2024 Measure Updates and Specifications Report
Skilled Nursing Facility Value-Based Purchasing Program

Skilled Nursing Facility 30-Day All-Cause Readmission Measure – Version 2.0

Submitted By:
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Prepared For:
Centers for Medicare & Medicaid Services (CMS)

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1. How to Use This Report

This report describes updates that have been made to the Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM) used in the SNF Value-Based Purchasing (VBP) Program during annual reevaluation. The report provides background information about the measure, a description of each update made since the prior AUS report (August 2023 report for the 2024 SNF VBP Program year baseline period), the impacts of the changes on the measure cohort and outcome, and overall measure results. Specifically, the report includes the following sections:

- Section 2 – **Background and Overview of Measure Methodology**
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- Section 3 – **FY 2023 Performance Period (FY 2025 Program Year) Measure Updates**
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- Appendix A – **Updates to Measure Since Measure Development**
- Appendix B – **Planned Readmission Algorithm**

For additional references, the original measure technical report and supplements as well as a more in depth 2023 Measure Updates and Specifications Report are available on the SNF VBP Program's measures page.

- SNFRM Technical Report (March 2015)
- SNFRM Reliability Testing Memo (April 2018)

2. Background and Overview of Measure Methodology

2.1. Background

The SNFRM measure estimates the risk standardized rate of all cause, unplanned hospital readmissions for SNF Medicare (FFS) beneficiaries within 30 days of discharge from a prior proximal acute hospitalization. A comprehensive description of the measure development process is available in the 2015 Measure Technical Report located here. Detailed information about the measure specifications of the SNFRM measure can be found in the 2023 Measure Updates and Specifications Report.

CORE reevaluates the measure annually to make refinements based on stakeholder input and to incorporate advances in science, changes in coding and impacts on care delivery. The updates described in this report were made in preparation for public reporting for the FY 2025 SNF VBP Program year. This report includes results for the FY 2023 performance period of the FY 2025 SNF VBP Program, which uses FY 2023 data.

2.2. Risk-Adjustment Variables

The SNFRM risk-adjustment model accounts for variation across SNFs in case mix and patient characteristics. The measure adjusts for age, sex, length of stay during the prior proximal hospitalization, COVID-19 diagnoses, time spent in the intensive care unit (ICU) during the prior proximal hospitalization, disabled as original reason for Medicare coverage, end-stage renal disease (ESRD), number of acute care hospitalizations in the 365 days before the prior proximal hospitalization, principal diagnosis using Agency for Healthcare Research and Quality (AHRQ) Clinical Classification Software (CCS) categories, system-specific surgical indicators, individual comorbidities based on CMS Hierarchical Condition Categories (CCs), and the presence of multiple comorbidities.

2.3. Data Sources

CMS uses paid Medicare FFS claims to identify SNF admissions, as well as CMS enrollment and demographic data. Patient history is also normally assessed using claims data collected in the 12 months prior to the SNF admission. No additional information or data are needed from providers beyond what is present in claims and Medicare eligibility files (i.e., no additional data collection is required). The following specific files are used:

- Medicare Provider Analysis and Review (MedPAR) files. MedPAR data is available from multiple sources. Documentation for MedPAR available from the Chronic Conditions Warehouse is available here: https://www2.ccwdata.org/web/guest/data-dictionaries
- Medicare Beneficiary Information. Beneficiary information is obtained through the Beneficiary in the Cloud (BIC) system. Information available at BIC (cms.gov) and https://www.cms.gov/tra/Home/Home.htm

3. Updates to Measure for FY 2023 Performance Period (FY 2025 Program) Reporting

3.1. Background and Rationale for Measure Updates

The measure aims to improve the quality of care delivered to SNF patients within 30 days of discharge from a prior proximal hospitalization. The measure is reevaluated annually.

Section 3.2 below details the measure updates instituted during the measure reevaluation period and the impact of these updates on the measure cohort and outcome.

3.2. Measure Updates

3.2.1. Updates to Measure Specifications

We reviewed the FY 2023 and FY 2024 International Classification of Disease, 10th revision (ICD-10) Procedure Coding System (PCS) and FY 2023 as well as FY 2024 ICD-10 Clinical Modification (CM) codes to update the codes that define post-acute care exclusions. We did not identify any other coding updates to make to the measure specifications, other than to adopt the PRA v4.0_2022 (detailed in Section 3.2.2). Aside from minor, annual adjustments to the CCS and HCC software, all other measure specifications remained unchanged from the prior version of the SNFRM. See Appendix A for more detailed information on historical updates to the measure specification.

3.2.2. Updates to the Planned Readmission Algorithm

The SNFRM outcome does not include planned inpatient readmissions because they are not a signal of poor-quality care. For more detailed information about the Planned Readmission Algorithm (PRA), see the 2023 Measure Updates and Specifications Report and Appendix B. The PRA is updated annually to reflect coding updates and clinical expert review. The FY 2025 performance period code set file added 2,741 new FY 2023 and FY 2024 ICD-10 codes (1,853 ICD-10-CM codes and 888 ICD-10-PCS codes) and removed 102 retired ICD-10 codes (21 ICD-10-CM codes and 81 ICD-10-PCS codes) from the cohort and outcome PRA. Additionally, 1,775 codes were added, 7 codes were revised, and 20 retired ICD-10 codes were removed in the CCS diagnosis map, and 2 codes were remapped, 14 codes were revised, and 629 codes were added to the CCS procedure map.

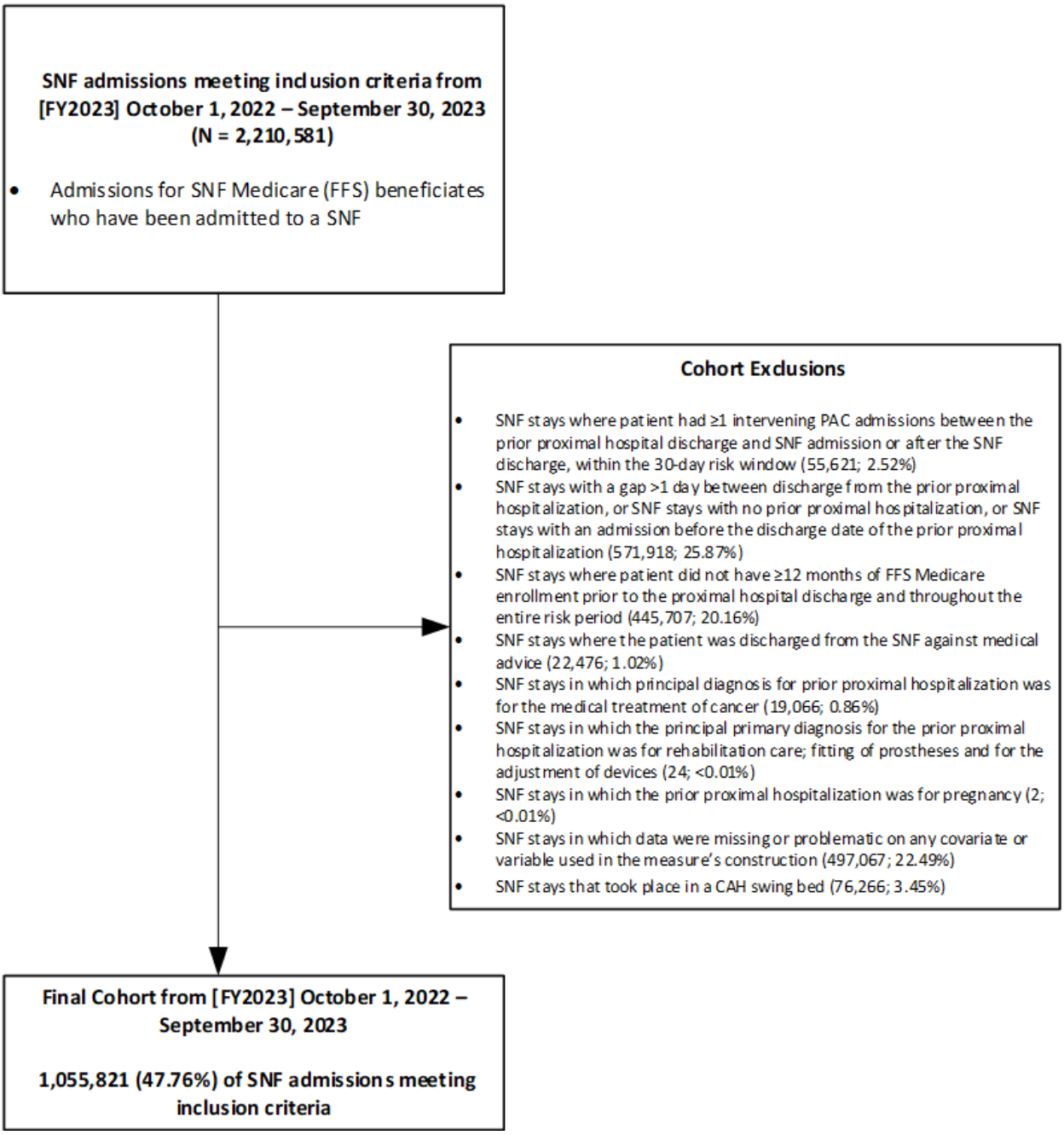
4. Summary of SNFRM Performance after Updates

This section presents updated information on the frequency and effect of model risk factors, model performance, SNF-level admission volume, and risk-standardized rates across SNFs after updating the codes that define post-acute care exclusions in FY 2023 data and adopting PRA v4.0_2022. All analyses were performed in FY 2023 data which is used to calculate the performance period for the FY2025 SNF VBP Program year.

4.1. Final SNFRM Cohort

Figure 1 illustrates the final cohort using the FY 2023 data after applying all updates to inclusion and exclusion criteria described in Section 3.

Figure 1. SNFRM Cohort



4.2. SNFRM Model Parameters and Performance

We computed two summary statistics to assess model performance: the predictive ability and the area under the receiver operating characteristic (ROC) curve (c-statistic). To test model predictive ability, we calculated observed readmission rates in the lowest and highest deciles based on predicted readmission probabilities. The c-statistic is an indicator of the model's discriminant ability or ability to correctly classify those who did and did not have an unplanned readmission within 30 days of discharge from a prior proximal acute hospitalization. Potential

values range from 0.5, meaning no better than chance, to 1.0, meaning perfect discrimination. A c-statistic of 1.0 indicates perfect prediction, implying patients' outcomes can be predicted completely by their risk factors, and SNFs play no role in patients' outcomes. In Section 4.3, we present the distributions of SNF admissions and risk-standardized readmission rates across SNFs.

Table 1 shows the frequency of risk factors used in the risk-adjustment model and presents the corresponding odds ratios (ORs) and 95% confidence intervals (CIs) from the hierarchical logistic regression model. Table 2 presents the SNFRM model performance values.

Table 1. Logistic Regression Model Risk Factor Frequencies and Odds Ratios (ORs) of SNFRM Model (FY 2023)

Risk Factor	Prevalence (%) N = 1,055,821	OR (95% CI)
Unadjusted unplanned readmission rate	20.2	--
Age-Sex Groups	--	--
Male age 0-34	0.1	1.16 (0.97, 1.38)
Male age 35-44	0.2	1.05 (0.95, 1.16)
Male age 45-54	0.7	1.01 (0.95, 1.07)
Male age 55-59	0.9	0.96 (0.91, 1.02)
Male age 60-64	1.6	0.96 (0.92, 1.00)
Male age 65-69	4.2	0.96 (0.93, 0.99)
Male age 70-74	6.0	1.01 (0.98, 1.04)
Male age 75-79	7.2	1.04 (1.01, 1.07)
Male age 80-84	7.6	1.08 (1.05, 1.11)
Male age 85-89	6.4	1.06 (1.03, 1.09)
Male age 90-94	3.8	1.06 (1.02, 1.10)
Male age > 95	1.3	1.05 (0.99, 1.10)
Female age 0-34	0.0	1.02 (0.82, 1.27)
Female age 35-44	0.2	1.16 (1.04, 1.30)
Female age 45-54	0.6	1.06 (0.99, 1.13)
Female age 55-59	0.8	0.99 (0.93, 1.05)
Female age 60-64	1.4	1.02 (0.98, 1.07)
Female age 65-69 (REF)	7.6	--
Female age 70-74	10.3	0.99 (0.96, 1.02)
Female age 75-79	11.6	0.99 (0.96, 1.02)
Female age 80-84	11.3	0.96 (0.93, 0.99)
Female age 85-89	8.2	0.93 (0.90, 0.95)
Female age 90-94	3.8	0.90 (0.87, 0.93)
Female age > 95	0.1	0.85 (0.81, 0.88)
Prior Hospital Length of Stay (LOS)	--	--
LOS 1-3 days (REF)	--	--

Risk Factor	Prevalence (%) N = 1,055,821	OR (95% CI)
LOS 4-7 days	44.3	1.13 (1.11, 1.14)
LOS 8-14 days	23.4	1.30 (1.28, 1.32)
LOS >14 days	9.2	1.46 (1.43, 1.49)
Eligibility	--	--
Patient originally entitled by disability	22.0	1.03 (1.02, 1.05)
End Stage Renal Disease Indicator	4.0	1.05 (1.01, 1.10)
Surgical Groups	--	--
Vascular Surgery	1.0	1.21 (1.16, 1.27)
Orthopedic Surgery	15.5	0.94 (0.92, 0.96)
General Surgery	4.6	1.00 (0.97, 1.02)
Cardio Thoracic Surgery	1.1	0.81 (0.77, 0.86)
Urologic Surgery	0.8	1.01 (0.95, 1.06)
Neurosurgery	1.0	1.11 (1.05, 1.17)
Plastic Surgery	2.6	1.03 (1.00, 1.07)
Otolaryngologic Surgery	0.2	1.01(0.89, 1.14)
Obstetric/Gynecologic Surgery	0.1	0.93 (0.80, 1.08)
Prior Care Utilization - Count of Prior Acute Stays (365-Day Look-back)	--	--
Count: 0 (REF)	--	--
Count: 1-3	47.4	1.06 (1.05, 1.08)
Count: 4-6	7.2	1.23 (1.20, 1.26)
Count: 7-9	1.2	1.54 (1.48, 1.60)
Count: 10+	0.3	2.13 (1.98, 2.29)
ICU use: at least one day in ICU During Proximal Stay	38.3	1.11 (1.10, 1.12)
COVID-19	--	--
No COVID-19 diagnoses in history or the prior proximal hospitalization (REF)	--	--
COVID-19 during the prior proximal hospitalization	6.6	1.05 (1.02, 1.07)
History of COVID-19 but no COVID-19 during the prior proximal hospitalization	6.7	0.92 (0.90, 0.94)
Principal diagnosis on prior acute stay, Clinical Classifications Software (CCS) Groupings	--	--
Septicemia (except in labor) (CCS: 2)	13.8	1.27 (1.23, 1.31)
Mycoses (CCS: 4)	0.1	1.61 (1.37, 1.89)
HIV infection (CCS: 5)	<0.1	1.71 (1.12, 2.61)
Hepatitis (CCS: 6)	<0.1	1.57 (1.22, 2.03)

Risk Factor	Prevalence (%) N = 1,055,821	OR (95% CI)
Infections: Tuberculosis/Bacterial/Viral/Other/Sexually transmitted (not HIV or hepatitis) (CCS: 1, 3, 7, 8, 9)	0.2	1.16 (1.04, 1.29)
Immunizations and screening for infectious disease (CCS: 10) (REF)	--	--
Cancer of head and neck (CCS: 11)	<0.1	1.04 (0.77, 1.40)
Cancers of gastrointestinal system (CCS: 12, 13, 14, 15)	0.3	1.20 (1.09, 1.32)
Cancers of liver/pancreas/ other gastrointestinal organs (CCS: 16, 17, 18)	0.1	1.53 (1.27, 1.84)
Cancers of respiratory system (CCS: 19, 20)	<0.1	1.38 (1.09, 1.74)
Cancer of bone and connective tissue (CCS: 21)	<0.1	1.41 (1.00, 1.98)
Cancers of skin (CCS: 22, 23)	<0.1	1.29 (0.91, 1.83)
Cancer of breast (CCS: 24)	<0.1	1.16 (0.77, 1.76)
Cancers of female genitalia (CCS: 25, 26, 27, 28)	<0.1	1.56 (1.21, 2.02)
Cancers of male genitalia (CCS: 29, 30, 31)	<0.1	1.64 (1.08, 2.50)
Cancer of bladder (CCS: 32)	0.1	1.87 (1.58, 2.23)
Cancers of kidney/renal/other urinary (CCS: 33, 34)	<0.1	1.47 (1.16, 1.86)
Cancer of brain and nervous system (CCS: 35)	<0.1	1.55 (1.16, 2.07)
Thyroid cancer/disorders (CCS: 36, 48)	0.1	1.16 (0.97, 1.39)
Hodgkin's/Leukemia/Myeloma (CCS: 37, 38, 39, 40)	<0.1	1.44 (1.10, 1.89)
Secondary malignancies (CCS: 42)	0.1	1.37 (1.19, 1.59)
Other cancers/Neoplasms (CCS: 41, 43, 44)	<0.1	1.17 (0.88, 1.56)
Maintenance chemotherapy; radiotherapy (CCS: 45)	<0.1	0.82 (0.40, 1.70)
Benign neoplasms (CCS: 46, 47)	0.1	1.29 (1.12, 1.47)
Diabetes (CCS: 49, 50)	2.1	1.17 (1.12, 1.22)
Other endocrine disorders (CCS: 51)	0.5	1.23 (1.14, 1.33)
Nutritional deficiencies (CCS: 52)	0.1	1.17 (1.01, 1.36)
Disorders of lipid metabolism (CCS: 53) (REF)	--	--
Gout and other crystal arthropathies (CCS: 54)	0.1	1.10 (0.92, 1.31)

Risk Factor	Prevalence (%) N = 1,055,821	OR (95% CI)
Fluid and electrolyte disorders (CCS: 55)	1.8	1.31 (1.25, 1.37)
Cystic Fibrosis COPD (CCS: 56, 127)	0.9	1.50 (1.41, 1.59)
Immunity/White Blood Cell Disorders (CCS: 57, 63)	<0.1	1.26 (1.03, 1.55)
Other disorders: Nutritional/Endocrine/Metabolic (CCS: 58)	0.5	1.30 (1.20, 1.40)
Deficiency and other anemia (CCS: 59)	0.5	1.55 (1.45, 1.67)
Acute posthemorrhagic anemia (CCS: 60)	0.3	1.53 (1.40, 1.67)
Blood disorders (CCS: 61, 62, 64)	0.2	1.37 (1.24, 1.51)
Meningitis (except that caused by tuberculosis or sexually transmitted disease) (CCS: 76)	<0.1	1.44 (1.06, 1.94)
Encephalitis (except that caused by tuberculosis or sexually transmitted disease) (CCS: 77)	<0.1	1.52 (1.21, 1.89)
Other CNS infection and poliomyelitis (CCS: 78)	<0.1	1.43 (1.16, 1.76)
Parkinson's disease (CCS: 79)	0.3	1.08 (0.98, 1.20)
Multiple sclerosis (CCS: 80)	<0.1	0.84 (0.62, 1.14)
Other hereditary and degenerative nervous system conditions (CCS: 81)	0.1	0.89 (0.76, 1.04)
Paralysis (CCS: 82)	<0.1	1.14 (0.84, 1.54)
Epilepsy; convulsions (CCS: 83)	0.7	1.11 (1.04, 1.19)
Headache, including migraine (CCS: 84)	<0.1	0.89 (0.62, 1.27)
Coma, stupor, and brain damage (CCS: 85)	<0.1	1.48 (0.88, 2.49)
Conditions associated with dizziness or vertigo (CCS: 93)	0.1	0.87 (0.73, 1.03)
Eye/Ear/ Sensory Disorders (CCS: 86, 87, 88, 89, 90, 91, 92, 94)	0.1	0.94 (0.77, 1.14)
Other nervous system disorders (CCS: 95)	2.0	1.17 (1.11, 1.22)
Heart valve disorders (CCS: 96)	0.4	1.32 (1.20, 1.45)
Peri- endo- & myocarditis cardiomyopathy (except caused by tuberculosis or sexually transmitted disease) (CCS: 97)	0.1	1.58 (1.40, 1.78)
Essential hypertension (CCS: 98)	<0.1	1.27 (0.72, 2.27)
Hypertension with complications and secondary hypertension (CCS: 99)	5.9	1.34 (1.29, 1.39)
Acute myocardial infarction (CCS: 100)	1.0	1.39 (1.32, 1.47)

Risk Factor	Prevalence (%) N = 1,055,821	OR (95% CI)
Coronary atherosclerosis and other heart disease (CCS: 101)	0.4	1.28 (1.17, 1.40)
Nonspecific chest pain (CCS: 102)	0.1	0.99 (0.86, 1.15)
Pulmonary heart disease (CCS: 103)	0.7	1.16 (1.09, 1.24)
Other and ill-defined heart disease (CCS: 104)	<0.1	0.97 (0.74, 1.28)
Conduction disorders (CCS: 105)	0.3	0.96 (0.87, 1.06)
Cardiac dysrhythmias (CCS: 106)	1.6	1.34 (1.27, 1.40)
Cardiac arrest and ventricular fibrillation (CCS: 107)	<0.1	1.12 (0.88, 1.43)
Congestive heart failure, Non hypertensive (CCS: 108)	0.4	1.47 (1.36, 1.60)
Acute cerebrovascular disease (CCS: 109)	2.8	1.26 (1.21, 1.32)
Occlusion or stenosis of precerebral arteries (CCS: 110)	0.1	0.82 (0.68, 0.99)
Other and ill-defined cerebrovascular disease (CCS: 111)	0.1	0.84 (0.67, 1.07)
Transient cerebral ischemia (CCS: 112)	0.3	1.06 (0.95, 1.18)
Late effects of cerebrovascular disease (CCS: 113)	0.2	1.04 (0.92, 1.18)
Peripheral and visceral atherosclerosis (CCS: 114)	0.3	1.44 (1.32, 1.58)
Aortic, peripheral, and visceral artery aneurysms (CCS: 115)	0.2	1.31 (1.16, 1.47)
Aortic and peripheral arterial embolism or thrombosis (CCS: 116)	<0.1	1.65 (1.35, 2.02)
Other circulatory disease (CCS: 117)	0.7	1.09 (1.02, 1.17)
Phlebitis; thrombophlebitis and thromboembolism (CCS: 118)	0.3	1.24 (1.14, 1.36)
Vein/ Lymphatic Disease (CCS: 119, 120, 121, 247)	0.2	1.21 (1.08, 1.36)
Pneumonia (except that caused by tuberculosis or sexually transmitted disease) (CCS: 122)	2.9	1.28 (1.23, 1.33)
Influenza (CCS: 123)	0.4	1.09 (1.00, 1.19)
Acute bronchitis (CCS: 125)	0.1	1.01 (0.83, 1.21)
Upper respiratory infection/ Tonsillitis (CCS: 124, 126)	<0.1	1.08 (0.83, 1.40)
Asthma (CCS: 128)	<0.1	1.26 (0.99, 1.60)

Risk Factor	Prevalence (%) N = 1,055,821	OR (95% CI)
Aspiration pneumonitis; food/ vomitus (CCS: 129)	1.2	1.25 (1.18, 1.31)
Pleurisy, pneumothorax, pulmonary collapse (CCS: 130)	0.3	1.43 (1.30, 1.56)
Respiratory failure, insufficiency, arrest (adult) (CCS: 131)	1.4	1.49 (1.42, 1.56)
Lung disease due to external agents/ Other lower respiratory disease (CCS: 132, 133)	0.2	1.60 (1.44, 1.77)
Other upper respiratory disease (CCS: 134)	<0.1	1.33 (1.06, 1.66)
Intestinal infection (CCS: 135)	0.5	1.29 (1.20, 1.39)
Disorders of teeth and jaw/Diseases of the mouth (excluding dental) (CCS: 136, 137)	0.1	1.15 (0.92, 1.43)
Esophageal disorders (CCS: 138)	0.2	1.29 (1.17, 1.43)
Gastroduodenal ulcer (except hemorrhage) (CCS: 139)	0.1	1.23 (1.02, 1.48)
Gastritis and duodenitis (CCS: 140)	0.2	1.35 (1.22, 1.50)
Other disorders of stomach and duodenum (CCS: 141)	0.2	1.50 (1.35, 1.66)
Appendicitis and other appendiceal conditions (CCS: 142)	0.1	1.13 (0.91, 1.42)
Abdominal hernia (CCS: 143)	0.4	1.15 (1.05, 1.26)
Regional enteritis and ulcerative colitis (CCS: 144)	0.1	1.58 (1.34, 1.86)
Intestinal obstruction without hernia (CCS: 145)	0.8	1.21 (1.13, 1.29)
Diverticulosis and diverticulitis (CCS: 146)	0.6	1.47 (1.37, 1.57)
Anal and rectal conditions (CCS: 147)	0.1	1.17 (1.01, 1.34)
Peritonitis and intestinal abscess (CCS: 148)	<0.1	1.68 (1.38, 2.06)
Biliary tract disease (CCS: 149)	0.5	1.35 (1.26, 1.46)
Other liver diseases (CCS: 151)	0.4	1.83 (1.70, 1.97)
Pancreatic disorders (not diabetes) (CCS: 152)	0.2	1.37 (1.22, 1.54)
Gastrointestinal hemorrhage (CCS: 153)	1.2	1.32 (1.25, 1.39)
Noninfectious gastroenteritis (CCS: 154)	0.3	1.42 (1.28, 1.56)
Other gastrointestinal disorders (CCS: 155)	0.5	1.38 (1.29, 1.48)
Nephritis; nephrosis; renal sclerosis (CCS: 156)	<0.1	1.51 (1.08, 2.11)
Acute and unspecified renal failure (CCS: 157)	3.2	1.37 (1.31, 1.42)

Risk Factor	Prevalence (%) N = 1,055,821	OR (95% CI)
Chronic renal failure (CCS: 158)	<0.1	1.57 (1.04, 2.38)
Urinary tract infections (CCS: 159)	4.2	1.18 (1.13, 1.23)
Calculus of urinary tract (CCS: 160)	0.1	1.29 (1.04, 1.60)
Other diseases of kidney and ureters (CCS: 161)	0.1	1.41 (1.21, 1.63)
Other diseases of bladder and urethra (CCS: 162)	0.1	1.65 (1.38, 1.96)
Genitourinary symptoms and ill-defined conditions (CCS: 163)	0.1	1.41 (1.21, 1.65)
Hyperplasia of prostate (CCS: 164)	0.1	1.28 (1.07, 1.54)
Inflammatory conditions of male genital organs (CCS: 165)	<0.1	1.15 (0.92, 1.44)
Other male genital disorders (CCS: 166)	<0.1	1.73 (1.13, 2.65)
Nonmalignant female disorders: Breast/ Pelvis/Genital/Ovarian/ Endometriosis (CCS: 167, 168, 169, 170, 172, 173, 175)	0.1	1.26 (1.03, 1.54)
Menstrual disorders (CCS: 171) (REF)	--	--
Skin and subcutaneous tissue infections (CCS: 197)	1.4	1.08 (1.02, 1.14)
Chronic ulcer of skin (CCS: 199)	0.3	1.08 (0.98, 1.19)
Other inflammatory conditions of the skin/Other skin disorders (CCS: 198, 200)	<0.1	1.54 (1.23, 1.92)
Infective arthritis and osteomyelitis (except that caused by tuberculosis or sexually transmitted) (CCS: 201)	0.4	1.14 (1.05, 1.24)
Rheumatoid arthritis and related disease (CCS: 202)	<0.1	0.80 (0.58, 1.11)
Osteoarthritis (CCS: 203) (REF)	--	--
Other non-traumatic joint disorders (CCS: 204)	0.2	0.96 (0.84, 1.09)
Spondylosis; intervertebral disc disorders; other back problems/ Osteoporosis (CCS: 205, 206)	1.6	1.20 (1.13, 1.27)
Pathological fracture (CCS: 207)	1.6	1.05 (1.00, 1.11)
Foot/Other Deformities (CCS: 208, 209)	0.2	1.19 (1.03, 1.39)
Systemic lupus erythematosus and connective tissue disorders (CCS: 210)	<0.1	1.55 (1.18, 2.04)
Other connective tissue disease (CCS: 211)	0.8	0.98 (0.91, 1.05)

Risk Factor	Prevalence (%) N = 1,055,821	OR (95% CI)
Other bone disease and musculoskeletal deformities (CCS: 212)	0.1	1.09 (0.89, 1.33)
Congenital anomalies: Cardiac and circulatory/Digestive/ Genitourinary/Nervous/ Other (CCS: 213, 214, 215, 216, 217)	<0.1	0.96 (0.73, 1.27)
Joint disorders and dislocations; trauma-related (CCS: 225)	0.1	1.10 (0.90, 1.34)
Fracture of neck of femur (hip) (CCS: 226)	6.8	1.11 (1.07, 1.15)
Spinal cord injury (CCS: 227)	<0.1	1.72 (1.38, 2.14)
Skull and face fractures (CCS: 228)	0.1	1.02 (0.85, 1.22)
Fracture of upper limb (CCS: 229)	1.1	1.05 (0.99, 1.12)
Fracture of lower limb (CCS: 230)	2.3	1.07 (1.02, 1.13)
Other fractures (CCS: 231)	3.2	1.05 (1.00, 1.09)
Sprains and strains (CCS: 232)	0.1	1.03 (0.88, 1.21)
Intracranial injury (CCS: 233)	1.2	1.47 (1.39, 1.55)
Crushing injury or internal injury (CCS: 234)	0.3	1.24 (1.13, 1.36)
Open wounds of head, neck, and trunk (CCS: 235)	0.1	1.01 (0.83, 1.23)
Open wounds of extremities (CCS: 236)	0.1	1.39 (1.16, 1.66)
Complication of device, implant or graft (CCS: 237)	3.8	1.37 (1.32, 1.43)
Complications of surgical procedures or medical care (CCS: 238)	1.7	1.32 (1.26, 1.39)
Superficial injury; contusions/Burns (CCS: 239, 240)	0.4	1.20 (1.10, 1.31)
Poisoning: Psychotropic agents/Other medications/Nonmedical substances (CCS: 241, 242, 243)	0.2	1.01 (0.90, 1.13)
Other injuries and conditions due to external causes (CCS: 244)	0.5	1.04 (0.96, 1.13)
Syncope (CCS: 245)	0.3	0.97 (0.87, 1.07)
Fever of unknown origin (CCS: 246)	<0.1	1.11 (0.84, 1.48)
Gangrene (CCS: 248)	0.2	1.50 (1.34, 1.67)
Shock (CCS: 249)	<0.1	0.84 (0.65, 1.10)
Nausea and vomiting (CCS: 250)	<0.1	1.15 (0.88, 1.48)
Abdominal pain (CCS: 251)	<0.1	1.25 (0.96, 1.62)
Malaise and fatigue (CCS: 252)	0.4	1.16 (1.06, 1.27)
Allergic reactions (CCS: 253)	<0.1	1.28 (0.94, 1.75)

Risk Factor	Prevalence (%) N = 1,055,821	OR (95% CI)
Administrative/social admission (CCS: 255) (REF)	--	--
Medical examination/evaluation (CCS: 256) (REF)	--	--
Other aftercare (CCS: 257)	0.1	0.82 (0.66, 1.02)
Screening for suspected conditions/Residual codes; unclassified (CCS: 258, 259)	0.2	1.04 (0.91, 1.19)
Delirium (CCS: 653)	1.3	0.95 (0.90, 1.01)
Behavioral/ Developmental Disorders (CCS: 650, 651, 652, 654, 662)	0.1	0.95 (0.77, 1.17)
Disorders usually diagnosed in infancy (CCS: 655) (REF)	--	--
Impulse control disorders (CCS: 656) (REF)	--	--
Mood disorders (CCS: 657) (REF)	--	--
Personality disorder/ Schizophrenia/ Other (CCS: 658, 659)	0.5	0.66 (0.60, 0.73)
Alcohol/ Substance-related disorders/ Screening (CCS: 660, 661, 663)	0.4	1.14 (1.05, 1.23)
Miscellaneous disorders (CCS: 670)	<0.1	1.13 (0.78, 1.63)
Adverse effects of medical drugs (CCS: 2617) (REF)	--	--
Comorbidities, HCC Groupings	**--**	**--**
HCC1 HIV/AIDS	0.3	0.98 (0.90, 1.06)
HCC6 Opportunistic Infections	0.8	1.15 (1.10, 1.20)
HCC8 Metastatic Cancer and Acute Leukemia	3.1	1.41 (1.37, 1.44)
HCC9 Lung and Other Severe Cancers	2.0	1.27 (1.23, 1.31)
HCC10 Lymphoma and Other Cancers	1.7	1.14 (1.10, 1.18)
HCC11 Colorectal, Bladder, and Other Cancers	1.4	1.14 (1.09, 1.18)
HCC12 Breast, Prostate, and Other Cancers and Tumors	2.6	0.99 (0.96, 1.02)
HCC14_15 Other digestive and urinary neoplasms; Other neoplasms	2.9	1.02 (1.00, 1.05)

Risk Factor	Prevalence (%) N = 1,055,821	OR (95% CI)
HCC17_18 Diabetes with Acute complications; Diabetes with chronic complications	32.4	1.12 (1.11, 1.13)
HCC19 Diabetes without Complication	8.1	1.04 (1.02, 1.06)
HCC20 Type I Diabetes Mellitus	1.0	1.23 (1.17, 1.28)
HCC21 Protein-Calorie Malnutrition	20.7	1.11 (1.09, 1.12)
HCC23 Other Significant Endocrine and Metabolic Disorders	9.2	1.08 (1.06, 1.10)
HCC24 Disorders of Fluid/ Electrolyte/ Acid-Base Balance	64.6	1.10 (1.09, 1.12)
HCC27 End-Stage Liver Disease	2.0	1.43 (1.38, 1.47)
HCC28 Cirrhosis of Liver	2.0	1.13 (1.10, 1.17)
HCC29 Chronic Hepatitis	0.5	1.06 (0.99, 1.13)
HCC31 Other Hepatitis and Liver Disease	3.7	1.02 (0.99, 1.04)
HCC33 Intestinal Obstruction/Perforation	6.5	1.06 (1.04, 1.08)
HCC34 Chronic Pancreatitis	0.6	1.01 (0.95, 1.07)
HCC35 Inflammatory Bowel Disease	1.3	1.07 (1.03, 1.12)
HCC36 Peptic Ulcer, Hemorrhage, Other Specified Gastrointestinal Disorders	14.3	1.08 (1.07, 1.10)
HCC40 Rheumatoid Arthritis and Inflammatory Connective Tissue Disease	6.6	1.08 (1.06, 1.10)
HCC46 Severe Hematological Disorders	0.9	1.33 (1.27, 1.39)
HCC47 Disorders of Immunity	5.7	1.14 (1.12, 1.17)
HCC48 Coagulation Defects and Other Specified Hematological Disorders	15.8	1.10 (1.08, 1.12)
HCC49 Iron Deficiency and Other/Unspecified Anemias and Blood Disease	42.4	1.11 (1.10, 1.12)
HCC50 Delirium and Encephalopathy	35.4	1.06 (1.05, 1.07)
HCC60 Personality Disorders	0.1	1.09 (0.96, 1.25)
HCC63 Other Psychiatric Disorders	7.2	1.03 (1.01, 1.05)
HCC64_65 Profound/ Severe Mental Retardation	0.2	1.14 (1.02, 1.28)
HCC66 Moderate Mental Retardation/Developmental Disability	0.1	0.84 (0.70, 1.01)
HCC69 Attention Deficit Disorder	0.3	0.91 (0.82, 1.01)
HCC70 Quadriplegia	1.5	1.08 (1.04, 1.12)
HCC71 Paraplegia	0.8	1.06 (1.00, 1.12)

Risk Factor	Prevalence (%) N = 1,055,821	OR (95% CI)
HCC72 Spinal Cord Disorders/ Injuries	1.3	1.01 (0.97, 1.05)
HCC73 Amyotrophic Lateral Sclerosis and Other Motor Neuron Disease	0.1	1.05 (0.89, 1.23)
HCC75 Polyneuropathy	1.0	1.06 (1.01, 1.11)
HCC79 Seizure Disorders and Convulsions	7.9	1.01 (0.99, 1.03)
HCC80 Coma, Brain Compression/Anoxic Damage	1.8	1.07 (1.03, 1.11)
HCC82 Respirator Dependence/Tracheostomy Status	0.7	1.24 (1.17, 1.31)
HCC83 Respiratory Arrest	<0.1	0.84 (0.59, 1.19)
HCC84 Cardio-Respiratory Failure and Shock	32.7	1.10 (1.09, 1.12)
HCC85 Congestive Heart Failure	43.0	1.12 (1.11, 1.13)
HCC86 Acute Myocardial Infarction	9.6	1.08 (1.07, 1.10)
HCC87 Unstable Angina and Other Acute Ischemic Heart Disease	5.9	1.08 (1.05, 1.10)
HCC88 Angina Pectoris	1.0	1.09 (1.04, 1.14)
HCC89 Coronary Atherosclerosis/Other Chronic Ischemic Heart Disease	26.2	1.06 (1.04, 1.07)
HCC90 Heart Infection/ Inflammation, Except Rheumatic	2.5	1.06 (1.03, 1.09)
HCC91 Valvular and Rheumatic Heart Disease	17.3	1.06 (1.04, 1.07)
HCC96 Specified Heart Arrhythmias	42.0	1.12 (1.11, 1.13)
HCC99 Cerebral Hemorrhage	1.5	1.07 (1.02, 1.11)
HCC100 Ischemic or Unspecified Stroke	3.7	1.07 (1.05, 1.10)
HCC106 Atherosclerosis of the Extremities with Ulceration or Gangrene	3.1	1.11 (1.08, 1.14)
HCC107 Vascular Disease with Complications	4.4	1.06 (1.04, 1.09)
HCC108 Vascular Disease	17.8	1.05 (1.04, 1.07)
HCC109 Other Circulatory Disease	16.4	1.02 (1.00, 1.03)
HCC111 Chronic Obstructive Pulmonary Disease	26.1	1.12 (1.10, 1.13)
HCC112 Fibrosis of Lung and Other Chronic Lung Disorders	1.8	1.08 (1.04, 1.12)
HCC114 Aspiration and Specified Bacterial Pneumonias	9.0	1.07 (1.05, 1.08)

Risk Factor	Prevalence (%) N = 1,055,821	OR (95% CI)
HCC116 Viral and Unspecified Pneumonia, Pleurisy	16.7	1.04 (1.02, 1.05)
HCC117 Pleural Effusion/ Pneumothorax	7.8	1.11 (1.09, 1.13)
HCC122 Proliferative Diabetic Retinopathy and Vitreous Hemorrhage	0.2	0.96 (0.88, 1.05)
HCC124 Exudative Macular Degeneration	0.1	0.91 (0.77, 1.07)
HCC132 Kidney Transplant Status	0.6	1.68 (1.58, 1.78)
HCC134 Dialysis Status	3.9	1.51 (1.44, 1.58)
HCC135 Acute Renal Failure	39.0	1.20 (1.19, 1.22)
HCC136 Chronic Kidney Disease, Stage 5	0.3	1.54 (1.41, 1.67)
HCC137 Chronic Kidney Disease, Severe (Stage 4)	1.0	1.34 (1.27, 1.40)
HCC138 Chronic Kidney Disease, Moderate (Stage 3)	6.9	1.09 (1.07, 1.12)
HCC139 Chronic Kidney Disease, Mild or Unspecified (Stages 1-2 or Unspecified)	3.2	1.06 (1.03, 1.09)
HCC140 Unspecified Renal Failure	0.0	1.24 (0.97, 1.58)
HCC141 Nephritis	0.2	1.04 (0.92, 1.17)
HCC142 Urinary Obstruction and Retention	18.5	1.06 (1.05, 1.08)
HCC144 Urinary Tract Infection	34.0	0.99 (0.98, 1.00)
HCC145 Other Urinary Tract Disorders	9.5	1.03 (1.02, 1.05)
HCC148 Other Female Genital Disorders	0.9	1.01 (0.96, 1.06)
HCC157 Pressure Ulcer of Skin with Necrosis Through to Muscle, Tendon, or Bone	1.3	1.09 (1.05, 1.13)
HCC158 Pressure Ulcer of Skin with Full Thickness Skin Loss	3.4	1.10 (1.07, 1.13)
HCC159 Pressure Ulcer of Skin with Partial Thickness Skin Loss	2.9	1.06 (1.03, 1.09)
HCC160 Pressure Pre-Ulcer Skin Changes or Unspecified Stage	3.3	1.05 (1.02, 1.07)
HCC169 Vertebral Fractures without Spinal Cord Injury	5.6	0.99 (0.97, 1.02)
HCC173 Traumatic Amputations and Complications	1.1	0.90 (0.86, 0.94)
HCC177 Other Complications of Medical Care	7.7	1.04 (1.02, 1.06)
HCC178 Major Symptoms, Abnormalities	63.2	1.02 (1.00, 1.03)

Risk Factor	Prevalence (%) N = 1,055,821	OR (95% CI)
HCC186 Major Organ Transplant or Replacement Status	0.5	1.04 (0.97, 1.11)
HCC187 Other Organ Transplant Status/ Replacement	3.7	1.02 (1.00, 1.05)
HCC188 Artificial Openings for Feeding or Elimination	3.8	1.20 (1.17, 1.23)
HCC189 Amputation Status, Lower Limb/ Amputation Complications	1.8	0.98 (0.94, 1.01)
HCC190 Amputation Status, Upper Limb	0.1	1.03 (0.90, 1.17)
The sum of HCCs is greater than or equal to 2	96.4	1.24 (1.19, 1.29)

Notes: In Table 1, results are based on FY 2023 performance period. CC-related risk factors are defined by v24 of CC map; OR=Odds ratio CI=Confidence interval; HCC=Hierarchical Condition Categories

Table 2. SNFRM Logistic Regression Model Performance Among SNFs (FY 2023)

Characteristic	FY 2023
Predictive ability, % (lowest decile – highest decile)	7.7 – 40.1%
c-statistic	66.5

Note: In Table 2, results are based on FY 2023 performance period data.

4.3. Distribution of Provider-Level Measure Score

Table 3 presents the number of SNF stays. There were 14,739 SNFs with at least one admission during FY 2023. The median number of SNF admissions was 71.63 (interquartile range [IQR] = 22 – 90).

Table 4 shows the mean and median risk-standardized readmission rates (RSRRs). The median RSRR was 0.20 (IQR = 0.19 – 0.21). Figure 2 shows the overall distribution of RSRRs rates for SNFs.

Table 3. Distribution of SNF Stays (FY 2023)

	Mean (SD)	Min.	10th percentile	Lower quartile	Median	Upper quartile	90th percentile	Max
Count of SNF stays	71.63 (81.36)	1	11	22	46	90	164	1,290

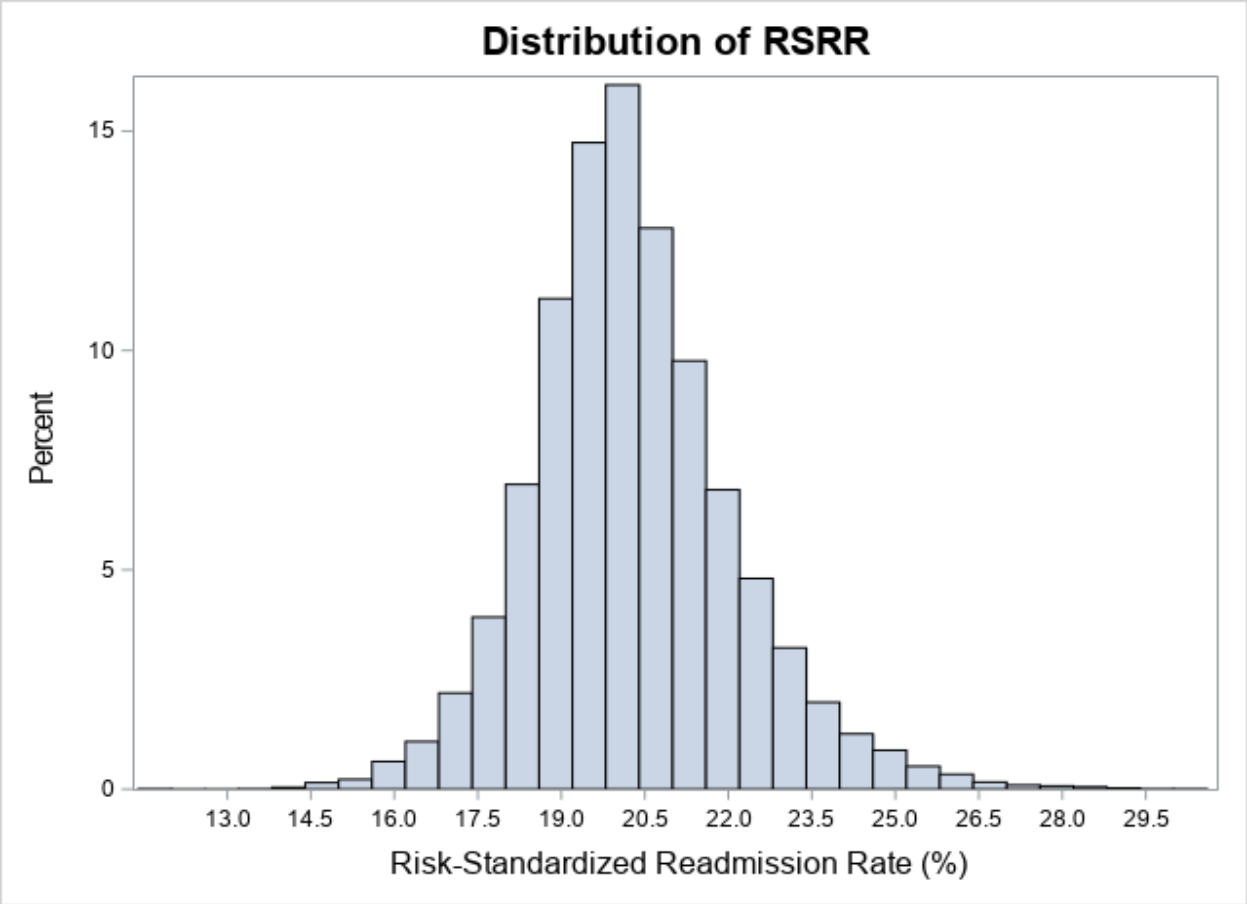
Note: In Table 3, results are based on FY 2023 performance period data

Table 4. Distribution of SNF-Level Observed Readmission Rates and RSRRs (FY 2023; total number of SNFs = 14,739)

Readmission rate	Mean (SD)	Min.	10th percentile	Lower quartile	Median	Upper quartile	90th percentile	Max
Observed	19.6 (9.8)	0	8.1	14	19.4	25	30.8	100
RSRR	20.3 (1.8)	11.7	18.2	19.1	20.1	21.3	22.6	30.5

Note: In Table 4, results are based on FY 2023 performance period data. SD=standard deviation; RSRR=risk-standardized readmission rate.

Figure 2. Distribution of SNF Risk-Standardized Readmission Rates (FY 2023; total number of SNFs = 14,739)



5. Appendices

Appendix A: Updates to Measure Since Measure Development

For convenience, we have listed all prior updates here under the year of the corresponding report.

A.1. 2024

2024 Measure Updates and Specifications Report

- Updated the ICD-10 code-based specifications used in the measure.
  Rationale: Revisions to the measure specifications were warranted to accommodate updated versions of the ICD-10-CM/PCS, AHRQ CCS, and CMS-HCC crosswalk.

A.2 2023

2023 Measure Updates and Specifications Report

- Reverted the risk-adjustment lookback period to 12 months instead of 90 days.
  Rationale: The 12-month lookback period is no longer in violation of the ECE policy.

- Updated the ICD-10 code-based specifications used in the measure.
  Rationale: Revisions to the measure specifications were warranted to accommodate updated versions of the ICD-10-CM/PCS, AHRQ CCS, and CMS-HCC crosswalk.

A.3. 2022

2022 Measure Updates and Specifications Report

- Updated the ICD-10 code-based specifications used in the measure.
  Rationale: Revisions to the measure specifications were warranted to accommodate updated versions of the ICD-10-CM/PCS, AHRQ CCS, and CMS-HCC crosswalk.

- Updated the risk-adjustment model to include a multi-level variable for COVID-19.
  Rationale: Patients with a current or historical diagnoses of COVID-19 may be at higher risk for readmission and this should be adjusted for in the model.

- Updated the risk-adjustment lookback period to 90 days instead of 12 months.
  Rationale: CMS' COVID-19 ECE, policy adopted in the FY 2019 SNF PPS final rule, prevented the use of January 1 – June 30, 2020 data from being used for any quality measurement purposes, including risk adjustment. To use the same lookback period for all patients we had to shorten the lookback period to 90 days, since using a longer lookback period would violate the ECE policy for patients admitted on October 1, 2020.

A.4. 2021

2021 Measure Updates and Specifications Report

- Updated the ICD-10 code-based specifications used in the measure.
  Rationale: Revisions to the measure specifications were warranted to accommodate updated versions of the ICD-10-CM/PCS, AHRQ CCS, and CMS-HCC crosswalk.

A.5. 2019

2019 Measure Updates and Specifications Report (Prepared by RTI International)

- No changes were made to the SNFRM's technical specifications or risk-adjustment model since the April 2017 Technical Report Supplement.

A.6. 2017

2017 Measure Updates and Specifications Report (Prepared by RTI International)

- Updated denominator to exclude stays at critical access hospital (CAH) swing-beds.
  Rationale: This change aligned the SNFRM sample with the population of SNFs eligible for the SNF VBP Program under which the SNFRM is implemented. CAHs are not paid on the SNF PPS, therefore they are not eligible for the SNF VBP Program.

Appendix B: Planned Readmission Algorithm

B.1. Planned Readmission Algorithm Overview

The planned readmission algorithm for the SNFRM is adapted from the CMS Planned Readmission Algorithm Version 4.0. The algorithm is a set of criteria for classifying readmissions as planned or unplanned using Medicare claims. CMS seeks to count only unplanned readmissions in the measure outcome, because variation in planned readmissions does not reflect quality differences. In order to define whether a readmission is planned or unplanned, the measure uses a modified version of the algorithm, which includes additional procedures specific to PAC settings and the addition of carefully selected ICD-10 codes released for the pertinent data periods.

The algorithm uses a YNHHSC/CORE-modified v3.0 of the Agency for Healthcare Research and Quality's (AHRQ's) HCUP's beta version 2019.1 Clinical Classification Software (CCS)[1] codes to group thousands of individual procedure and diagnosis ICD-10 codes into clinically coherent, mutually exclusive procedure CCS categories and mutually exclusive diagnosis CCS categories, respectively.3

[1] Healthcare Cost and Utilization Project (HCUP). Tools Archive for Clinical Classifications Software Refined. 2024; https://hcup-us.ahrq.gov/toolssoftware/ccsr/ccsr_archive.jsp#ccsr. Accessed May 20, 2024.