List of Measures Under Consideration for December 1, 2021

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OVERVIEW

Background

The pre-rulemaking process provides CMS with a vehicle to hear from stakeholders for early consideration of measures.

CMS is issuing this List of Measures Under Consideration (MUC) to comply with the statutory requirement,[1] which requires the Secretary of the Department of Health and Human Services (HHS) to make publicly available a list of certain quality and efficiency measures that the Secretary is considering for adoption through rulemaking under Medicare. Among the measures, the list includes measures CMS is considering that were originally suggested by the public. When organizations, such as physician specialty societies, request that CMS consider measures, CMS evaluates the suggested measures to determine whether CMS would consider them for use in one or more Medicare programs. If CMS determines that it would consider the measures and the pre-rulemaking process applies to those measures, CMS adds them to the MUC List as part of the pre-rulemaking process so the Measure Applications Partnership (MAP) can provide input. Inclusion of a measure on this list does not require CMS to propose to adopt or finalize the adoption of the measure for the identified program. Therefore, this list may include a larger number of measures than the number of measures CMS will decide to propose for adoption through rulemaking.

[1] *See* section 1890A(a)(2) of the Social Security Act (42 U.S.C. § 1395aaa-1(a)(2)).

CMS will continue its goal of aligning measures across programs. Measure alignment includes looking first to existing program measures for use in new programs, as well as looking across programs to see if the measure is used in other CMS programs. Further, CMS programs must balance competing goals of establishing parsimonious measure sets, while including sufficient measures to facilitate multi-specialty provider and supplier participation.

Statutory Requirement

HHS is statutorily required[2] to establish a pre-rulemaking process for the selection of certain quality and efficiency measures[3] for use by HHS. One of the steps in the pre-rulemaking process requires that HHS make publicly available, not later than December 1 annually, a list of quality and efficiency measures HHS is considering adopting, through the rulemaking process, for use in certain Medicare quality programs.

The pre-rulemaking process includes the following additional steps:

1. Providing the opportunity for multi-stakeholder groups to provide input to HHS not later than February 1 annually on the selection of quality and efficiency measures;

2. Requiring the Secretary to consider the multi-stakeholder groups' input in selecting quality and efficiency measures;

[2] *See* section 1890A(a) of the Social Security Act (42 U.S.C. § 1395aaa-1(a)).

[3] As listed in section 1890(b)(7)(B) of the Social Security Act (42 U.S.C. § 1395aaa(b)(7)(B)).

3. Publishing in the Federal Register the rationale for the use of any quality and efficiency measures that are not endorsed by the entity with a contract under Section 1890 of the Act, which is currently the National Quality Forum (NQF)[4]; and

4. Assessing the quality and efficiency impact of the use of endorsed measures and making that assessment available to the public at least every three years. (The 2012, 2015, 2018, and 2021 editions of that report and related documents are available at the website of the CMS National Impact Assessment.)

Fulfilling HHS's Requirement to Make Its Measures Under Consideration Publicly Available

The attached MUC List, which is compiled by CMS, will be posted on the NQF website and the CMS Pre-Rulemaking site. This posting will satisfy an important requirement of the pre-rulemaking process by making public the quality and efficiency measures that the Secretary is considering for use under certain Medicare quality programs.

Included Measures

This MUC List identifies the quality and efficiency measures under consideration by CMS for use in certain Medicare quality programs. Measures that appear on this list that are not selected for use under the Medicare program for the current rulemaking cycle will remain under consideration for future rulemaking cycles. They remain under consideration only for purposes of the particular

[4] The rationale for adopting measures not endorsed by the consensus-based entity will be published in rulemaking where such measures are proposed and finalized.

program or other use for which CMS was considering them when they were placed on the MUC List. These measures can be selected for those previously considered purposes and programs/uses in future rulemaking cycles. This MUC List as well as prior year MUC Lists and Measure Applications Partnership (MAP) Reports can be found at:

https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/QualityMeasures/Pre-RuleMaking.html.

Applicable Programs

The following programs, which now use or will use quality and efficiency measures, take part in the section 1890A pre-rulemaking process. Not all of these programs have measures on the current MUC List; those shown in **boldface** have one or more measures on this 2021 MUC List. Table 1 below shows the numbers of measures per program.

- Ambulatory Surgical Center Quality Reporting Program (ASCQR)
- **End-Stage Renal Disease Quality Incentive Program (ESRD QIP)**
- Home Health Quality Reporting Program (HH QRP)
- Hospice Quality Reporting Program (HQRP)
- **Hospital-Acquired Condition Reduction Program (HACRP)**
- **Hospital Inpatient Quality Reporting Program (Hospital IQR Program)**
- Hospital Outpatient Quality Reporting Program (Hospital OQR Program)
- Hospital Readmissions Reduction Program (HRRP)
- **Hospital Value-Based Purchasing Program (HVBP)**
- Inpatient Psychiatric Facility Quality Reporting Program (IPFQR)
- **Inpatient Rehabilitation Facility Quality Reporting Program (IRF QRP)**
- **Long-Term Care Hospital Quality Reporting Program (LTCH QRP)**
- **Medicare and Medicaid Promoting Interoperability Program for Eligible Hospitals (EHs) or Critical Access Hospitals (CAHs)**
- Medicare Shared Savings Program

- **Merit-based Incentive Payment System (MIPS)**
- **Part C and D Star Rating [Medicare]**
- **Prospective Payment System-Exempt Cancer Hospital Quality Reporting Program (PCHQR)**
- **Skilled Nursing Facility Quality Reporting Program (SNF QRP)**
- **Skilled Nursing Facility Value-Based Purchasing Program (SNF VBP)**

Table 1. Number of Measures Under Consideration by Program[5]

CMS Program	Number of Measures Under Consideration
End-Stage Renal Disease Quality Incentive Program	1
Hospital-Acquired Condition Reduction Program	2
Hospital Inpatient Quality Reporting Program	11*
Hospital Value-Based Purchasing Program	2*
Inpatient Rehabilitation Facility Quality Reporting Program	1
Long-Term Care Hospital Quality Reporting Program	1
Medicare and Medicaid Promoting Interoperability Program for Eligible Hospitals (EHs) or Critical Access Hospitals (CAHs)	4
Merit-based Incentive Payment System	10
Part C & D Star Rating [Medicare]	3
Prospective Payment System-Exempt Cancer Hospital Quality Reporting Program	3
Skilled Nursing Facility Quality Reporting Program	2
Skilled Nursing Facility Value-Based Purchasing Program	4

**These counts include measures that are not new to the program but have been resubmitted for consideration due to substantive changes to measure specifications. The Hospital IQR Program has 4 such measures, and HVBP has 2 such measures.*

Measures List Highlights

By publishing this list, CMS will make publicly available and seek the multi-stakeholder groups' input on 29 measures under consideration for use in Medicare programs. These 29 unique measures may be considered for more than one CMS program resulting in 44 total individual measures (See Table 1). Of these 29 unique measures, four (4) measures are currently fully

[5] A single measure may be under consideration for more than one program.

implemented in CMS programs and are on the MUC List due to substantive changes made to the specifications. The 29 measures proposed in the 2021 MUC List include 10 process measures, 9 outcome measures, 4 patient reported outcome measures, 2 structure measures, 1 intermediate outcome measure, 1 cost/resource use measure, 1 efficiency measure, and 1 patient engagement/experience measure. CMS notes several important points to consider and highlight:

- CMS will continue to balance the alignment of measures across programs whenever possible with the goals of moving payment toward value and reducing regulatory burden for clinicians and providers through focusing everyone's efforts on the same quality areas with the ultimate goal of improving outcomes for patients. Measures contained on this list fulfill a quality and efficiency measurement need and were assessed for alignment across CMS programs when applicable.

CMS Goals and Priorities

CMS launched the comprehensive Meaningful Measures Framework in 2017, which identifies high priority areas for quality measurement and improvement. The purpose of this initiative was to improve outcomes for patients, their families, and measured entities while balancing the reduction of burden by moving payment toward value through focusing everyone's efforts on the same quality areas. The Meaningful Measures Framework also helped to identify and close important gap areas of measures, align measures across the continuum of care and across payors, and spur innovation in new types of measures such as patient-reported measures and digital measures.

As CMS moves forward and evolves Meaningful Measures, the Agency builds on the strengths of the initiative while working to create broader, agency-wide actions to modernize and expand quality

work. CMS uses five interrelated goals to ensure the use of impactful quality measures to improve health outcomes and to support the delivery of value:

- using the Meaningful Measures Framework to streamline and align quality measurement
- leveraging measures to drive outcome improvement through public reporting and payment programs
- improving quality measures efficiency by a transition to digital measures and use of advanced data analytics
- empowering consumers to make the best healthcare choices through person-centered quality measures and public transparency
- leveraging quality measures to promote equity and close gaps in care

By working on these goals across the various components, CMS can work to:

- Align measures across CMS, federal programs, and private payers to reduce the number of unique measures, thereby improving measure efficiency for CMS and measured entities associated with those measures.
- Accelerate ongoing efforts to streamline and modernize programs, reducing burden, and promoting strategically important focus areas.
- Use data and information as essential aspects of a healthy, robust healthcare infrastructure to allow for payment and management of accountable, value-based care and development of learning health organizations.

- Empower patients through transparency of data and public reporting, so patients can make the best-informed decisions about their healthcare.
- Commit to a person-centered approach in quality measure and value-based incentives programs to ensure that quality and safety measures address patient goals of care and identify and close gaps in healthcare equity.

Through these goals and objectives, CMS will use impactful quality measures to improve health outcomes and deliver value by empowering patients to make informed care decisions while reducing burden to measured entities, which starts with how the measures in CMS programs are developed, implemented, and evaluated. The measures reviewed for inclusion on the 2021 MUC List take all these goals and priorities into consideration.

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LIST OF MEASURES UNDER CONSIDERATION

Legend for List of Measures Under Consideration

MUC ID: Gives users an identifier to refer to a unique measure. The "MUC2021-" prefix is intended to aid future researchers in distinguishing among measures considered in different years.

Measure Title: The title of the measure.

Description: Gives users more detailed information about the measure, such as medical conditions to be measured, particular outcomes or results that could or should/should not result from the care and patient populations.

Measure Type: Refers to the processes or outcomes of care that a measure assesses:

- Composite: A combination of two or more component measures, each of which individually reflects quality of care, into a single quality measure with a single score.
- Cost/Resource Use: A count of the frequency of units of defined health system services or resources; some may further apply a dollar amount (e.g., allowable charges, paid amounts, or standardized prices) to each unit of resource use.
- Efficiency: Refers to a relationship between a specific level of quality of health care provided and the resources used to provide that care.
- Intermediate Outcome: Refers to a change produced by a health care intervention that leads to a longer-term outcome (e.g., a reduction in blood pressure is an intermediate outcome that leads to a reduction in the risk of longer-term outcomes such as cardiac infarction or stroke).

- Outcome: The health status of a patient (or change in health status) resulting from healthcare, which can be desirable or adverse.
- Patient-Reported Outcome: Refers to a measure of a patient's feelings or what they are able to do as they are dealing with diseases or conditions. These types of measures may include Patient-Reported Outcome Measures (PROMs) and Patient-Reported Outcome-Based Performance Measures (PRO-PMs).
- Process: A healthcare service provided to, or on behalf of, a patient. This may include, but is not limited to, measures that address adherence to recommendations for clinical practice based on evidence or consensus.
- Structure: Features of a healthcare organization or clinician relevant to the capacity to provide healthcare. This may include, but is not limited to, measures that address health IT infrastructure, provider capacity, systems, and other healthcare infrastructure supports.

Measure Steward: Refers to the party responsible for updating and maintaining a measure.

CMS Program(s): Refers to the applicable Medicare program(s) that may adopt the measure through rulemaking in the future.

Measures Under Consideration

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC2021-053	Concurrent Use of Opioids and Benzodiazepines (COB)	The percentage of Medicare Part D beneficiaries, 18 years or older with concurrent use of prescription opioids and prescription benzodiazepines during the measurement period.	Process	Pharmacy Quality Alliance	Part C & D Star Rating [Medicare]
MUC2021-056	Polypharmacy: Use of Multiple Anticholinergic Medications in Older Adults (Poly-ACH)	The percentage of Medicare Part D beneficiaries 65 years of age or older with concurrent use of two or more unique anticholinergic (ACH) medications during the measurement period.	Process	Pharmacy Quality Alliance	Part C & D Star Rating [Medicare]
MUC2021-058	Appropriate intervention of immune-related diarrhea and/or colitis in patients treated with immune checkpoint inhibitors	Percentage of patients, aged 18 years and older, with a diagnosis of cancer, on immune checkpoint inhibitor therapy, and grade 2 or above diarrhea and/or grade 2 or above colitis, who have immune checkpoint inhibitor therapy held and corticosteroids or immunosuppressants prescribed or administered.	Process	Society for Immunotherapy of Cancer (SITC)	MIPS
MUC2021-063	Care Goal Achievement Following a Total Hip Arthroplasty (THA) or Total Knee Arthroplasty (TKA)	The percentage of adult patients 18 years and older who had an elective primary total hip arthroplasty (THA) or total knee arthroplasty (TKA) during the performance period AND who completed both a pre- and post-surgical care goal achievement survey and demonstrated that 75% or more of the patient's expectations from surgery were met or exceeded. The pre- and post-surgical surveys assess the patient's	Patient-Reported Outcome	Brigham and Women's Hospital	MIPS

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC2021-063 (cont'd)	(cont'd)	main goals and expectations (i.e., pain, physical function and quality of life) before surgery and the degree to which the expectations were met or exceeded after surgery. The measure will be reported as two risk-adjusted rates stratified by THA and TKA.	(cont'd)	(cont'd)	(cont'd)
MUC2021-066	Polypharmacy: Use of Multiple Central Nervous System (CNS)-Active Medications in Older Adults (Poly-CNS)	The percentage of Medicare Part D beneficiaries 65 years of age or older, with concurrent use of 3 or more unique central-nervous system (CNS)-active medications during the measurement period.	Process	Pharmacy Quality Alliance	Part C & D Star Rating [Medicare]
MUC2021-084	Hospital Harm – Opioid-Related Adverse Events	This measure assesses the proportion of inpatient hospital encounters where patients ages 18 years of age or older have been administered an opioid medication, subsequently suffer the harm of an opioid-related adverse event, and are administered an opioid antagonist (naloxone) within 12 hours. This measure excludes opioid antagonist (naloxone) administration occurring in the operating room setting.	Outcome	Centers for Medicare & Medicaid Services	Hospital IQR Program; Promoting Interoperability Program (EH-CAH)
MUC2021-090	Kidney Health Evaluation	Percentage of patients aged 18-75 years with a diagnosis of diabetes who received a kidney health evaluation defined by an Estimated Glomerular Filtration Rate (eGFR) AND Urine Albumin-Creatinine Ratio (uACR) within the 12-month measurement period.	Process	National Kidney Foundation	MIPS
MUC2021-091	Appropriate Treatment for Patients with Stage I (T1c) through III	Percentage of female patients aged 18 to 70 with stage I (T1c) – III HER-2 positive breast cancer for whom appropriate treatment is initiated.	Process	American Society of Clinical Oncology	PCHQR

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC2021-091 (cont'd)	HER2 Positive Breast Cancer	(cont'd)	(cont'd)	(cont'd)	(cont'd)
MUC2021-095	CoreQ: Short Stay Discharge Measure	The measure calculates the percentage of individuals discharged in a six-month time period from a SNF, within 100 days of admission, who are satisfied (scoring a 3 or above on the survey).	Patient Engagement/ Experience	American Health Care Association/National Center for Assisted Living (AHCA/NCAL)	SNF VBP
MUC2021-098	National Healthcare Safety Network (NHSN) Healthcare-associated Clostridioides difficile Infection Outcome Measure	This measure tracks the development of new Clostridioides difficile infection among patients already admitted to healthcare facilities, using algorithmic determinations from data sources widely available in electronic health records. This measure improves on the original measure by requiring both microbiologic evidence of C. difficile in stool and evidence of antimicrobial treatment.	Outcome	Centers for Disease Control and Prevention	HACRP; IRF QRP; LTCH QRP; PCHQR; SNF QRP; Hospital IQR Program; Promoting Interoperability (EH-CAH)
MUC2021-100	National Healthcare Safety Network (NHSN) Hospital-Onset Bacteremia & Fungemia Outcome Measure	This measure tracks the development of new bacteremia and fungemia among patients already admitted to acute care hospitals, using algorithmic determinations from data sources widely available in electronic health records. This measure includes many healthcare-associated infections not currently under surveillance by the Center for Disease Control and Prevention (CDC)'s	Outcome	Centers for Disease Control and Prevention	HACRP; Hospital IQR Program; Promoting Interoperability (EH-CAH); PCHQR

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC2021-100 (cont'd)	(cont'd)	National Healthcare Safety Network (NHSN). Ongoing surveillance also requires minimal data collection burden for users.	(cont'd)	(cont'd)	(cont'd)
MUC2021-101*	Standardized Readmission Ratio (SRR) for dialysis facilities	The Standardized Readmission Ratio (SRR) for a dialysis facility is the ratio of the number of observed index discharges from acute care hospitals to that facility that resulted in an unplanned readmission to an acute care hospital within 4-30 days of discharge to the expected number of readmissions given the discharging hospitals and the characteristics of the patients and based on a national norm. Note that the measure is based on Medicare-covered dialysis patients.	Outcome	Centers for Medicare & Medicaid Services	ESRD QIP
MUC2021-104	Severe Obstetric Complications eCQM	Proportion of patients with severe obstetric complications which occur during the inpatient delivery hospitalization.	Outcome	The Joint Commission	Hospital IQR Program; Promoting Interoperability (EH-CAH)
MUC2021-105	Mismatch Repair (MMR) or Microsatellite Instability (MSI) Biomarker Testing Status in Colorectal Carcinoma, Endometrial, Gastroesophageal, or	Percentage of surgical pathology reports for primary colorectal, endometrial, gastroesophageal or small bowel carcinoma, biopsy or resection, that contain impression or conclusion of or recommendation for testing of mismatch repair (MMR) by immunohistochemistry (biomarkers MLH1, MSH2, MSH6, and PMS2), or microsatellite instability (MSI) by DNA-based testing status, or both.	Process	College of American Pathologists	MIPS

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC2021-105 (cont'd)	Small Bowel Carcinoma	(cont'd)	(cont'd)	(cont'd)	(cont'd)
MUC2021-106	Hospital Commitment to Health Equity	This measure assesses promoting an organizational culture of equity through equity-focused leadership, commitment to robust demographic data collection, and active review of disparities in key quality outcomes. Among Medicare beneficiaries, racial and ethnic minority individuals, individuals with limited English proficiency or disabilities often receive lower quality of care and have higher rates of readmission and complications than beneficiaries without these characteristics. Strong and consistent hospital leadership can be instrumental in setting specific, measurable, and attainable goals to advance equity priorities and improve care for all beneficiaries.	Structure	Centers for Medicare & Medicaid Services	Hospital IQR Program

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC2021-107	Clinician-Level and Clinician Group-Level Total Hip Arthroplasty and/or Total Knee Arthroplasty (THA and TKA) Patient-Reported Outcome-Based Performance Measure (PRO-PM)	The measure will estimate a clinician- and clinician group-level, risk-standardized improvement rate for patient-reported outcomes (PROs) following elective primary THA/TKA for Medicare fee-for-service (FFS) patients 65 years of age or older. Substantial clinical benefit (SCB) improvement will be measured by the change in score on the joint-specific patient-reported outcome measure (PROM) instruments, measuring hip or knee pain and functioning, from the preoperative assessment (data collected 90 to 0 days before surgery) to the postoperative assessment (data collected 300 to 425 days following surgery).	Patient-Reported Outcome	Centers for Medicare & Medicaid Services	MIPS
MUC2021-118*	Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)	The measure estimates a hospital-level risk-standardized complication rate (RSCR) associated with elective primary THA and/or TKA. The outcome (complication) is defined as any one of the specified complications occurring from the date of index admission to 90 days post-date of the index admission (the admission included in the measure cohort).	Outcome	Centers for Medicare & Medicaid Services	Hospital IQR Program; HVBP
MUC2021-120*	Hospital-level, risk-standardized payment associated with an episode of care for primary elective total hip and/or total knee	This measure estimates hospital-level, risk-standardized payments for an elective primary total THA/TKA episode of care, starting with an inpatient admission to a short-term acute care facility and extending 90 days post admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older.	Cost/Resource Use	Centers for Medicare and Medicaid Services	Hospital IQR Program

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC2021-120* (cont'd)	arthroplasty (THA/TKA)	(cont'd)	(cont'd)	(cont'd)	(cont'd)
MUC2021-122*	Excess days in acute care (EDAC) after hospitalization for acute myocardial infarction (AMI)	This measure estimates days spent in acute care within 30 days of discharge from an inpatient hospitalization for AMI. This measure is intended to capture the quality of care transitions provided to discharged patients hospitalized with AMI by collectively measuring a set of adverse acute care outcomes that can occur post-discharge: 1) emergency department (ED) visits, 2) observation stays, and 3) unplanned readmissions at any time during the 30 days post-discharge. Readmissions are classified as planned and unplanned by applying the planned readmission algorithm (PRA). Days spent in each care setting are aggregated for the 30 days post-discharge with a minimum of half-day increments.	Outcome	Centers for Medicare and Medicaid Services	Hospital IQR Program
MUC2021-123	Influenza Vaccination Coverage among Healthcare Personnel	Percentage of healthcare personnel (HCP) who receive the influenza vaccination.	Process	Centers for Disease Control and Prevention	SNF QRP
MUC2021-124	Skilled Nursing Facility Healthcare-Associated Infections Requiring Hospitalization	This measure estimates the risk-adjusted rate of healthcare-associated infections (HAIs) that are acquired during skilled nursing facility (SNF) care and result in hospitalizations. The measure is risk adjusted to "level the playing field" and to allow comparison of performance based on residents with similar characteristics between SNFs. The one-year measure is calculated using the following formula: (risk-adjusted	Outcome	Centers for Medicare & Medicaid Services	SNF VBP

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC2021-124 (cont'd)	(cont'd)	numerator/risk-adjusted denominator) *national observed rate of HAIs. 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 when compared to their peers.	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC2021-125	Psoriasis – Improvement in Patient-Reported Itch Severity	The percentage of patients, aged 18 years and older, with a diagnosis of psoriasis where at an initial (index) visit have a patient reported itch severity assessment performed, score greater than or equal to 4, and who achieve a score reduction of 2 or more points at a follow up visit.	Patient-Reported Outcome	American Academy of Dermatology	MIPS
MUC2021-127	Adult Kidney Disease: Angiotensin Converting Enzyme (ACE) Inhibitor or Angiotensin Receptor Blocker (ARB) Therapy	Percentage of patients aged 18 years and older with a diagnosis of CKD (Stages 1-5, not receiving Renal Replacement Therapy (RRT)) and proteinuria who were prescribed ACE inhibitor or ARB therapy within a 12-month period.	Process	Renal Physicians Association	MIPS
MUC2021-130	Discharge to Community-Post Acute Care Measure for Skilled Nursing Facilities (SNF)	This measure estimates the risk-adjusted rate of successful discharge to community from a SNF, with successful discharge to community including no unplanned rehospitalizations and no death in the 31 days following SNF discharge. The measure is calculated using the following formula: (risk-adjusted numerator/risk-adjusted denominator) *national observed rate of successful discharges to the community. The measure is calculated using two years of Medicare FFS claims data.	Outcome	Centers for Medicare & Medicaid Services	SNF VBP

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC2021-131*	Medicare Spending Per Beneficiary (MSPB) Hospital	The measure evaluates hospitals' efficiency relative to the efficiency of the national median hospital and assesses the cost to Medicare for Part A and Part B services performed by hospitals and other healthcare providers during an MSPB Hospital episode, which is comprised of the periods 3-days prior to, during, and 30-days following a patient's hospital stay. The measure is not condition specific and uses standardized prices when measuring costs. Eligible beneficiary populations include beneficiaries enrolled in Medicare Parts A and B who were discharged between January 1 and December 1 in a calendar year from short-term acute hospitals paid under the Inpatient Prospective Payment System.	Efficiency	Centers for Medicare & Medicaid Services	Hospital IQR Program; HVBP
MUC2021-134	Screen Positive Rate for Social Drivers of Health	Percent of beneficiaries 18 years and older who screen positive for food insecurity, housing instability, transportation problems, utility help needs, or interpersonal safety.	Process	The Physicians Foundation	Hospital IQR Program; MIPS
MUC2021-135	Dermatitis – Improvement in Patient-Reported Itch Severity	The percentage of patients, aged 18 years and older, with a diagnosis of dermatitis where at an initial (index) visit have a patient reported itch severity assessments performed, score greater than or equal to 4, and who achieve a score reduction of 2 or more points at a follow up visit.	Patient-Reported Outcome	American Academy of Dermatology	MIPS
MUC2021-136	Screening for Social Drivers of Health	Percent of beneficiaries 18 years and older screened for food insecurity, housing instability, transportation problems, utility help needs, and interpersonal safety.	Process	The Physicians Foundation	Hospital IQR Program; MIPS

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC2021-137	Total nursing hours per resident day	Total nursing hours (RN + LPN + nurse aide hours) per resident day. The source for total nursing hours is CMS's Payroll-based Journal (PBJ) system. The denominator for the measure is a count of daily resident census derived from Minimum Data Set (MDS) resident assessments. The measure is case-mix adjusted based on the distribution of MDS assessments by Resource Utilization Groups, version IV (RUG-IV groups).	Structure	Centers for Medicare & Medicaid Services	SNF VBP

*This measure is currently in use but it is included on the 2021 MUC List because it is undergoing substantial changes to specifications.

APPENDIX A: MEASURE SPECIFICATIONS

Table Legend for Measure Specifications

MUC ID: Gives users an identifier to refer to a unique measure.

Measure Title: The title of the measure.

Numerator: The numerator reflects the subset of patients in the denominator for whom a particular service has been provided or for whom a particular outcome has been achieved.

Numerator Exclusions. Defines instances that should not be included in the numerator data. Numerator exclusions are used only in ratio and proportion measures (CMS Measures Management System Blueprint).

Denominator: The lower part of a fraction used to calculate a rate, proportion, or ratio. The denominator is associated with a given patient population that may be counted as eligible to meet a measure's inclusion requirements.

Denominator Exclusion. Patients who should be removed from the measure population and denominator before determining if numerator criteria are met. Denominator exclusions are used in proportion and ratio measures to help narrow the denominator. For example, patients with bilateral lower extremity amputations would be listed as a denominator exclusion for a measure requiring foot exams (CMS Measures Management System Blueprint).

Denominator Exception. Those conditions that should remove a patient, procedure, or unit of measurement from the denominator of the performance rate only if the numerator criteria are not met. A denominator exception allows for adjustment of the calculated score for those providers with higher risk populations. A denominator exception also provides for the exercise of clinical judgment and should be specifically defined where capturing the information in a structured manner fits the clinical workflow. A denominator exception is

used only in proportion measures. These cases are removed from the denominator. However, the number of patients with valid exceptions may still be reported (CMS Measures Management System Blueprint).

Measure Specifications

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-053	Concurrent Use of Opioids and Benzodiazepines (COB) CMS Program(s): Part C & D Star Rating [Medicare]	Number of member-years of beneficiaries in the denominator with at least 2 prescription claims of a benzodiazepine with unique dates of service (DOS) and concurrent use of opioids and benzodiazepines during the measurement period. To determine concurrent use, a beneficiary's number of overlapping days' supply must be determined first for the measurement period. 1. Use the prescriptions' DOS and days' supply to count the number of	N/A	Number of member-years of enrolled beneficiaries, 18 years or older, with at least 2 fills of a prescription opioid with unique DOS and at least 15 total days' supply of opioids during the measurement period. Note: If multiple prescriptions for opioids are dispensed on the same day, calculate the number of days covered by an opioid using the prescriptions with the longest days' supply. If multiple prescriptions for opioids are dispensed on different days, sum the days' supply for all the prescription claims, regardless of overlapping days' supply.	Exclusions: Cancer diagnosis, sickle cell disease diagnosis, or enrolled in hospice at any time during the measurement year are excluded. Exceptions: N/A

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-053 (cont'd)	(cont'd)	days the beneficiary was covered by both an opioid and a benzodiazepine prescription. 2. The days covered by both opioid and benzodiazepine claims will be considered days of overlapping supply. Concurrent use if defined as an overlapping supply of 30 or more cumulative days of opioids and benzodiazepines. Note: If multiple prescriptions for opioids (or benzodiazepines) are dispensed on the same day, calculate the number of days	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-053 (con't	(cont'd)	covered by an opioid (or benzodiazepine) using the prescriptions with the longest days' supply. If multiple prescription claims of opioids (or benzodiazepines) are dispensed on different days with overlapping days' supply, count each day in the measurement year only once towards the numerator. There is no adjustment for early fills or overlapping days' supply for opioids (or benzodiazepines).	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-056	Concurrent Use of Opioids and Benzodiazepines (COB)	Number of member-years of beneficiaries in the denominator with concurrent use of 2 or more unique anticholinergic medications during the measurement period. Each medication must have at least 2 fills with unique dates of service (DOS) during the measurement period. Concurrent Use: To determine concurrent use, a beneficiary's number of overlapping days' supply is determined for each measurement period. 1. Use the prescriptions' DOS and days' supply to	N/A	Number of member-years of enrolled beneficiaries, 65 years or older, with at least 2 fills with unique dates of service (DOS) of the same medication in the targeted drug class(es) during the measurement period.	Exclusions: Beneficiaries enrolled in hospice at any time during the measurement period are excluded from the denominator. Exceptions: N/A

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-056 (cont'd)	Polypharmacy: Use of Multiple Anticholinergic Medications in Older Adults (Poly-ACH) CMS Program(s): Part C & D Star Rating [Medicare] Polypharmacy: Use of Multiple Anticholinergic Medications in Older Adults (Poly-ACH)	count the number of days the beneficiary was covered by ACH medications. -If multiple prescription claims for the same ACH medication (active ingredient) are dispensed on the same day, calculate the number of days covered by the target medication using the claim with the longest days' supply. -If multiple prescription claims for the same ACH medication (active ingredient) are dispensed on different days with overlapping days' supply, count each day in the measurement year	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-056 (cont'd)	(cont'd)	only once toward the numerator. These is no adjustment for early fills or overlapping days' supply. 2. The days covered by two or more unique ACH medications during the measurement period are considered days of overlapping supply. Concurrent use is defined as 30 or more cumulative overlapping days' supply of at least 2 unique ACH medications.	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions

MUC2021-058	Appropriate intervention of immune-related diarrhea and/or colitis in patients treated with immune checkpoint inhibitors
	
	CMS Program(s): MIPS
		Patients with immune checkpoint inhibitor therapy held and corticosteroids or immunosuppressants prescribed or administered.
		
		Numerator Guidance:
		
		• Immune checkpoint inhibitors should be held for patients who have grade 2 or above diarrhea and/or grade 2 or above colitis.
		
		Corticosteroids examples include but are not limited to methylpredni-solone, prednisone, or dexamethasone. Route of administration may be oral or
			N/A	Patients, 18 years and older, with a diagnosis of cancer and on immune checkpoint inhibitors and who have grade 2 or above diarrhea and/or grade 2 or above colitis.
				
				Denominator Guidance:
				
				• Immune checkpoint inhibitors-class of medications that prevent tumors from "hiding" or "evading" the body's natural immune system. This is a form of cancer immunotherapy. Immune checkpoint inhibitor medications include PD-1 inhibitor drugs, PD-L1 inhibitor drugs, and CTLA-4 inhibitor drug.
				  ○ PD-1 inhibitors drugs include: Pembrolizumab, Nivolumab, Cemiplimab
				  ○ PD-L1 inhibitors drugs include: Atezolizumab, Avelumab, Durvalumab
					Exclusions:
					
					Patients with pre-existing inflammatory bowel disease (IBD) (e.g., ulcerative colitis, Crohn's disease).
					
					Exceptions:
					
					Documentation of medical reason(s) for not prescribing or administering corticosteroid or immunosuppressant treatment (e.g., allergy, intolerance, infectious etiology, pancreatic insufficiency, hyperthyroidism, prior bowel surgical interventions, celiac disease, receiving other medication, awaiting diagnostic workup results, other medical reasons/contraindication).
					
					Denominator Exceptions Guidance:

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-058 (cont'd)	(cont'd)	intravenous dependent on agent. Immunosuppres-sants include but are not limited to vedolizumab or anti-TNF agent such as infliximab. Route of administration may vary dependent on agent.	(cont'd)	CTLA-4 inhibitor drug includes: Ipilimumab • Grade 2 Diarrhea - 4-6 bowel movements above baseline per day. Moderate increase in ostomy output compared to baseline; limiting instrumental ADL • Grade 3 Diarrhea - increase of >=7 stools per day over baseline; hospitalization indicated; severe increase in ostomy output compared to baseline; limiting self-care ADL • Grade 4 Diarrhea - Life-threatening consequences; urgent intervention indicated • Grade 2 Colitis - Abdominal pain, mucus or blood in stool	• Diarrhea is not attributed to immune checkpoint inhibitor mucosal inflammation. Examples include but are not limited to infection, pancreatic insufficiency, hyperthyroidism, prior bowel surgical interventions, and celiac disease. • Clinician did not yet prescribe or administer corticosteroid or immunosuppressant due to awaiting diagnostic workup or results for alternative etiologies. Exceptions: N/A

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-058 (cont'd)	Appropriate intervention of immune-related diarrhea and/or colitis in patients treated with immune checkpoint inhibitors	(cont'd)	(cont'd)	• Grade 3 Colitis – Severe abdominal pain; peritoneal signs • Grade 4 Colitis – Life-threatening consequences; urgent intervention indicated *Grading for GI toxicity by Common Terminology Criteria for Adverse Events (CTCAE) v5.0	(cont'd)
MUC2021-063	Care Goal Achievement Following a Total Hip Arthroplasty (THA) or Total Knee Arthroplasty (TKA) CMS Program(s): MIPS	The total number of patients in the denominator who completed both a pre- and post-surgical care goal achievement (CGA) survey who demonstrated that 75% or more of the patient's expectations from surgery were met or exceeded.	N/A	All adult patients age 18 and older who undergo an elective, primary THA or TKA during the performance period AND who have completed a pre-surgical care goal achievement (CGA) survey 0-90 days before surgery AND a post-surgical CGA survey 90-180 days after surgery.	Exclusions: Patients who meet the following criteria are excluded from the measure: • A revision THA or TKA procedure • A conversion THA or TKA procedure • A fracture of the hip or knee at the time of the THA or TKA • A malignant neoplasm of the pelvis, sacrum, coccyx, lower limbs, or

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-063 (cont'd)	(cont'd)	(cont'd)	(cont'd)	(cont'd)	bone/bone marrow or a disseminated malignant • neoplasm that overlaps the data measurement collection period or the THA or TKA procedure • A simultaneous, bilateral THA or TKA procedure • Transfer from another acute care facility for the THA or TKA procedure Exceptions: N/A
MUC2021-066	Polypharmacy: Use of Multiple Central Nervous System (CNS)-Active Medications in Older Adults (Poly-CNS) CMS Program(s): Part C & D Star Rating [Medicare]	Number of member-years of beneficiaries in the denominator with concurrent use of 3 or more CNS-active medications during the measurement period. Each medication must have at least 2 fills with unique DOS.	N/A	Number of member-years of enrolled beneficiaries, 65 years or older, with at least 2 fills with unique dates of service (DOS) of the same medication in the targeted drug class(es) (CNS-active) during the measurement period.	Exclusions: Beneficiaries enrolled in hospice at any time during the measurement period are excluded from the denominator. Additionally, beneficiaries with a seizure disorder diagnosis are excluded from the denominator. Exceptions: N/A

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-066 (cont'd)	(cont'd)	during the measurement period Concurrent Use: To determine concurrent use, a beneficiary's number of overlapping days' supply is determined for each measurement period. 1. Use the prescriptions' DOS and days' supply to count the number of days the beneficiary was covered by CNS-active medications. -If multiple prescription claims for the same CNS-active medication (active ingredient) are dispensed on the same day, calculate the number of days covered by the target medication using the	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-066 (cont'd)	(cont'd)	claim with the longest days' supply. -If multiple prescription claims for the same CNS-active medication (active ingredient) are dispensed on different days with overlapping days' supply, count each day in the measurement year only once toward the numerator. These is no adjustment for early fills or overlapping days' supply. 2. The days covered by three or more unique CNS-active medications during the measurement period are considered days of overlapping supply.	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-066 (cont'd)	(cont'd)	Concurrent use is defined as 30 or more cumulative overlapping days' supply of at least 3 unique CNS-active medications.	(cont'd)	(cont'd)	(cont'd)
MUC2021-084	Hospital Harm – Opioid-Related Adverse Events CMS Program(s): Hospital IQR Program; Promoting Interoperability Program (EH-CAH)	Inpatient hospitalizations where an opioid antagonist (naloxone) was administered outside of the operating room and within 12 hours following administration of an opioid medication. Only one numerator event is counted per encounter.	N/A	Inpatient hospitalizations for patients 18 years or older during which at least one opioid medication was administered. An inpatient hospitalization includes time spent in the emergency department or in observation status when the patients are ultimately admitted to inpatient status.	Exclusions: N/A Exceptions: N/A
MUC2021-090	Kidney Health Evaluation CMS Program(s): MIPS	Patients who received a kidney health evaluation defined by an Estimated Glomerular Filtration Rate (eGFR) AND	N/A	All patients aged 18-75 years with a diagnosis of diabetes	Exclusions: Patients with a diagnosis of End Stage Renal Disease (ESRD); Patients with a diagnosis of Chronic Kidney

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-090 (cont'd)	(cont'd)	Urine Albumin-Creatinine Ratio (uACR) within the 12-month measurement period	(cont'd)	(cont'd)	Disease (CKD) Stage 5; Patients who have an order for or are receiving hospice or palliative care Exceptions: N/A

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-091	Appropriate Treatment for Patients with Stage I (T1c) through III HER2 Positive Breast Cancer CMS Program(s): PCHQR	Patients whose adjuvant treatment course includes both chemotherapy and HER-2 targeted therapy	N/A	Female patients with stage I (T1c) – III HER-2 positive breast cancer	Exclusions: Patients who are pregnant Exceptions: • Patients with poor performance status (ECOG 3-4; Karnofsky = 50) • Patients with cardiac contraindications • Patients with insufficient renal function (eGFR < 10 ml/min; elevated creatinine or BUN; kidney failure) • Patients with insufficient hepatic function (AST or ALT > 2-4 x ULN; bilirubin (total) > 2-4 x UL; hepatic failure) • Patients with other active or secondary cancer diagnoses •

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-091 (cont'd)	(cont'd)	(cont'd)	(cont'd)	(cont'd)	• Patients with other medical contraindications Patients who died during initial treatment course or transferred during or after initial treatment course

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-095	CoreQ: Short Stay Discharge Measure CMS Program(s): SNF VBP	The measure assesses the number of patients who are discharged from a SNF, within 100 days of admission, who are satisfied. The numerator is the sum of the individuals in the facility that have an average satisfaction score equal to or greater than 3 for the four questions on the CoreQ: Short Stay Discharge questionnaire.	Respondents with average score less than 3.0.	The denominator includes all the patients that are admitted to the SNF, regardless of payor source, for post-acute care, that are discharged within 100 days; who receive the survey (e.g. people meeting exclusions do not receive a questionnaire) and who respond to the CoreQ: Short Stay Discharge questionnaire within the time window	Exclusions: Exclusions used are made at the time of sample selection and include: (1) Patients who died during their SNF stay; (2) Patients discharged to a hospital, another SNF, psychiatric facility, inpatient rehabilitation facility or long term care hospital; (3) Patients with court appointed legal guardian for all decisions; (4) Patients discharged on hospice; (5) Patients who left the nursing facility against medical advice (AMA); (6) Patients who have dementia impairing their ability to answer the questionnaire defined as having a BIMS score on the MDS as 7 or lower. [Note: we understand that some SNCCs may not have

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-095 (cont'd)	(cont'd)	(cont'd)	(cont'd)	(cont'd)	information on cognitive function available to help with sample selection. In that case, we suggest administering the survey to all residents and assume that those with cognitive impairment will not complete the survey or have someone else complete on their behalf which in either case will exclude them from the analysis.] (7) Patients who responded after the two-month response period; and (8) Patients whose responses were filled out by someone else. Exceptions: N/A
MUC2021-098	National Healthcare Safety Network (NHSN)	Healthcare-Associated Clostridioides difficile Infection (HA-CDI):	Excluding well baby-nurseries and neonatal intensive care units (NICU).	The expected number of HA-CDI based on predictive models using facility- and	Exclusions: Data from patients who are not assigned to an inpatient bed in an applicable location

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-098 (cont'd)	Healthcare-associated Clostridioides difficile Infection Outcome Measure CMS Program(s): HACRP; IRF QRP; LTCH QRP; PCHQR; SNF QRP; Hospital IQR Program; Promoting Interoperability (EH-CAH)	Total observed number of observed Clostridioides difficile infections among all inpatients in the facility, as defined as either of the below definitions. HA-CDI 1: must meet BOTH A & B. A) Any C. difficile (CD) positive laboratory assay from a stoolspecimen, including initial and final tests in a testing algorithm. B) Administration of oral or rectal vancomycin or fidaxomicin within the window period extending 2 calendar days before and 2 calendar days after the date of stool specimen collection	(cont'd)	patient care location data as predictors.	are excluded from the denominator counts, including outpatient clinic and emergency department visits. Additionally, data from well-baby nurseries and NICUs are excluded from the denominator count Denominator counts exclude data from inpatient rehabilitation units and inpatient psychiatric units with unique CMS Certification Numbers (CCN) than the acute care facility. Exceptions: Under investigation, subject to change.

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-098 (cont'd)	(cont'd)	in part A. HA-CDI 2: must meet BOTH A & B. A) Final positive test from a C. difficile (CD) laboratory assay from a stool specimen in a testing algorithm. B) Administration of oral or intravenous metronidazole within the window period extending 2 calendar days before and 2 calendar days after the date of stool specimen collection in part A.	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-100	National Healthcare Safety Network (NHSN) Hospital-Onset Bacteremia & Fungemia Outcome Measure CMS Program(s): HACRP; Hospital IQR Program; Promoting Interoperability (EH-CAH); PCHQR	Observed number of Hospital-Onset Bacteremia & Fungemia (HOB) events, defined below: Must meet Bacteremia OR Fungemia criteria (BFC), AND Antimicrobial treatment criteria (ATC). Bacteremia OR Fungemia criteria (BFC): Patient of any age has a recognized bacterial or fungal pathogen from a blood specimen collected on the 3rd calendar day of admission or later (where the date of	1) Previous matching Present on Admission Bacteremia or Fungemia If a patient meets BFC but also had a pathogen matching to the same species or genus level identified from a blood specimen by culture or NCT that was collected in the Present on Admission (POA) window, defined as hospital calendar day 2 or earlier (where calendar date of admission to an inpatient location is day 1), then this BFC is excluded from the HOB measure. If multiple pathogens are identified from the same blood culture or NCT, then a match of any of those pathogens to a POA blood pathogen is sufficient to exclude the BFC from the HOB measure. 2) Previous HOB event	The expected number of HOB events based on predictive models using facility- and patient care location data as predictors	Exclusions: Data from patients who are not assigned to an inpatient bed in an applicable location are excluded from the denominator counts. Denominator counts exclude data from inpatient rehabilitation units and inpatient psychiatric units with unique CMS Certification Numbers (CCN) than the acute care facility. Exceptions: Under investigation, subject to change.

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-100 (cont'd)	(cont'd)	admission to an inpatient location is calendar day 1). The pathogen must not be included on the NHSN common commensal list, and meet EITHER of the following criteria: 1) Pathogen identified by culture of one or more blood specimens, OR 2) Pathogen identified to the genus or species level by non-culture based microbiologic testing (NCT) methods. Note: if blood is collected for culture within 2 days before, or 1 day after the NCT disregard the result of the NCT and use only the result of the CULTURE to make a BFC determination. If	A patient with a previous HOB event is excluded from additional HOB events during the same hospital admission	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-100 (cont'd)	National Healthcare Safety Network (NHSN) Hospital-Onset Bacteremia & Fungemia Outcome Measure	no blood is collected for culture within this time period, use the result of the NCT for BFC determination. Antimicrobial Treatment Criteria (ATC): A patent must have been administered at least 1 dose of an intravenous or oral (including all enteral routes) antimicrobial in the window period extending 2 calendar days before and 2 calendar days after the date of blood specimencollection for BFC. The date of blood specimen collection is day 0.	(cont'd)	(cont'd)	(cont'd)
MUC2021-100 (cont'd)	(cont'd)	Furthermore, if the patient had	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-100 (cont'd)	(cont'd)	Bacteremia, only antibiotics are eligible to meet the ATC criteria. Similarly, if the patient has Fungemia, only antifungals are eligible to meet ATC criteria. If a patient has both Bacteremia and Fungemia, then either an antibiotic or antifungal can meet the ATC criteria.	(cont'd)	(cont'd)	(cont'd)
MUC2021-101*	Standardized Readmission Ratio (SRR) for dialysis facilities CMS Program(s): ESRD QIP	Each facility's observed number of hospital discharges that are followed by an unplanned hospital readmission within 4-30 days of discharge.	N/A	The denominator for a given facility is the expected number of the observed index hospital discharges that result in an unplanned readmission in days 4-30 and that are not preceded by an unplanned or competing event. The expectation accounts for patient-level characteristics, including measures of patient comorbidities, and	Exclusions: A live inpatient hospital discharge is excluded if any of the following hold: • Associated with a stay of 365 days or longer • It is against medical advice

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-101*(cont'd)	(cont'd)	(cont'd)	(cont'd)	the discharging hospital, and is based on estimated readmission rates for an overall population norm that corresponds to an "average" facility.	• It Includes a primary diagnosis of cancer, mental health or rehabilitation • It Includes revenue center codes indicating rehabilitation It occurs after a patient's 12th hospital discharge in the calendar year • It is from a PPS-exempt cancer hospital • It is followed within 3 days by any hospitalization (at acute care, long-term care, rehabilitation, or psychiatric hospital or unit) or any other competing event Exceptions: N/A
MUC2021-104	Severe Obstetric Complications eCQM	Inpatient hospitalizations for patients with severe	N/A	Inpatient hospitalizations for patients delivering stillborn or live birth with =	Exclusions: N/A Exceptions: N/A

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions

MUC2021-104 (cont'd)	CMS Program(s): Hospital IQR Program, Promoting Interoperability (EH-CAH)	obstetric complications occurring during the delivery hospitalization (not present on admission) including the following:
		
		• Severe maternal morbidity diagnoses (see list below)
		• Severe maternal morbidity procedures (see list below)
		• Discharge disposition = expired
		
		Severe Maternal Morbidity Diagnoses:
		
		• Cardiac
		  ○ Acute heart failure
		  ○ Acute myocardial infarction
			(cont'd)	20 weeks, 0 days gestation completed.	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-104 (cont'd)	(cont'd)	○ Aortic aneurysm Cardiac arrest/ ○ ventricular fibrillation ○ Heart failure/ ○ arrest during procedure or surgery • Hemorrhage ○ Dissemin-ated intravas-cular coagulation ○ Shock • Renal ○ Acute renal failure • Respiratory ○ Adult respiratory distress syndrome	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions

MUC2021-104 (cont'd)	(cont'd)	• Pulmonary edema
		• Sepsis
		• Other OB
		  ○ Air and thrombotic embolism
		  ○ Amniotic fluid embolism
		  ○ Eclampsia
		  ○ Severe anesthesia complica-tions
		• Other Medical
		  ○ Puerperal cerebrovas-cular disease
		  ○ Sickle cell disease with crisis
		
		Severe Maternal Morbidity Procedures:
		
		  ○ Blood transfusion
			(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-104 (cont'd)	(cont'd)	• Conversion of cardiac rhythm Hysterectomy • Temporary tracheostomy • Ventilation	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-105	Mismatch Repair (MMR) or Microsatellite Instability (MSI) Biomarker Testing Status in Colorectal Carcinoma, Endometrial, Gastroesophageal, or Small Bowel Carcinoma CMS Program(s): MIPS	Surgical pathology reports that contain impression or conclusion of or recommendation for testing of MMR by immunohistochemistry, MSI by DNA-based testing status, or both	N/A	All surgical pathology reports for primary colorectal, endometrial, gastroesophageal or small bowel carcinoma, biopsy or resection CPT: 88305, 88307, 88309 AND ICD-10: • C18.0: Malignant neoplasm of cecum • C18.2: Malignant neoplasm of ascending colon • C18.3: Malignant neoplasm of hepatic flexure • C18.4: Malignant neoplasm of transverse colon • C18.5: Malignant neoplasm of splenic flexure • C18.6: Malignant neoplasm of descending colon • C18.7: Malignant neoplasm of sigmoid colon • C18.8: Malignant neoplasm of overlapping	Exclusions: 1. Patients with an existing diagnosis of Lynch Syndrome (ICD-10-CM Z15.0, Z15.04, Z15.09, Z80.0) 2. Squamous cell carcinoma of the esophagus Exceptions: Documentation of medical reasons MMR, MSI, or both tests were not performed (e.g., patient receiving hospice or will not be treated with checkpoint inhibitor therapy, no residual carcinoma is present in the sample [tissue exhausted or status post neoadjuvant treatment], insufficient tumor for testing)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-105 (cont'd)	(cont'd)	(cont'd)	(cont'd)	sites of colon • C18.9: Malignant neoplasm of colon, unspecified • C19: Malignant neoplasm of rectosigmoid junction • C20: Malignant neoplasm of rectum • C54.1 Malignant neoplasm of endometrium • C54.3 Malignant neoplasm of fundus uteri • C54.8 Malignant neoplasm of overlapping sites of corpus uteri • C54.9 Malignant neoplasm of corpus uteri, unspecified • C55 Malignant neoplasm of uterus, unspecified • C15.3: Malignant neoplasm of upper third of esophagus • C15.4: Malignant neoplasm of middle third of esophagus • C15.5: Malignant neoplasm of lower third of esophagus	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-105 (cont'd)	(cont'd)	(cont'd)	(cont'd)	• C15.8: Malignant neoplasm of overlapping sites of esophagus • C15.9: Malignant neoplasm of esophagus, unspecified • C16.0: Malignant neoplasm of cardia • C16.1: Malignant neoplasm of fundus of stomach • C16.2: Malignant neoplasm of body of stomach • C16.3: Malignant neoplasm of pyloric antrum • C16.4: Malignant neoplasm of pylorus • C16.5: Malignant neoplasm of lesser curvature of stomach, unspecified • C16.6: Malignant neoplasm of greater curvature of stomach, unspecified	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-105 (cont'd)	(cont'd)	(cont'd)	(cont'd)	• C16.8: Malignant neoplasm of overlapping sites of stomach • C16.9: Malignant neoplasm of stomach, unspecified • C17.0 Malignant neoplasm of duodenum • C17.1 Malignant neoplasm of jejunum • C17.2 Malignant neoplasm of ileum • C17.3 Meckel's diverticulum, malignant • C17.8 Malignant neoplasm of overlapping sites of small intestine • C17.9 Malignant neoplasm of small intestine, unspecified • C26.0 Malignant neoplasm of intestinal tract, part unspecified.	(cont'd)
MUC2021-106	Hospital Commitment to Health Equity	This structural measure assesses hospital commitment to health equity using	N/A	The denominator for each hospital is 5 which represents the total number of questions.	Exclusions: N/A Exceptions: N/A

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-106 (cont'd)	CMS Program(s): Hospital IQR Program	a suite of equity-focused organizational competencies aimed at achieving health equity for racial and ethnic minorities, people with disabilities, sexual and gender minorities, individuals with limited English proficiency, and rural populations. The measure will include five attestation-based questions, each representing a separate domain of commitment. A hospital will receive a point for each domain where they attest to the corresponding statement (for a total of 5 points). For	(cont'd)	The measure is calculated as the number of complete attestations / total number of questions. There is no partial credit for any question. Attestation of all elements is required to qualify for the measure numerator For example, if a hospital affirmatively attests to all elements for only 2 questions; the final score is 40% (2 complete attestations / 5 total questions)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-106 (cont'd)	(cont'd)	questions with multiple elements, attestation of all elements is required to qualify for the measure numerator. Question 1. Hospital commitment to reducing disparities is strengthened when equity is a key organizational priority. Please attest that your hospital has a strategic plan for achieving health equity and that it includes all the following elements. Select all that apply (note: attestation of all elements is required to qualify for the measure numerator):	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-106 (cont'd)	(cont'd)	a) Our hospital strategic plan identifies priority populations who currently experience health disparities. b) Our hospital strategic plan identifies equity goals and discrete action steps to achieving these goals. c) Our hospital strategic plan outlines specific resources which have been dedicated to achieving our equity goals. d) Our hospital strategic plan describes our approach for engaging key stakeholders, such as community-based organizations.	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-106 (cont'd)	(cont'd)	Question 2. Collecting valid and reliable demographic and social determinant of health data on patients served in a hospital is an important step in identifying and eliminating health disparities. Please attest that your hospital engages in the following activities. Select all that apply (note: attestation of all elements is required in order to qualify for the measure numerator): a) Our hospital collects demographic and social determinant of health information on the majority of	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-106 (cont'd)	(cont'd)	our patients. b) Our hospital has training for staff in culturally sensitive collection of demographic and social determinant of health information. c) Our hospital inputs demographic and social determinant of health information collected from patients into structured, interoperable data elements using a certified EHR technology. Question 3. Effective data analysis can provide insights into which factors contribute to health disparities and how to respond. Please attest that your	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-106 (cont'd)	(cont'd)	hospital engages in the following activities. Select all that apply (note: attestation of all elements is required to qualify for the measure numerator): a) Our hospital stratifies key performance indicators by demographic variables to identify equity gaps and includes this information on hospital performance dashboards. b) Our hospital stratifies key performance indicators by social determinant of health to identify equity gaps and includes this information on	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-106 (cont'd)	(cont'd)	hospital performance dashboards. Question 4. Health disparities are evidence that high quality care has not been delivered equally to all patients. Engagement in quality improvement activities can improve quality of care for all patients. Select all that apply (note: attestation of all elements is required to qualify for the measure numerator): a) Our hospital participates in local, regional, or national quality improvement activities focused on reducing health disparities.	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-106 (cont'd)	(cont'd)	Question 5. Leaders and staff can improve their capacity to address disparities by demonstrating routine and thorough attention to equity and setting an organizational culture of equity. Please attest that your hospital engages in the following activities. Select all that apply (note: attestation of all elements is required in order to qualify for the measure numerator): a) Our hospital senior leadership, including chief executives and the entire hospital board of trustees, annually reviews our strategic plan for achieving health equity. b) Our hospital senior leadership,	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-106 (cont'd)	(cont'd)	including chief executives and the entire hospital board of trustees, annually reviews key performance indicators stratified by demographic and social factors.	(cont'd)	(cont'd)	(cont'd)
MUC2021-107	Clinician-Level and Clinician Group-Level Total Hip Arthroplasty	The numerator is the risk-adjusted proportion of patients undergoing an elective primary THA/TKA who meet or exceed a SCB threshold of improvement between preoperative and postoperative assessments on joint-specific PROMs as follows:	N/A	The cohort (target population) includes Medicare FFS patients 65 years of age and older	Exclusions: Denominator exclusion: 1) Patients with staged procedures,

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-107 (cont'd)	and/or Total Knee Arthroplasty (THA and TKA) Patient-Reported Outcome-Based Performance Measure (PRO-PM) CMS Program(s): MIPS	-For THA patients, meeting or exceeding a 22-point increase in score on the Hip dysfunction and Osteoarthritis Outcome Score for Joint Replacement (HOOS, JR)1, and -For TKA patients, meeting or exceeding a 20-point increase in score on the Knee injury and Osteoarthritis Outcome Score for Joint Replacement (KOOS, JR)2.	(cont'd)	undergoing elective primary THA/TKA procedures. The measure requires patients be enrolled in Medicare FFS Part A and Part B for the 12 months prior to the date of the index admission and enrolled in Part A during the index admission, be discharged alive from their admission, and not have more than two THA or TKA procedure codes on their index hospitalization claim.	defined as two or more elective primary THA or TKA procedures performed on the same patient during distinct hospitalizations during the measurement period, are excluded from the measure. The recovery from one procedure may negatively impact recovery from the other procedure therefore, staged procedures are excluded from the measure. Therefore, at this time, the measure focuses on patients receiving unilateral or simultaneous bilateral (not staged) THA/TKA procedures. 2) Patients who die within 300 days of the procedure are excluded as they are unable to complete PROM data in alignment with the postoperative PROM collection timeframe. 3) Patients that leave against

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-107 (cont'd)	(cont'd)	(cont'd)	(cont'd)	(cont'd)	medical advice are excluded from this measure. Exceptions: N/A
MUC2021-118*	Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA) CMS Program(s): Hospital IQR Program; HVBP Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)	The outcome for this measure is any complication occurring during the index admission [not coded present on admission (POA)] to 90 days post-date of the index admission. Complications are counted in the measure only if they occur during the index hospital admission or during a readmission. The complication outcome is a dichotomous (yes/no) outcome. If a patient	N/A	The target population for the publicly reported measure includes admissions for Medicare FFS beneficiaries who are at least 65 years, undergoing elective primary THA and/or TKA procedures. The measure cohort includes admissions to non-federal, short-stay, acute-care hospitals for Medicare FFS patients aged 65 years and older with a qualifying THA/TKA procedure, not transferred in from another facility. To be included in the measure cohort used in public reporting, patients must meet the following additional inclusion criteria:	Exclusions: The hip/knee complication measure excludes index admissions for patients: 1. Without at least 90 days post-discharge enrollment in Medicare FFS; 2. Discharged against medical advice (AMA); or, 3. Who had more than two THA/TKA procedure codes during the index hospitalization. Exceptions: N/A

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-118* (cont'd)	Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)	experiences one or more of these complications in the applicable time period, the complication outcome for that patient is counted in the measure as a "yes."	(cont'd)	1. Enrolled in Medicare fee-for-service (FFS) Part A and Part B for the 12 months prior to the date of admission; and enrolled in Part A during the index admission; 2. Aged 65 or older 3. Having a qualifying elective primary THA/TKA procedure; elective primary THA/TKA procedures are defined as those procedures without any of the following: - Fracture of the pelvis or lower limbs coded in the principal or secondary discharge diagnosis fields on the index admission claim (Note: Periprosthetic fractures must be additionally coded as present on admission [POA] in order to disqualify a THA/TKA from cohort inclusion, unless exempt	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-118* (cont'd)	(cont'd)	(cont'd)	(cont'd)	from POA reporting.); - A concurrent partial hip or knee arthroplasty procedure; - A concurrent revision, resurfacing, or implanted device/prosthesis removal procedure; - Mechanical complication coded in the principal discharge diagnosis field on the index admission claim; - Malignant neoplasm of the pelvis, sacrum, coccyx, lower limbs, or bone/bone marrow or a disseminated malignant neoplasm coded in the principal discharge diagnosis field on the index admission claim; or, - Transfer from another acute care facility for the THA/TKA. Patients are eligible for inclusion in the denominator if they had an elective primary THA and/or a TKA AND had continuous	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-118* (cont'd)	(cont'd)	(cont'd)	(cont'd)	enrollment in Part A and Part B Medicare fee-for-service (FFS) 12 months prior to the date of index admission.	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-120*	Hospital-level, risk-standardized payment associated with an episode of care for primary elective total hip and/or total knee arthroplasty (THA/TKA) CMS Program(s): Hospital IQR Program	The THA/TKA payment measure assesses risk-standardized payments (RSPs) for Medicare patients for an episode of care that begins with a qualifying elective primary THA/TKA procedure. The measure captures payments for Medicare patients across multiple care settings, services, and supplies (that is, inpatient, outpatient, skilled nursing facility [SNF], home health, hospice, physician/clinical laboratory/ambulance services, durable medical equipment, prosthetics/orthotics, and supplies). Payment adjustments	N/A	This outcome measure does not have a traditional numerator and denominator. We use this field to define the measure cohort. The measure cohort includes admissions to non-federal, short-stay, acute-care hospitals for Medicare FFS patients aged 65 years and older with a qualifying THA/TKA procedure, not transferred in from another facility. Patients must also have continuous enrollment in Medicare Part A and Part B benefits for the 12 months prior to the index admission and 90 days post-admission.	Exclusions: 1) Patients without complete administrative data in the 90 days following the index admission, if alive 2) Patients with no payment information during the index admission 3) Patients discharged against medical advice (AMA) 4) Patients transferred to federal hospitals 5) Patients with more than two THA/TKA procedure codes during the admission 6) Patients transferred into the hospital Exceptions: N/A

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-120* (cont'd)	(cont'd)	unrelated to clinical care decisions are not considered in the measure outcome. Elective primary THA/TKA procedures are defined as those THA/TKA procedures without any of the following: fracture of the pelvis or lower limbs coded in the principal or secondary discharge diagnosis fields of the index admission; a concurrent partial hip arthroplasty procedure; a concurrent revision, resurfacing, or implanted device/prosthesis removal procedure; mechanical complication coded in the principal discharge diagnosis	(cont'd)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-120* (cont'd)	(cont'd)	field; or, malignant neoplasm of the pelvis, sacrum, coccyx, lower limbs, or bone/bone marrow or a disseminated malignant neoplasm coded in the principal discharge diagnosis field.	(cont'd)	(cont'd)	(cont'd)
MUC2021-122*	Excess days in acute care (EDAC) after hospitalization for acute myocardial infarction (AMI) CMS Program(s): Hospital IQR Program	The outcome of the measure is a count of the number of days the patient spends in acute care within 30 days of discharge from an eligible index AMI hospitalization. We define days in acute care as days spent in an ED, admitted to an observation unit, or admitted as an unplanned readmission for any cause to a short-term	N/A	To be included in the measure cohort used in public reporting, patients must meet the following inclusion criteria: 1. Have a principal discharge diagnosis of AMI; 2. Enrolled in Medicare FFS Part A and Part B for the first 12 months prior to the date of admission, and enrolled in Part A during the index admission, or those who are VA beneficiaries; 3. Aged 65 or over; 4. Discharged alive from a	Exclusions: The measure excludes index hospitalizations that meet any of the following exclusion criteria: 1. Without at least 30 days of post-discharge enrollment in Medicare FFS 2. Discharged against medical advice 3. Same-day discharges 4. AMI admissions within 30 days of discharge from a prior AMI index admission

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-122* (cont'd)	acute myocardial infarction (AMI)	acute care hospital, within 30 days from the date of discharge from the index AMI hospitalization.	(cont'd)	non-federal short-term acute care hospital; and, 5. Not transferred to another acute care facility	Exceptions: N/A
MUC2021-123	Influenza Vaccination Coverage among Healthcare Personnel CMS Program(s): SNF QRP	HCP in the denominator population who during the time from October 1 (or when the vaccine became available) through March 31 of the following year: (a) received an influenza vaccination administered at the healthcare facility, or reported in writing (paper or electronic) or provided documentation that influenza vaccination was received elsewhere; or (b) were determined to have a medical	N/A	Number of HCP who are working in the healthcare facility for at least 1 working day between October 1 and March 31 of the following year, regardless of clinical responsibility or patient contact. Denominators are to be calculated separately for: (a) Employees: all persons who receive a direct paycheck from the reporting facility (i.e., on the facility's payroll). (b) Licensed independent practitioners: include physicians (MD, DO), advanced practice nurses, and physician assistants only who are affiliated with the	Exclusions: N/A Exceptions: N/A

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-123 (cont'd)	Influenza Vaccination Coverage among Healthcare Personnel	contraindication/condition of severe allergic reaction to eggs or to other component(s) of the vaccine, or history of Guillain-Barré Syndrome within 6 weeks after a previous influenza vaccination; or (c) declined influenza vaccination Numerators are to be calculated separately for each of the above groups.	(cont'd)	reporting facility who do not receive a direct paycheck from the reporting facility. (c) Adult students/trainees and volunteers: include all students/trainees and volunteers aged 18 or over who do not receive a direct paycheck from the reporting facility.	(cont'd)
MUC2021-124	Skilled Nursing Facility Healthcare-Associated Infections Requiring Hospitalization CMS Program(s): SNF VBP	To calculate the measure numerator, we first count the outcome and then apply risk-adjustment. The final measure numerator is the adjusted numerator.	The measure only includes HAIs reported on inpatient claims. Emergency department visits and observation stays are excluded from the numerator. An HAI is excluded from the numerator if it is a pre-existing infection. A pre-existing	To calculate the measure denominator, we first count the number of eligible stays and then apply risk-adjustment. The final measure denominator is the adjusted denominator. Unadjusted Denominator:	Exclusions: SNF stays are excluded from the denominator if they meet one or more of the following criteria: • Resident is under 18 years old at SNF admission

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-124 (cont'd)	(cont'd)	Measure Outcome - Unadjusted The unadjusted numerator is 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 4 after SNF admission and within 3 days after SNF discharge. HAIs are identified using both the principal diagnosis code and the Present on Admission (POA) indicator on the re-hospitalization claim. Measure Outcome - Adjusted The final numerator	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. The definition of HAI excludes the following infection types: • chronic infections (e.g. subacute and chronic melioidosis) • 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.	Part A FFS Medicare SNF stays during the measurement period. 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.	• Resident is not continuously enrolled in Part A FFS Medicare during the measurement period (1 year before SNF admission and 3 days after discharge) • SNF length of stay was shorter than 4 days • SNF stay cannot be matched to prior inpatient stay within 30 days before SNF admission • Resident was transferred to federal hospital • SNF stay has zero Medicare payment • Provider of stay is outside of the 50 U.S. states, Puerto Rico, or U.S. Territory • SNF stay does not have complete information for measure construction and risk adjustment

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-124 (cont'd)	(cont'd)	is a risk-adjusted estimate of the number of SNF stays predicted to have an HAI that results in hospitalization. This estimate starts with the observed (i.e. unadjusted) count of the measure outcome, which is then risk adjusted for resident characteristics and a statistical estimate of the measured SNF's effect beyond resident case mix. The SNF effect accounts for clustering of patients within the same facility and captures variation in the measure outcome across SNFs, which helps isolate the differences in measure	• postprocedural retroperitoneal abscess) • 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)The definition of HAI also excludes the following types of diagnosis codes: • codes likely to represent secondary infection, where the primary infection would likely already be coded (e.g. viral endocarditis infections likely to be community acquired • codes that include "causing disease classified elsewhere" (e.g. meningitis in bacterial diseases classified elsewhere)	(cont'd)	Exceptions: N/A

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-124 (cont'd)	(cont'd)	performance that are due to provider-specific behavior and characteristics.	• sequela and subsequent encounter codes (e.g. sequelae of inflammatory diseases of central nervous system)	(cont'd)	(cont'd)

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-125	Psoriasis – Improvement in Patient-Reported Itch Severity CMS Program(s): MIPS	Patients who achieve an assessment score that is reduced by 2 or more points (minimal clinically important difference) from the initial (index) assessment score.	N/A	All patients aged 18 years and older, with a diagnosis of psoriasis with an initial (index visit) NRS, VRS, or ItchyQuant assessment score of greater than or equal to 4 who are returning for a follow-up visit.	Exclusions: N/A Exceptions: N/A
MUC2021-127	Adult Kidney Disease: Angiotensin Converting Enzyme (ACE) Inhibitor or Angiotensin Receptor Blocker (ARB) Therapy CMS Program(s): MIPS	Patients who were prescribed ACE inhibitor or ARB therapy within a 12-month period Definitions: Prescribed – May include prescription given to the patient for ACE Inhibitor or ARB therapy OR patient already taking ACE Inhibitor or ARB therapy as documented in the current medication list	N/A	All patients aged 18 years and older with the diagnosis of CKD (Stages 1-5, not receiving RRT) and proteinuria. Definitions: Proteinuria: 1. >300mg of albumin in the urine per 24 hours OR 2. ACR >300 mcg/mg creatinine OR 3. Protein to creatinine ratio > 0.3 mg/mg creatinine RRT (Renal Replacement Therapy): For the purposes of this measure, RRT	Exclusions: ACE inhibitor (ACE-I) or ARB therapy not prescribed during the measurement period, medical reason(s) documented (e.g., pregnancy, history of angioedema to ACE-I, other allergy to ACE-I and ARB, hyperkalemia or history of hyperkalemia while on ACE-I or ARB therapy, acute kidney injury due to ACE-I or ARB therapy, other medical reasons. ACE inhibitor or ARB therapy not prescribed during the measurement period,

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-127 (cont'd)	(cont'd)	(cont'd)	(cont'd)	includes hemodialysis, peritoneal dialysis, and kidney transplantation	patient reason(s) documented (e.g., patient declined, other patient reasons). Exceptions: N/A
MUC2021-130	Discharge to Community-Post Acute Care Measure for Skilled Nursing Facilities (SNF) CMS Program(s): SNF VBP	The measure numerator is the risk-adjusted predicted estimate of the number of residents who are discharged to the community, and do not have an unplanned readmission to an acute care hospital or LTCH in the 31-day post-discharge observation window, and who remain alive during the post-discharge observation window. This estimate starts with the observed (or unadjusted) number of discharges to community, defined	N/A	The measure denominator is the risk-adjusted expected number of discharges to community. This estimate includes risk adjustment for resident characteristics with the facility effect removed. The "expected" number of discharges to community is the predicted number of risk-adjusted discharges to community if the same residents were treated at the average facility. The denominator is computed in the same way as the numerator, but the facility effect is set at the average.	Exclusions: • Age under 18 years • No short-term acute care hospital discharge within the thirty days preceding SNF admission • Discharges to a psychiatric hospital • Discharges against medical advice • Discharges to disaster alternative care site or a federal hospital • Discharges to court/law enforcement • Discharges to hospice or resident stays with a hospice benefit in the 31-day post-discharge window

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-130 (cont'd)	Discharge to Community-Post Acute Care Measure for Skilled Nursing Facilities (SNF)	as: (i) discharges to home or self-care with or without home health services, based on Patient Discharge Status Codes 01, 06, 81, or 86 on the Medicare FFS claim (ii) no unplanned acute or LTCH hospitalizations in the 31-day post-discharge window (iii) no death in the 31-day post-discharge window. The discharge to community outcome is risk-adjusted for resident characteristics and a statistical estimate of the facility effect beyond case-mix (described below).	(cont'd)	(cont'd)	• Planned discharges to an acute or LTCH setting • Stays for residents without continuous Part A FFS Medicare enrollment during the 12 months prior to the SNF admission date and the 31 days after the SNF discharge • SNF stays preceded by a short-term acute care stay for non-surgical treatment of cancer • Stays ending in transfer to a SNF • Stays with problematic claims data (e.g. anomalous records for stays that overlap wholly or in part, or are otherwise erroneous or contradictory; claims not paid) • Exhaustion of Medicare Part A benefit during the SNF stay • SNF stays in facilities outside of the United

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-130 (cont'd)	(cont'd)	(cont'd)	(cont'd)	(cont'd)	States, Puerto Rico, or another U.S. territory • Swing bed stays in critical access hospitals • Having a nursing facility in the 180-day lookback window preceding the admission date of the prior proximal inpatient stay • Exceptions: N/A
MUC2021-131*	Medicare Spending Per Beneficiary (MSPB) Hospital	The numerator of the MSPB Hospital measure is the hospital's average risk-adjusted episode cost, also referred to as the MSPB Amount. The MSPB Amount is calculated as the average ratio of Medicare Part A and Part B standardized episode costs to predicted episode costs from all episodes at the	The following episode-level exclusions apply to all episodes triggered at a particular hospital: (a) The beneficiary has a primary payer other than Medicare for any time during the episode window or 90-day lookback period prior to the episode start day (b) The beneficiary was not enrolled in Medicare Parts A and B for the entirety of the lookback period plus episode window, or was enrolled in Part C for any part of the	The denominator of the MSPB Hospital measure is the episode-weighted median MSPB Amount across all episodes nationally.	Exclusions: The following episode-level exclusions apply to episodes triggered at all eligible hospitals in the nation: (a) The beneficiary has a primary payer other than Medicare for any time during the episode window or 90-day lookback period prior to the episode start day (b) The beneficiary was not enrolled in Medicare Parts A

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-131* (cont'd)	Medicare Spending Per Beneficiary (MSPB) Hospital CMS Program(s): Hospital IQR Program, HVBP	hospital, multiplied by the average standardized episode cost nationwide.	lookback plus episode window (c) The beneficiary's date of birth is missing (d) The beneficiary's death date occurred before the episode ended (e) The index admission for the episode did not occur in a subsection (d) hospital paid under the IPPS or occurred in an acute hospital in Maryland (f) The discharge of the inpatient stay occurred in the last 30 days of the measurement period (g) The index admission for the episode was involved in an acute-to-acute hospital transfer (h) The inpatient claim of the inpatient stay indicated a $0 actual payment or a $0 standardized payment.	(cont'd)	and B for the entirety of the lookback period plus episode window, or was enrolled in Part C for any part of the lookback plus episode window (c) The beneficiary's date of birth is missing (d) The beneficiary's death date occurred before the episode ended (e) The index admission for the episode did not occur in a subsection (d) hospital paid under the IPPS or occurred in an acute hospital in Maryland (f) The discharge of the inpatient stay occurred in the last 30 days of the measurement period (g) The index admission for the episode was involved in an acute-to-acute hospital transfer (h) The inpatient claim of the inpatient stay indicated a $0 actual payment or a $0 standardized payment.

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-131* (cont'd)	(cont'd)	(cont'd)	(cont'd)	(cont'd)	Exceptions: N/A
MUC2021-134	Screen Positive Rate for Social Drivers of Health CMS Program(s): Hospital IQR Program; MIPS	Number of beneficiaries 18 and older that screen positive for food insecurity, housing instability, transportation needs, utility assistance or interpersonal violence.	N/A	Total number of beneficiaries 18 and older screened for food insecurity, housing instability, transportation needs, utility assistance or interpersonal violence.	Exclusions: N/A Exceptions: N/A
MUC2021-135	Dermatitis – Improvement in Patient-Reported Itch Severity CMS Program(s): MIPS	Patients who achieve an assessment score that is reduced by 2 or more points (minimal clinically important difference) from the initial (index) assessment score.	N/A	All patients aged 18 years and older, with a diagnosis of dermatitis with an initial (index visit) NRS, VRS, or ItchyQuant assessment score of greater than or equal to 4 who are returning for a follow-up visit.	Exclusions: N/A Exceptions: N/A

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-136	Screening for Social Drivers of Health CMS Program(s): Hospital IQR Program; MIPS	Number of beneficiaries 18 and older screened for food insecurity, housing instability, transportation needs, utility assistance, and interpersonal violence.	N/A	Number of beneficiaries 18 and older in practice (or population).	Exclusions: N/A Exceptions: N/A
MUC2021-137	Total nursing hours per resident day CMS Program(s): SNF VBP	Total nursing hours (RN + LPN + nurse aide hours). The source for total nursing hours is CMS's Payroll-based Journal (PBJ) system. RN hours include RN director of nursing, registered nurses with administrative duties, and registered nurses. LPN hours include licensed practical/vocational nurses with administrative duties	N/A	The denominator of the measures is a count of daily resident census, derived from MDS resident assessments. The daily MDS census is aggregated (summed) across all days in the quarter.	Exclusions: A set of exclusion criteria are used to identify facilities with highly improbable staffing data and these facilities are excluded. The exclusion criteria are as follows: • Total nurse staffing, aggregated over all days in the quarter that the facility reported both residents and staff is excessively low (<1.5 hours per resident day) • Total nurse staffing, aggregated over all days

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-137 (cont'd)	(cont'd)	and licensed practical/ vocational nurses. Nurse aide hours include certified nurse aides, aides in training, and medication aides/technicians. The nurse staffing hours reported through PBJ are aggregated (summed) across all days in the quarter.	(cont'd)	(cont'd)	in the quarter that the facility reported both residents and staff is excessively high (>12 hours per resident day). • Nurse aide staffing, aggregated over all days in the quarter that the facility reported both residents and staff is excessively high (>5.25 hours per resident day) In addition, CMS conducts audits of nursing homes to verify the data submitted (both PBJ and census) Facilities that fail to respond to these audits and those for which the audit identifies significant discrepancies between the hours reported and the hours verified receive a one-star rating for overall staffing and RN staffing for three months from the time at which the deadline to

MUC ID	Measure Title	Numerator	Numerator Exceptions	Denominator	Denominator Exclusions and Exceptions
MUC2021-137 (cont'd)	(cont'd)	(cont'd)	(cont'd)	(cont'd)	respond to audit requests passes or discrepancies are identified. These facilities are also excluded from this measure. In addition, only days that have at least one resident in the daily census are included in the calculation of total nurse staffing hours per resident day. Exceptions: N/A •

*This measure is currently in use but it is included on the 2021 MUC List because it is undergoing substantial changes to specifications.

APPENDIX B: MEASURE RATIONALES

Legend for Measure Rationales

MUC ID: Gives users an identifier to refer to a unique measure.

Measure Title: The title of the measure.

Rationale: Refers to the rationale for the measure, the peer-reviewed evidence justifying the measure, and/or the impact the measure is anticipated to achieve.

Measure Rationales

MUC ID	Measure Title	Rationale
MUC2021-053	Concurrent Use of Opioids and Benzodiazepines (COB) CMS Program(s): Part C & D Rating [Medicare]	In 2018, nearly 41 people died each day from overdoses involving prescription opioids, which were involved in 32% of all opioid overdose deaths.(1) Scientific research has identified high-risk prescribing practices that have contributed to the opioid overdose epidemic, including overlapping opioid and benzodiazepine prescriptions.(2) Concurrent use of opioids and benzodiazepines, both central nervous system (CNS) depressants, increases the risk for severe respiratory depression, which can be fatal.(1,2) Despite the risks, concurrent prescriptions for opioids and benzodiazepines are common. From 2001-2013, concurrent prescribing (overlap of at least one day) increased by nearly 80% (from 9% to 17%) among privately insured patients.(3) In one study, approximately half of the patients receiving opioids and benzodiazepines concomitantly received both prescriptions from the same prescriber on the same day.(4) In a 2015 analysis of Medicare Part D non-cancer and/or non-hospice patients on opioid therapy, the prevalence of benzodiazepine concurrent use was 24%.(5) A study on opioid and benzodiazepine prescribing in 9 states using the 2015 Prescription Behavioral Surveillance System, which includes de-identified prescription drug management (PDMP) data, found that 21.6% of patients prescribed an opioid were also prescribed a benzodiazepine, of which 54.9% had concurrent prescriptions.(6) Several studies indicate that concurrent use of opioids and benzodiazepines puts

MUC ID	Measure Title	Rationale
MUC2021-053 (cont'd)	(cont'd)	patients at greater risk for a fatal overdose. Three studies of opioid overdose deaths conducted in 2011, 2015, and 2016 found evidence of concurrent benzodiazepine use in 31%–61% of cases. (7-9) In the United States, the number of opioid overdose deaths involving benzodiazepines increased 14% on average for each year from 2006 through 2011. However, the number of opioid overdose deaths not involving benzodiazepines did not change significantly. (10) A 2015 case-cohort study found that concurrent use of benzodiazepines among US veterans raised the risk of drug overdose deaths four-fold (hazard ratio, 3.86, 95% confidence interval [CI] 3.49-4.26) compared with patients not using benzodiazepines.(11) In a large sample of privately insured patients from 2001-2013, opioid users who also used benzodiazepines were at substantially higher risk of an emergency department (ED) visit or hospital admission for opioid overdose (adjusted odds ratio 2.14; 95% CI, 2.05-2.24). If this association is causal, elimination of the concurrent use could reduce the population risk of an ED visit or hospitalization for opioid overdose by 15%. (3) References: 1 Centers for Disease Control and Prevention. Drug Overdose Deaths. N.d. Available from https://www.cdc.gov/drugoverdose/data/prescribing/overdose-death-maps.html. 2 US Food and Drug Administration. FDA Drug Safety Communication: FDA warns about serious risks and death when combining opioid pain or cough medicines with benzodiazepines; requires its strongest warning [Internet]. 2016 [2016 Nov 9]. Available from: http://www.fda.gov/Drugs/DrugSafety/ucm518473.htm. 3 Sun EC, Dixit A, Humphreys K, et al. Association between concurrent use of prescription opioids and benzodiazepines and overdose: retrospective analysis. BMJ. 2017; 356:j760. PMID: 28292769. 4 Hwang CS, Kang EM, Kornegay CJ, et al. Trends in the Concomitant Prescribing of Opioids and Benzodiazepines, 2002-2014. Am J Prev Med. 2016; 51(2):151-160. PMID: 27079639. 5 CMS. Concurrent Use of Opioids and Benzodiazepines in a Medicare Part D Population [Internet]. 2016 [cited 2016 Dec 6]. Available from: https://www.cms.gov/Medicare/Prescription-Drug-Coverage/PrescriptionDrugCovContra/Downloads/Concurrent-Use-of-Opioids-and-Benzodiazepines-in-a-Medicare-Part-D-Population-CY-2015.pdf. 6 Guy GP Jr, Zhang K, Halpin J, Sargent W. An Examination of Concurrent Opioid and Benzodiazepine Prescribing in 9 States, 2015. Am J Prev Med. 2019;57(5):629-636. PMID: 31564606. 7 Gomes T, Mamdani MM, Dhalla IA, et al. Opioid dose and drug-related mortality in patients with nonmalignant pain. Arch Intern Med. 2011; 171(7):686-91. PMID: 21482846. 8 Jones CM, McAninch JK. Emergency Department Visits and Overdose Deaths From Combined Use of Opioids and Benzodiazepines. Am J Prev Med. 2015; 49(4):493-501. PMID: 26143953. 9 Dasgupta N, Funk MJ, Proescholdbell S, et al. Cohort Study of the Impact of High-Dose Opioid Analgesics on Overdose Mortality. Pain Med. 2016; 17(1):85-98. PMID: 26333030. 10 Chen LH, Hedegaard H, Warner M. Drug-poisoning Deaths Involving Opioid Analgesics:

MUC ID	Measure Title	Rationale
MUC2021-053 (cont'd)	(cont'd)	United States, 1999-2011. NCHS Data Brief. 2014; (166):1-8. PMID: 25228059. 11 Park TW, Saitz R, Ganoczy D, et al. Benzodiazepine prescribing patterns and deaths from drug overdose among US veterans receiving opioid analgesics: case-cohort study. BMJ. 2015; 350:h2698. PMID: 26063215.
MUC2021-056	Polypharmacy: Use of Multiple Anticholinergic Medications in Older Adults (Poly-ACH) CMS Program(s): Part C & D Rating [Medicare]	A systematic review of the literature, evaluating 27 studies from 1966 to 2008, determined that a high burden of anticholinergic use consistently shows a negative association with cognitive performance in older adults. (1) Several more recent studies have shown an association between concurrent use of anticholinergic medications and an increased risk of dementia and cognitive impairment. In 2015, Gray et al conducted a cohort study of 3434 individuals over age 65 who were followed up with every two years to examine the relationship between anticholinergics and cognitive decline.(2) Hazard ratios for dementia associated with cumulative anticholinergic use were 0.92 (95% CI, 0.74-1.16) for total standardized daily doses (TSDDs) of 1 to 90; 1.19 (95% CI, 0.94-1.51) for TSDDs of 91 to 365; 1.23 (95% CI, 0.94-1.62) for TSDDs of 366 to 1095; and 1.54 (95% CI, 1.21-1.96) for TSDDs greater than 1095; findings were similar for Alzheimer's, suggesting a strong relationship between cumulative anticholinergic use and cognitive decline. In 2013, Cai et al conducted a retrospective cohort study of 3,690 individuals over age 65 to examine the association between cognitive impairment and anticholinergic exposure within the prior year.(3) In comparison to older adults with no anticholinergic exposure and after adjusting for age, race, gender, and underlying comorbidity, the odds ratio (OR) for having a diagnosis of mild chronic impairment was 2.73 (95% CI; 1.27-5.87) among lder adults who were exposed to at least three possible anticholinergic for at least 90 days. Clinical research from Risacher et al published by JAMA in 2016 found that among older adults, use of anticholinergics was associated with increased brain atrophy and dysfunction and cognitive decline based on performance on several cognitive scores at initiation of anticholinergic use and follow-up (mean follow-up 32 months).(4) In 2017, Campbell et al conducted an observational cohort study of 350 adults 65 and older to examine the effects of anticholinergic use on transition to mild cognitive impairment.(5) Compared with stable cognition, increasing use of strong anticholinergics calculated by total standard daily dose increased the odds of transition from normal cognition to MCI (OR 1.15; 95% CI 1.01–1.31). In addition to cognitive decline, anticholinergic use in older adults is also associated with increased hospitalizations, with a study by Kalisch et. al., finding that older persons taking two or more anticholinergic medications had a significantly greater risk of hospitalization for confusion or dementia (adjusted incident rate ratio [IRR] 2.58; 95% CI 1.91-3.48); risk was further increased by taking three or more anticholinergics (IRR 3.87; 95% CI 1.83-8.21).(6) Evidence also suggests anticholinergics may increase risk for falls, with a 2016 case control study (n case [falls] = 263; n control [no falls]

MUC ID	Measure Title	Rationale
MUC2021-056 (cont'd)	Older Adults (Poly-ACH)	=165) finding a significant association between anticholinergic burden and fall risk (OR, 1.8; 95% CI; 1.1–3.0).(7) References 1.Campbell N, Boustani M, Limbil T, et al. The cognitive impact of anticholinergics: a clinical review. Clin Interv Aging. 2009; 4:225-33. PMID: 19554093. 2.Gray SL, Anderson ML, Dublin S, et al. Cumulative use of strong anticholinergics and incident dementia: a prospective cohort study. JAMA Intern Med. 2015; 175(3):401-7. PMID: 25621434. 3.Cai X, Campbell N, Khan B, et al. Long-term anticholinergic use and the aging brain. Alzheimers Dement. 2013; 9(4):377-85. PMID: 23183138. 4.Risacher SL, McDonald BC, Tallman EF, et al. Association Between Anticholinergic Medication Use and Cognition, Brain Metabolism, and Brain Atrophy in Cognitively Normal Older Adults. JAMA Neurol. 2016;73(6):721–732. PMID: 27088965 5. Campbell NL, Lane KA, Gao S, Boustani MA, Unverzagt F. Anticholinergics Influence Transition from Normal Cognition to Mild Cognitive Impairment in Older Adults in Primary Care. Pharmacotherapy. 2018 May;38(5):511-519. doi: 10.1002/phar.2106. Epub 2018 Apr 25. PMID: 29600808; 6. Kalisch Ellett LM, Pratt NL, Ramsay EN, et al. Multiple anticholinergic medication use and risk of hospital admission for confusion or dementia. J Am Geriatr Soc. 2014; 62(10):1916-22. PMID: 25284144. 7.Zia A, Kamaruzzaman S, Myint PK, Tan MP. Anticholinergic burden is associated with recurrent and injurious falls in older individuals. Maturitas. 2016 Feb;84:32-7. doi: 10.1016/j.maturitas.2015.10.009. Epub 2015 Oct 23. PMID: 26531071
MUC2021-058	Appropriate intervention of immune-related diarrhea and/or colitis in patients treated with immune checkpoint inhibitors CMS Program(s): MIPS	All the 5 clinical guidelines below address the measure's quality actions of holding immunotherapy and administering corticosteroids or immunosuppressant for grade 2 or above diarrhea and/or grade 2 or above colitis. The measure will enhance compliance with the clinical guidelines by ensuring the eligible provider is addressing the adverse event of diarrhea or colitis by immediately providing an intervention to prevent the adverse event from worsening. NCCN Clinical Practice Guidelines in Oncology: Management of Immunotherapy-Related Toxicities.2020.- (Evidence Based) AGA Clinical Practice Update on Diagnosis and Management of Immune Checkpoint Inhibitor (ICI) Colitis and Hepatitis: Expert Review. 2020.- (Evidence-based and Consensus-based) Chemotherapy and Immunotherapy Guidelines and Recommendations for Practice. ONS. 2019. American Society of Clinical Oncology Clinical Practice Guideline. Management of immune-related adverse events in patients treated with immune checkpoint inhibitor therapy. Journal of Clinical Oncology. 2018-(Consensus-based) Management of toxicities from immunotherapy: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. 2017 -(Evidence-based)

MUC ID	Measure Title	Rationale
MUC2021-063	Care Goal Achievement Following a Total Hip Arthroplasty (THA) or Total Knee Arthroplasty (TKA) CMS Program(s): MIPS	This patient-reported outcome-based performance measure (PRO-PM) related to care goal achievement following a total hip arthroplasty (THA) or total knee arthroplasty (TKA) is designed to promote patient-centered care and enable care that is personalized and aligned with patient's goals. Specifically, the newly developed pre- and post-surgical patient-reported outcome measures (PROMs) assess the patient's main goals and expectations (i.e., pain, physical function and quality of life) before surgery (i.e., THA or TKA) and the degree to which the expectations were met or exceeded after surgery. Consistent with this notion, the measure enables clinician-groups to identify patient's goals and expectations for their surgery, incorporate the information into their conversation with patients which allows shared-decision making and management of unrealistic expectations; all of which have the potential to enhance patient satisfaction, improve clinical outcomes (both as reported by patients and by more traditional measures), increase health service efficiency, and improve health-related business metrics. Patient-centered care is part of a shift in focus which has drawn increasing interest in recent years, highlighting the importance of incorporating patients' perspectives, expectations and goals into care delivery (IOM 2001; Berwick DM 2002). Consistently, patient expectations have been proven to impact patient outcomes (Dyche 2005). Literature suggests that providers' responsiveness to patient expectations is one of the main determinants of patient experience and satisfaction (Needleman et al., 2002; Schoenfelder et al., 2011; McKinley et al., 2002). Unfulfilled patient expectations are associated with poor satisfaction (McKinley et al., 2002) and poor overall health outcomes (Barry et al. 2000). Consequently, a growing body of evidence supports the importance of identifying and addressing patients' expectations (McKinley et al., 2002; Dyche 2005; Main et al. 2010; Snell et al. 2010). Nonetheless, previous studies have emphasized that clinicians frequently neglect to solicit information about patients' expectations, tending to underestimate or not recognize them, resulting in unmet expectations and lower satisfaction (Rozenblum et al. 2011; Topaz et al. 2016; Rozenblum et al. 2015). As such, clinician-groups must begin to develop and implement practical and effective measurements (e.g., PROMs and PRO-PMs) and interventions that create a culture where clinician groups actively assess and respond to patient expectations. The PRO-PM addresses a gap in orthopedic measure development, as currently there are no PRO-PMs related to care goal achievement. This gap impacts both patient outcomes, health service efficiency and healthcare cost. The demand for THA and TKA procedures are expected to continue to rise substantially in the coming decades (Singh et al. 2019). With this increased demand for total joint arthroplasty (TJA) and a consistent need for outcome improvement, it is important to maintain care goal achievement. National goals emphasize the importance of engaging patients in the care process and measuring their goals, experience and perspectives. More specifically, there is increased emphasis on

MUC ID	Measure Title	Rationale
MUC2021-063 (cont'd)	(cont'd)	evaluating patient reported outcomes especially in the area of joint replacement. Consistent with this notion, both the American Joint Replacement Registry and the American Association of Hip and Knee Surgeons, established guidelines related to the use of PROMs in TJA (AJRR 2018; AAHKS 2016). PROMs have become increasingly emphasized in the transition from volume-based to value-based orthopedic care (Makhni et al, 2019). Studies showed the importance of measuring PROMs following THA and TKA (SooHoo et al. 2009; Makhni 2019). For example, a study conducted by SooHoo and colleagues identified that 81 percent of patients achieved a minimally clinically important difference of three PROMs three months following THA and TKA (SooHoo et al. 2009; Makhni et al 2019). Consistent with this notion, PROMs and PRO-PMs are currently one of the Centers for Medicare & Medicaid Service's (CMS) priorities (CMS 2021). Therefore, we have developed two PROMs and a PRO-PM related to care goal achievement following a THA or TKA, which assess and manage patient goals and expectations. The importance of the measure was assessed with stakeholders in qualitative assessment (i.e., interviews and focus groups) throughout the measure development process. Patients and providers saw great value in the new PRO-PM. They indicated that completing PROMs before and after surgery to measure patient's expectations and perceived outcomes were a good approach for assessing goal achievement and that the measure is important in improving quality of care. The stakeholders also thought that the measure would improve communication among patients and providers and consequently, enhance patient satisfaction and health outcomes. Payers' interviews also supported these findings and added that this PRO-PM will enable new national benchmark related to care goal achievement and possibly incentivize efforts to implement the necessary improvements to practice quality. References: Adams, J.L., Mehrotra, A., Thomas, J.W., McGlynn, E.A. "Physician cost profiling--reliability and risk of misclassification." N Engl J Med. Mar 18;362(11), 2010, pp. 1014-21. Adams, J.L., Mehrotra, A., Thomas, J.W., McGlynn, E.A. "Physician cost profiling--reliability and risk of misclassification." N Engl J Med. Mar 18;362(11), 2010, supplementary appendix, p. 16. American Joint Replacement Registry (AJRR). Patient-Reported Outcome Measures Guide. 2018. American Association of Hip and Knee Surgeons (AAHKS). "Primary Total Hip Arthroplasty Performance Measurement Set." Approved Final Measures. 2016. Available at https://www.aahks.org/wp-content/uploads/2018/07/hip-arthroplasty-measures.pdf. American Association of Orthopaedic Surgeons (AAOS). (2015). Evidence-Based Clinical Practice Guideline.

MUC ID	Measure Title	Rationale
MUC2021-063 (cont'd)	(cont'd)	https://www.aaos.org/globalassets/quality-and-practice-resources/surgical-management-knee/smoak-cpg_4.22.2016.pdf Barry, C.A., Bradley, C.P., Britten, N., Stevenson, F.A., Barber, N. "Patients' unvoiced agendas in general practice consultations: Qualitative study." British Medical Journal, 320(7244), 2000, pp.1246-1250. Berwick, DM. "A user's manual for the IOM's 'Quality Chasm' report." Health Aff (Milwood), 2002, pp. 21:80-90. Bureau of Labor Statistics (BLS). "Producer Price Indexes." U.S. Dept of Labor. https://www.bls.gov/ppi/notices/2018/ppi-updates-the-publication-structure-for-naics-622110-general-medical-and-surgical-hospitals.htm Cattell, R.B. "The Scientific Use of Factor Analysis." New York: Plenum, 1978 Center for Medicare and Medicaid Services (CMS). Meaningful Measures Hub. 2021, Retrieved May 11, 2021. Available from https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/QualityInitiativesGenInfo/MMF/General-info-Sub-Page. Conner-Spady, B.L., Bohm, E., Loucks, L., Dunbar, M.J., Marshall, D.A., Noseworthy, T.W. "Patient expectations and satisfaction 6 and 12 months following total hip and knee replacement." Qual Life Res. Mar;29(3), 2020, pp. 705-719. Dyche, L., Swiderski, D. "The effect of physician solicitation approaches on ability to identify patient concerns." Journal of General Internal Medicine, 20(3), 2005, pp. 267-270. Ethgen, O., Bruyère, O., Richy, F., Dardennes, C., Reginster, J.Y. "Health-related quality of life in total hip and total knee arthroplasty. A qualitative and systematic review of the literature." J Bone Joint Surg Am. May;86(5), 2004, pp. 963-74. Ghomrawi, H., Ferrando, N., Mandl, L., Do, H., Noor, N., Gonzalez Della Valle, A., "How often are patient and surgeon recovery expectations for total joint arthroplasty aligned? Results of a pilot study." HSS J. 7(3), 2011, pp. 229-34. Hripcsak, G., Heitjan, D. F. (2002). "Measuring agreement in medical informatics reliability studies." Journal of biomedical informatics, 35(2), 2002, pp. 99–110. https://doi.org/10.1016/s1532-0464(02)00500-2. Institute of Medicine (IOM). "Crossing the Quality Chasm: A New Health System for the 21st Century." Washington, DC: National Academy Press; 2001. Koo, T.K., Li, M.Y. "A guideline of selecting and reporting intraclass correlation coefficients for reliability research." J Chiropr Med. Jun;15(2), 2016, pp. 155-63. Luzzi, AJ., Fleischman, AN., Matthews, CN., Crizer, MP., Wilsman, J., Parvizi, J. "The 'Bundle Busters': Incidence and cost of post-acute complications following total joint arthroplasty." J. Arthroplasty, 33(9), 2018, pp. 2734-39. Main, C.J., Buchbinder, R., Porcheret, M., Foster, N. "Addressing patient beliefs and expectations in the consultation." Best Practice & Research: Clinical Rheumatology, 24(2), 2010, pp. 219-225. Makhni, E. C., Baumhauer, J. F., Ayers, D., Bozic, K. J. "Patient-Reported Outcome Measures: How and Why They Are Collected." Instructional course lectures, 68, 2019, pp. 675–680. McKinley, R.K., Stevenson, K., Adams, S., Manku-

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MUC2021-063 (cont'd)	(cont'd)	Scott, T. K. "Meeting patient expectations of care: The major determinant of satisfaction with out-of-hours primary medical care?" Family Practice, 19(4), 2002, pp. 333-338. National Quality Forum (NQF). "Guidance for measure testing and evaluating scientific acceptability of measure properties." January 2011. National Quality Forum (NQF). (2013). Patient Reported Outcomes (PROs) in Performance Measurement. http://www.qualityforum.org/Publications/2012/12/Patient-Reported_Outcomes_Final_Report.aspx National Quality Forum (NQF). "Draft Acceptable Reliability Thresholds." May 2021. Needleman J., Buerhaus, P., Mattke, S., Stewart, M., Zelevinsky, K. "Nurse-staffing levels and the quality of care in hospitals." The New England Journal of Medicine, 346(22), 2002, pp. 1715-1722. Nilsdotter, A.K., Petersson, I.F., Roos, E.M., Lohmander, L.S. "Predictors of patient relevant outcome after total hip replacement for osteoarthritis: a prospective study." Ann Rheum Dis, 62(10), 2003, pp. 923-30. Rozenblum, R., Gianola, A., Ionescu-Ittu, R., Verstappen, A., Landzberg, M., Gurvitz, M., Marelli, A.J. "Clinicians' perspectives on patient satisfaction in adult congenital heart disease clinics—A dimension of healthcare quality whose time has come." Congenital Heart Disease, 10(2), 2015, pp. 128-136. Rozenblum, R., Lisby, M., Hockey, P. M., Levtizion-Korach, O., Salzberg, C.A., Lipsitz S, Bates, D.W. "Uncovering the blind spot of patient satisfaction: An international survey." BMJ Quality & Safety, 20(11), 2011, pp. 959-965. Schoenfelder, T., Klewer, J., Kugler, J. "Determinants of patient satisfaction: A study among 39 hospitals in an in-patient setting in Germany." International Journal for Quality in Healthcare, 23(5), 2011, pp. 503-509. Sim, J., Wright, C. C. "The kappa statistic in reliability studies: use, interpretation, and sample size requirements." Physical therapy, 85(3), 2005, pp. 257–268. Singh, J.A., Yu, S., Chen, L., Cleveland, J.D. "Rates of Total Joint Replacement in the United States: Future Projections to 2020-2040 Using the National Inpatient Sample." J.Rheumatol, 46(9), 2019, pp. 1134-40. Snell, L., McCarthy, C., Klassen, A., Cano, S., Rubin, L., Hurley, K., Pusic, A. "Clarifying the expectations of patients undergoing implant breast reconstruction: A qualitative study." Plastic and Reconstructive Surgery, 126(6), 2010; pp. 1825-1830. Snyder, D. J., Kroshus, T. R., Keswani, A., Garden, E. B., Koenig, K. M., Bozic, K. J., Jevsevar, D. S., Poeran, J., & Moucha, C. S. (2019). Are Medicare's Nursing Home Compare Ratings Accurate Predictors of 90-Day Complications, Readmission, and Bundle Cost for Patients Undergoing Primary Total Joint Arthroplasty? The Journal of Arthroplasty, 34(4), 613–618. https://doi.org/10.1016/j.arth.2018.12.002 SooHoo, NF., Lieberman, JR., Zingmond, DS. "Factors that predict short-term complication rates after total hip arthroplasty." J Bone Joint Surg Am. 91(1), 2009, pp. 128-33. Topaz, M., Lisby, M., Morrison, C., Levtzion-Korach, O., Hockey, P.M., Salzberg, C.A., Efrati, N., Lipsitz, S., Bates, D.W., Rozenblum, R. "Nurses' perspectives on patient satisfaction and expectations: An international cross-sectional

MUC ID	Measure Title	Rationale
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MUC2021-066	Polypharmacy: Use of Multiple Central Nervous System (CNS)-Active Medications in Older Adults (Poly-CNS) CMS Program(s): Part C & D Rating [Medicare]	A recent analysis published in JAMA in 2017 showed that CNS polypharmacy in older adults has been trending upward.(1) The frequency of three or more CNS-active medications being initiated or continued in older adults during a physician office visit more than doubled from 2004 to 2013. In particular, nearly half (46%) of CNS polypharmacy visits for older adults in 2013 were for individuals without pain, insomnia, or other mental health diagnoses. This is consistent with other findings suggesting frequent CNS use in older adults: among a sample of 18,752 nursing home residents across two states in 2013, 66.8% received at least one CNS-active drug.(2) Multiple studies of older adults have reported that the use of CNS-active medications is linked to an increased risk of fractures, falls, and recurrent falls.(3-7) Specifically, a cohort study published in 1998 found that older adults taking one or more CNS-active medications were at a 1.5-fold increased risk (OR 1.54; 95% CI 1.07-2.22) and those taking two or more CNS-active medications were at a 2.5-fold increased risk (OR 2.37; 95% CI 1.14-4.94) of falling compared to a reference group of no CNS-active medications, suggesting that a dose-response relationship exists between CNS-active medications and falls.(3) A nested case-control study of adults 65 and over using data from 1994 to 2005 (including 17,198 cases and 85,990 controls) found that the risk ratio for concomitant use of benzodiazepines and interacting drugs, and hip fracture, ranged from 1.5 (95% CI 1.3, 1.7) to 2.1 (95% CI 1.5, 2.8).(4) A 2009 longitudinal cohort study following 3,055 older adults annually for five years found that as many as 24.1% of CNS-users took multiple agents annually.(5) Those taking multiple CNS medications had an increased risk of recurrent falls (OR 1.95; 95% CI 1.35-2.81) compared to non-users, and patients taking higher doses of CNS-active medications had a threefold increased risk (OR 2.89; 95% CI 1.96-4.25) of recurrent falls.(6) Additionally, a nested case-control study of 5,556 nursing home residents using 2010 data found that patients taking 3 or more CNS-active standardized daily doses were more likely to have a serious fall than those who did not take any CNS medications (adjusted OR 1.83; 95% CI 1.35-2.48).(7) References: 1 Maust DT, Gerlach LB, Gibson A, et al. Trends in Central Nervous System-Active Polypharmacy Among Older Adults Seen in Outpatient Care in the United States. JAMA Intern Med. 2017; 177(4):583-585. PMID: 28192559. 2 Bathena SP, Lippek IE, Kanner AM, Birnbaum AK. Antiseizure,

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MUC2021-084	Hospital Harm – Opioid-Related Adverse Events CMS Program(s): Hospital IQR Program; Promoting Interoperability (EH-CAH)	Opioids are often the foundation for sedation and pain relief. However, use of opioids can also lead to serious adverse events, including constipation, oversedation, delirium, and respiratory depression. Opioid-related adverse events have both patient-level and financial implications. Patients who experience this event have been noted to have 55% longer lengths of stay, 47% higher costs, 36% higher risk of 30-day readmission, and 3.4 times higher payments than patients without these adverse events (Kessler et al., 2013). Most opioid-related adverse events are preventable. Of the adverse drug events reported to the Joint Commission´s Sentinel Event database, 47% were due to a wrong medication dose, 29% to improper monitoring, and 11% to other causes (e. g., medication interactions, drug reactions) (Joint Commission, 2012; Overdyk, 2009). Additionally, in a closed-claims analysis, 97% of adverse events were judged preventable with better monitoring and response (Lee et al., 2015). Naloxone administration is often used as an indicator of a severe opioid-related adverse event, and implementation of this measure can advance safe use of opioids in hospitals and prevent these serious and potentially lethal adverse drug events. Naloxone is an opioid reversal agent typically used for severe opioid-related adverse events. Naloxone administration has been used in a number of studies as an indicator of opioid-related adverse events (Nwulu et al., 2013; Eckstrand et al., 2009). From Part 10 of the 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care (Lavonas et al., 2015), the following recommendation is listed for use of Naloxone: Naloxone is a potent opioid receptor antagonist in the brain, spinal cord, and gastrointestinal system. Naloxone has an excellent safety profile and can rapidly reverse central nervous

MUC ID	Measure Title	Rationale
MUC2021-084 (cont'd)	(cont'd)	system (CNS) and respiratory depression in a patient with an opioid-associated resuscitative emergency. References: Eckstrand, J. A., Habib, A. S., Williamson, A., Horvath, M. M., Gattis, K. G., Cozart, H., & Ferranti, J. Computerized surveillance of opioid-related adverse drug events in perioperative care: a cross-sectional study. Patient Saf Surg. 2009;3(1), 18. Kessler ER, Shah M, Gruschkus SK, Raju A. Cost and quality implications of opioid-based postsurgical pain control using administrative claims data from a large health system: opioid-related adverse events and their impact on clinical and economic outcomes. Pharmacotherapy. 2013;33(4):383-391. Lavonas EJ, Drennan IR, Gabrielli A, Heffner AC, Hoyte CO, Orkin AM, Sawyer KN, Donnino MW. Part 10: Special Circumstances of Resuscitation: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation. 2015 Nov 3;132(18 Suppl 2):S501-18. doi: 10.1161/CIR.0000000000000264. Erratum in: Circulation. 2016 Aug 30;134(9):e122. Lee, L. A., Caplan, R. A., Stephens, L. S., Posner, K. L., Terman, G. W., Voepel-Lewis, T., & Domino, K. B. Postoperative opioid-induced respiratory depression: a closed claims analysis. Anesthesiology. 2015:122(3), 659-665. Nwulu, U., Nirantharakumar, K., Odesanya, R., McDowell, S. E., & Coleman, J. J. Improvement in the detection of adverse drug events by the use of electronic health and prescription records: an evaluation of two trigger tools. Eur J Clin Pharmacol. 2013;69(2), 255-259. Overdyk FJ: Postoperative respiratory depression and opioids. Initiatives in Safe Patient Care, Saxe Healthcare Communications, 2009 The Joint Commission. Safe use of opioids in hospitals. Sentinel Event Alert. 2012(49):1-5. https://www.jointcommission.org/-/media/deprecated-unorganized/imported-assets/tjc/system-folders/topics-library/sea_49_opioids_8_2_12_finalpdf.pdf?db=web&hash=0135F306FCB10D919CF7572ECCC65C84

MUC ID	Measure Title	Rationale
MUC2021-090	Kidney Health Evaluation CMS Program(s): MIPS	Chronic kidney disease (CKD) stemming from diabetes occurs in almost 30% of patients with diabetes (Afkarian et al, 2016). CKD is diagnosed by the chronic presence of elevated albumin excretion, measured by the urinary albumin-creatinine ratio (uACR), or low estimated glomerular filtration rate (eGFR). The following evidence statements are quoted from the referenced clinical guidelines: 1) At least once a year, assess urinary albumin (e.g., spot urinary albumin-to-creatinine ratio) and estimated glomerular filtration rate (eGFR) in patients with type 1 diabetes with duration of =5 years and in all patients with type 2 diabetes regardless of treatment. (Evidence Grade = B) (American Diabetes Association, 2020) 2) Patients with diabetes should be screened annually for chronic kidney disease. Initial screening should commence: 5 years after the diagnosis of type 1 diabetes; (Evidence Grade = A) or From diagnosis of type 2 diabetes. (Evidence Grade = B) Screening should include: Measurements of urinary albumin-creatinine ratio (ACR) in a spot urine sample; (Evidence Grade = B) Measurement of serum creatinine and estimation of GFR. (Evidence Grade = B) (National Kidney Foundation, 2007 and 2012) References: 1. Afkarian, M., Zelnick, L. R., Hall, Y. N., Heagerty, P. J., Tuttle, K., Weiss, N. S., & de Boer, I. H. (2016). Clinical Manifestations of Kidney Disease Among US Adults With Diabetes, 1988-2014. JAMA, 316(6), 602–610. https://doi.org/10.1001/jama.2016.10924 2. American Diabetes Association. Microvascular Complications and Foot Care: *Standards of Medical Care in Diabetes—2021*. Diabetes Care 2021 Jan; 44(Supplement 1): S151-S167. https://doi.org/10.2337/dc21-S011 3. National Kidney Foundation. (2007). KDOQI™ Clinical practice guidelines and clinical practice recommendations for diabetes and chronic kidney disease. American Journal of Kidney Disorders, 49, S1-S180. Retrieved from https://www.kidney.org/sites/default/files/docs/diabetes_ajkd_febsuppl_07.pdf 4. National Kidney Foundation. (2012). KDOQI Clinical practice guidelines and clinical practice recommendations for diabetes and CKD: 2012 update. American Journal of Kidney Disorders, 60(5), 850-886. Retrieved from http://www.kidney.org/sites/default/files/docs/diabetes-ckd-update-2012.pdf

MUC ID	Measure Title	Rationale
MUC2021-091	Appropriate Treatment for Patients with Stage I (T1c) through III HER2 Positive Breast Cancer CMS Program(s): PCHQR	Approximately 15% of patients with breast cancer have tumors that overexpress the human epidermal growth hormone receptor protein (HER2). The American Society of Clinical Oncology (ASCO) envisions that use of this measure will improve concordance with recommendations for the use of HER2-targeted therapy with chemotherapy for patients with stage I (T1c) – III, HER2 positive breast cancer. We recognize the importance of ensuring that the appropriate patient population receives guideline concordant treatment as studies have shown that the administration of HER2-targeted therapies significantly improves overall survival in patients with high-risk HER2 positive breast cancer. References: Gradishar WJ, Anderson BO, Abraham J, et al. NCCN Guidelines Panel. NCCN Clinical Practice Guidelines in Oncology - Breast Cancer. Version 3. 2019. September 6, 2019. https://www.nccn.org/professionals/physician_gls/pdf/breast.pdf. Wolff AC, Hammond MEH, Allison KH, Harvey BE, Mangu PB, Bartlett JMS, et al. Human Epidermal Growth Factor Receptor 2 Testing in Breast Cancer: American Society of Clinical Oncology/College of American Pathologists Clinical Practice Guideline Focused Update. J Clin Oncol. 2018 Jul 10; 36(20):2105-2122.
MUC2021-095	CoreQ: Short Stay Discharge Measure CMS Program(s): SNF VBP	Castle, N.G. (2007). A literature review of satisfaction instruments used in long-term care settings. *Journal of Aging and Social Policy*, 19(2), 9-42. Donabedian, A. (1985). Twenty years of research on the quality of medical care: 1964-1984. *Evaluation and the Health Professions,* 8, 243-65. Donabedian, A. (1988). The quality of care. *Journal of the American Medical Association,* 260, 1743-1748. Donabedian, A. (1996). Evaluating the quality of medical care. *Milbank Memorial Fund Quarterly*, 44(1), 166-203. Glass, A. (1991). Nursing home quality: A framework for analysis. *Journal of Applied Gerontology*, 10(1), 5-18. National Research Corporation. (2014). 2014 National Research Report Empowering Customer-Centric Healthcare Across the Continuum.
MUC2021-098	National Healthcare Safety Network (NHSN) Healthcare-associated Clostridioides difficile Infection Outcome Measure	C. difficile caused 159,463 infections among hospitalized US patients in 2019. (1) Robust surveillance combined with incentives from value-based purchasing resulted in a reduction of 42% between 2015 and 2019 in acute-care hospitals. (1) Further improvements are possible, but aspects of the existing surveillance definition complicate the external reception of the measure and create unintended consequences regarding testing and treatment practices. (2, 3) These issues also challenge the ability to track trends in true infections as organizations alter their practices. Validation studies performed from 2013 -2106 by 6 different states, suggest that the negative predictive value of the metric is low at ~59% indicating that, in addition to potential manipulation of testing practices, many cases are being missed in the reporting process. (4) To address these concerns, CDC's National Healthcare Safety Network (NHSN) proposes a new measure that promotes further improvements in care for patients and reduces unintended consequences. Creating an improved surveillance definition that more closely approximates the disease-state

MUC ID	Measure Title	Rationale
MUC2021-098 (cont'd)	CMS Program(s): HACRP; IRF QRP; LTCH QRP; PCHQR; SNF QRP; Hospital IQR Program; Promoting Interoperability (EH-CAH)	requires incorporating use of therapy as a proxy for clinical decision-making into the measure. To that end, this new NHSN measure includes not only the lab test for C. difficile but also the use of a specific antimicrobial agent or other therapy as part of the definition. In this approach, use of therapy acts as a proxy for a clinically significant infection – and is especially possible because of the specific therapies used for infections due to C. difficile. (5) References: (1) Centers for Disease Control and Prevention. CDC Antibiotic Resistance & Patient Safety Portal accessed May 2, 2021, available at https://arpsp.cdc.gov/profile/infections/CDI (2) Rock C, Pana Z et al. National Healthcare Safety Network laboratory-identified Clostridium difficile event reporting: A need for diagnostic stewardship. American Journal of Infection Control, 2018. ISSN: 0196-6553, Vol: 46, Issue: 4, Page: 456-458 (3) Centers for Disease Control and Prevention. Short Summary: Testing for C. difficile and Standardized Infection Ratios, National Healthcare Safety Network, 2019. Published November 2019, available at https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/Cdiff-testing-sir-508.pdf (4) Thure K, Fell A. Improving HAI surveillance: lessons learned from NHSN Data Validation. Presented at Association for Professionals in Infection Control and Epidemiology Annual Conference; June 2018; Minneapolis, MN (5) McDonald LC, Gerdling DN et al. Clinical Practice Guidelines for Clostridium difficile Infection in Adults and Children: 2017 Update by the Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA) Clinical Infectious Diseases. Volume 66, Issue 7, 1 April 2018, Pages e1–e48.
MUC2021-100	National Healthcare Safety Network (NHSN) Hospital-Onset Bacteremia & Fungemia Outcome Measure CMS Program(s): HACRP; Hospital IQR Program;	Multiple justification studies are underway. An HOB measure is viewed favorably among subject matter experts and users. A survey of 89 researchers in the Society for Hospital Epidemiology of America (SHEA) Research Network found that "Among the majority of SHEA Research Network respondents, HOB is perceived as preventable, reflective of quality of care, and potentially acceptable as a publicly reported quality metric." Furthermore, "Given a choice to publicly report central-line-associated bloodstream infections (CLABSIs) and/or HOB, 57% favored reporting either HOB alone (22%) or in addition to CLABSI (35%) and 34% favored CLABSI alone. (1) References: 1) Dantes et al. Hospital epidemiologists' and infection preventionists' opinions regarding hospital-onset bacteremia and fungemia as a potential healthcare-associated infection metric. Infection Control and Hospital Epidemiology, 01 Apr 2019, 40(5);536-540.

MUC ID	Measure Title	Rationale
MUC2021-100 (cont'd)	Promoting Interoperability (EH-CAH); PCHQR	(cont'd)
MUC2021-101*	Standardized Readmission Ratio (SRR) for dialysis facilities CMS Program(s): ESRD QIP	Several studies and commentaries strongly suggest pre- and post-discharge interventions within the purview of dialysis providers may reduce the risk of unplanned readmissions within the end-stage renal disease (ESRD) chronic dialysis population (Assimon, Wang, and Flythe 2018; Plantinga et al 2018; Flythe et al 2017, 2016; Chan et al 2017; Assimon and Flythe 2017; Plantinga and Jaar 2017). Plantinga et al (2018) found that interventions in the immediate post-discharge period were associated with reduced readmission risk among hemodialysis patients. They also suggest that post-discharge processes of care may help identify certain patients at higher risk for readmission, creating opportunities for dialysis providers to initiate interventions to reduce readmissions. A number of 'patient-at-discharge' characteristics were found by Flythe et al (2017) to be associated with greater readmission risk. These included 10 or more outpatient medications at time of admission; catheter vascular access; three or more hospital admissions in the prior year; and intradialytic hypotension. The authors suggest that modifiable processes of care such as care transitions and targeted medication education may reduce the risk of readmissions among dialysis patients recently discharged. Chan and colleagues (2009) found that certain post-discharge assessments and changes in treatment at the dialysis facility may be associated with a reduced risk of readmission. Assessments included hemoglobin testing and modification of erythropoietin (EPO) dose; mineral and bone disease testing and modification of vitamin D; and, importantly, modification of dry weight after discharge. The risk of unplanned hospital readmission was reduced when these assessments were completed within the first seven days post-hospital discharge. In a commentary (Wish 2014) the Chan 2009 study and several others are cited as examples of the potential for care coordination to reduce readmissions among ESRD dialysis patients. The findings from Chan 2009 are further supported by results from a recent study (Lin et. al. CJASN, 2019) comparing principal diagnosis of index hospitalizations and their associated readmissions. Tables included in the paper's supplementary materials clearly demonstrate that a significant portion of readmission principal discharge diagnoses are for dialysis-related conditions. For example, regardless of the index hospitalization cause (i.e. infectious, endocrine, cardiovascular, gastrointestinal, dermatologic, renal, etc), the top principal discharge diagnosis lists for related readmissions prominently included diagnoses typically associated with fluid overload and failure of fluid management in dialysis patients (fluid overload, hypertension, congestive heart failure, etc). These results support the early findings from Chan 2009, nearly a decade earlier, showing that adjustment of patient target weight in the early

MUC ID	Measure Title	Rationale
MUC2021-101* (cont'd)	(cont'd)	post-hospitalization discharge period (to adjust for the frequent weight loss and/or in-hospital re-assignment of a lower post-dialysis target weight) is a likely mechanism for a substantial minority of unplanned readmissions in the US chronic dialysis population. Facility structures of care may also impact risk of readmission. One study reported that lower nurses-to-total staff and higher patient-to-nurse ratios were associated with significantly worse 30-day readmission performance (Chen et al 2019). Finally, findings from the first two performance years of the Center for Medicare and Medicaid Innovation's Comprehensive ESRD Care Initiative suggest care coordination may reduce readmission risk (Marrufo et al, 2019). The findings of this controlled study showed an overall decrease in the percentage of Medicare beneficiaries with at least one readmission, among those aligned to an ESRD Seamless Care Organization, relative to a matched comparison group of facilities. Studies in the non-dialysis setting have cited post-interventions or a combination of pre-and post-discharge interventions as drivers for reducing unplanned readmissions (Dunn 1994; Bostrom 1996; Dudas 2001; Azevedo 2002; Coleman 2004; Coleman 2006; Balaban 2008; Braun 2009; Naylor 1994; McDonald 2001; Creason 2001; Ahmed 2004; Anderson 2005; Jack 2009; Koehler 2009; Parry 2009). However, a recent study and related commentary challenge the reported magnitude of reductions in hospital-wide readmissions since 2010, as part of the publicly reported Hospital Wide Readmission (HWR) measure for the Hospital Readmission Reduction Program (HRRP) (Wadhera, Yeh, and Joynt-Maddox 2019; Ody et al 2019). They suggest the potential driver of these reductions is in part attributed to a change in diagnosis coding policy for inpatient claims that took effect in October 2012. While it is not yet settled whether the reductions were primarily or only nominally driven by the ability of hospitals to report more condition diagnoses, resulting in more robust comorbidity risk adjustment in the measure, the concern has generated attention about whether reported improvements in readmission rates is a result of the HWR and by extension better care delivery by hospitals. These concerns are not considered germane to drivers of readmission reduction based on the dialysis facility readmission measure. The SRR was implemented by CMS in 2015, after the 2012 coding changes took effect. Therefore, trends in dialysis patient 30-day readmissions only reflect the period since the claims-based diagnoses coding changes and observed reductions since that time are not considered an artifact of the 2012 inpatient diagnosis coding changes. Collectively this body of evidence provides support on interventions that may reduce the risk of unplanned readmissions among ESRD dialysis patients. Effective interventions include enhanced care coordination and interventions performed prior to and immediately following the post-discharge period.
MUC2021-104	Severe Obstetric Complications eCQM	Although the United States (US) is one of the most developed countries, there continues to be a staggering increase in the number of pregnant women who suffer from complications associated with Severe Maternal Morbidity (SMM). It has been found that rates of SMM are steadily increasing in the US [1]. Fourteen in every 1,000 perinatal

MUC ID	Measure Title	Rationale
MUC2021-104 (cont'd)	CMS Program(s): Hospital IQR Program; Promoting Interoperability (EH-CAH) Severe Obstetric Complications eCQM	pregnant women have experienced hemorrhage, embolism, hypertension, stroke, and other serious complications. Racial and ethnic disparities for women who identify as minority are significant; they are at considerably higher risk for developing these complications than are Non-Hispanic White women [2,3]. Additionally, recent maternal mortality data from 2018 reveal that 658 women died from maternal causes, resulting in a rate of 17.4 deaths per 100,000 live births, with 77% of the deaths attributed to direct obstetric causes like hemorrhage, preeclampsia, obstetric embolism, and other complications [4]. Per report from the Center for Disease Control and Prevention (CDC), the overall rate of SMM increased almost 200%, from 49.5 per 10,000 delivery hospitalizations in 1993 to 144.0 per 10,000 delivery hospitalizations in 2014 [1]. This increase has been mostly driven by blood transfusions, which increased by almost 400% in that period. Excluding blood transfusions, there has been a 22.4% increase in SMM, from 28.6 in 1993 to 35.0 in 2014 [5]. Increasing rates of SMM are resulting in increased healthcare costs, longer hospitalization stays and short- and long-term negative outcomes on a woman's health [6-9]. National evaluation of hospitals' performance on maternal morbidity and mortality is limited because there are currently no maternal morbidity or obstetric complications outcome measures in national reporting programs. Current quality measures related to pregnancy and maternal health proposed for or in public reporting programs are largely process measures (e.g., Maternity Care: Post-partum Follow Up and Care Coordination) and outcome measures related to delivery type (e.g., PC-01 Elective Delivery). The high maternal mortality and morbidity rates in the United States present unique opportunities for large-scale quality measurement and improvement activities. Statistics on preventability vary but suggest that a considerable proportion of maternal morbidity and mortality events could be prevented [10,11]. This measure will therefore assist in the discovery and understanding of SMM outcomes and disparities in maternal outcomes, which can lead to improvements in the safety and quality of maternal care necessary to reduce SMM and mortality rates. 1. Severe maternal morbidity in the United States. (2017) https://www.cdc.gov/reproductivehealth/maternalinfanthealth/severematernalmorbidity.html 2. Leonard SA, Main EK, Scott KA, Profit J, Carmichael SL. Racial and ethnic disparities in severe maternal morbidity prevalence and trends. Annals of epidemiology. 2019;33:30-36. 3. Petersen EE, Davis NL, Goodman D, et al. Vital signs: pregnancy-related deaths, United States, 2011–2015, and strategies for prevention, 13 states, 2013–2017. Morbidity and Mortality Weekly Report. 2019;68(18):423. 4.Hoyert DL, Miniño AM. Maternal mortality in the United States: changes in coding, publication, and data release, 2018. 2020. 5. Rates in severe morbidity indicators per 10,000 delivery hospitalization. (2020, February 10). From https://www.cdc.gov/reproductivehealth/maternalinfanthealth/smm/rates-severe-morbidity-indicator.html 6.Vesco KK, Ferrante S, Chen Y, Rhodes T, Black CM, Allen-Ramey F. Costs of Severe Maternal Morbidity During Pregnancy in US Commercially Insured and Medicaid Populations: An Observational Study. Maternal and Child

MUC ID	Measure Title	Rationale
MUC2021-104 (cont'd)	(cont'd)	Health Journal. 2020;24(1):30-38. 7.Chen H-Y, Chauhan SP, Blackwell SC. Severe maternal morbidity and hospital cost among hospitalized deliveries in the United States. American journal of perinatology. 8. Lin C-CC, Hirai AH, Li R, Kuklina EV, Fisher SK. Rural–urban differences in delivery hospitalization costs by severe maternal morbidity status. Annals of Internal Medicine. 9. Premier Inc. Report 2: The Added Cost of Complications During and After Delivery. 2019. 10. Davis NL, Smoots AN, Goodman DA. Pregnancy-Related Deaths: Data from 14 US Maternal Mortality Review Committees. Education. 2019;40(36):8.2. 11. Geller SE, Rosenberg D, Cox SM, et al. The continuum of maternal morbidity and mortality: factors associated with severity. American journal of obstetrics and gynecology. 2004;191(3):939-944.
MUC2021-105	Mismatch Repair (MMR) or Microsatellite Instability (MSI) Biomarker Testing Status in Colorectal Carcinoma, Endometrial, Gastroesophageal, or Small Bowel Carcinoma CMS Program(s): MIPS	This measure has been created to work in conjunction with the new "MMR and MSI Testing in Patients Being Considered for Checkpoint Inhibitor Therapy" Guideline. Rather than waiting for the Guideline to be published then creating a measure based on recommendations, which would result in a lag of several years between the Guideline and the measure, we have developed the measure to become available at the same time as the Guideline. Due to an unforeseen delay, the Guideline was not published at the original target date of April but will be published later in the summer. We feel that the timing of the measure and the Guideline is ideal for this measure to drive quality improvement and uptake of the Guideline.
MUC2021-106	Hospital Commitment to Health Equity CMS Program(s): Hospital IQR Program	Significant and persistent inequities in health care outcomes exist in the United States. Belonging to a racial or ethnic minority group, living with a disability, being a member of the lesbian, gay, bisexual, transgender, and queer (LGBTQ+) community, living in a rural area, or being near or below the poverty level, is often associated with worse health outcomes (Joynt, 2011; Lindenauer, 2013; Trivedi, 2014; Polyakova, 2021; Rural Health Research Gateway, 2018; HHS Office of Minority Health, 2020; Heslin, 2021; Poteat, 2020).Numerous studies have shown that among

MUC ID	Measure Title	Rationale
MUC2021-106 (cont'd)	(cont'd)	Medicare beneficiaries, racial and ethnic minority individuals often receive lower quality of hospital care, report lower experiences of care, and experience more frequent hospital readmissions and procedural complications. (Martino, 2020; CMS Office of Minority Health, 2018; Singh, 2014; Rivera-Hernandez, 2019; Joynt, 2011; Tsai, 2014). Readmission rates for the most common conditions in the Hospital Readmissions Reduction Program are higher for black Medicare beneficiaries and higher for Hispanic Medicare beneficiaries with Congestive Heart Failure and Acute Myocardial Infarction (Rodriguez, 2011; CMS, 2014; CMS Office of Minority Health, 2018; Prieto-Centurion, 2013; Joynt, 2011). To ensure that all patients receive excellent care when hospitalized regardless of their individual characteristics, strong and committed leadership from hospital executives and board members is essential. Publications from the Agency for Healthcare Research and Quality and The Joint Commission identify the important role of hospital leadership in promoting a culture of quality and safety (AHRQ, 2019; Joint Commission on Accreditation of Healthcare Organizations, 2009).Studies have shown that interventions taken by hospital leadership can positively influence culture (Bradley, 2018) and that health care organizational culture can translate into better quality outcomes and experience of care (Bradley, 2018; Smith, 2017; Keroack, 2007). A 2013 systematic review of 122 published studies found an association between hospital board composition and processes and high-performance (Millar, 2013). Health disparities are evidence that high quality care has not been delivered equally to all patients. Studies from the Institute for Healthcare Improvement identified five core features of health care organizations that make health equity a core strategy, including making health equity a leader-driven priority and developing structures and processes that support equity (Mate, 2017).This measure aligns with the National Quality Forum strategic goal of advancing health equity and addressing disparities (National Quality Forum, 2021). The five questions of the structural measures are adapted from the CMS Office of Minority Health, Building an Organizational Response to Health Disparities (CMS Office of Minority Health, 2021) framework for helping health care organizations build a response to health disparities through focus on data collection, data analysis, culture of equity, and quality improvement. References: Joynt KE, Orav E, Jha AK. Thirty-Day Readmission Rates for Medicare Beneficiaries by Race and Site of Care. JAMA. 2011;305(7):675-681. Lindenauer PK, Lagu T, Rothberg MB, et al. Income Inequality and 30-Day Outcomes After Acute Myocardial Infarction, Heart Failure, and Pneumonia: Retrospective Cohort Study. British Medical Journal. 2013;346. Trivedi AN, Nsa W, Hausmann LRM, et al. Quality and Equity of Care in U.S. Hospitals. New England Journal of Medicine. 2014;371(24):2298-2308. Polyakova, M., et al. Racial Disparities In Excess All-Cause Mortality During The Early COVID-19 Pandemic Varied Substantially Across States. Health Affairs. 2021; 40(2): 307-316. Rural Health Research

MUC ID	Measure Title	Rationale
MUC2021-106 (cont'd)	(cont'd)	Gateway. Rural Communities: Age, Income, and Health Status. Rural Health Research Recap. November 2018. HHS Office of Minority Health, 2020 Update on the Action Plan to Reduce Racial and Ethnic Health Disparities, Progress Report to Congress, 2020 https://www.minorityhealth.hhs.gov/assets/PDF/Update_HHS_Disparities_Dept-FY2020.pdf Heslin KC, Hall JE. Sexual Orientation Disparities in Risk Factors for Adverse COVID-19–Related Outcomes, by Race/Ethnicity — Behavioral Risk Factor Surveillance System, United States, 2017–2019. MMWR Morb Mortal Wkly Rep 2021;70:149–154. DOI: http://dx.doi.org/10.15585/mmwr.mm7005a1 Poteat TC, Reisner SL, Miller M, Wirtz AL. COVID-19 Vulnerability of Transgender Women With and Without HIV Infection in the Eastern and Southern U.S. Preprint. *medRxiv*. 2020;2020.07.21.20159327. Published 2020 Jul 24. doi:10.1101/2020.07.21.20159327. Martino, SC, Elliott, MN, Dembosky, JW, Hambarsoomian, K, Burkhart, Q, Klein, DJ, Gildner, J, and Haviland, AM. Racial, Ethnic, and Gender. Disparities in Health Care in Medicare Advantage. Baltimore, MD: CMS Office of Minority Health. 2020. Guide to Reducing Disparities in Readmissions. CMS Office of Minority Health. Revised August 2018. Available at: https://www.cms.gov/About-CMS/Agency-Information/OMH/Downloads/OMH_Readmissions_Guide.pdf. Singh JA, Lu X, Rosenthal GE, Ibrahim S, Cram P. Racial disparities in knee and hip total joint arthroplasty: an 18-year analysis of national Medicare data. Ann Rheum Dis. 2014 Dec;73(12):2107-15. Rivera-Hernandez M, Rahman M, Mor V, Trivedi AN. Racial Disparities in Readmission Rates among Patients Discharged to Skilled Nursing Facilities. J Am Geriatr Soc. 2019 Aug;67(8):1672-1679. Joynt KE, Orav E, Jha AK. Thirty-Day Readmission Rates for Medicare Beneficiaries by Race and Site of Care. JAMA. 2011;305(7):675-681. Tsai TC, Orav EJ, Joynt KE. Disparities in surgical 30-day readmission rates for Medicare beneficiaries by race and site of care. Ann Surg. Jun 2014;259(6):1086-1090. Rodriguez F, Joynt KE, Lopez L, Saldana F, Jha AK. Readmission rates for Hispanic Medicare beneficiaries with heart failure and acute myocardial infarction. Am Heart J. Aug 2011;162(2):254-261 e253. Centers for Medicare and Medicaid Services. Medicare Hospital Quality Chartbook: Performance Report on Outcome Measures; 2014. Guide to Reducing Disparities in Readmissions. CMS Office of Minority Health. Revised August 2018. Available at: https://www.cms.gov/About-CMS/Agency-Information/OMH/Downloads/OMH_Readmissions_Guide.pdf. Prieto-Centurion V, Gussin HA, Rolle AJ, Krishnan JA. Chronic obstructive pulmonary disease readmissions at minority-serving institutions. Ann Am Thorac Soc. Dec 2013;10(6):680-684. Joynt KE, Orav E, Jha AK. Thirty-Day Readmission Rates for Medicare

MUC ID	Measure Title	Rationale
MUC2021-106 (cont'd)	(cont'd)	Beneficiaries by Race and Site of Care. JAMA. 2011;305(7):675-681. Leadership Role in Improving Patient Safety. Agency for Health Care Research and Quality. Patient Safety Primer, September 2019: Available at: https://psnet.ahrq.gov/primer/leadership-role-improving-safety. Joint Commission on Accreditation of Healthcare Organizations, USA. Leadership committed to safety. Sentinel Event Alert. 2009 Aug 27;(43):1-3. PMID: 19757544. Bradley EH, Brewster AL, McNatt Z, et al. How guiding coalitions promote positive culture change in hospitals: a longitudinal mixed methods interventional study. BMJ Qual Saf. 2018;27(3)(3):218-225. doi:10.1136/bmjqs-2017-006574. Smith SA, Yount N, Sorra J. Exploring relationships between hospital patient safety culture and Consumer Reports safety scores. BMC health services research. 2017;17(1):143. doi:10.1186/s12913-017-2078-6. Keroack MA, Youngberg BJ, Cerese JL, Krsek C, Prellwitz LW, Trevelyan EW. Organizational factors associated with high performance in quality and safety in academic medical centers. Acad Med. 2007 Dec;82(12):1178-86. doi: 10.1097/ACM.0b013e318159e1ff. PMID: 18046123. Millar R, Mannion R, Freeman T, et al. Hospital board oversight of quality and patient safety: a narrative review and synthesis of recent empirical research. The Milbank quarterly. 2013;91(4):738-70. doi:10.1111/1468-0009.12032. Mate KS and Wyatt R. Health Equity Must Be a Strategic Priority. NEJM Catalyst. January 4, 2017. National Quality Forum. A Strategic Plan for Achieving the Care We Need. 2021. https://www.qualityforum.org/About_NQF/2021_Strategic_Plan.aspx. CMS Office of Minority Health. Building an Organizational Response to health Disparities. 2021. https://www.cms.gov/About-CMS/Agency-Information/OMH/Downloads/Health-Disparities-Guide.pdf.
MUC2021-107	Clinician-Level and Clinician Group-Level Total Hip Arthroplasty and/or Total Knee Arthroplasty (THA and TKA) Patient-Reported Outcome-Based Performance	Elective primary THA/TKA procedures are well-suited for patient-reported outcome (PRO) measurement. Unlike procedures that are intended to promote survival, these procedures are specifically intended to improve function and reduce pain, outcomes best reported by patients, making PROs a meaningful outcome metric to assess for this population. THA/TKAs are important, effective procedures performed on a broad population. Patient-reported outcomes for these procedures (pain, mobility, and quality of life) can be measured in a scientifically sound way (3-15) and are influenced by a range of improvements across the full spectrum of care pre-, peri-, and postoperatively (16-23). The goal of the clinician-level THA/TKA PRO-PM is to incentivize patient-centered care and promote clinician-level accountability for improving patients' health and reducing the burden of their recovery. References: 3. Bauman S, Williams D, Petruccelli D, Elliott W, de Beer J. Physical Activity After Total Joint Replacement: A Cross-Sectional Survey. Clin J Sport Med. 2007; 17(2):104-108. 4. Collins NJ, Roos EM. Patient-reported outcomes for total

MUC ID	Measure Title	Rationale
MUC2021-107 (cont'd)	Measure (PRO-PM) CMS Program(s): MIPS	hip and knee arthroplasty: commonly used instruments and attributes of a "good" measure. Clin Geriatr Med. 2012; 28(3):367-394. 5. Jones CA, Beaupre LA, Johnston DW, Suarez-Almazor ME. Total joint arthroplasties: current concepts of patient outcomes after surgery. Rheum Dis Clin North Am. 2007; 33(1):71-86. 6. Jones CA, Pohar S. Health-related quality of life after total joint arthroplasty: a scoping review. Clin Geriatr Med. 2012; 28(3):395-429 7. Lau RL, Gandhi R, Mahomed S, Mahomed N. Patient satisfaction after total knee and hip arthroplasty. Clin Geriatr Med. 2012; 28(3):349-365. 8. Liebs TR. Quality-adjusted life years gained by hip and knee replacement surgery and its aftercare. Arch Physical Med Rehabil. 2016; 97(5):691-700. doi: 10.1016/j.apmr.2015.12.021. 9. Montin L, Leino-Kilpi H, Suominen T, Lepisto J. A systematic review of empirical studies between 1966 and 2005 of patient outcomes of total hip arthroplasty and related factors. J Clin Nurs. 2008; 17(1):40-45. 10. Papalia R, Del Buono A, Zampogna B, Maffulli N, Denaro V. Sport activity following joint arthroplasty: a systematic review. Br Med Bull. 2012; 101:81-103. 11. Rolfson O, Rothwell A, Sedrakyan A, et al. Use of patient-reported outcomes in the context of different levels of data. J Bone Joint Surg Am. 2011; 3:66-71. 12. Thorborg K, Roos EM, Bartels EM, Petersen J, Holmich P. Validity, reliability and responsiveness of patient-reported outcome questionnaires when assessing hip and groin disability: a systematic review. British Journal of Sports Medicine. 2010; 44(16):1186-1196. 13. White DK, Master H. Patient-reported measures of physical function in knee osteoarthritis. Rheum Dis Clin North Am.2016; 42(2):239-352. doi: 10.1016/j.rdc.2016.01.005 14. Brown K, Topp R, Brosky JA, Lajoie AS. Prehabilitation and quality of life three months after total knee arthroplasty: a pilot study. Percept Mot Skills. Dec 2012; 115(3):765-774. 15. Choong PF, Dowsey MM, Stoney JD. Does accurate anatomical alignment result in better function and quality of life? Comparing conventional and computer-assisted total knee arthroplasty. J Arthroplasty. Jun 2009; 24(4):560-569. 16. Galea MP, Levinger P, Lythgo N, et al. A targeted home-and center-based exercise program for people after total hip replacement: a randomized clinical trial. Arch Phys Med Rehabil. Aug 2008; 89(8):1442-1447. 17. Kim KY. Perioperative orthopedic surgical home: Optimizing total joint arthroplasty candidates and preventing readmission. J Arthroplasty. 2019; 34(7s):S91-S96. doi: 10.1016/j/arth.2019.01.020. 18. McGregor AH, Rylands H, Owen A, Dore CJ, Hughes SP. Does preoperative hip rehabilitation advice improve recovery and patient satisfaction? J Arthroplasty. Jun 2004; 19(4):464-468. 19. Moffet H, Collet JP, Shapiro SH, Paradis G, Marquis F, Roy L. Effectiveness of intensive rehabilitation on functional ability and quality of life after first total knee arthroplasty: A single-blind randomized controlled trial. Arch Phys Med Rehabil. Apr 2004; 85(4):546-556.

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MUC2021-107 (cont'd)	(cont'd)	20. Monticone M, Ferrante S, Rocca B, et al. Home-based functional exercises aimed at managing kinesiophobia contribute to improving disability and quality of life of patients undergoing total knee arthroplasty: a randomized controlled trial. Arch Phys Med Rehabil. Feb 2013; 94(2):231-239. 21. Saufl N, Owens A, Kelly I, Merrill B, Freyaldenhouen L. A multidisciplinary approach to total joint replacement. J Perianesth Nurs. 2007; 22(3):195-206.e9. 22. Nilsdotter A, Bremander A. (2011). Measures of hips function and symptoms: Harris Hip Score (HHS), Hip Disability and Osteoarthritis Outcome Score (HOOS), Oxford Hip Score (OHS), Lequesne Index of Severity of Osteoarthritis of the Hip (LISOH), and American Academy of Orthopedic Surgeons (AAOS) Hip and Knee Questionnaire. Arthritis Care & Research, 63(S11): S200-S207. 23. Roos EM, Roos HP, Lohmander LS, Ekdahl C, Beynnon BD. (1998). Knee Injury and Osteoarthritis Outcome Score (KOOS)—development of a self-administered outcome measure. J Orthop Sports Phys Ther, 8(2):88-96.
MUC2021-118*	Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)	In 2010, there were 168,000 THAs and 385,000 TKAs performed on Medicare beneficiaries 65 years and older (National Center for Health Statistics, 2010). There is an increasing trend in both of these procedures, with some projecting that annual TKA and THA volume will reach more than 3 million and 500,000 by 2030 respectively (Kurtz et al., 2007; Kurtz et al., 2014). Although these procedures dramatically improve quality of life, they are costly. In 2005, annual hospital charges totaled $3.95 billion and $7.42 billion for primary THA and TKA, respectively (Kurtz et al., 2007). These costs are projected to increase significantly for both THAs and TKAs by 2020 (Kurtz et al., 2014). Medicare is the single largest payer for these procedures, covering approximately two-thirds of all THAs and TKAs performed in the US (Ong et al., 2006). Combined, THA and TKA procedures account for the largest procedural cost in the Medicare budget (Bozic et al., 2008). Since THAs and TKAs are commonly performed and costly procedures, it is imperative to address quality of care. Complications increase costs associated with THA and TKA and affect the quality, and potentially quantity, of life for patients. Although complications following elective THA and TKA are rare, the results can be devastating. Rates for periprosthetic joint infection following THA and TKA range from 1.6% to 2.3%, depending upon the population (Bongartz et al., 2008; Kurtz et al., 2010). Reported 90-day death rates following THA range from 0.7% (Soohoo et al., 2010) to 2.7% (Cram et al., 2007). Rates for pulmonary embolism following TKA range from 0.5% to 0.9% (Cram et al., 2007; Mahomed et al., 2003; Khatod et al., 2008; Solomon et al., 2006; Bozic et al., 2014). Rates for wound infection in Medicare population-based studies vary between 0.3% and 1.0% (Cram et al., 2007; Mahomed et al., 2003; Solomon et al., 2006; Bozic et al., 2014). Rates for septicemia range from 0.1%, during the index admission (Browne et al., 2010) to 0.3%, 90 days following discharge for

MUC ID	Measure Title	Rationale
MUC2021-118* (cont'd)	(cont'd)	primary TKA (Cram et al., 2007; Bozic et al., 2014). Rates for bleeding and hematoma following TKA range from 0.9% (Browne et al., 2010; Bozic et al., 2014) to 1.7% (Huddleston et al., 2009). The variation in complication rates across hospitals indicates there is room for quality improvement and targeted efforts to reduce these complications could result in better patient care and potential cost savings (Navathe et al, 2017; Cyriac et al., 2016; Borza et al., 2019). Measurement of patient outcomes allows for a comprehensive view of quality of care that reflects complex aspects of care such as communication between providers and coordinated transitions to the outpatient environment. These aspects are critical to patient outcomes, and are broader than what can be captured by individual process of care measures. The THA/TKA hospital-specific risk-standardized complication rate (RSCR) measure is thus intended to inform quality-of-care improvement efforts, as individual process-based performance measures cannot encompass all the complex and critical aspects of care within a hospital that contribute to patient outcomes. References: Bongartz T, Halligan CS, Osmon DR, et al. Incidence and risk factors of prosthetic joint infection after total hip or knee replacement in patients with rheumatoid arthritis. Arthritis Rheum. Dec 15 2008;59(12):1713-1720. Borza T, Oerline MK, Skolarus TA, et al. Association Between Hospital Participation in Medicare Shared Savings Program Accountable Care Organizations and Readmission Following Major Surgery. Ann Surg. 2019;269(5):873-878. doi:10.1097/SLA.0000000000002737. Bozic KJ, Grosso LM, Lin Z, et al. Variation in hospital-level risk-standardized complication rates following elective primary total hip and knee arthroplasty. J Bone Joint Surg Am. 2014;96(8):640-647. doi:10.2106/JBJS.L.01639. Bozic KJ, Rubash HE, Sculco TP, Berry DJ. An analysis of medicare payment policy for total joint arthroplasty. J Arthroplasty. Sep 2008;23(6 Suppl 1):133-138. Browne J, Cook C, Hofmann A, Bolognesi M. Postoperative morbidity and mortality following total knee arthroplasty with computer navigation. Knee. Mar 2010;17(2):152-156. Cram P, Vaughan-Sarrazin MS, Wolf B, Katz JN, Rosenthal GE. A comparison of total hip and knee replacement in specialty and general hospitals. J Bone Joint Surg Am. Aug 2007;89(8):1675-1684. Cyriac, James MD; Garson, Leslie MD; Schwarzkopf, Ran MD; Ahn, Kyle MD; Rinehart, Joseph MD; Vakharia, Shermeen MD, MBA; Cannesson, Maxime MD, PhD; Kain, Zeev MD, MBA. Total Joint Replacement Perioperative Surgical Home Program: 2-Year Follow-Up, Anesthesia & Analgesia: July 2016 - Volume 123 - Issue 1 - p 51-62 doi: 10.1213/ANE.0000000000001308. Huddleston JI, Maloney WJ, Wang Y, Verzier N, Hunt DR, Herndon JH. Adverse Events After Total Knee Arthroplasty: A National Medicare Study. The Journal of Arthroplasty. 2009;24(6, Supplement 1):95-100. Khatod M, Inacio M, Paxton EW, et al. Knee replacement: epidemiology, outcomes, and trends in Southern California: 17,080 replacements from 1995 through 2004. Acta Orthop. Dec 2008;79(6):812-819. Kurtz S, Ong K, Lau E, Bozic K. Impact of the economic downturn on

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MUC2021-120*	Hospital-level, risk-standardized payment associated with an episode of care for primary elective total hip and/or total knee arthroplasty (THA/TKA) CMS Program(s): Hospital IQR Program	Due to their frequency and cost, THA and TKA are priority areas for outcome measure development. More than one third of the US population 65 years and older suffers from osteoarthritis [1]. Between 2009 and 2012, there were 337,419 THA procedures and 750,569 TKA procedures for Medicare fee-for-service patients 65 years and older [2]. Estimates place the annual insurer cost of osteoarthritis in the US at $149 billion, with Medicare direct payments to hospitals for THA/TKA exceeding $15 billion annually [3]. Further, there are conflicting data regarding costs after total joint arthroplasty, with evidence to support both increased [4] and decreased costs [5] following arthroplasty, suggesting there is great variation in the costs of a full episode of care for THA and TKA. The goal of hospital-level resource use measurement is to capture the full spectrum of care in order to incentivize collaboration and shared responsibility for improving patients' health and reducing the burden of their disease. Variation in the cost of a THA or TKA episode of care is often related to the quality of care, where complications and readmissions increase the total payment for post-surgical care. Given the well-documented variation in readmission and complication rates following THA and TKA, there is expected variation in total episode of care costs for the procedures [6]. Birkmeyer et al. found that the average 30-day cost increased by $2,436 among hospitals with the highest quintile of

MUC ID	Measure Title	Rationale
MUC2021-120* (cont'd)	(cont'd)	complication rates, compared to the lowest quintile following THA [7]. The same study also found that rehabilitation costs accounted for 50% of "excess" payments among those undergoing THA. Miller et al. found that a major driver of differences in episode payments for THA was that hospitals within Accountable Care Organizations (ACO) had smaller payments for post-discharge care compared to non-ACO hospitals [8]. Taken together, these studies suggest that much of the variation in total episode costs arises in the post-acute setting. Health systems have taken notice of opportunities to improve value by encouraging collaboration of care between hospitals and post-acute providers. [10]. Transparency regarding the variation of episode of care payments triggered by THA and TKA helps to guide health systems and providers towards improvement in the value of care. 1. Centers for Disease Control and Prevention (CDC). Osteoarthritis. 2011; http://www.cdc.gov/arthritis/basics/osteoarthritis.htm Accessed August 13, 2013. 2. Suter LG, Grady JN, Lin Z, et al. 2013 Measure Updates and Specifications: Elective Primary Total Hip Arthroplasty (THA) And/Or Total Knee Arthroplasty (TKA) All-Cause Unplanned 30-Day Risk-Standardized Readmission Measure (Version 2.0). March 2013. 3. Miller DC, Gust C, Dimick JB, Birkmeyer N, Skinner J, Birkmeyer JD. Large variations in Medicare payments for surgery highlight savings potential from bundled payment programs. Health affairs (Project Hope). Nov 2011;30(11):2107-2115. 4. Bozic KJ, Stacey B, Berger A, Sadosky A, Oster G. Resource utilization and costs before and after total joint arthroplasty. BMC health services research. 2012;12:73. 5. Hawker GA, Badley EM, Croxford R, et al. A population-based nested case-control study of the costs of hip and knee replacement surgery. Med Care. 2009;47(7):732-741. 6. Suter LG, et al., Medicare Hospital Quality Chartbook 2013: Performance Report on Outcome Measures, 2013. 7. Birkmeyer JD, Gust C, Dimick JB, Birkmeyer NJ, Skinner JS. Hospital quality and the cost of inpatient surgery in the United States. Annals of surgery. 2012;255(1):1-5. 8. Miller DC, Ye Z, Gust C, Birkmeyer JD. Anticipating the effects of accountable care organizations for inpatient surgery. JAMA surgery. Jun 2013;148(6):549-554. 9. CMS. Bundled Payments for Care Improvement (BPCI) Initiative: General Information. http://innovation.cms.gov/initiatives/bundled-payments/ [accessed Jan 7, 2014] 10. Miller DC, Ye Z, Gust C, Birkmeyer JD. Anticipating the effects of accountable care organizations for inpatient surgery. JAMA surgery. Jun 2013;148(6):549-554.
MUC2021-122*	Excess days in acute care (EDAC) after hospitalization for acute myocardial infarction (AMI)	AMI is among the most common principal hospital discharge diagnoses among Medicare beneficiaries, and, in 2013, it was the fifth most expensive condition treated in US hospitals, accounting for 3.5% of national healthcare costs (Torio et al., 2016). Readmission rates following discharge for AMI are high and variable across hospitals in the United States (Krumholz et al., 2009; Bernheim et al., 2010). For example, for the time period of July 2015-June 2018, publicly reported 30-day risk-standardized readmission rates ranged from 12.0% to 21.9% for patients admitted with AMI (Wallace et al., 2019). Interventions during and after a hospitalization can be effective in reducing utilization rates in geriatric populations (Benbassat et al., 2000; Naylor et al., 1999; Coleman et al., 2006;

MUC ID	Measure Title	Rationale
MUC2021-122* (cont'd)	CMS Program(s): Hospital IQR Program	Courtney et al., 2009; Koehler et al., 2009) and, particularly, for older patients with AMI (Carroll et al., 2007; Young et al., 2003; Bondestam et al., 1995; Ades et al, 1992; Carlhed et al., 2009). Several randomized trials have reduced 30-day readmission rates by 20-40% (Jack et al., 2009; Coleman et al., 2004; Courtney et al., 2009; Garasen et al., 2007; Koehler et al., 2009; Mistiaen et al., 2007; Naylor et al., 1999; van Walraven et al., 2002; Weiss et al., 2010; Krumholz et al., 2012; Balaban et al., 2008; Patel et al., 2018). These types of interventions have also been demonstrated to be cost-saving (Naylor et al., 1999; Naylor et al., 2004; Koelling et al., 2005; Krumholz et al., 2002; Stauffer et al., 2011). Outside the randomized controlled trial setting, there is also increasing evidence that hospitals and health plans have been able to reduce readmission rates through more generalizable quality improvement initiatives (Gerhardt et al., 2012; Stauffer et al., 2011; Graham et al., 2012; Harrison et al., 2011; Hernandez et al., 2010; Radhakrishnan et al., 2018). In the case of AMI, specifically, studies suggest that appropriate care for AMI during and after the index hospitalization may reduce the risk of subsequent readmission (Carroll et al., 2007; Young et al., 2003; Bondestam et al., 1995; Ades et al, 1992; Carlhed et al., 2009). Studies have also reported reductions in emergency department (ED) visit rates for patients with other conditions after implementation of interventions that focused on the inpatient and outpatient settings (Bondestam et al., 1995). The current process-based performance measures cannot capture all the ways that care within the hospital might influence outcomes. As a result, many stakeholders, including patient organizations, are interested in outcomes measures that allow patients and providers to assess relative outcomes performance among hospitals (Bratzler et al., 2007). In the context of the Centers for Medicare and Medicaid Services' (CMS's) publicly reported readmission measures, the increasing use of ED visits and observation stays has raised concerns that current readmission measures do not capture the full range of unplanned acute care in the post-discharge period (Vashi et al., 2013; Rising et al., 2012; Feng et al., 2012). Observation stays can occur in many different parts of the hospital, including dedicated treatment rooms, the ED, or inpatient units. In particular, there is concern that high use of observation stays could in some cases replace readmissions, and that hospitals with high rates of observation stays in the post-discharge period may therefore have low readmission rates that do not accurately reflect the quality of care (Vashi et al., 2013; Nuckols et al., 2018). References: Ades PA, Huang D, Weaver SO. 1992. Cardiac rehabilitation participation predicts lower rehospitalization costs. Am Heart J 123(4 Pt 1):916-921.Balaban RB, Weissman JS, Samuel PA, Woolhandler S. Redefining and redesigning hospital discharge to enhance patient care: a randomized controlled study. J Gen Intern Med. 2008;23(8):1228-1233. Benbassat, J., and M. Taragin. 2000. Hospital readmissions as a measure of quality of health care: advantages and limitations. Arch Intern Med 160 (8):1074-81. Bondestam E, Breikss A, Hartford M. 1995. Effects of early rehabilitation on consumption of medical care during the first year after acute myocardial infarction in patients > or

MUC ID	Measure Title	Rationale
MUC2021-122* (cont'd)	(cont'd)	= 65 years of age. Am J Cardiol 75(12):767-771. Bratzler, DW, Nsa W, Houck PM. Performance measures for pneumonia: are they valuable, and are process measures adequate. Current Opinion in Infectious Diseases. 20(2):182-189, April 2007. Carlhed R, Bojestig M, Peterson A, et al. Improved clinical outcome after acute myocardial infarction in hospitals participating in a Swedish quality improvement initiative. Circulation. Cardiovascular Quality & Outcomes. 2009;2(5):458-464. Carroll DL, Rankin SH, Cooper BA. 2007. The effects of a collaborative peer advisor/advanced practice nurse intervention: cardiac rehabilitation participation and rehospitalization in older adults after a cardiac event. J Cardiovasc Nurs 22(4):313-319. Coleman EA, Parry C, Chalmers S, et al. 2006. The care transitions intervention: results of a randomized controlled trial. Arch Intern Med 166:1822-1828. Coleman EA, Smith JD, Frank JC, Min SJ, Parry C, Kramer AM. Preparing patients and caregivers to participate in care delivered across settings: the Care Transitions Intervention. J Am Geriatr Soc 2004;52(11):1817-25. Courtney M, Edwards H, Chang A, Parker A, Finlayson K, Hamilton K. Fewer emergency readmissions and better quality of life for older adults at risk of hospital readmission: a randomized controlled trial to determine the effectiveness of a 24-week exercise and telephone follow-up program. J Am Geriatr Soc 2009;57(3):395-402. Feng Z, Wright B, Mor V. Sharp rise in Medicare enrollees being held in hospitals for observation raises concerns about causes and consequences. Health affairs (Project Hope). Jun 2012;31(6):1251-1259. Garasen H, Windspoll R, Johnsen R. Intermediate care at a community hospital as an alternative to prolonged general hospital care for elderly patients: a randomised controlled trial. BMC Public Health 2007;7:68. Gerhardt G, Yemane A, Hickman P, Oelschlaeger A, Rollins E, Brennan N. Medicare Readmission Rates Showed Meaningful Decline in 2012. Medicare & Medicaid Research Review. 2013;3(2):E1-E12. Graham J, Tomcavage J, Salek D, Sciandra J, Davis DE, Stewart WF. Postdischarge monitoring using interactive voice response system reduces 30-day readmission rates in a case-managed Medicare population. Medical Care. 2012;50(1):50-57. Harrison PL, Hara PA, Pope JE, Young MC, Rula EY. The impact of postdischarge telephonic follow-up on hospital readmissions. Population Health Management. 2011;14(1):27-32. Hernandez AF, Greiner MA, Fonarow GC, et al. Relationship between early physician follow-up and 30-day readmission among Medicare beneficiaries hospitalized for heart failure. Jama. 2010;303(17):1716-1722. Jack BW, Chetty VK, Anthony D, Greenwald JL, Sanchez GM, Johnson AE, et al. A reengineered hospital discharge program to decrease rehospitalization: a randomized trial. Ann Intern Med 2009;150(3):178-87. Koehler BE, Richter KM, Youngblood L, Cohen BA, Prengler ID, Cheng D, et al. Reduction of 30-day postdischarge hospital readmission or emergency department (ED) visit rates in high-risk elderly medical patients through delivery of a targeted care bundle. J Hosp Med 2009;4(4):211-218. Koelling, TM. 2005. Multifaceted outpatient support can improve outcomes for people with heart failure. Commentary. Evid Based Cardiovasc Med 9 Koelling, TM. 2005. Multifaceted outpatient support can improve outcomes for people with heart failure. Commentary. Evid Based

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MUC2021-122* (cont'd)	(cont'd)	Cardiovasc Med 9 (2):138-41. Krumholz HM, Amatruda J, Smith GL, et al. Randomized trial of an education and support intervention to prevent readmission of patients with heart failure. J Am Coll Cardiol. Jan 2 2002;39(1):83-89. Mistiaen P, Francke AL, Poot E. Interventions aimed at reducing problems in adult patients discharged from hospital to home: a systematic metareview. BMC Health Serv Res 2007;7:47. Naylor, MD, Brooten D, Campbell R, et al. 1999. Comprehensive discharge planning and home follow-up of hospitalized elders: a randomized clinical trial. JAMA 281 (7):613-20. Naylor MD, Brooten D, Campbell R, et al. 2004. Transitional care of older adults hospitalized with heart failure: a randomized, controlled trial. J Am Geriatr Soc 52 (5):675-84. Nuckols TK, Fingar KR, Barrett ML, et al. Returns to Emergency Department, Observation, or Inpatient Care Within 30 Days After Hospitalization in 4 States, 2009 and 2010 Versus 2013 and 2014. J Hosp Med. 2018;13(5):296-303. doi:10.12788/jhm.2883. Patel PH, Dickerson KW. Impact of the Implementation of Project Re-Engineered Discharge for Heart Failure patients at a Veterans Affairs Hospital at the Central Arkansas Veterans Healthcare System. Hosp Pharm. 2018;53(4):266-271. doi:10.1177/0018578717749925. Radhakrishnan K, Jones TL, Weems D, Knight TW, Rice WH. Seamless Transitions: Achieving Patient Safety Through Communication and Collaboration. J Patient Saf. 2018;14(1):e3-e5. Rising KL, White LF, Fernandez WG, Boutwell AE. Emergency Department Visits After Hospital Discharge: A Missing Part of the Equation. Annals of Emergency Medicine. (0). Stauffer BD, Fullerton C, Fleming N, et al. Effectiveness and cost of a transitional care program for heart failure: a prospective study with concurrent controls. Archives of Internal Medicine. 2011;171(14):1238-1243. Torio CM, Moore BJ. National Inpatient Hospital Costs: The Most Expensive Conditions by Payer, 2013. HCUP Statistical Brief # 204. Available at: http://www.hcup-us.ahrq.gov/reports/statbriefs/sb204-Most-Expensive-Hospital-Conditions.pdf. Published May 2016. Accessed August 23, 2020. van Walraven C, Seth R, Austin PC, Laupacis A. Effect of discharge summary availability during post-discharge visits on hospital readmission. J Gen Intern Med 2002;17(3):186-92. Vashi AA, Fox JP, Carr BG, et al. Use of hospital-based acute care among patients recently discharged from the hospital. JAMA. Jan 23 2013;309(4):364-371. Wallace L., Grady J., Djordjevic, D., et al. 2019 Condition-Specific Measures Updates and Specifications Report Hospital-Level 30-Day Risk-Standardized Readmission Measures: Acute Myocardial Infarction – Version 12.0, Chronic Obstructive Pulmonary Disease – Version 8.0, Heart Failure – Version 12.0, Pneumonia – Version 12.0. 2019; https://qualitynet.org/inpatient/measures/readmission/methodology. Available as of April 23, 2019. Weiss M, Yakusheva O, Bobay K. Nurse and patient perceptions of discharge readiness in relation to post discharge utilization. Med Care 2010;48(5):482-6. Young W, Rewa G, Goodman SG, et al. 2003. Evaluation of a community-based inner-city disease management program for postmyocardial infarction patients: a randomized controlled trial. CMAJ Canadian Med Assn J 169(9):905-910.

MUC ID	Measure Title	Rationale
MUC2021-123	Influenza Vaccination Coverage among Healthcare Personnel CMS Program(s): SNF QRP	From 1976-2007, influenza virus infections caused an average of 23,607 influenza-related deaths with a wide yearly range of 3,349 to 48,614 deaths over 31 influenza seasons; approximately 90% of these deaths occurred among persons aged 65 and older.(1) Healthcare personnel (HCP) can serve as vectors for influenza transmission because they are at risk for both acquiring influenza from patients and transmitting it to patients and HCP often come to work when ill.(2) One early report of HCP influenza infections during the 2009 H1N1 influenza pandemic estimated 50% of infected HCP had contracted the influenza virus from patients or coworkers in the healthcare setting.(3) Influenza virus infection is common among HCP: one study suggested that nearly one-quarter of HCP were infected during influenza season, but few of these recalled having influenza.(4) Therefore, all HCP are recommended to receive the seasonal influenza vaccine annually to protect themselves and their patients.(5) Nosocomial influenza outbreaks in healthcare facilities result in longer stays and greater mortality for patients (6-9) and missed work for HCP.(2,9) Higher influenza vaccination coverage among HCP is associated with reductions in nosocomial influenza among hospitalized patients (8,10) and nursing home residents.(11-13) Influenza vaccination of HCP is also associated with decreased all-cause mortality among nursing home residents.(11-14) Citations: 1. Thompson MG, Shay DK, Zhou H, et al. Estimates of deaths associated with seasonal influenza – United States, 1976-2007. MMWR Morb Mortal Wkly Rep. 2010; 59(33):1057-1062. 2. Wilde JA, McMillan JA, Serwint J, et al. Effectiveness of influenza vaccine in healthcare professionals: a randomized trial. JAMA 1999; 281: 908–913. 3. Harriman K, Rosenberg J, Robinson S, et al. Novel influenza A (H1N1) virus infections among health-care personnel – United States, April-May 2009. MMWR Morb Mortal Wkly Rep. 2009; 58(23): 641-645. 4. Elder AG, O´Donnell B, McCruden EA, et al. Incidence and recall of influenza in a cohort of Glasgow health-care workers during the 1993-4 epidemic: results of serum testing and questionnaire. BMJ. 1996; 313:1241-1242. 5. Fiore AE, Uyeki TM, Broder K, et al. Prevention and control of influenza with vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2010. MMWR Recomm Rep. 2010; 59(08): 1-62. 6. Cunney RJ, Bialachowski A, Thornley D, Smaill FM, Pennie RA. An outbreak of influenza A in a neonatal intensive care unit. Infect Control Hosp Epidemiol. 2000; 21:449-454. 7. Bridges CB, Kuehnert MJ, Hall CB. Transmission of influenza: implications for control in health care settings. Clin Infect Dis 2003; 37: 1094–1101. 8. Weinstock DM, Eagan J, Malak SA, et al. Control of influenza A on a bone marrow transplant unit. Infect Control Hosp Epidemiol. 2000; 21:730-732. 9. Sartor C, Zandotti C, Romain F, et al. Disruption of services in an internal medicine unit due to a nosocomial influenza outbreak. Infect Control Hosp Epidemiol 2002; 23:615–619. 10. Salgado CD, Giannetta ET, Hayden FG, Farr BM. Preventing nosocomial influenza by improving the vaccine acceptance rate of clinicians. Infect Control Hosp Epidemiol 2004; 25:923–928. 11. Hayward AC, Harling R, Wetten S, et al. Effectiveness of an influenza vaccine

MUC ID	Measure Title	Rationale
MUC2021-123 (cont'd)	(cont'd)	programme for care home staff to prevent death, morbidity, and health service use among residents: cluster randomised controlled trial. BMJ 2006; 333: 1241-1246. 12. Potter J, Stott DJ, Roberts MA, et al. Influenza vaccination of healthcare workers in long-term-care hospitals reduces the mortality of elderly patients. J Infect Dis. 1997; 175:1-6. 13. Lemaitre M, Meret T, Rothan-Tondeur M, et al. Effect of influenza vaccination of nursing home staff on mortality of residents: a cluster-randomized trial. J Am Geriatr Soc. 2009; 57:1580-1586. 14. Carman WF, Elder AG, Wallace LA, et al. Effects of influenza vaccination of health-care workers on mortality of elderly people in long-term care: a randomised controlled trial. Lancet 2000; 355:93–97.
MUC2021-124	Skilled Nursing Facility Healthcare-Associated Infections Requiring Hospitalization CMS Program(s): SNF VBP	Healthcare associated infection (HAI) is defined as an infection acquired while receiving care at a health care facility that was not present or incubating at the time of admission. [1] If the prevention and treatment of HAIs are poorly managed, they can cause poor health care outcomes for patients and lead to wasteful resource use. Most HAIs are considered potentially preventable because they are outcomes of care related to processes or structures of care. In other words, these infections typically result from inadequate management of patients following a medical intervention, such as surgery or device implantation, or poor adherence to hygiene protocol and antibiotic stewardship guidelines. Measuring HAIs among SNF residents can therefore provide valuable information about SNFs' quality of care. HAIs are associated with longer lengths of stay, use of higher-intensity care (e.g., critical care services and hospital readmissions), and increased mortality. [2, 3, 4] HAIs also lead to increased health care costs and present an economic burden. [2,5] Addressing HAIs in SNFs is particularly important because several factors place SNF residents at high risk for infection, including increased age, cognitive and functional decline, use of indwelling devices, frequent care transitions, and close contact with other residents and health care workers. [6,7] A recent report from the Office of Inspector General (OIG, 2014) estimated that 1 in 4 adverse events among SNF residents are due to HAIs and that more than half of all HAIs are potentially preventable. [2] Infection prevention and control programs with core components in education, monitoring, and feedback on infection rates from surveillance programs or feedback on infection control practices from audits have been found to be successful interventions for reducing HAIs. [8] Preventing and reducing HAIs is crucial to delivering safe and high-quality care across the health care system and has been a priority objective at the federal, state, and local levels. For example, the Office of Disease Prevention and Health Promotion has created a National Action Plan to Prevent Health Care-Associated Infections, with specific attention to HAIs in long-term care facilities (LTCFs). [6] In 2017, CMS launched the Meaningful Measures framework. "Making Care Safer by Reducing Harm Caused in the Delivery of Care" is one of the six meaningful measure domains and is a companion priority for quality assurance and improvement work and improvement work at CMS. The meaningful measure area of HAIs is under this domain. References: 1. World Health Organization. (n.d.). The burden of health care-associated infection worldwide. Retrieved from

MUC ID	Measure Title	Rationale
MUC2021-124 (cont'd)	(cont'd)	https://www.who.int/gpsc/country_work/burden_hcai/en/ 2. 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 3. 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 4. 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. http://dx.doi.org/10.1001/jamainternmed.2013.9763 5. Bureau of Labor Statistics 6. Office of Disease Prevention and Health Promotion. (2013). Long-term care facilities. In U.S. Department of Health and Human Services, National action plan to prevent health care-associated infections: Road map to elimination (pp. 194-239). Retrieved from: http://www.health.gov/hai/prevent_hai.asp#hai_plan 7. Montoya, A., & Mody, L. (2011). Common infections in nursing homes: A review of current issues and challenges. Aging Health, 7(6), 889–899. http://dx.doi.org/10.2217/ahe.11.80 8. Lee, M.H., Lee GA, Lee SH, Park YH (2019). Effectiveness and core components of infection prevention and control programmes in long-term care facilities: a systematic review. Retrieved from https://pubmed.ncbi.nlm.nih.gov/30794854/
MUC2021-125	Psoriasis – Improvement in Patient-Reported Itch Severity CMS Program(s): MIPS	Psoriasis is a chronic inflammatory disease in which pruritus is a frequent symptom. Approximately 7.4 million people in the United States have psoriasis. Direct costs of the disease are estimated between $51.7 and $63.2 billion, with the total economic burden estimated to be between $112 and $135 billion. Chronic inflammatory skin diseases, such as psoriasis, are pruritic and tremendously burdensome; with more than 70% of psoriasis patients suffering from itch. Itch has profound effects on patients, especially in geriatric populations, where there is increased incidence of pruritus. For those over 65 years old, itch is the most common skin complaint. The number of patients with pruritus is expected to increase as the elderly population grows – becoming 25% of the US population by 2025. Pruritus is a frequent and onerous symptom of psoriasis and, on its own, has significant effects on patients' quality of life. In a study, investigators quantified pruritic burden in a cross-sectional analysis investigating chronic pruritus and pain. They demonstrated that the quality of life impact was due to the severity of the symptom, rather than whether the symptom was pain or pruritus. Moreover, they elucidated a mean health utility score of 0.87 from chronic pruritus (CP) patients, meaning that on average, a patient would give up 13% of their life expectancy to live without pruritus. An additional study showed the effects of CP on a population-based level. Researchers found that the point prevalence of pruritus was 13.5%. When looking at 12-months the prevalence rose to 16.4% and rose again to 22% when looking at lifetime prevalence.

MUC ID	Measure Title	Rationale
MUC2021-125 (cont'd)	(cont'd)	When studied again in 2013, the lifetime prevalence rose to 25.5%. Moreover, data from the National Ambulatory Medical Care Survey (1999-2009) found that a total of 77 million patient visits for itch were made during the 11-year time period. This was an average of 7 million visits per year, which represented approximately 1% of all outpatient visits. Also, further analysis showed that although the majority of visits (58.6%) were for new instances of itch, almost a third (32%) were for chronic pruritus. Pruritus is a subjective and multifaceted symptom that manifests in patients in various ways that affect quality-of-life by contributing to the development of depression, global distress, and sleep impairment. Additionally, studies of CP have shown patients to have a 17% higher mortality risk as well as being strongly associated with poorer general health. This measure aims to improve pruritus in patients who carry a large burden with this disease; by assessing itch and aiming to make the symptom more manageable. Furthermore, the use of itch will be a measure of overall disease improvement/response.
MUC2021-127	Adult Kidney Disease: Angiotensin Converting Enzyme (ACE) Inhibitor or Angiotensin Receptor Blocker (ARB) Therapy CMS Program(s): MIPS	Clinical practice guidelines support the use of ACE and ARB in CKD patients not on RRT. Kidney Disease Improving Global Outcomes (KDIGO) 2012 Chapter 3: Blood pressure management in CKD Non-Dialysis (ND) patients without diabetes mellitus 3.4: We suggest that an ARB or ACE-I be used in non-diabetic adults with CKD ND and urine albumin excretion of 30 to 300 mg per 24 hours (or equivalent*) in whom treatment with BP-lowering drugs is indicated. (2D) 3.5: We recommend that an ARB or ACE-I be used in non-diabetic adults with CKD ND and urine albumin excretion ≥300 mg per 24 hours (or equivalent*) in whom treatment with BP-lowering drugs is indicated. (1B) Chapter 4: Blood pressure management in CKD ND patients with diabetes mellitus 4.3: We suggest that an ARB or ACE-I be used in adults with diabetes and CKD ND with urine albumin excretion of 30 to 300 mg per 24 hours (or equivalent*). (2D) 4.4: We recommend that an ARB or ACE-I be used in adults with diabetes and CKD ND with urine albumin excretion ≥300 mg per 24 hours (or equivalent*). (1B). Guideline available at https://kdigo.org/wp-content/uploads/2016/10/KDIGO-2012-Blood-Pressure-Guideline-English.pdf This measure was rated as HIGH for Overall Measure Validity in Mendu ML, Tummalapalli SL, Lentine KL, Erickson KF, Lew SQ, Liu F, Gould E, Somers M, Garimella PS, O'Neil T, White DL, Meyer R, Bieber SD, Weiner DE. Measuring Quality in Kidney Care: An Evaluation of Existing Quality Metrics and Approach to Facilitating Improvements in Care Delivery. J Am Soc Nephrol. 2020 Mar;31(3):602-614. doi: 10.1681/ASN.2019090869. Epub 2020 Feb 13. PMID: 32054692; PMCID: PMC7062216.
MUC2021-130	Discharge to Community-Post Acute Care Measure for Skilled	The empirical evidence provided below comes from SNF-specific literature, as well as literature from other inpatient PAC and hospital settings, as evidence related to healthcare structures and processes for improving discharge to community outcomes is largely applicable across inpatient PAC and hospital settings. There is consistent evidence in the literature across inpatient settings that rehabilitation interventions, discharge planning, and care coordination

MUC ID	Measure Title	Rationale
MUC2021-130 (cont'd)	Nursing Facilities (SNF)	can improve discharge to community rates. Thus, evidence from other inpatient PAC and hospital settings can be used to support the DTC-PAC SNF measure. Discharge to community is an actionable health care outcome, as targeted interventions have been shown to successfully increase discharge to community rates in a variety of post-acute settings and hospital settings. These interventions frequently involve specific rehabilitation strategies such as addressing discharge barriers and improving medical and functional status, discharge planning, communication and care coordination, or community-based transitional care services and supports. In a retrospective observational study, O'Brien and Zhang [2] examined the relationship of therapy intensity with discharge destination and time to community discharge (i.e., LOS) among 311,338 Medicare fee-for-service (FFS) residents in 3,605 SNFs across five states in 2008. The authors used data from Minimum Data Set (MDS), Online Survey Certification and Reporting (OSCAR) dataset, and Rural Urban Commuting Area Codes. Therapy intensity was calculated as the total minutes of physical, occupational, and speech therapy in a day, and categorized as high (≥ 60min/day), medium-high (45 to <60 min/day), medium-low (30 to <45min/day), and low (0 to <30min/day). The authors found a dose-response relationship between therapy intensity and discharge destination, with the proportion of residents discharged to community decreasing with decreasing therapy intensity: 63% (high intensity), 52.9% (medium-high), 45.1% (medium-low), and 27.4% (low). The proportion of residents discharged to long-term care increased as therapy intensity decreased: 8.4% (high), 13.3% (medium-high), 17.1% (medium-low), and 24.4% (low). Risk-adjusted random-effects competing risks regression modeling controlling for patient demographic/clinical characteristics and facility/regional characteristics, showed that compared with the high intensity group, the medium-high, medium-low, and low intensity groups, respectively, had a 15% (hazard ratio (HR) = .85, 95% confidence interval (CI) = .83-.85), 32% (HR = .68, 95% CI = .67-.69), and 57% (HR = .43, 95% CI = .42-.45) lower likelihood of community discharge than of becoming permanently placed in a nursing home. The hazard of hospital readmission increased with decreased therapy intensity. Compared with the high intensity group, the medium-high, medium-low, and low intensity groups, respectively, had an 8% (HR = 1.08, 95% CI = 1.06-1.12), 25% (HR = 1.25, 95% CI = 1.19-1.27), and 29% (HR = 1.29, 95% CI = 1.19-1.27) higher risk for hospital discharge than for permanent nursing home placement. The risk of death also increased significantly as therapy intensity decreased (HR = 1.407, 95% CI = 1.32-1.45; HR = 2.299, 95% CI = 2.15-2.46; and HR = 4.198, 95% CI = 3.89-4.52 for medium-high, medium-low, and low intensity groups, respectively). For residents discharged home (n = 162,792), the mean SNF LOS increased as therapy intensity decreased from 35.6 ± 24.2 days for the high intensity group to 45.3 ± 31.7 days for the low intensity group. Further, Poisson regression modeling controlling for covariates and compared with the low intensity group,

MUC ID	Measure Title	Rationale
MUC2021-130 (cont'd)	(cont'd)	showed that SNF LOS was 5% shorter for the high intensity group (p<.001), with an incident rate ratio of 0.95 (95% CI = 0.92-0.97). The high intensity group averaged 2 days less in the SNF compared with other intensity groups. The authors concluded that high intensity therapy was associated with desirable discharge outcomes and may shorten PAC length of stay. [2] In another retrospective cohort study, Jung et al. [3] examined the relationship between therapy intensity and likelihood of discharge to home in 481,908 Medicare FFS residents admitted to 15,496 SNFs after hip fracture. Therapy intensity included total physical, occupational, and speech and language therapy minutes, and was calculated as the average quantity of therapy per week. Patient-level data were taken from MDS and Medicare inpatient claims and facility-level data from OSCAR, for years 2000 through 2009. Multivariable linear regression adjusting for patient characteristics and time-varying facility characteristics indicated that each additional hour of therapy per week was associated with a 3.1 percentage-point (95% CI = 3.0, 3.1) increase in the likelihood of discharge to home. An additional hour of occupational therapy was associated with a 5.3 percentage-point (95% CI = 5.2, 5.4) increase in the likelihood of discharge to community, while an additional hour of physical therapy was associated with a 5.9 percentage-point (95% CI = 5.8, 6.1) increase in the likelihood of discharge to community. When examined by SNF LOS, an additional hour of therapy per week was associated with increases in the likelihood of discharge to home of 2.9 percentage points (95% CI = 2.8, 2.9), 3.0 percentage points (95% CI = 2.9, 3.1), and 3.0 percentage points (95% CI = 3.0, 3.1) for stays of up to 30, 60, and 90 days, respectively. The effect of additional therapy decreased as the Resource Utilization Group (RUG) category increased, with additional therapy not benefiting patients in the highest RUG category, who had the highest impairment levels. The authors concluded that increased therapy intensity was associated with a larger proportion of patients being discharged to home, suggesting better post-acute outcomes, except for patients with the highest impairment levels. [3] Schweickert et al. [4] conducted a randomized controlled trial of physical and occupational therapy in 104 patients receiving mechanical ventilation in medical intensive care in two Midwest medical centers. Intervention group patients (n = 49) received early exercise and mobilization (physical and occupational therapy) during periods of daily interruption of sedation, while control group patients (n = 55) received daily interruption of sedation and standard care with physical and occupational therapy as ordered by the primary care team. Blinded therapists functionally assessed patients at discharge based on the ability to perform six activities of daily living and walk independently. Using intention-to-treat analysis, the authors reported higher discharge to home rates in intervention patients (43%) compared with controls (24%) for comparison of home discharge to all other possible locations for group comparison (p=0.06). Return to independent functional status at hospital discharge occurred in 59% of intervention

MUC ID	Measure Title	Rationale
MUC2021-130 (cont'd)	(cont'd)	patients compared with 35% of controls (p=0.02; odds ratio (OR) = 2.7 [95% CI = 1.2-6.1]). Other important outcomes included shorter median duration of delirium (2 vs. 4 days; p=0.02), and more median ventilator-free days (23.5 vs. 21.1; p=0.05) during the 28-day follow-up period in intervention patients than controls. The authors concluded that a strategy for whole-body rehabilitation-consisting of interruption of sedation, protocol-driven spontaneous breathing trials, and physical and occupational therapy in the earliest days of critical illness was safe and well-tolerated, and resulted in better functional outcomes at hospital discharge, a shorter duration of delirium, and more ventilator-free days compared with standard care. [4] Length of stay (LOS) is another important variable that can impact discharge to community rates. Camicia et al. [5] examined the relationship between IRF LOS and discharge to community outcomes in a retrospective cohort analysis of 4,781 IRF patients with stroke between 2009 and 2011, based on random sampling of 2% of all stroke patients during the time period, using Uniform Data System for Medical Rehabilitation (UDSMR) data. After adjusting for admission functional status and other patient factors, IRF LOS was positively associated with functional gains and likelihood of discharge to community among severely impaired patients (OR = 1.010, 95% CI = 0.999–1.021), but negatively associated with the likelihood of discharge to community for mildly (OR = 0.905, 95% CI = 0.839–0.976) and moderately (OR = 0.943, 95% CI = 0.924–0.962) impaired patients. [5] Thus, optimizing IRF LOS based on patient severity and needs is important to improve discharge to community outcomes. Functional status has been observed to be associated with discharge destination, including discharge to home. For example, Thrush et al. [6] examined the relationship between functional status and discharge outcomes based on data collected from 101 LTCH patients in a 38-bed LTCH over 8 months, beginning in September 2010. Functional status was measured based upon the Functional Status Score for the Intensive Care Unit (FSS-ICU), which contains five functional activities scored using a seven-point system, resulting in a score range from 0 to 35; FSS-ICU has been used in both the ICU and LTCH setting. FSS-ICU scores were significantly higher for those discharged home (score = 28) compared to those discharged to a long-term care/hospice/expired (score = 5) or transferred to a short-stay hospital (score = 4) (p<0.001). [6] These findings suggest that interventions aimed at improving functional status could help improve discharge to community outcomes. Using an observational study design, Kushner et al. [7,8,9] assessed the impact of the Siebens Domain Management Model (SDMM) on several discharge outcomes in IRF geriatric, stroke, and geriatric-stroke patients at a single facility, and compared outcomes to national IRF outcomes using UDSMR data. The SDMM intervention focused on effective interdisciplinary communication and collaboration providing a standard format for weekly interdisciplinary team conferences. The intervention also involved weekly adjustmentsof care focusing on potential

MUC ID	Measure Title	Rationale
MUC2021-130 (cont'd)	(cont'd)	barriers to home or community discharge including medical/surgical issues, mental status/emotions/coping, physical function, and living environment/community re-entry needs. In all three patient groups, the authors reported significantly higher discharges to community in the post- intervention period (year 2012) compared with pre- intervention (year 2010) ($p < 0.05$). Pre-intervention versus post-intervention discharge to community rates were 58.5% (of 429) vs. 74.4% (of 524) in geriatric patients [7], 57.8% (of 154) vs. 81.2% (of 151) in stroke patients [8], and 56.9% (of 60) vs. 79.3% (of 58) in geriatric-stroke patients [9]. The authors also reported other outcome improvements following SDMM implementation including fewer discharges to long-term care (24.0% pre-intervention vs. 10.4% post-intervention) [7], fewer acute care transfers (27.3% pre-intervention vs. 9.4% post-intervention) [8], reduced length of IRF stay [2,8,9], and improved Functional Independence Measure (FIM) efficiency [7,8]. While the authors did not adjust for patient characteristics when comparing outcomes, the magnitude of differences strongly suggests that discharge planning processes can improve discharge to community rates. The authors also reported that unlike the pre-intervention group, the post-intervention group had significantly higher (3-4 times higher) discharge to community rates [7,8,9], fewer acute care transfers [7,9], fewer long-term care discharges [9], and higher FIM efficiency [7,8,9] compared with case-mix group adjusted national UDSMR data, using a 0.05 significance level. Berkowitz et al. [10] examined the impact of a three-component intervention on discharge disposition outcomes of residents admitted to a single SNF between June 2008 and May 2010. The intervention included standardized physician admission procedures with a goals-of-care discussion; palliative care consultation for patients with three or more hospital admissions over the prior 6 months; and bimonthly multidisciplinary root- cause analysis conferences for rehospitalized patients to identify problems and improve processes of care. 862 patients were included in the pre-intervention period (June 2008–May 2009) and 863 during the post-intervention period (June 2009–May 2010). Discharge dispositions differed significantly (p =.03) between the pre- and post-intervention periods, with discharges to home increasing from 68.6% to 73.0%. The rate of rehospitalization declined 19.4% from 16.5% to 13.3%, and discharges to long-term care fell from 13.8% to 11.5%. [10] Buttke et al. [11] described outcomes of Minnesota's Return to Community Initiative (RTCI), a novel, statewide initiative introduced in 2010 to assist private paying nursing home residents to return to and remain in the community without converting to Medicaid. RTCI is a multi-component intervention, consisting of in-person SNF visits to ensure consumersreceive information regarding options for residing in the community and make consumers aware of the right to live in the

MUC ID	Measure Title	Rationale
MUC2021-130 (cont'd)	(cont'd)	least restrictive environment; interviews to fill the Community Planning Tool; development of Community Living Support Plans; post-discharge in-person and phone follow-up visits to help the consumer transition back to the community; ongoing follow-up up to 90 days post-discharge; and follow-up up to five years if desired by the consumer. The authors reported that under RTCI, the number of resident transitions to the community increased from 38 per month in 2013 to 69 per month in 2014, and 90 to 100 per month during 2015 and 2016. Seventy-six percent of transitioned residents were alive and living in the community at one year after initial transition. The authors concluded that the relatively low nursing home readmission rates and mortality among transitioned residents may be attributable to effective follow-up. [11] In a retrospective analysis, Logue and Drago [12] described the impact of a modified community-based care transitions program on 30-day all-cause readmissions in 149 Medicare FFS patients in two hospital catchment areas in Arizona. The care transitions program included home-based in-person and phone visits by licensed practical nurses and registered nurses. The program focused on medication self-management, use of a personal health record by the patient or caregiver to facilitate communication and ensure continuity of the care plan across providers and settings, timely follow-up visits with care teams, educating patients on red flags indicating worsening condition, and depression and mobility screening. The 30-day all-cause readmission rate was 4% for patients who completed the program; compared with a baseline readmission rate of 15%, the program resulted in a 73% reduction in all-cause readmissions. Compared with the national average 30-day readmission rate, the program resulted in an 80% reduction in readmissions. The authors also reported other positive outcomes, including high levels of patient satisfaction with the care transitions program, significant improvement in participants' confidence with self-care, and actual Medicare cost savings during the 9-month study period of $214,192, excluding the cost to administer the program. The authors concluded that a customized care transitions approach is desirable and often required as the most cost-effective way to manage care transitions and employ evidence-based policy-making. [12] In a secondary data analysis, Carnahan et al. [13] used the Older Adults Transition Study (OATS) database to identify whether early post-SNF discharge care reduces likelihood of 30-day hospital readmissions in 1,543 patients discharged from a safety-net hospital in Central Indiana to SNF then to home between January 1, 2007 and October 1, 2010. The OATS database combines MDS, Outcome and Assessment Information Set (OASIS), Medicare and Medicaid claims, and electronic medical records. Using a multivariable Cox proportional hazards model adjusting for patient demographic, clinical and utilization variables, the authors found that a home health visit within a week of SNF discharge reduced the hazard of 30-day hospital readmissions [adjusted HR = 0.61, p <.001]. Kaplan-Meier survival function estimates found that a home care visit

MUC ID	Measure Title	Rationale
MUC2021-130 (cont'd)	(cont'd)	was also significantly associated ($p < 0.05$) with reduced likelihood of readmission at one, two, and three weeks. The authors concluded that early home health services could be a potential intervention to reduce readmissions and improve outcomes for this patient population. [13] A 2017 systematic review and meta-analysis of 11 randomized controlled trials by Rodakowski et al. [14] examined the effect of integrating informal caregivers (i.e., unpaid individuals who provide support for medical tasks and daily activities once home) into discharge planning from a hospital or SNF on post-discharge readmissions in a combined total sample of 4,361 older adults. The authors reported that integrating caregivers into discharge planning for patients 65 years and older resulted in a 25% lower risk of 90-day hospital readmissions and 24% fewer readmissions at 180 days. These findings provide evidence that community support services can help ensure that patients successfully stay in the community following discharge. [14] The empirical evidence provided above demonstrates that improvement in successful discharge to community rates among PAC patients is possible through modifying provider-led processes and interventions in the PAC setting and community. References: 2. O'Brien SR, Zhang N. Association between therapy intensity and discharge outcomes in aged Medicare skilled nursing facilities admissions. Archives of Physical Medicine and Rehabilitation. 2018;99(1):107-115. 3. Jung HY, Trivedi AN, Grabowski DC, Mor V. Does more therapy in skilled nursing facilities lead to better outcomes in patients with hip fracture? Physical therapy. 2016;96(1):81-89. 4. Schweickert WD, Pohlman MC, Pohlman AS, et al. Early physical and occupational therapy in mechanically ventilated, critically ill patients: a randomised controlled trial. Lancet (London, England). 2009;373(9678):1874-1882. 5. Camicia M, Wang H, DiVita M, Mix J, Niewczyk P. Length of stay at inpatient rehabilitation facility and stroke patient outcomes. Rehabilitation Nursing: The Official Journal of the Association of Rehabilitation Nurses. 2016;41(2):78-90. 6. Thrush A, Rozek M, Dekerlegand JL. The Clinical Utility of the functional status score for the intensive care unit (FSS-ICU) at a long-term acute care hospital: a prospective cohort study. Physical Therapy. 2012;92(12):1536-1545. 7. Kushner DS, Peters KM, Johnson-Greene D. Evaluating Siebens Domain Management Model for inpatient rehabilitation to increase functional independence and discharge rate to home in geriatric patients. Archives of Physical Medicine and Rehabilitation. 2015;96(7):1310-1318. 8. Kushner DS, Peters KM, Johnson-Greene D. Evaluating use of the Siebens Domain Management Model during inpatient rehabilitation to increase functional independence and discharge rate to home in stroke patients. PM&R: The Journal of Injury, Function, and Rehabilitation. 2015;7(4):354-364. 9. Kushner DS, Peters KM, Johnson-Greene D. Evaluating the Siebens Model in geriatric-stroke inpatient rehabilitation to reduce institutionalization and acute-care readmissions. Journal of Stroke and Cerebrovascular Diseases. 2016;25(2):317-326. 10. Berkowitz RE, Jones RN, Rieder R, et al. Improving disposition outcomes for

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MUC2021-130 (cont'd)	(cont'd)	patients in a geriatric skilled nursing facility. Journal of the American Geriatrics Society. 2011;59(6):1130-1136. 11. Buttke D, Cooke V, Abrahamson K, et al. A Statewide Model forassisting nursing home residents to transition successfully to the community. Geriatrics. 2018;3(2):18. 12. Logue MD, Drago J. Evaluation of a modified community based care transitions model to reduce costs and improve outcomes. BMC Geriatrics. 2013;13(1):94. 13. Carnahan JL, Slaven JE, Callahan CM, Tu W, Torke AM. Transitions from skilled nursing facility to home: the relationship of early outpatient care to hospital readmission. Journal of the American Medical Directors Association. 2017;18(10):853-859. 14. Rodakowski J, Rocco PB, Ortiz M, et al. Caregiver integration during discharge planning for older adults to reduce resource use: a metaanalysis. J Am Geriatr Soc. 2017;65(8):1748-1755.
MUC2021-131*	Medicare Spending Per Beneficiary (MSPB) Hospital CMS Program(s): Hospital IQR Program; HVBP	In the United States, healthcare costs consume an ever-increasing amount of our nation's resources. One source of these rising healthcare costs is payment systems that reward medical inputs rather than outcomes. Medicare is transforming from a system that rewards volume of service to one that rewards efficient, effective care and reduces delivery system fragmentation. To advance this transformation, the Centers for Medicare & Medicaid Services (CMS) provides financial incentives to hospitals based on their performance on selected quality measures. These measures include evaluations of hospitals' clinical process of care, patient perspective of care, outcomes, and efficiency. By measuring Medicare spending through the MSPB Hospital measure, CMS aims to reward hospitals that can provide efficient care at a lower cost to Medicare. The MSPB Hospital measure evaluates hospitals' risk-adjusted episode costs relative to the risk-adjusted episode costs of the national median hospital. This scoring allows hospitals to improve their score by spending less than the episode-weighted risk-adjusted median cost during a given performance period through improved care coordination and provision of efficient care. For instance, hospitals can decrease (i.e., improve) their risk-adjusted episode costs through actions such as: 1) improving coordination with post-acute providers to reduce the likelihood post-discharge of adverse events, 2) identifying unnecessary or low-value post-acute services and reducing or eliminating these services, or 3) shifting post-acute care from more expensive services (e.g., skilled nursing facilities) to less expensive services (e.g., home health) in cases that would not affect patient outcomes. Care coordination helps ensure a patient's needs and preferences for care are understood, and that those needs and preferences are shared between providers, patients, and families as a patient moves from one healthcare setting to another. People with chronic conditions, such as diabetes and hypertension, often receive care in multiple settings from numerous providers. As a result, care coordination among different providers is required to avoid waste, over-, under-, or misuse of prescribed medications and conflicting plans of care.

MUC ID	Measure Title	Rationale
MUC2021-134	Screen Positive Rate for Social Drivers of Health	American academy of Family Physicians. (2020). Addressing Social Determinants of Health in Primary Care team-based approach for advancing health equity. https://www.aafp.org/dam/AAFP/documents/patient_care/everyone_project/team-based-approach.pdf. American Academy of Pediatrics. (2019). Social Determinants of Health. https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Screening/Pages/Social-Determinants-of-Health.aspx. Baker, M. C., Alberti, P. M., Tsao, T. Y., Fluegge, K., Howland, R. E., & Haberman, M. (2021). Social Determinants Matter For Hospital Readmission Policy: Insights From New York City. Health Affairs, 40(4), 645–654. https://doi.org/10.1377/hlthaff.2020.01742. Berkowitz, S. A., Basu, S., Meigs, J. B., & Seligman, H. K. (2017). Food Insecurity and Health Care Expenditures in the United States, 2011–2013. Health Services Research, 53(3), 1600–1620. https://doi.org/10.1111/1475-6773.12730. Berkowitz, S. A., Cené, C. W., & Chatterjee, A. (2020). Covid-19 and Health Equity — Time to Think Big. New England Journal of Medicine, 383(12), e76. https://doi.org/10.1056/nejmp2021209. Berkowitz, S. A., Karter, A. J., Corbie-Smith, G., Seligman, H. K., Ackroyd, S. A., Barnard, L. S., Atlas, S. J., & Wexler, D. J. (2018). Food Insecurity, Food "Deserts," and Glycemic Control in Patients With Diabetes: A Longitudinal Analysis. Diabetes Care, 41(6), 1188–1195. https://doi.org/10.2337/dc17-1981. Berkowitz SA, Seligman HK, Meigs JB, Basu S. Food insecurity, healthcare utilization, and high cost: a longitudinal cohort study. Am J Manag Care. 2018 Sep;24(9):399-404. PMID: 30222918; PMCID: PMC6426124. Berkowitz, S. A., Terranova, J., Hill, C., Ajayi, T., Linsky, T., Tishler, L. W., & DeWalt, D. A. (2018). Meal Delivery Programs Reduce The Use Of Costly Health Care In Dually Eligible Medicare And Medicaid Beneficiaries. Health Affairs, 37(4), 535–542. https://doi.org/10.1377/hlthaff.2017.0999. Billioux, A., Verlander, K., Anthony, S., & Alley, D. (2017). Standardized Screening for Health-Related Social Needs in Clinical Settings: The Accountable Health Communities Screening Tool. NAM Perspectives, 7(5). https://doi.org/10.31478/201705b.Davidson, K. W., Kemper, A. R., Doubeni, C. A., Tseng, C. W., Simon, M. A., Kubik, M., Curry, S. J., Mills, J., Krist, A., Ngo-Metzger, Q., & Borsky, A. (2020). Developing Primary Care–Based Recommendations for Social Determinants of Health: Methods of the U.S. Preventive Services Task Force. Annals of Internal Medicine, 173(6), 461–467. https://doi.org/10.7326/m20-0730. Dean, E. B., French, M. T., & Mortensen, K. (2020a). Food insecurity, health care utilization, and health care expenditures. Health Services Research, 55(S2), 883–893. https://doi.org/10.1111/1475-6773.13283. Dean, E. B., French, M. T., & Mortensen, K. (2020b). Food insecurity, health care utilization, and health care expenditures. Health Services Research, 55(S2), 883–893. https://doi.org/10.1111/1475-6773.13283. Drennen, C. R., Coleman, S. M., Ettinger De Cuba, S., Frank, D. A., Chilton, M., Cook, J. T., Cutts, D. B., Heeren, T., Casey, P. H., & Black, M. M. (2019). Food Insecurity, Health, and Development in Children Under Age Four Years. Pediatrics, 144(4), e20190824. https://doi.org/10.1542/peds.2019-0824.Gundersen, C., Engelhard, E. E., Crumbaugh, A. S., & Seligman, H. K. (2017). Brief assessment of food insecurity

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MUC2021-134 (cont'd)	(cont'd)	Homeless People Had Lower Overall Health Care Expenditures After Moving Into Supportive Housing. Health Affairs, 35(1), 20–27. https://doi.org/10.1377/hlthaff.2015.0393.
MUC2021-135	Dermatitis – Improvement in Patient-Reported Itch Severity CMS Program(s): MIPS	Various types of dermatitis are chronically pruritic and are tremendously burdensome. Atopic dermatitis (AD) is a chronic skin disease in which pruritus is responsible for much of the disease burden and morbidity borne by patients. It is estimated that in the U.S. alone, 31.6 million people have symptoms of AD, with 17.8 million meeting the criteria for AD. The effects of this disease are substantial; with direct costs estimated to be between $1 and $4 billion. Other types of dermatitis, such as contact dermatitis and seborrheic dermatitis (SD) are also chronic, pruritic conditions which greatly affect patients. Approximately 6 million people in the U.S. have SD with direct and indirect costs estimated to be $230 million. These various forms of dermatitis also greatly impact the quality-of-life patients have. In one study looking at the patient burden in adults with moderate to severe AD, 85% reported problems with the frequency of their itch and 41.5% reported itching for 18 hours or more a day. With this persistence of itching, 55% of patients showed AD-related sleep disturbance 5 days a week or more and 21.8% showed clinically relevant anxiety or depression. In another study, investigators quantified pruritic burden in a cross-sectional analysis investigating chronic pruritus and pain. They demonstrated that the quality-of-life impact was due to the severity of the symptom, rather than whether the symptom was pain or pruritus. Moreover, they elucidated a mean health utility score of 0.87 from CP patients, meaning that on average, a patient would give up 13% of their life expectancy to live without pruritus. Additionally, studies of CP have shown patients to have a 17% higher mortality risk as well as being strongly associated with poorer general health. Moreover, data from the National Ambulatory Medical Care Survey (1999-2009) found that a total of 77 million patient visits for itch were made during the 11-year time period. This was an average of 7 million visits per year, which represented approximately 1% of all outpatient visits. Also, further analysis showed that although the majority visits (58.6%) were for new instances of itch, almost a third (32%) were for chronic pruritus. This measure aims to improve pruritus in patients who carry a large burden with this disease; by assessing itch and aiming to make the symptom more manageable.
MUC2021-136	Screening for Social Drivers of Health CMS Program(s): Hospital IQR Program; MIPS	American academy of Family Physicians. (2020). Addressing Social Determinants of Health in Primary Care team-based approach for advancing health equity. https://www.aafp.org/dam/AAFP/documents/patient_care/everyone_project/team-based-approach.pdf. American Academy of Pediatrics. (2019). Social Determinants of Health. https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Screening/Pages/Social-Determinants-of-Health.aspx. Baker, M. C., Alberti, P. M., Tsao,

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MUC2021-136 (cont'd)	(cont'd)	T. Y., Fluegge, K., Howland, R. E., & Haberman, M. (2021). Social Determinants Matter For Hospital Readmission Policy: Insights From New York City. Health Affairs, 40(4), 645–654. https://doi.org/10.1377/hlthaff.2020.01742. Berkowitz, S. A., Basu, S., Meigs, J. B., & Seligman, H. K. (2017). Food Insecurity and Health Care Expenditures in the United States, 2011–2013. Health Services Research, 53(3), 1600–1620. https://doi.org/10.1111/1475-6773.12730. Berkowitz, S. A., Cené, C. W., & Chatterjee, A. (2020). Covid-19 and Health Equity — Time to Think Big. New England Journal of Medicine, 383(12), e76. https://doi.org/10.1056/nejmp2021209. Berkowitz, S. A., Karter, A. J., Corbie-Smith, G., Seligman, H. K., Ackroyd, S. A., Barnard, L. S., Atlas, S. J., & Wexler, D. J. (2018). Food Insecurity, Food "Deserts," and Glycemic Control in Patients With Diabetes: A Longitudinal Analysis. Diabetes Care, 41(6), 1188–1195. https://doi.org/10.2337/dc17-1981. Berkowitz SA, Seligman HK, Meigs JB, Basu S. Food insecurity, healthcare utilization, and high cost: a longitudinal cohort study. Am J Manag Care. 2018 Sep;24(9):399-404. PMID: 30222918; PMCID: PMC6426124. Berkowitz, S. A., Terranova, J., Hill, C., Ajayi, T., Linsky, T., Tishler, L. W., & DeWalt, D. A. (2018). Meal Delivery Programs Reduce The Use Of Costly Health Care In Dually Eligible Medicare And Medicaid Beneficiaries. Health Affairs, 37(4), 535–542. https://doi.org/10.1377/hlthaff.2017.0999. Billioux, A., Verlander, K., Anthony, S., & Alley, D. (2017). Standardized Screening for Health-Related Social Needs in Clinical Settings: The Accountable Health Communities Screening Tool. NAM Perspectives, 7(5). https://doi.org/10.31478/201705b. Davidson, K. W., Kemper, A. R., Doubeni, C. A., Tseng, C. W., Simon, M. A., Kubik, M., Curry, S. J., Mills, J., Krist, A., Ngo-Metzger, Q., & Borsky, A. (2020). Developing Primary Care–Based Recommendations for Social Determinants of Health: Methods of the U.S. Preventive Services Task Force. Annals of Internal Medicine, 173(6), 461–467. https://doi.org/10.7326/m20-0730. Dean, E. B., French, M. T., & Mortensen, K. (2020). Food insecurity, health care utilization, and health care expenditures. Health Services Research, 55(S2), 883–893. https://doi.org/10.1111/1475-6773.13283. Drennen, C. R., Coleman, S. M., Ettinger De Cuba, S., Frank, D. A., Chilton, M., Cook, J. T., Cutts, D. B., Heeren, T., Casey, P. H., & Black, M. M. (2019). Food Insecurity, Health, and Development in Children Under Age Four Years. Pediatrics, 144(4), e20190824. https://doi.org/10.1542/peds.2019-0824. Gundersen, C., Engelhard, E. E., Crumbaugh, A. S., & Seligman, H. K. (2017). Brief assessment of food insecurity accurately identifies high-risk US adults. Public Health Nutrition, 20(8), 1367–1371. https://doi.org/10.1017/s1368980017000180. Gundersen, C., Tarasuk, V., Cheng, J., de Oliveira, C., & Kurdyak, P. (2018). Food insecurity status and mortality among adults in Ontario, Canada. PLOS ONE, 13(8), e0202642. https://doi.org/10.1371/journal.pone.0202642. Gundersen, C., & Ziliak, J. P. (2015). Food Insecurity And Health

MUC ID	Measure Title	Rationale
MUC2021-136 (cont'd)	(cont'd)	Outcomes. Health Affairs, 34(11), 1830–1839. https://doi.org/10.1377/hlthaff.2015.0645. Hager, E. R., Quigg, A. M., Black, M. M., Coleman, S. M., Heeren, T., Rose-Jacobs, R., Cook, J. T., de Cuba, S. A. E., Casey, P. H., Chilton, M., Cutts, D. B., Meyers, A. F., & Frank, D. A. (2010). Development and Validity of a 2-Item Screen to Identify Families at Risk for Food Insecurity. PEDIATRICS, 126(1), e26–e32. https://doi.org/10.1542/peds.2009-3146. Hill-Briggs, F., Adler, N. E., Berkowitz, S. A., Chin, M. H., Gary-Webb, T. L., Navas-Acien, A., Thornton, P. L., & Haire-Joshu, D. (2020). Social Determinants of Health and Diabetes: A Scientific Review. Diabetes Care, 44(1), 258–279. https://doi.org/10.2337/dci20-0053. Kamyck, D., Senior Director of Marketing. (2019). CMS releases standardized screening tool for health-related social needs. Activate Care. https://blog.activatecare.com/standardized-screening-for-health-related-social-needs-in-clinical-settings-the-accountable-health-communities-screening-tool/. Keith-Jennings, B., Llobrera, J., & Dean, S. (2019). Links of the Supplemental Nutrition Assistance Program With Food Insecurity, Poverty, and Health: Evidence and Potential. American Journal of Public Health, 109(12), 1636–1640. https://doi.org/10.2105/ajph.2019.305325. Khullar, D., Schpero, W. L., Bond, A. M., Qian, Y., & Casalino, L. P. (2020). Association Between Patient Social Risk and Physician Performance Scores in the First Year of the Merit-based Incentive Payment System. JAMA, 324(10), 975. https://doi.org/10.1001/jama.2020.13129. Larimer, M. E. (2009). Health Care and Public Service Use and Costs Before and After Provision of Housing for Chronically Homeless Persons With Severe Alcohol Problems. JAMA, 301(13), 1349. https://doi.org/10.1001/jama.2009.414. Leddy, A. M., Weiser, S. D., Palar, K., & Seligman, H. (2020). A conceptual model for understanding the rapid COVID-19–related increase in food insecurity and its impact on health and healthcare. The American Journal of Clinical Nutrition, 112(5), 1162–1169. https://doi.org/10.1093/ajcn/nqaa226. Lewis, C., Wellman, R., Jones, S. W., Walsh-Bailey, C., Thompson, E., Derus, A., Paolino, A., Steiner, J., de Marchis, E., Gottlieb, L., & Sharp, A. (2020). Comparing the performance of two social risk screening tools in a vulnerable subpopulation. Journal of Family Medicine and Primary Care, 9(9), 5026. https://doi.org/10.4103/jfmpc.jfmpc_650_20. Lumpkin, J., Perla, R., Onie, R., & Seligson, R. (2021). What We Need to Be Healthy—And How To Talk About It. HEALTH AFFAIRS BLOG. https://www.healthaffairs.org/do/10.1377/hblog20210429.335599/full/. Maynard, M., Andrade, L., Packull-McCormick, S., Perlman, C., Leos-Toro, C., & Kirkpatrick, S. (2018). Food Insecurity and Mental Health among Females in High-Income Countries. International Journal of Environmental Research and Public Health, 15(7), 1424. https://doi.org/10.3390/ijerph15071424. Narain, K., Bean-Mayberry, B., Washington, D. L., Canelo, I. A., Darling, J.

MUC ID	Measure Title	Rationale
MUC2021-136 (cont'd)	(cont'd)	E., & Yano, E. M. (2018). Access to Care and Health Outcomes Among Women Veterans Using Veterans Administration Health Care: Association With Food Insufficiency. Women's Health Issues, 28(3), 267–272. https://doi.org/10.1016/j.whi.2018.01.002. National Academies of Sciences, Engineering, and Medicine. 2006. Executive Summary: Cost-Benefit Analysis of Providing Non-Emergency Medical Transportation. Washington, DC: The National Academies Press. https://doi.org/10.17226/23285. Pak, T. Y., & Kim, G. (2020). Food stamps, food insecurity, and health outcomes among elderly Americans. Preventive Medicine, 130, 105871.https://doi.org/10.1016/j.ypmed.2019.105871. Peikes Et Al. (2021). Independent Evaluation of Comprehensive Primary Care Plus: Third Annual Report. https://innovation.cms.gov/data-and-reports/2021/cpc-plus-third-anual-eval-report. Peltz, A., & Garg, A. (2019). Food Insecurity and Health Care Use. Pediatrics, 144(4), e20190347. https://doi.org/10.1542/peds.2019-0347. Pooler, J. A., Hartline-Grafton, H., DeBor, M., Sudore, R. L., & Seligman, H. K. (2018). Food Insecurity: A Key Social Determinant of Health for Older Adults. Journal of the American Geriatrics Society, 67(3), 421–424. https://doi.org/10.1111/jgs.15736. Pourmotabbed, A., Moradi, S., Babaei, A., Ghavami, A., Mohammadi, H., Jalili, C., Symonds, M. E., & Miraghajani, M. (2020). Food insecurity and mental health: a systematic review and meta-analysis. Public Health Nutrition, 23(10), 1778–1790. https://doi.org/10.1017/s136898001900435x. Rogers, A. J., Hamity, C., Sharp, A. L., Jackson, A. H., & Schickedanz, A. B. (2020). Patients' Attitudes and Perceptions Regarding Social Needs Screening and Navigation: Multi-site Survey in a Large Integrated Health System. Journal of General Internal Medicine, 35(5), 1389–1395. https://doi.org/10.1007/s11606-019-05588-1. RTI International. (2020). Accountable Health Communities (AHC) Model Evaluation: First Evaluation Report. https://innovation.cms.gov/data-and-reports/2020/ahc-first-eval-rpt. Shier, G., Ginsburg, M., Howell, J., Volland, P., & Golden, R. (2013). Strong Social Support Services, Such As Transportation And Help For Caregivers, Can Lead To Lower Health Care Use And Costs. Health Affairs, 32(3), 544–551. https://doi.org/10.1377/hlthaff.2012.0170. The Physicians Foundation. (2018). The Physicians Foundation: 2018 Survey of America's Patients. https://physiciansfoundation.org/wp-content/uploads/2018/09/physicians-survey-results-final-2018.pdf. The Physicians Foundation. (2019). The Physicians Foundation: 2019 Survey of America's Patients. https://physiciansfoundation.org/wp-content/uploads/2019/10/The-Physicians-Foundation-2019-Survey-of-Americas-Patients.pdf. The Physicians Foundation. (2020). The Physicians Foundation: 2020 Survey of America's Patients, Part Three. https://physiciansfoundation.org/wp-content/uploads/2020/10/2020-Physicians-Foundation-Survey-Part3.pdf.

MUC ID	Measure Title	Rationale
MUC2021-136 (cont'd)	(cont'd)	Wright, B. J., Vartanian, K. B., Li, H. F., Royal, N., & Matson, J. K. (2016). Formerly Homeless People Had Lower Overall Health Care Expenditures After Moving Into Supportive Housing. Health Affairs, 35(1), 20–27. https://doi.org/10.1377/hlthaff.2015.0393
MUC2021-137	Total nursing hours per resident day CMS Program(s): SNF VBP	Staffing is a vital component of quality care for nursing home residents. Numerous studies have examined the relationship between nursing home staffing levels and quality of care. The findings of these studies have been mixed, although most studies have found a positive relationship [1-5]. Previous studies have varied considerably with respect to how they measured both staffing and quality. While not all studies have found a consistent relationship, associations have been found between higher staffing levels in nursing homes and fewer hospitalizations [6,7], fewer pressure ulcers [8, 9], less weight loss [6, 9], fractures [10], decreased resistance to care [6], improved functional status [6, 11], improved pain management [12] and fewer survev deficiencies [13,14]. The strongest relationships have been identified for RN staffing [1, 2]. Major methodological and theoretical limitations in some studies, including poor quality staffing data, small sample size, and the quality measures used, limit the interpretation of results [2-3]. One of the most comprehensive studies to date [6] used Medicaid Cost Report data from 10 states with over 5,000 facilities to examine the relationship between staffing and hospitalizations of nursing home residents. The study found evidence of a relationship between higher staffing and better outcomes for total nurse staffing levels up to 4.08 hours per resident day and RN staffing levels up to 0.75 RN hours per resident day. Minimum staffing levels at any level up to these thresholds were associated with incremental quality improvements, and no significant quality improvements were observed for staffing levels above these thresholds. References: [1] Backhaus R, Verbeek H, van Rossum E, Capezuti E, Hamer JPH. Nursing staffing impact on quality of care in nursing homes: a systemic review of longitudinal studies. J Am Med Dir Assoc. 2014;15(6):383–393. [2] Dellefield ME, Castle NG, McGilton KS, Spilsbury K. The relationship between registered nurses and nursing home quality: an integrative review (2008–2014). Nurs Econ. 2015;33(2):95–108, 116. [3] Bostick JE, Rantz MJ, Flesner MK, Riggs CJ. Systematic review of studies of staffing and quality in nursing homes. J Am Med Dir Assoc. 2006;7:366–376. [4] Castle N. Nursing home caregiver staffing levels and quality of care: a literature review. J Appl Gerontol. 2008;27:375–405. [5]. Spilsbury K, Hewitt C, Stirk L, Bowman C. The relationship between nurse staffing and quality of care in nursing homes: a systematic review. Int J Nurs Stud. 2011; 48(6):732–750. [6] Centers for Medicare and Medicaid Services. 2001 Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes, Phase II. Baltimore, MD: Centers for Medicare and Medicaid Services. [7] Carter, M. W., and F. W. Porell. ''Variations in Hospitalization

MUC ID	Measure Title	Rationale
MUC2021-137 (cont'd)	(cont'd)	Rates among Nursing Home Residents: The Role of Facility and Market Attributes.'' Gerontologist 2003 43 (2): 175–91. [8] Alexander, G.L. An analysis of nursing home quality measures and staffing. Qual Manag Health Care. 2008;17:242–251 [9] Castle NG, Anderson RA. Caregiver staffing in nursing homes and their influence on quality of care: Using dynamic panel estimation methods. Med Care 2011;49:545-552. [10] Dyck MJ. Nursing staffing and resident outcomes in nursing homes: weight loss and dehydration. J Nurs Care Qual 2007;22(1):59–65. [11] Spector W, Shaffer T, Potter DE, et al. Risk factors associated with the occurrence of fractures in U.S. nursing homes: Resident and facility characteristics and prescription medications. J Am Geriatr Soc 2007 55:327-333. [12] Horn SD, Buerhaus P, Bergstrom N, et al. RN staffing time and outcomes of long-stay nursing home residents: Pressure ulcers and other adverse outcomes are less likely as RNs spend more time on direct patient care. Am J Nurs 2005 6:50-53. [13] Harrington, C., D. Zimmerman, S. L. Karon, J. Robinson, and P. Beutel. ''Nursing Home Staffing and Its Relationship to Deficiencies.'' Journal of Gerontology Series B: Psychological Science and Social Science 55 (5). 2000: S278–87. [14] Lin, Haizhen, 'Revisiting the relationship between nurse staffing and quality of care in nursing homes: An instrumental variables approach', Journal of Health Economics 2014 37: 13 – 24.

*This measure is currently in use but it is included on the 2021 MUC List because it is undergoing substantial changes to specifications.

APPENDIX C: MEASURES LISTED BY PROGRAM

December 1, 2021

Appendix C Table of Contents

Chronic and Post-Acute Care Measures Programs

Home Health Quality Reporting Program

MUC ID	CMS Program[6]	Measure Title	Healthcare Domain
No new candidate measures were approved for consideration under this program in the current year.			

[6] A single unique measure can be associated with more than one CMS Program.

Hospice Quality Reporting Program

MUC ID	CMS Program	Measure Title	Healthcare Domain
No new candidate measures were approved for consideration under this program in the current year.			

Inpatient Rehabilitation Facility Quality Reporting Program

MUC ID	CMS Program	Measure Title	Healthcare Domain
MUC2021-098	IRF QRP	National Healthcare Safety Network (NHSN) Healthcare-associated Clostridioides difficile Infection Outcome Measure	Safety

Long-Term Care Hospital Quality Reporting Program

MUC ID	CMS Program	Measure Title	Healthcare Domain
MUC2021-098	LTCH QRP	National Healthcare Safety Network (NHSN) Healthcare-associated Clostridioides difficile Infection Outcome Measure	Safety

Skilled Nursing Facility Quality Reporting Program

MUC ID	CMS Program	Measure Title	Healthcare Domain
MUC2021-098	SNF QRP	National Healthcare Safety Network (NHSN) Healthcare-associated Clostridioides difficile Infection Outcome Measure	Safety
MUC2021-123	SNF QRP	Influenza Vaccination Coverage among Healthcare Personnel	Safety

Skilled Nursing Facility Value-Based Purchasing Program

MUC ID	CMS Program	Measure Title	Healthcare Domain
MUC2021-095	SNF VBP	CoreQ: Short Stay Discharge Measure	Person-Centered Care
MUC2021-124	SNF VBP	Skilled Nursing Facility Healthcare-Associated Infections Requiring Hospitalization	Safety
MUC2021-130	SNF VBP	Discharge to Community-Post Acute Care Measure for Skilled Nursing Facilities (SNF)	Safety
MUC2021-137	SNF VBP	Total nursing hours per resident day	Safety

Ambulatory Care and Meaningful Use Measures Programs

Merit-Based Incentive Payment System

MUC ID	CMS Program	Measure Title	Healthcare Domain
MUC2021-058	MIPS	Appropriate intervention of immune-related diarrhea and/or colitis in patients treated with immune checkpoint inhibitors	Safety
MUC2021-063	MIPS	Care Goal Achievement Following a Total Hip Arthroplasty (THA) or Total Knee Arthroplasty (TKA)	Person-Centered Care
MUC2021-090	MIPS	Kidney Health Evaluation	Chronic Conditions
MUC2021-105	MIPS	Mismatch Repair (MMR) or Microsatellite Instability (MSI) Biomarker Testing Status in Colorectal Carcinoma, Endometrial, Gastroesophageal, or Small Bowel Carcinoma	Chronic Conditions
MUC2021-107	MIPS	Clinician-Level and Clinician Group-Level Total Hip Arthroplasty and/or Total Knee Arthroplasty (THA and TKA) Patient-Reported Outcome-Based Performance Measure (PRO-PM)	Person-Centered Care
MUC2021-125	MIPS	Psoriasis – Improvement in Patient-Reported Itch Severity	Chronic Conditions
MUC2021-127	MIPS	Adult Kidney Disease: Angiotensin Converting Enzyme (ACE) Inhibitor or Angiotensin Receptor Blocker (ARB) Therapy	Chronic Conditions
MUC2021-134	MIPS	Screen Positive Rate for Social Drivers of Health	Equity

MUC ID	CMS Program	Measure Title	Healthcare Domain
MUC2021-135	MIPS	Dermatitis – Improvement in Patient-Reported Itch Severity	Chronic Conditions
MUC2021-136	MIPS	Screening for Social Drivers of Health	Equity

Part C & D Star Rating

MUC ID	CMS Program	Measure Title	Healthcare Domain
MUC2021-053	Part C & D Star Rating [Medicare]	Concurrent Use of Opioids and Benzodiazepines (COB)	Chronic Conditions
MUC2021-056	Part C & D Star Rating [Medicare]	Polypharmacy: Use of Multiple Anticholinergic Medications in Older Adults (Poly-ACH)	Chronic Conditions
MUC2021-066	Part C & D Star Rating [Medicare]	Polypharmacy: Use of Multiple Central Nervous System (CNS)-Active Medications in Older Adults	Chronic Conditions

Medicare Shared Savings Program

MUC ID	CMS Program	Measure Title	Healthcare Domain
No new candidate measures were approved for consideration under this program in the current year.			

Hospital Measures Programs

Ambulatory Surgical Center Quality Reporting Program

MUC ID	CMS Program	Measure Title	Healthcare Domain
No new candidate measures were approved for consideration under this program in the current year.			

End-Stage Renal Disease Quality Incentive Program

MUC ID	CMS Program	Measure Title	Healthcare Domain
MUC2021-101*	ESRD QIP	Standardized Readmission Ratio (SRR) for dialysis facilities	Seamless Care Coordination

*This measure is currently in use but it is included on the 2021 MUC List because it is undergoing substantial changes to specifications.

Hospital-Acquired Condition Reduction Program

MUC ID	CMS Program	Measure Title	Healthcare Domain
MUC2021-098	HACRP	National Healthcare Safety Network (NHSN) Healthcare-associated Clostridioides difficile Infection Outcome Measure	Safety
MUC2021-100	HACRP	National Healthcare Safety Network (NHSN) Hospital-Onset Bacteremia & Fungemia Outcome Measure	Safety

Hospital Inpatient Quality Reporting Program

MUC ID	CMS Program	Measure Title	Healthcare Domain
MUC2021-084	Hospital IQR Program	Hospital Harm – Opioid-Related Adverse Events	Safety
MUC2021-098	Hospital IQR Program	National Healthcare Safety Network (NHSN) Healthcare-associated Clostridioides difficile Infection Outcome Measure	Safety
MUC2021-100	Hospital IQR Program	National Healthcare Safety Network (NHSN) Hospital-Onset Bacteremia & Fungemia Outcome Measure	Safety
MUC2021-104	Hospital IQR Program	Severe Obstetric Complications eCQM	Safety
MUC2021-106	Hospital IQR Program	Hospital Commitment to Health Equity	Equity

MUC ID	CMS Program	Measure Title	Healthcare Domain
MUC2021-118*	Hospital IQR Program	Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)	Safety
MUC2021-120*	Hospital IQR Program	Hospital-level, risk-standardized payment associated with an episode of care for primary elective total hip and/or total knee arthroplasty (THA/TKA)	Affordability and Efficiency
MUC2021-122*	Hospital IQR Program	Excess days in acute care (EDAC) after hospitalization for acute myocardial infarction (AMI)	Seamless Care Coordination
MUC2021-131*	Hospital IQR Program	Medicare Spending Per Beneficiary (MSPB) Hospital	Affordability and Efficiency
MUC2021-134	Hospital IQR Program	Screen Positive Rate for Social Drivers of Health	Equity
MUC2021-136	Hospital IQR Program	Screening for Social Drivers of Health	Equity

*This measure is currently in use but it is included on the 2021 MUC List because it is undergoing substantial changes to specifications.

Hospital Outpatient Quality Reporting Program

MUC ID	CMS Program	Measure Title	Healthcare Domain
No new candidate measures were approved for consideration under this program in the current year.			

Hospital Readmissions Reduction Program

MUC ID	CMS Program	Measure Title	Healthcare Domain
No new candidate measures were approved for consideration under this program in the current year.			

Hospital Value-Based Purchasing Program

MUC ID	CMS Program	Measure Title	Healthcare Domain
MUC2021-118*	HVBP	Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)	Safety
MUC2021-131*	HVBP	Medicare Spending Per Beneficiary (MSPB) Hospital	Affordability and Efficiency

*This measure is currently in use but it is included on the 2021 MUC List because it is undergoing substantial changes to specifications.

Inpatient Psychiatric Facility Quality Reporting Program

MUC ID	CMS Program	Measure Title	Healthcare Domain
No new candidate measures were approved for consideration under this program in the current year.			

Medicare and Medicaid Promoting Interoperability Program for Eligible Hospitals (EHs) or Critical Access Hospitals (CAHs)

MUC ID	CMS Program	Measure Title	Healthcare Domain
MUC2021-084	Promoting Interoperability (EH-CAH)	Hospital Harm – Opioid-Related Adverse Events	Safety
MUC2021-098	Promoting Interoperability (EH-CAH)	National Healthcare Safety Network (NHSN) Healthcare-associated Clostridioides difficile Infection Outcome Measure	Safety
MUC2021-100	Promoting Interoperability (EH-CAH)	National Healthcare Safety Network (NHSN) Hospital-Onset Bacteremia & Fungemia Outcome Measure	Safety
MUC2021-104	Promoting Interoperability (EH-CAH)	Severe Obstetric Complications eCQM	Safety

PPS-Exempt Cancer Hospital Quality Reporting Program

MUC ID	CMS Program	Measure Title	Healthcare Domain
MUC2021-091	PCHQR	Appropriate Treatment for Patients with Stage I (T1c) through III HER2 Positive Breast Cancer	Chronic Conditions
MUC2021-098	PCHQR	National Healthcare Safety Network (NHSN) Healthcare-associated Clostridioides difficile Infection Outcome Measure	Safety
MUC2021-100	PCHQR	National Healthcare Safety Network (NHSN) Hospital-Onset Bacteremia & Fungemia Outcome Measure	Safety

PPS-Exempt Cancer Hospital Quality Reporting Program

MUC ID	CMS Program	Measure Title	Healthcare Domain
MUC2021-091	PCHQR	Appropriate Treatment for Patients with Stage I (T1c) through III HER2 Positive Breast Cancer	Chronic Conditions
MUC2021-098	PCHQR	National Healthcare Safety Network (NHSN) Healthcare-associated Clostridioides difficile Infection Outcome Measure	Safety
MUC2021-100	PCHQR	National Healthcare Safety Network (NHSN) Hospital-Onset Bacteremia & Fungemia Outcome Measure	Safety