extremities with Ulceration or Gangrene	58,126	3.2%	0.230	0.017	<0.001	1.258	1.217	1.301
HCC107: Vascular Disease with Complications	72,196	4.0%	0.033	0.015	0.030	1.033	1.003	1.065
HCC108: Vascular Disease	353,614	19.4%	0.037	0.008	<0.001	1.037	1.021	1.054
HCC110: Cystic Fibrosis	255	0.0%	-0.072	0.251	0.775	0.931	0.569	1.522
HCC111: Chronic Obstructive Pulmonary Disease	533,928	29.3%	0.121	0.008	<0.001	1.129	1.112	1.146
HCC112: Fibrosis of Lung and Other Chronic Lung Disorders	31,566	1.7%	0.116	0.023	<0.001	1.123	1.073	1.175
HCC114: Aspiration and Specified Bacterial Pneumonias	163,170	9.0%	0.150	0.010	<0.001	1.161	1.138	1.185
HCC115: Pneumococcal Pneumonia, Emphysema, Lung Abscess	52,799	2.9%	0.030	0.017	0.081	1.031	0.996	1.066
HCC122: Proliferative Diabetic Retinopathy and Vitreous Hemorrhage	3,780	0.2%	-0.006	0.063	0.929	0.994	0.878	1.126
HCC124: Exudative Macular Degeneration	1,488	0.1%	-0.196	0.132	0.138	0.822	0.635	1.065
HCC134: Dialysis Status	87,634	4.8%	0.243	0.015	<0.001	1.275	1.237	1.315
HCC135: Acute Renal Failure	660,457	36.2%	0.131	0.008	<0.001	1.140	1.123	1.157
HCC136: Chronic Kidney Disease, Stage 5	25,428	1.4%	0.086	0.023	<0.001	1.089	1.041	1.140
HCC137: Chronic Kidney Disease, Severe (Stage 4)	41,718	2.3%	0.028	0.022	0.201	1.028	0.985	1.072
HCC157: Pressure Ulcer of Skin with Necrosis Through to Muscle, Tendon, or Bone	23,941	1.3%	0.505	0.021	<0.001	1.657	1.591	1.726
HCC158: Pressure Ulcer of Skin with Full Thickness Skin Loss	67,023	3.7%	0.367	0.013	<0.001	1.443	1.407	1.481

Covariate	Number of Stays	Percent of Stays	Estimate	Std Error	P-Value	Odds Ratio	OR Lower 95% CI	OR Higher 95% CI
HCC161: Chronic Ulcer of Skin, Except Pressure	98,998	5.4%	0.123	0.014	<0.001	1.131	1.101	1.161
HCC162: Severe Skin Burn or Condition	883	0.0%	0.062	0.114	0.588	1.064	0.850	1.331
HCC166: Severe Head Injury	269	0.0%	0.101	0.209	0.630	1.106	0.734	1.668
HCC167: Major Head Injury	37,563	2.1%	-0.039	0.024	0.100	0.961	0.917	1.008
HCC169: Vertebral Fractures without Spinal Cord Injury	83,259	4.6%	0.056	0.016	0.001	1.057	1.024	1.092
HCC170: Hip Fracture/Dislocation	123,319	6.8%	-0.032	0.014	0.023	0.968	0.942	0.996
HCC173: Traumatic Amputations and Complications	16,958	0.9%	-0.015	0.033	0.657	0.985	0.923	1.052
HCC176: Complications of Specified Implanted Device or Graft	121,762	6.7%	0.088	0.012	<0.001	1.093	1.067	1.119
HCC186: Major Organ Transplant or Replacement Status	7,266	0.4%	0.012	0.045	0.780	1.013	0.928	1.105
HCC188: Artificial Openings for Feeding or Elimination	81,464	4.5%	0.266	0.013	<0.001	1.304	1.270	1.339
HCC189: Amputation Status, Lower Limb/Amputation Complications	52,745	2.9%	0.093	0.018	<0.001	1.097	1.060	1.136
Length of Stay (Prior IP Stay) (Reference: 1-3 days)								
Psych Hospital Stay	23,512	1.3%	0.175	0.052	0.001	1.191	1.076	1.319
4-7 days	782,329	42.9%	0.127	0.009	<0.001	1.135	1.115	1.156
8-14days	362,227	19.9%	0.279	0.011	<0.001	1.322	1.294	1.350
>14 days	175,406	9.6%	0.434	0.013	<0.001	1.543	1.505	1.583
ICU/CCU Utilization (Prior IP Stay) (Reference: No)								
Yes	679,847	37.3%	0.072	0.008	<0.001	1.075	1.059	1.091
Number of IP Stays (Prior IP Stay) (Reference: 0 stays)								
1-3 stays	883,645	48.5%	0.077	0.009	<0.001	1.080	1.062	1.099
4-6 stays	173,182	9.5%	0.068	0.014	<0.001	1.071	1.043	1.100
7-9 stays	36,935	2.0%	0.002	0.022	0.935	1.002	0.960	1.045
>9 stays	12,190	0.7%	-0.016	0.034	0.629	0.984	0.920	1.052

APPENDIX C: MEASURE CALCULATION FLOW CHART