List of Measures under Consideration for December 1, 2018

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OVERVIEW

Background

The Centers for Medicare & Medicaid Services (CMS) is issuing this List of Measures under Consideration (MUC) to comply with statutory requirements[1], which require the Secretary of the Department of Health and Human Services (HHS) to make publicly available a list of certain quality and efficiency measures it is considering for adoption through rulemaking under Medicare. Among the measures, the list includes measures we are considering that were suggested to us by the public. When organizations, such as physician specialty societies, request that CMS consider measures, CMS evaluates the submission for inclusion on the MUC List so that the Measure Applications Partnership (MAP), the statutorily-required[2] multi-stakeholder groups, can provide their input on potential measures. Inclusion of a measure on this list does not require CMS to adopt the measure for the identified program. Therefore, this list is likely larger than what will ultimately be adopted by CMS for optional or mandatory reporting programs in Medicare.

CMS will continue its goal of aligning measures across programs. Measure alignment includes looking first to existing program measures for use in new 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.

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

Statutory Requirement

HHS is statutorily-required[3] to establish a federal pre-rulemaking process for the selection of certain quality and efficiency measures[4] 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 federal 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 not later than February 1 annually to HHS on the selection of quality and efficiency measures;
2. Considering the multi-stakeholder groups' input in selecting quality and efficiency measures;
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)[5]; 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 and 2018 editions of that report and related documents are available at the website of the CMS National Impact Assessment.)

[3] Section 1890A of the Social Security Act (42 U.S.C. § 1395aaa-1).
[4] As listed in Section 1890(b)(7)(B) of the Social Security Act (42 U.S.C. § 1395aaa).
[5] The rationale for adopting measures not endorsed by the consensus-based entity will be published in rulemaking where such measures are proposed and finalized.

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 HHS is considering for use under Medicare. Additionally, the CMS website will indicate that the MUC list is being posted on the NQF website.

Included Measures

This MUC List identifies the quality and efficiency measures under consideration by the Secretary of HHS for use in certain Medicare quality programs. Measures that appear on this list but 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 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 that now use or will use quality and efficiency measures have been identified for inclusion on this list.

- 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 (HIQR)
- Hospital Outpatient Quality Reporting Program (HOQR)
- 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 EHR Incentive Program for Eligible Hospitals (EHs) and Critical Access Hospitals (CAHs)
- Medicare Shared Savings Program (SSP)
- Merit-based Incentive Payment System (MIPS)—Cost
- Merit-based Incentive Payment System (MIPS)—Quality
- Prospective Payment System (PPS)-Exempt Cancer Hospital Quality Reporting Program (PCHQR)
- Skilled Nursing Facility Quality Reporting Program (SNF QRP)

- Skilled Nursing Facility Value-Based Purchasing Program (SNF VBP)

Measures List Highlights

By publishing this list, CMS will make publicly available and seek the multi-stakeholder groups' input on 39 measures under consideration for use in Medicare programs. We note several important points to consider and highlight:

- Of the applicable programs covered by the statutory pre-rulemaking process, all programs contributed measures to this list in 2018 *except* the Ambulatory Surgical Center Quality Reporting Program, the End-Stage Renal Disease Quality Incentive Program, the Hospital-Acquired Condition Reduction Program, the Hospital Outpatient Quality Reporting Program, the Hospital Readmissions Reduction Program, the Hospital Value-Based Purchasing Program, the Skilled Nursing Facility Value-Based Purchasing Program, and the PPS-Exempt Cancer Hospital Quality Reporting Program.
- The 2018 MUC List includes measures that CMS is currently considering under Medicare. Inclusion of a measure on this list does not require CMS to adopt the measure for the identified program.
- If CMS chooses not to adopt a measure under this list in the current rulemaking cycle, the measure remains under consideration by the Secretary and may be proposed and adopted in subsequent rulemaking cycles without being published again as part of a future MUC list.
- The following components of the Department of Health and Human Services contributed to and supported CMS in publishing a majority of measures on this list:
    - Office of the Assistant Secretary for Health

- Office of the National Coordinator for Health Information Technology
- National Institutes of Health
- Agency for Healthcare Research and Quality
- Health Resources and Services Administration
- Centers for Disease Control and Prevention
- Substance Abuse and Mental Health Services Administration
- Office of the Assistant Secretary for Planning and Evaluation
- Indian Health Service
- Food and Drug Administration

- CMS will continue aligning measures across programs whenever possible with the goals of moving payment toward value, improving outcomes for patients, and reducing regulatory burden for clinicians and providers through focusing everyone's efforts on the same quality areas. In an effort to provide a more meaningful List of Measures under Consideration, CMS included only measures that contain adequate specifications. Measures contained on this list had to fill a quality and efficiency measurement need and were assessed for alignment across CMS programs when applicable. To achieve this goal of alignment across programs, measures in the 2018 MUC list were reviewed using the Meaningful Measures Framework.

Meaningful Measures

Regulatory reform and reducing regulatory burden are high priorities for CMS. To reduce the regulatory burden on the

healthcare industry, lower health care costs, and enhance patient care, in October 2017, we launched the Meaningful Measures Initiative.[6] This initiative is one component of our agency-wide Patients Over Paperwork Initiative,[7] which is aimed at evaluating and streamlining regulations with a goal to reduce unnecessary burden, increase efficiencies, and improve beneficiary experience. The Meaningful Measures Initiative is aimed at identifying the highest priority areas for quality measurement and quality improvement in order to assess the core quality of care issues that are most vital to advancing our work to improve patient outcomes. The Meaningful Measures Initiative represents a new approach to quality measures that will reduce the collection and reporting burden while producing quality measurement that is more focused on meaningful outcomes.

The Meaningful Measures Framework has the following objectives:

- Address high-impact measure areas that safeguard public health;
- Patient-centered and meaningful to patients;
- Outcome-based where possible;
- Fulfill each program's statutory requirements;
- Minimize the level of burden for health care providers;
- Significant opportunity for improvement;
- Address measure needs for population based payment through alternative payment models; and
- Align across programs and/or with other payers.

[6] https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/QualityInitiativesGenInfo/CMS-Quality-Strategy.html
[7] https://www.cms.gov/Outreach-and-Education/Outreach/Partnerships/PatientsOverPaperwork.html

In order to achieve these objectives, we have identified 19 Meaningful Measure areas and mapped them to six overarching quality priorities as shown in Table 1.

Table 1: Meaningful Measures Framework Domains and Measure Areas

Quality Priority	Meaningful Measure Area
Make Care Safer by Reducing Harm Caused in the Delivery of Care	Healthcare-Associated Infections
	Preventable Healthcare Harm
Strengthen Person and Family Engagement as Partners in Their Care	Care is Personalized and Aligned with Patient's Goals
	End of Life Care according to Preferences
	Patient's Experience of Care
	Patient Reported Functional Outcomes
Promote Effective Communication and Coordination of Care	Medication Management
	Admissions and Readmissions to Hospitals
	Transfer of Health Information and Interoperability
Promote Effective Prevention and Treatment of Chronic Disease	Preventive Care
	Management of Chronic Conditions
	Prevention, Treatment, and Management of Mental Health
	Prevention and Treatment of Opioid and Substance Use Disorders
	Risk Adjusted Mortality
Work with Communities to Promote Best Practices of Healthy Living	Equity of Care
	Community Engagement
Make Care Affordable	Appropriate Use of Healthcare
	Patient-focused Episode of Care
	Risk Adjusted Total Cost of Care

By including Meaningful Measures in our programs, we believe that we can also address the following cross-cutting measure criteria:

- Eliminating disparities;
- Tracking measurable outcomes and impact;
- Safeguarding public health;
- Achieving cost savings;
- Improving access for rural communities; and
- Reducing burden.

Through the Meaningful Measures Initiative, CMS will continue to improve outcomes for patients, their families, and health care providers while reducing burden and costs for clinicians and providers as well as promoting operational efficiencies.

How to Navigate the Document

Headings in this document have been bookmarked to facilitate navigation. The remainder of this document consists of four sections:

- List of Measures under Consideration (page 14) – This table contains the complete list of measures under consideration with basic information about each measure and the programs for which the measure is being considered.
- Appendix A: Measure Specifications (page 31) – This table details the numerator, denominator, and exclusions for each measure.
- Appendix B: Measures Rationales (page 65) – This table describes the rationale for the measure, the peer-reviewed evidence

justifying the measure, and/or the impact the measure is anticipated to achieve.

- Appendix C: Measures Listed by Program (page 117) – This series of tables lists the individual programs for which each measure is under consideration, the quality priority (or domain) associated with each measure, and the Meaningful Measure Area as submitted. The same measure may be under consideration for more than one CMS program.

Each table is preceded by a legend defining the contents of the columns. For more information, please contact Brendan Loughran at Brendan.Loughran@cms.hhs.gov or Helen Dollar-Maples at Helen.Dollar-Maples@cms.hhs.gov.

NUMBER OF MEASURES UNDER CONSIDERATION BY PROGRAM[8]

CMS Program	Number of Measures under Consideration
Ambulatory Surgical Center Quality Reporting Program	0
End-Stage Renal Disease Quality Incentive Program	0
Home Health Quality Reporting Program	2
Hospice Quality Reporting Program	1
Hospital-Acquired Condition Reduction Program	0
Hospital Inpatient Quality Reporting Program	3
Hospital Outpatient Quality Reporting Program	0
Hospital Readmissions Reduction Program	0
Hospital Value-Based Purchasing Program	0
Inpatient Psychiatric Facility Quality Reporting Program	1
Inpatient Rehabilitation Facility Quality Reporting Program	2
Long-Term Care Hospital Quality Reporting Program	2
Medicare and Medicaid EHR Incentive Program for Eligible Hospitals and Critical Access Hospitals	3
Medicare Shared Savings Program	5
Merit-based Incentive Payment System—Cost	13
Merit-based Incentive Payment System—Quality	8
Prospective Payment System-Exempt Cancer Hospital Quality Reporting Program	1
Skilled Nursing Facility Quality Reporting Program	2
Skilled Nursing Facility Value-Based Purchasing Program	0

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

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 "MUC18-" 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 domain of quality 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)
MUC18-31	Time to surgery for elderly hip fracture patients	Percentage of patients (65 years and older) who present to the emergency department with a hip fracture receive surgical intervention within 48 hours of admission to the hospital.	Process	American Academy of Orthopaedic Surgeons	MIPS-Quality
MUC18-32	Discouraging the routine use of occupational and/or physical therapy after carpal tunnel release	Percentage of patients who underwent carpal tunnel release surgery who were not prescribed postoperative hand, occupational, or physical therapy within 6 weeks of surgery	Process	American Academy of Orthopaedic Surgeons	MIPS-Quality
MUC18-38	International Prostate Symptom Score (IPSS) or American Urological Association-Symptom Index (AUA-SI) change 6-12 months after diagnosis of Benign Prostatic Hyperplasia	Percentage of patients with an office visit within the measurement period and with a new diagnosis of clinically significant Benign Prostatic Hyperplasia who have International Prostate Symptoms Score (IPSS) or American Urological Association Symptom Index (AUA-SI) documented at time of diagnosis and again 6-12 months later with an improvement of 3 points.	Patient Reported Outcome	Large Urology Group Practice Association and Oregon Urology Institute	MIPS-Quality
MUC18-47	Multimodal Pain Management	Percentage of patients, regardless of age, undergoing selected elective surgical procedures that were managed with multimodal pain medicine.	Process	American Society of Anesthesiologists	MIPS-Quality
MUC18-48	Potential Opioid Overuse	Percentage of patients aged 18 years or older who receive opioid therapy for 90 days or longer and are prescribed a 90 milligram or larger morphine equivalent daily dose	Process	Centers for Medicare & Medicaid Services	MIPS-Quality
MUC18-52	Cesarean Birth	Nulliparous women with a term, singleton baby in a vertex position delivered by cesarean birth.	Outcome	The Joint Commission	HIQR; EHR Incentive/EH/CAH

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC18-57	Annual Wellness Assessment: Preventive Care	Percentage of patients 65 years of age and older with an Annual Wellness Visit who received age- and sex-appropriate preventive services. This measure is a composite of seven component measures that are based on recommendations for preventive care by the USPSTF, ACIP, and AGS.	Composite	Centers for Medicare & Medicaid Services	MIPS-Quality
MUC18-62	Adult Immunization Status	Percentage of members 19 years of age and older who are up-to-date on recommended routine vaccines for influenza; tetanus and diphtheria (Td) or tetanus, diphtheria and acellular pertussis (Tdap); zoster; and pneumococcal.	Composite	National Committee for Quality Assurance	MIPS-Quality; MSSP
MUC18-63	Functional Status Change for Patients with Neck Impairments	This is a patient-reported outcome performance measure (PRO-PM) consisting of a patient-reported outcome measure (PROM) of risk-adjusted change in functional status (FS) for patients aged 14+ with neck impairments. The change in FS is assessed using the Neck FS PROM.* The measure is risk-adjusted to patient characteristics known to be associated with FS outcomes. It is used as a performance measure at the patient, individual clinician, and clinic levels to assess quality. *The Neck FS PROM is an item-response theory-based computer adaptive test (CAT). In addition to the CAT version, which provides for reduced patient response burden, it is available as a 10-item short form (static/paper-pencil).	Patient Reported Outcome	Focus on Therapeutic Outcomes	MIPS-Quality
MUC18-77	Use of Opioids from Multiple Providers in Persons Without Cancer	The rate (XX out of 1,000) of individuals without cancer receiving prescriptions for opioids from four (4) or more prescribers AND four (4) or more pharmacies.	Process	Pharmacy Quality Alliance	MSSP

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC18-78	Use of Opioids at High Dosage in Persons Without Cancer	The rate (XX out of 1,000) of individuals without cancer receiving prescriptions for opioids with a daily dosage greater than 120 mg morphine equivalent dose (MED) for 90 consecutive days or longer.	Process	Pharmacy Quality Alliance	MSSP
MUC18-79	Use of Opioids from Multiple Providers and at High Dosage in Persons Without Cancer	The rate (XX of 1,000) of individuals without cancer receiving prescriptions for opioids with a daily dosage greater than 120 mg morphine equivalent dose (MED) for 90 consecutive days or longer, AND who received opioid prescriptions from four (4) or more prescribers AND four (4) or more pharmacies.	Process	Pharmacy Quality Alliance	MSSP
MUC18-101	Transitions from Hospice Care, Followed by Death or Acute Care	This measure will estimate the risk-adjusted rate of transitions from hospice care, followed by death within 30 days or acute care use within 7 days. The measure is risk adjusted to "level the playing field" to allow comparison based on patients with similar characteristics between hospices. The goal of this risk-adjusted measure is to identify hospices that have notably higher rates of negative outcomes, including patient death or acute care following live discharges, when compared to their peers.	Outcome	Centers for Medicare & Medicaid Services	HQRP
MUC18-106	Initial opioid prescription compliant with CDC recommendations	Composite score indicating compliance with five measurable CDC opioid prescribing guidelines. The denominator includes new opioid prescriptions in the measurement year. The numerator includes new opioid prescriptions that are compliant on all 5 CDC indicators. Higher is better on this measure.	Composite	OptumLabs	MSSP

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC18-107	Hospital Harm - Pressure Injury	This measure assesses the rate at which new hospital-acquired pressure injuries occur during an acute-care hospitalization. It assesses the proportion of encounters with a newly developed stage 2, stage 3, stage 4, deep tissue pressure injury or unstageable pressure injury during hospitalization.	Outcome	Centers for Medicare & Medicaid Services	HIQR; EHR Incentive/EH/CAH
MUC18-108	Medication Reconciliation on Admission	The measure assesses whether critical elements of the medication reconciliation process are completed at the beginning of an inpatient hospitalization. It assesses the percentage of patients for whom a designated prior to admission (PTA) medication list was generated by referencing one or more external sources of PTA medications and for which all PTA medications have a documented reconciliation action by the end of Day 2 of the hospitalization when the admission is Day 0.	Process	Centers for Medicare & Medicaid Services	IPFQR
MUC18-109	Hospital Harm - Hypoglycemia	This measure assesses the rate at which severe hypoglycemia events caused by hospital administration of medications occur in the acute care hospital setting. It assesses the proportion of patients who had an antihyperglycemic medication given within the 24 hours prior to the harm event; AND a lab test for glucose with a result of low glucose (less than 40 mg/dL); AND no subsequent lab test for glucose with a result greater than 80 mg/dL within five minutes of the low glucose result. This measure only counts one severe hypoglycemia event per patient admission.	Outcome	Centers for Medicare & Medicaid Services	HIQR; EHR Incentive/EH/CAH

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC18-115	Inpatient Chronic Obstructive Pulmonary Disease (COPD) Exacerbation	The Inpatient Chronic Obstructive Pulmonary Disease (COPD) Exacerbation Measure is meant to apply to clinicians who manage the inpatient care of Medicare beneficiaries hospitalized for exacerbation of COPD. This acute episode captures patients hospitalized for an exacerbation of COPD. The measure evaluates a clinician's risk-adjusted cost for the episode group by averaging it across all episodes attributed to the clinician during the performance period. The cost of each episode is the sum of the cost to Medicare for assigned services performed by the attributed clinician and other healthcare providers during the episode window.	Cost/Resource Use	Centers for Medicare & Medicaid Services	MIPS-Cost
MUC18-116	Femoral or Inguinal Hernia Repair	The Femoral or Inguinal Hernia Repair Measure is meant to apply to clinicians who perform this procedure for Medicare beneficiaries. This procedural episode captures patients who undergo a femoral or inguinal hernia repair procedure. The measure evaluates a clinician's risk-adjusted cost for the episode group by averaging it across all episodes attributed to the clinician during the performance period. The cost of each episode is the sum of the cost to Medicare for assigned services performed by the attributed clinician and other healthcare providers during the episode window.	Cost/Resource Use	Centers for Medicare & Medicaid Services	MIPS-Cost

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC18-117	Lumbar Spine Fusion for Degenerative Disease, 1-3 Levels	The Lumbar Spine Fusion for Degenerative Disease, 1-3 Levels Measure is meant to apply to clinicians who perform this procedure for Medicare beneficiaries. This procedural episode captures patients who undergo a lumbar spinal fusion surgery. The measure evaluates a clinician's risk-adjusted cost for the episode group by averaging it across all episodes attributed to the clinician during the performance period. The cost of each episode is the sum of the cost to Medicare for assigned services performed by the attributed clinician and other healthcare providers during the episode window.	Cost/Resource Use	Centers for Medicare & Medicaid Services	MIPS-Cost
MUC18-119	Psychoses/Related Conditions	The Psychoses/Related Conditions Measure is meant to apply to clinicians who manage the inpatient care of Medicare beneficiaries hospitalized with these conditions. This acute episode captures patients who are treated for psychoses and related conditions. The measure evaluates a clinician's risk-adjusted cost for the episode group by averaging it across all episodes attributed to the clinician during the performance period. The cost of each episode is the sum of the cost to Medicare for assigned services performed by the attributed clinician and other healthcare providers during the episode window.	Cost/Resource Use	Centers for Medicare & Medicaid Services	MIPS-Cost

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC18-120	Lumpectomy, Partial Mastectomy, Simple Mastectomy	The Lumpectomy, Partial Mastectomy, Simple Mastectomy Measure is meant to apply to clinicians who perform these procedures for Medicare beneficiaries. This procedural episode captures patients who receive surgical treatment for breast cancer. The measure evaluates a clinician's risk-adjusted cost for the episode group by averaging it across all episodes attributed to the clinician during the performance period. The cost of each episode is the sum of the cost to Medicare for assigned services performed by the attributed clinician and other healthcare providers during the episode window.	Cost/Resource Use	Centers for Medicare & Medicaid Services	MIPS-Cost
MUC18-121	Acute Kidney Injury Requiring New Inpatient Dialysis	The Acute Kidney Injury (AKI) Requiring New Inpatient Dialysis Measure is meant to apply to clinicians who supervise dialysis procedures for AKI Medicare beneficiaries. This acute episode captures patients previously not dependent on dialysis who undergo AKI dialysis. The measure evaluates a clinician's risk-adjusted cost for the episode group by averaging it across all episodes attributed to the clinician during the performance period. The cost of each episode is the sum of the cost to Medicare for assigned services performed by the attributed clinician and other healthcare providers during the episode window.	Cost/Resource Use	Centers for Medicare & Medicaid Services	MIPS-Cost

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC18-122	Lower Gastrointestinal Hemorrhage	The Lower Gastrointestinal Hemorrhage Measure is meant to apply to clinicians who manage the inpatient care of Medicare beneficiaries hospitalized for acute lower gastrointestinal hemorrhage. This acute episode captures patients hospitalized for acute lower gastrointestinal hemorrhage. The measure evaluates a clinician's risk-adjusted cost for the episode group by averaging it across all episodes attributed to the clinician during the performance period. The cost of each episode is the sum of the cost to Medicare for assigned services performed by the attributed clinician and other healthcare providers during the episode window.	Cost/Resource Use	Centers for Medicare & Medicaid Services	MIPS-Cost
MUC18-123	Renal or Ureteral Stone Surgical Treatment	The Renal or Ureteral Stone Surgical Treatment Measure is meant to apply to clinicians who perform this procedure for Medicare beneficiaries. This procedural episode captures patients who receive surgical treatment for renal or ureteral stones. The measure evaluates a clinician's risk-adjusted cost for the episode group by averaging it across all episodes attributed to the clinician during the performance period. The cost of each episode is the sum of the cost to Medicare for assigned services performed by the attributed clinician and other healthcare providers during the episode window.	Cost/Resource Use	Centers for Medicare & Medicaid Services	MIPS-Cost

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC18-126	Hemodialysis Access Creation	The Hemodialysis Access Creation Measure is meant to apply to clinicians who perform this procedure for Medicare beneficiaries. This procedural episode captures patients who undergo a procedure for the creation of access for long-term hemodialysis. The measure evaluates a clinician's risk-adjusted cost for the episode group by averaging it across all episodes attributed to the clinician during the performance period. The cost of each episode is the sum of the cost to Medicare for assigned services performed by the attributed clinician and other healthcare providers during the episode window.	Cost/Resource Use	Centers for Medicare & Medicaid Services	MIPS-Cost
MUC18-131	Transfer of Health Information to Provider—Post-Acute Care	The purpose of this measure is to assess for and report on the timely transfer of health information when a patient is discharged from their current setting of care. For this measure, the timely transfer of health information specifically assesses for the transfer of the patient's current reconciled medication list. This process measure calculates the proportion of patient/resident stays or quality episodes with a discharge/transfer assessment indicating that a current reconciled medication list was provided to the subsequent provider at the time of discharge/transfer.	Process	Centers for Medicare & Medicaid Services	HH QRP

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC18-132	Transfer of Health Information to Provider—Post-Acute Care	The purpose of this measure is to assess for and report on the timely transfer of health information when a patient is discharged from their current setting of care. For this measure, the timely transfer of health information specifically assesses for the transfer of the patient's current reconciled medication list. This process measure calculates the proportion of patient/resident stays or quality episodes with a discharge/transfer assessment indicating that a current reconciled medication list was provided to the subsequent provider at the time of discharge/transfer.	Process	Centers for Medicare & Medicaid Services	IRF QRP
MUC18-133	Transfer of Health Information to Provider—Post-Acute Care	The purpose of this measure is to assess for and report on the timely transfer of health information when a patient is discharged from their current setting of care. For this measure, the timely transfer of health information specifically assesses for the transfer of the patient's current reconciled medication list. This process measure calculates the proportion of patient/resident stays or quality episodes with a discharge/transfer assessment indicating that a current reconciled medication list was provided to the subsequent provider at the time of discharge/transfer.	Process	Centers for Medicare & Medicaid Services	LTCH QRP

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC18-135	Transfer of Health Information to Patient—Post-Acute Care	The purpose of this measure is to assess for and report on the timely transfer of health information when a patient is discharged from their current setting of care. For this measure, the timely transfer of health information specifically assesses for the transfer of the patient's current reconciled medication list. This process measure calculates the proportion of patient/resident stays or quality episodes with a discharge/transfer assessment indicating that a current reconciled medication list was provided to the patient, family and/or caregiver at the time of discharge/transfer.	Process	Centers for Medicare & Medicaid Services	HH QRP
MUC18-136	Transfer of Health Information to Provider—Post-Acute Care	The purpose of this measure is to assess for and report on the timely transfer of health information when a patient is discharged from their current setting of care. For this measure, the timely transfer of health information specifically assesses for the transfer of the patient's current reconciled medication list. This process measure calculates the proportion of patient/resident stays or quality episodes with a discharge/transfer assessment indicating that a current reconciled medication list was provided to the subsequent provider at the time of discharge/transfer.	Process	Centers for Medicare & Medicaid Services	SNF QRP

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC18-137	Elective Primary Hip Arthroplasty	The Elective Primary Hip Arthroplasty Measure is meant to apply to clinicians who perform this procedure for Medicare beneficiaries. This procedural episode captures patients who undergo elective primary hip arthroplasty. The measure evaluates a clinician's risk-adjusted cost for the episode group by averaging it across all episodes attributed to the clinician during the performance period. The cost of each episode is the sum of the cost to Medicare for assigned services performed by the attributed clinician and other healthcare providers during the episode window.	Cost/Resource Use	Centers for Medicare & Medicaid Services	MIPS-Cost
MUC18-138	Transfer of Health Information to Patient—Post-Acute Care	The purpose of this measure is to assess for and report on the timely transfer of health information when a patient is discharged from their current setting of care. For this measure, the timely transfer of health information specifically assesses for the transfer of the patient's current reconciled medication list. This process measure calculates the proportion of patient/resident stays or quality episodes with a discharge/transfer assessment indicating that a current reconciled medication list was provided to the patient, family or caregiver at the time of discharge/transfer.	Process	Centers for Medicare & Medicaid Services	SNF QRP

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC18-139	Transfer of Health Information to Patient—Post-Acute Care	The purpose of this measure is to assess for and report on the timely transfer of health information when a patient is discharged from their current setting of care. For this measure, the timely transfer of health information specifically assesses for the transfer of the patient's current reconciled medication list. This process measure calculates the proportion of patient/resident stays or quality episodes with a discharge/transfer assessment indicating that a current reconciled medication list was provided to the patient, family, or caregiver at the time of discharge/transfer.	Process	Centers for Medicare & Medicaid Services	IRF QRP
MUC18-140	Non-Emergent Coronary Artery Bypass Graft (CABG)	The Non-Emergent Coronary Artery Bypass Graft (CABG) Measure is meant to apply to clinicians who perform this procedure for Medicare beneficiaries. This procedural episode captures patients who undergo a CABG procedure. The measure evaluates a clinician's risk-adjusted cost for the episode group by averaging it across all episodes attributed to the clinician during the performance period. The cost of each episode is the sum of the cost to Medicare for assigned services performed by the attributed clinician and other healthcare providers during the episode window.	Cost/Resource Use	Centers for Medicare & Medicaid Services	MIPS-Cost

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC18-141	Transfer of Health Information to Patient—Post-Acute Care	The purpose of this measure is to assess for and report on the timely transfer of health information when a patient is discharged from their current setting of care. For this measure, the timely transfer of health information specifically assesses for the transfer of the patient's current reconciled medication list. This process measure calculates the proportion of patient/resident stays or quality episodes with a discharge/transfer assessment indicating that a current reconciled medication list was provided to the patient, family or caregiver at the time of discharge/transfer.	Process	Centers for Medicare & Medicaid Services	LTCH QRP
MUC18-148	Medicare Spending Per Beneficiary (MSPB) clinician measure	MSPB is a payment-standardized, risk-adjusted cost measure focused on clinicians (TIN-NPIs) / clinician groups (TINs) providing care at acute inpatient hospitals. The measure is an average of risk-adjusted costs across all episodes. Each MSPB episode has a window spanning from three days prior to the index inpatient admission through 30 days after discharge. The measure attributes all Medicare Part A and B costs occurring in the episode window to the clinician(s) responsible for care, as identified for medical MS-DRGs through the use of an E&M threshold and for surgical MS-DRGs by identification of the physician performing the core procedure of the stay.	Cost/Resource Use	Centers for Medicare & Medicaid Services	MIPS-Cost

MUC ID	Measure Title	Description	Measure Type	Measure Steward	CMS Program(s)
MUC18-149	Total Per Capita Cost	The Total Per Capita Cost (TPCC) measure is a payment-standardized, risk-adjusted, and specialty-adjusted cost measure focused on clinicians/clinician groups performing primary care services. The measure is an average of per capita costs (with the previously mentioned adjustments applied) across all attributed beneficiaries. The measure includes all Medicare Part A and B costs across all attributed beneficiaries.	Cost/Resource Use	Centers for Medicare & Medicaid Services	MIPS-Cost
MUC18-150	Surgical Treatment Complications for Localized Prostate Cancer	This measure analyzes hospital/facility-level variation in patient-relevant outcomes during the year after prostate-directed surgery. Specifically, the measure uses claims to identify urinary incontinence and erectile dysfunction among patients undergoing localized prostate cancer surgery and uses this information to derive hospital-specific rates. Those outcomes are rescaled to a 0-100 scale, with 0=worst and 100=best.	Outcome	Dana-Farber Cancer Institute and Alliance of Dedicated Cancer Centers	PCHQR

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.

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.

Exclusions: Exclusions are patients included in an initial population for whom there are valid reasons a process or outcome of care has not occurred. These cases are removed from the denominator. When clinical judgment is allowed, these are referred to as "exceptions." Denominator exceptions fall into three general categories: medical reasons, patients' reasons, and system reasons. Exceptions must be captured in a way that they could be reported separately.

Measure Specifications

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-31	Time to surgery for elderly hip fracture patients	Number of patients in the denominator who are operated on within 48 hours of admission to the hospital. Numerator Criteria (Eligible Cases): CPT: 27235, 27236, 27244, 27245, 27248, 27254, 27269	Number of patients age 65 or older admitted to the hospital with a low energy hip fracture Denominator Criteria (Eligible Cases): ICD-10-CM: S72.00, S72.001, S72.002, S72.009, S72.01, S72.011, S72.012, S72.019, S72.02, S72.03, S72.032, S72.033, S72.034, S72.035, S72.036, S72.04, S72.041, S72.042, S72.043, S72.044, S72.045, S72.046, S72.05, S72.051, S72.052, S72.059, S72.060, S72.09, S72.091, S72.092, S72.099, S72.136, S72.14, S72.141, S72.143, S72.144, S72.145, S72.1346, S72.2, S72.21, S72.22, S72.23, S72.24, S72.25, S72.26 OR ICD-9-CM: 820.8, 820, 820.02, 820.03, 820.09, 820.2, 820.21, 820.22	Patients that can be classified as having the following: non-operative fractures, multiple injuries, periprosthetic fracture, high energy trauma, and or meet local criteria for multiple trauma designation

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-32	Discouraging the routine use of occupational and/or physical therapy after carpal tunnel release	Number of patients who underwent carpal tunnel release and did not receive postoperative hand, physical therapy (low, moderate, or high complexity) or occupational therapy (low, moderate, or high complexity) within 6 weeks (42 days) of carpal tunnel release Numerator Criteria (Eligible Cases): Patient encounter (CPT): 64721 or 29848 AND No patient encounter for postoperative hand, physical therapy (low, moderate, or high complexity) within 6 weeks (42 days) of carpal tunnel release (CPT): 97161, 97162, 97163 AND No patient encounter for postoperative hand occupational therapy (low, moderate, or high complexity) within 6 weeks (42 days) of carpal tunnel release (CPT): 97165, 97166, 97167 Note: Code change implemented 2015, for data prior to 2015 CPT codes for 97161, 97162, 97163 is equivalent to 97001 (PT) and codes 97165, 97166, 97167 is equivalent to 97003 (OT).	Number of patients who underwent carpal tunnel release Denominator Criteria (Eligible Cases): Patient encounter (CPT): 64721 or 29848	None

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-38	International Prostate Symptom Score (IPSS) or American Urological Association-Symptom Index (AUA-SI) change 6-12 months after diagnosis of Benign Prostatic Hyperplasia	Patients with a documented improvement of at least 3 points in their urinary symptom score during the measurement period.	Equals Initial Population. Initial population is: Male patients newly diagnosed with benign prostatic hyperplasia, that have a urinary symptom score (USS) within 1 month of initial diagnosis. If more than one USS in the initial one month, then the first USS counts. The patient must have a USS again at 6-12 months and if more than on USS in this time frame, then the last USS counts. The patient must have an office visit during the measurement period.	Urinary retention within 1 year of BPH diagnosis BPH diagnosis during hospitalization or within 30 days of hospitalization Morbid obesity (BMI>40) during measurement period

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-47	Multimodal Pain Management	Patients for whom multimodal pain management is administered in the perioperative period from six hours prior to anesthesia start time until discharged from the postanesthesia care unit. Numerator Definition: Multimodal pain management is defined as the use of two or more drugs and/or interventions, NOT including systemic opioids, that act by different mechanisms for providing analgesia. These drugs and/or interventions can be administered via the same route or by different routes. Opioids may be administered for pain relief when indicated but will not count towards this measure. Numerator note: Documentation of qualifying medications or interventions provided from six hours prior to anesthesia start time through PACU discharge count toward meeting the numerator.	Patients, regardless of age, who undergo selected elective surgical procedures	Denominator Exception: Documented allergy to multiple classes of analgesics
MUC18-48	Potential Opioid Overuse	Patients with an average daily dosage of 90 morphine milligram equivalents (MME) or greater, prescribed during the measurement period	Patients 18 years of age and older prescribed a 90 day or longer supply of opioids and who have a visit during the measurement period	Patients with an active diagnosis of cancer or sickle cell disease, or who have an order for hospice or palliative care treatment during the measurement period

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-52	Cesarean Birth	Patients with cesarean births.	Nulliparous patients delivered of a live term singleton newborn greater than or equal to 37 weeks' gestation.	Patients with abnormal presentations or single stillbirth during the encounter, or patients with multiple gestations recorded less than or equal to 42 weeks prior to the end of the encounter.
MUC18-57	Annual Wellness Assessment: Preventive Care	Numerator 1: Patients who were screened for fall risk at least once in the 12 months before or during a Medicare Annual Wellness Visit (AWV) Numerator 2: Patients who were screened for depression during the AWV or in the 12 months before (during an encounter) using an age-appropriate standardized tool Numerator 3: Patients who received an influenza immunization OR who reported previous receipt of an influenza immunization in the 153 days before the start of the measurement period (August 1) to the end of the most recent flu season (March 31) Numerator 4: Patients who have ever received a pneumococcal vaccination before the end of the measurement period Numerator 5: Women who had one or more mammograms during the measurement period, or in the 15 months prior to the measurement period Numerator 6: Patients with one or more screenings for colorectal cancer. Appropriate screenings are defined by any one of the following	Denominator 1: Patients 65 years of age and older with an AWV during the measurement period. Denominator 2: Patients 65 years of age and older with an AWV during the measurement period. Denominator 3: Patients 65 years of age and older with an AWV during the measurement period, with an encounter from October 1 of the year before the measurement period to March 31 of the measurement period. Denominator 4: Patients 65 years of age and older with an AWV during the measurement period. Denominator 5: Female patients 65 to 74 years of age during the measurement period, with an AWV during the measurement period. Denominator 6: Patients age 65 to 75 years of age, with an AWV during the measurement period. Denominator 7: Female	Denominator Exclusion Population 1: Patients whose hospice care overlaps the 12 months before or during the AWV. Patients who were assessed to be non-ambulatory in the 12 months before or during the AWV. Denominator Exclusion Population 2: Patients with an active diagnosis of depression or bipolar disorder that starts before start of and overlaps the AWV. Denominator Exception Population 2: Patient refusal or medical reasons for not completing a depression screening in the 12 months before or during the AWV. Denominator Exclusion Population 3: None Denominator Exceptions Population 3: Documentation of medical reasons (e.g., patient allergy, other medical reasons), patient reasons (e.g., patient declined, other patient reasons), and system reasons (e.g., vaccine not available, other system reasons) for not receiving

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-57 (cont'd)	Annual Wellness Assessment: Preventive Care (cont'd)	criteria: - Colonoscopy during the measurement period or the nine years prior to the measurement period - Flexible sigmoidoscopy during the measurement period or the four years prior to the measurement period - Fecal occult blood test (FOBT) during the measurement period - FIT-DNA during the measurement period or the two years prior to the measurement period - CT colonography during the measurement period or the four years prior to the measurement period Numerator 7: Female patients who have ever received a central (that is, hip or spine) DXA scan before the end of the measurement period	patients 65 to 85 years of age, with an AWV during the measurement period.	influenza immunization in the 153 days before the start of the measurement period (August 1) to the end of the most recent flu season (March 31). Documentation of an active allergy any time before the end of the most recent flu season. Denominator Exclusion Population 4: Patients whose hospice care overlaps the measurement period. Denominator Exclusion Population 5: Patients who had a bilateral mastectomy or who have a history of a bilateral mastectomy or for whom there is evidence of a right and a left unilateral mastectomy. Patients whose hospice care overlaps the measurement period. Denominator Exclusion Population 6: Patients with a diagnosis or past history of total colectomy or colorectal cancer. Patients whose hospice care overlaps the measurement period. Denominator Exclusion Population 7: Patients with a diagnosis of osteoporosis at the time of the AWV. Patients whose hospice care overlaps the measurement period.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-62	Adult Immunization Status	Numerator 1 (N1): Members in Denominator 1 (D1) who received an influenza vaccine on or between July 1 of the year prior to the measurement period and June 30 of the measurement period. N2: Members in D2 who received at least 1 Td vaccine or 1 Tdap vaccine between 9 years prior to the start of the measurement period and the end of the measurement period. N3: Members in D3 who received at least 1 dose of the herpes zoster live vaccine or 2 doses of the herpes zoster recombinant vaccine anytime on or after the members 50th birthday. N4: Members in D4 who were administered both the 13-valent pneumococcal conjugate vaccine and the 23-valent pneumococcal polysaccharide vaccine at least 12 months apart, with the first occurrence after the age of 60. N5: The actual number of required immunizations administered to members in D5.	Denominator 1: Members age 19 and older at the start of the measurement period. Denominator 2: Members age 19 and older at the start of the measurement period. Denominator 3: Members age 50 and older at the start of the measurement period. Denominator 4: Members age 66 and older at the start of the measurement period. Denominator 5: The total number of possible immunizations required for members age 19 and older determined by their age at the start of the measurement period.	Members with any of the following: - Prior anaphylactic reaction to the vaccine or its components any time during or before the measurement period. - History of encephalopathy within seven days after a previous dose of a Td-containing vaccine. - Active chemotherapy during the measurement period. - Bone marrow transplant during the measurement period. - History of immunocompromising conditions, cochlear implants, anatomic or functional asplenia, sickle cell anemia & HB-S disease or cerebrospinal fluid leaks any time during the member's history prior to or during the measurement period. - In hospice or using hospice services during the measurement period.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-63	Functional Status Change for Patients with Neck Impairments	The proportion of a provider's (clinic's or clinician's) patient care episodes that met or exceeded the risk-adjusted predicted Residual Change Score. The Residual Change Score is defined as the difference between the Actual and Predicted Change Scores where - The Actual Score is the patient's Functional Status (FS) Score, - The Actual Change Score is the change in the patient's FS score from Admission to Discharge, and - The Predicted Change Score is the risk-adjusted prediction of FS change. (Please see the Comments section of JIRA submission for details of the Risk-adjustment component.) Calculating the Residual - Example Actual Score at Admission 45 Actual Score at Discharge 60 Actual Change Score (Discharge minus Admission) +15 Predicted Change Score +10 Residual (Actual Change minus Predicted) +5 Numerator Options Performance Met The Residual Change Score is equal to or greater than 0 Performance Not Met The Residual Change Score is less than 0 Performance may be calculated on 3 levels:	Patients aged 14+ who initiated rehabilitation therapy, chiropractic, or medical episodes of care for neck impairments including but not limited to cervical (neck) pain, radiculopathy, strain, sprain, stenosis, myelopathy, spondylosis or disc disorders	Denominator Exceptions - Patient refused to participate at admission and/or discharge - Patient unable to complete the Neck FS PROM at admission or discharge due to cognitive deficit, visual deficit, motor deficit, language barrier, or low reading level, and a suitable proxy/recorder is not available. - Patient self-discharged early (e.g., financial or insurance reasons, transportation problems, or reason unknown) - Medical reasons (e.g., scheduled for surgery or hospitalized) Denominator Exclusions - Patients with diagnosis of a degenerative neurological condition such as ALS, MS, Parkinson's diagnosed at any time before or during the episode of care - Ongoing care not indicated, patient seen only 1-2 visits (e.g., home program only, referred to another provider or facility, consultation only)

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-63 (cont'd)	Functional Status Change for Patients with Neck Impairments (cont'd)	1. Patient Level: For the individual patient episode, the patient's Actual FS scores relative to the risk-adjusted predicted. This level should be used for optimizing care as described below.* 2. Clinician Level: The average of the Residuals for patient care episodes managed by a clinician (individual provider) over a 12 month time period. 3. Clinic Level: The average of the Residuals for patient care episodes managed by a group of clinicians within a clinic over a 12 month time period. * A provider's (clinician's or clinic's) performance must be assessed based on an average all of the provider's patient episodes. On the level of the individual patient, variation is expected. When an individual episode does not result in meeting or exceeding the performance standard, the functional data should be useful to the provider in optimizing the balance of effectiveness/efficiency for that particular care episode. For example, if patient-perceived function is not improving, or has plateaued in progress, that data may be a component of provider-patient communication and care decision-making such as the following examples:		

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-63 (cont'd)	Functional Status Change for Patients with Neck Impairments (cont'd)	1) does the provider understand the patient's perception of his/her current level of function? 2) should the treatment plan be modified? 3) should the patient be discharged sooner than later? 4) should the patient be referred to a different care provider?		
MUC18-77	Use of Opioids from Multiple Providers in Persons Without Cancer	Any member in the denominator who received opioid prescription claims from 4 or more prescribers AND 4 or more pharmacies.	Any member with two or more prescription claims for opioids filled on at least two separate days, for which the sum of the days' supply is greater than or equal to 15.	Any member with a diagnosis for Cancer or a Prescription Drug Hierarchical Condition Category (RxHCC) 8, 9, 10, 11 for Payment Year 2015; or RxHCC 15, 16, 17, 18, or 19 for Payment Year 2016, or a hospice indicator from the enrollment database.
MUC18-78	Use of Opioids at High Dosage in Persons Without Cancer	Any member in the denominator with opioid prescription claims where the MED is greater than 120mg for 90 consecutive days or longer.	Any member with two or more prescription claims for opioids filled on at least two separate days, for which the sum of the days' supply is greater than or equal to 15.	Any member with a diagnosis for Cancer or a Prescription Drug Hierarchical Condition Category (RxHCC) 8, 9, 10, or 11 for Payment Year 2015; or RxHCC 15, 16, 17, 18, 19 for Payment Year 2016; or a hospice indicator (Medicare Part D) from the enrollment database.
MUC18-79	Use of Opioids from Multiple Providers and at High Dosage in Persons Without Cancer	Any member in the denominator with opioid prescription claims where the MED is greater than 120 mg for 90 consecutive days or longer AND who received opioid prescriptions from 4 or more prescribers AND 4 or more pharmacies.	Any member with two or more prescription claims for opioids filled on at least two separate days, for which the sum of the days' supply is greater than or equal to 15.	Any member with a diagnosis for Cancer or Prescription Drug Hierarchical Condition Category (RxHCC) 8, 9, 10, or 11 for Payment Year 2015; or RxHCC 15, 16, 17, 18, or 19 for Payment Year 2016; or a hospice indicator (Medicare Part D) from the enrollment database.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-101	Transitions from Hospice Care, Followed by Death or Acute Care	Measure Outcome (Unadjusted Numerator): Number of live discharges that are followed by death within 30 days or a hospitalization/emergency room visit/observation stay within 7 days of hospice discharge. Adjusted Numerator: The numerator is a risk-adjusted estimate of hospice stays that would be predicted to have live discharges that are followed by death within 30 days or a hospitalization/emergency room visit/observation stay within 7 days of hospice discharge. This estimate starts with the observed number of live discharges from hospice that are followed by death or acute care, and is risk adjusted for patient characteristics and a statistical estimate of the hospice effect beyond case mix. The hospice effect captures variation in the measure outcome across hospices, accounting for differences in patient composition. The hospice effect helps isolate the differences in measure performance that are due to hospice behavior and characteristics, thereby producing a more accurate assessment of quality of care. The construction of the risk adjusted numerator uses a statistical model estimated on the	Eligible Stays (Unadjusted Denominator): The eligible stays for this measure are discharged hospice stays among all Medicare FFS patients not excluded for the reasons listed below: 1. Patients not continuously enrolled in Part A Medicare FFS in the 12 months prior to the hospice admission date, during the hospice stay, or at least 7 days following the hospice discharge date. 2. Patients enrolled in Medicare Advantage in the 12 months prior to the hospice admission date, during the hospice stay, or in the 7 days following the hospice discharge date. 3. Patients who are under 18 years old at hospice admission. Adjusted Denominator: The denominator for this measure is computed the same way as the numerator, but the hospice effect is set at the national average. For the eligible stays at each hospice, the measure denominator is the risk adjusted expected number of stays with transitions from	Denominator exclusions: Patients are excluded from the denominator if they meet one or more of the following criteria: 1. Patients not continuously enrolled in Part A Medicare FFS in the 12 months prior to the hospice admission date, during the hospice stay, or at least 7 days following the hospice discharge date. 2. Patients enrolled in Medicare Advantage in the 12 months prior to the hospice admission date, during the hospice stay, or in the 7 days following the hospice discharge date. 3. Patients who are under 18 years old at hospice admission.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-101 (cont'd)	Transitions from Hospice Care, Followed by Death or Acute Care (cont'd)	national data for all included hospice stays. It is applied to the hospice stays included in the measure and includes the estimated effect of each specific hospice. The prediction equation is based on a logistic statistical model with a two-level hierarchical structure. The patient-stays in the model have an indicator of the discharging hospice; the effect of the hospice is measured as a positive or negative shift in the intercept term of the equation. The hospice effects are modeled as belonging to a normal (Gaussian) distribution centered at 0 and are estimated along with the effects of patient characteristics in the model.	hospice that are followed by death within 30 days or a hospitalization/emergency room visit/observation stay within 7 days of hospice discharge. This estimate includes risk adjustment for patient characteristics with the hospice effect removed. The "expected" number of live discharges from hospice that are followed by death or acute care is the predicted number of live discharges from hospice that are followed by death or acute care if the same patients were treated in the "average" hospice.	
MUC18-106	Initial opioid prescription compliant with CDC recommendations	Individuals in the denominator whose new opioid medication meets all of the following CDC guidelines: 1. Initial opioid prescription is prescribed while patient is not exposed to benzodiazepines 2. Initial opioid prescription is not for methadone 3. Initial opioid prescription is for short acting formulation 4. Initial opioid prescription is for less than 50 MME/day 5. Initial opioid prescription is for a 7-day supply or less	All new opioid prescriptions in the measurement year (a new opioid prescription is defined as no evidence of an opioid prescription 12 months prior to the earliest detected claim in the measurement year).	Denominator exclusions include: Evidence of malignant cancer, chemotherapy, or radiation in the measurement year. Patients in hospice or palliative care. Patients in long term care, nursing home, or skilled nursing facility for >=90 days at any time during the measurement year.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-107	Hospital Harm - Pressure Injury	Proportion of encounters with a newly developed (not documented within the first 24 hours of arrival to the hospital) stage 2, stage 3, stage 4, deep tissue pressure injury, or unstageable pressure injury during hospitalization.	All encounters (patients 18 years or older at the start) with a discharged inpatient hospital encounter during the measurement period. Measure includes inpatient admissions who were directly admitted, or who were initially seen in the emergency department or in observation status and subsequently became an inpatient.	None
MUC18-108	Medication Reconciliation on Admission	The number of patients for whom a designated PTA medication list was generated by referencing one or more external sources of medications and for which all PTA medications have a documented reconciliation action by the end of Day 2 of the hospitalization when the admission date is Day 0. The numerator is operationalized into three key criteria of the medication reconciliation process that must be met. 1. Medications taken by the patient prior to admission are documented on a designated PTA medication list. 2. The PTA medication list is generated using at least one external source to identify the medications taken by the patient prior to admission.	All patients admitted to an inpatient facility from home or a non-acute setting.	The measure applies two exclusion criteria to ensure that it is feasible to complete the medication reconciliation process on admission to the Inpatient Psychiatric Facility (IPF): - Patients transferred from an acute care setting - Patient admissions with lengths of stay less than or equal to 2 days

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-108 (cont'd)	Medication Reconciliation on Admission (cont'd)	3. All medications listed on the PTA medication list have a reconciliation action to continue, discontinue, or modify by the end of Day 2 of the hospitalization, or if there are no medications on the PTA medication list, the prescriber has signed the document by the end of Day 2 of the hospitalization to indicate his/her review of the PTA medication list.		
MUC18-109	Hospital Harm - Hypoglycemia	Proportion of patients who had an antihyperglycemic medication given within the 24 hours prior to the harm event; AND a lab test for glucose with a result of low glucose (less than 40 mg/dL); AND no subsequent lab test for glucose with a result greater than 80 mg/dL within five minutes of the low glucose result. This measure only counts one severe hypoglycemia event per patient admission.	Patients (age on admission 18 years or older) with a discharged inpatient hospital encounter during the measurement period who were given at least one antihyperglycemic medication during their hospital stay. Measure includes inpatient admissions who were directly admitted, or who were initially seen in the emergency department or in observation status and subsequently became an inpatient.	N/A

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-115	Inpatient Chronic Obstructive Pulmonary Disease (COPD) Exacerbation	The numerator for the Inpatient Chronic Obstructive Pulmonary Disease (COPD) Exacerbation measure is the sum of the ratio of observed to expected payment-standardized cost to Medicare for all episodes attributed to a clinician. This sum is then multiplied by the national average observed episode cost to generate a dollar figure. Mathematically, this is represented as: sum of (observed episode cost/expected episode cost) * national average observed cost.	The denominator for the Inpatient Chronic Obstructive Pulmonary Disease (COPD) Exacerbation measure is the total number of episodes from this episode group attributed to a clinician.	The following episode-level exclusions apply: (a) The beneficiary has a primary payer other than Medicare for any amount of time overlapping the episode window or in the lookback period. (b) No attributed clinician is found for the episode. (c) The beneficiary's date of birth is missing. (d) The beneficiary's death date occurred before the episode ended. (e) The beneficiary was not enrolled in Medicare Part A and B for the entirety of the lookback period plus episode window, or is enrolled in Part C for any part of the lookback period plus episode window. (f) The episode trigger claim was not performed in an office, IP, OP, or ASC setting based on its place of service. Exclusions specific to the Inpatient COPD Exacerbation measure are developed with input from the Pulmonary Disease Management Clinical Subcommittee.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-116	Femoral or Inguinal Hernia Repair	The numerator for the Femoral or Inguinal Hernia Repair measure is the sum of the ratio of observed to expected payment-standardized cost to Medicare for all episodes attributed to a clinician. This sum is then multiplied by the national average observed episode cost to generate a dollar figure. Mathematically, this is represented as: sum of (observed episode cost/expected episode cost) * national average observed cost.	The denominator for the Femoral or Inguinal Hernia Repair measure is the total number of episodes from this episode group attributed to a clinician.	The following episode-level exclusions apply: (a) The beneficiary has a primary payer other than Medicare for any amount of time overlapping the episode window or in the lookback period. (b) No attributed clinician is found for the episode. (c) The beneficiary's date of birth is missing. (d) The beneficiary's death date occurred before the episode ended. (e) The beneficiary was not enrolled in Medicare Part A and B for the entirety of the lookback period plus episode window, or is enrolled in Part C for any part of the lookback period plus episode window. (f) The episode trigger claim was not performed in an office, IP, OP, or ASC setting based on its place of service. Exclusions specific to the Femoral or Inguinal Hernia Repair measure are developed with input from the Gastrointestinal Disease Management Clinical Subcommittee.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-117	Lumbar Spine Fusion for Degenerative Disease, 1-3 Levels	The numerator for the Lumbar Spine Fusion for Degenerative Disease, 1-3 Levels measure is the sum of the ratio of observed to expected payment-standardized cost to Medicare for all episodes attributed to a clinician. This sum is then multiplied by the national average observed episode cost to generate a dollar figure. Mathematically, this is represented as: sum of (observed episode cost/expected episode cost) * national average observed cost.	The denominator for the Lumbar Spine Fusion for Degenerative Disease, 1-3 Levels measure is the total number of episodes from this episode group attributed to a clinician.	The following episode-level exclusions apply: (a) The beneficiary has a primary payer other than Medicare for any amount of time overlapping the episode window or in the lookback period. (b) No attributed clinician is found for the episode. (c) The beneficiary's date of birth is missing. (d) The beneficiary's death date occurred before the episode ended. (e) The beneficiary was not enrolled in Medicare Part A and B for the entirety of the lookback period plus episode window, or is enrolled in Part C for any part of the lookback period plus episode window. (f) The episode trigger claim was not performed in an office, IP, OP, or ASC setting based on its place of service. Exclusions specific to the Lumbar Spine Fusion for Degenerative Disease, 1-3 Levels measure are developed with input from the Musculoskeletal Disease Management - Spine Clinical Subcommittee.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-119	Psychoses/ Related Conditions	The numerator for the Psychoses/Related Conditions measure is the sum of the ratio of observed to expected payment-standardized cost to Medicare for all episodes attributed to a clinician. This sum is then multiplied by the national average observed episode cost to generate a dollar figure. Mathematically, this is represented as: sum of (observed episode cost/expected episode cost) * national average observed cost.	The denominator for the Psychoses/Related Conditions measure is the total number of episodes from this episode group attributed to a clinician.	The following episode-level exclusions apply: (a) The beneficiary has a primary payer other than Medicare for any amount of time overlapping the episode window or in the lookback period. (b) No attributed clinician is found for the episode. (c) The beneficiary's date of birth is missing. (d) The beneficiary's death date occurred before the episode ended. (e) The beneficiary was not enrolled in Medicare Part A and B for the entirety of the lookback period plus episode window, or is enrolled in Part C for any part of the lookback period plus episode window. (f) The episode trigger claim was not performed in an office, IP, OP, or ASC setting based on its place of service. Exclusions specific to the Psychoses/Related Conditions measure are developed with input from the Neuropsychiatric Disease Management Clinical Subcommittee.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-120	Lumpectomy, Partial Mastectomy, Simple Mastectomy	The numerator for the Lumpectomy, Partial Mastectomy, Simple Mastectomy measure is the sum of the ratio of observed to expected payment-standardized cost to Medicare for all episodes attributed to a clinician. This sum is then multiplied by the national average observed episode cost to generate a dollar figure. Mathematically, this is represented as: sum of (observed episode cost/expected episode cost) * national average observed cost.	The denominator for the Lumpectomy, Partial Mastectomy, Simple Mastectomy measure is the total number of episodes from this episode group attributed to a clinician.	The following episode-level exclusions apply: (a) The beneficiary has a primary payer other than Medicare for any amount of time overlapping the episode window or in the lookback period. (b) No attributed clinician is found for the episode. (c) The beneficiary's date of birth is missing. (d) The beneficiary's death date occurred before the episode ended. (e) The beneficiary was not enrolled in Medicare Part A and B for the entirety of the lookback period plus episode window, or is enrolled in Part C for any part of the lookback period plus episode window. (f) The episode trigger claim was not performed in an office, IP, OP, or ASC setting based on its place of service. Exclusions specific to the Lumpectomy, Partial Mastectomy, Simple Mastectomy measure are developed with input from the Oncologic Disease Management - Medical, Radiation, and Surgical Clinical Subcommittee.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-121	Acute Kidney Injury Requiring New Inpatient Dialysis	The numerator for the Acute Kidney Injury Requiring New Inpatient Dialysis measure is the sum of the ratio of observed to expected payment-standardized cost to Medicare for all episodes attributed to a clinician. This sum is then multiplied by the national average observed episode cost to generate a dollar figure. Mathematically, this is represented as: sum of (observed episode cost/expected episode cost) * national average observed cost.	The denominator for the Acute Kidney Injury Requiring New Inpatient Dialysis measure is the total number of episodes from this episode group attributed to a clinician.	The following episode-level exclusions apply: (a) The beneficiary has a primary payer other than Medicare for any amount of time overlapping the episode window or in the lookback period. (b) No attributed clinician is found for the episode. (c) The beneficiary's date of birth is missing. (d) The beneficiary's death date occurred before the episode ended. (e) The beneficiary was not enrolled in Medicare Part A and B for the entirety of the lookback period plus episode window, or is enrolled in Part C for any part of the lookback period plus episode window. (f) The episode trigger claim was not performed in an office, IP, OP, or ASC setting based on its place of service. Exclusions specific to the AKI Requiring New Inpatient Dialysis measure are developed with input from the Renal Disease Management Clinical Subcommittee.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-122	Lower Gastrointestinal Hemorrhage	The numerator for the Lower Gastrointestinal Hemorrhage measure is the sum of the ratio of observed to expected payment-standardized cost to Medicare for all episodes attributed to a clinician. This sum is then multiplied by the national average observed episode cost to generate a dollar figure. Mathematically, this is represented as: sum of (observed episode cost/expected episode cost) * national average observed cost.	The denominator for the Lower Gastrointestinal Hemorrhage measure is the total number of episodes from this episode group attributed to a clinician.	The following episode-level exclusions apply: (a) The beneficiary has a primary payer other than Medicare for any amount of time overlapping the episode window or in the lookback period. (b) No attributed clinician is found for the episode. (c) The beneficiary's date of birth is missing. (d) The beneficiary's death date occurred before the episode ended. (e) The beneficiary was not enrolled in Medicare Part A and B for the entirety of the lookback period plus episode window, or is enrolled in Part C for any part of the lookback period plus episode window. (f) The episode trigger claim was not performed in an office, IP, OP, or ASC setting based on its place of service. Exclusions specific to the Lower Gastrointestinal Hemorrhage measure are developed with input from the Gastrointestinal Disease Management Clinical Subcommittee.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-123	Renal or Ureteral Stone Surgical Treatment	The numerator for the Renal or Ureteral Stone Surgical Treatment measure is the sum of the ratio of observed to expected payment-standardized cost to Medicare for all episodes attributed to a clinician. This sum is then multiplied by the national average observed episode cost to generate a dollar figure. Mathematically, this is represented as: sum of (observed episode cost/expected episode cost) * national average observed cost.	The denominator for the Renal or Ureteral Stone Surgical Treatment measure is the total number of episodes from this episode group attributed to a clinician.	The following episode-level exclusions apply: (a) The beneficiary has a primary payer other than Medicare for any amount of time overlapping the episode window or in the lookback period. (b) No attributed clinician is found for the episode. (c) The beneficiary's date of birth is missing. (d) The beneficiary's death date occurred before the episode ended. (e) The beneficiary was not enrolled in Medicare Part A and B for the entirety of the lookback period plus episode window, or is enrolled in Part C for any part of the lookback period plus episode window. (f) The episode trigger claim was not performed in an office, IP, OP, or ASC setting based on its place of service. Exclusions specific to the Renal or Ureteral Stone Surgical Treatment measure are developed with input from the Urologic Disease Management Clinical Subcommittee.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-126	Hemodialysis Access Creation	The numerator for the Hemodialysis Access Creation measure is the sum of the ratio of observed to expected payment-standardized cost to Medicare for all episodes attributed to a clinician. This sum is then multiplied by the national average observed episode cost to generate a dollar figure. Mathematically, this is represented as: sum of (observed episode cost/expected episode cost) * national average observed cost.	The denominator for the Hemodialysis Access Creation measure is the total number of episodes from this episode group attributed to a clinician.	The following episode-level exclusions apply: (a) The beneficiary has a primary payer other than Medicare for any amount of time overlapping the episode window or in the lookback period. (b) No attributed clinician is found for the episode. (c) The beneficiary's date of birth is missing. (d) The beneficiary's death date occurred before the episode ended. (e) The beneficiary was not enrolled in Medicare Part A and B for the entirety of the lookback period plus episode window, or is enrolled in Part C for any part of the lookback period plus episode window. (f) The episode trigger claim was not performed in an office, IP, OP, or ASC setting based on its place of service. Exclusions specific to the Hemodialysis Access Creation measure are developed with input from the Peripheral Vascular Disease Management Clinical Subcommittee.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-131	Transfer of Health Information to Provider—Post-Acute Care	HHA: The numerator is the number of home health quality episodes with an OASIS discharge/transfer assessment indicating a current reconciled medication list was provided to the subsequent provider at the time of discharge/transfer.	HHA Denominator: The denominator for this measure is the number of Medicare Part A, Medicare Part B, Medicare Advantage (Part C) and Medicaid covered home health quality episodes ending in discharge/transfer to the following settings only: a short-term general hospital, a SNF, intermediate care, home under care of another organized home health service organization or hospice, hospice in an institutional facility, a swing bed, an IRF, a LTCH, a Medicaid nursing facility, an inpatient psychiatric facility, or a critical access hospital.	Patients who died are not included in this measure

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-132	Transfer of Health Information to Provider—Post-Acute Care	The numerator is the number of IRF patient stays with an IRF-PAI discharge/transfer assessment indicating a current reconciled medication list was provided to the subsequent provider at the time of discharge/transfer.	The denominator for this measure is the total number of IRF Medicare Part A and Medicare Advantage (Part C) patient stays ending in discharge/transfer to the following settings only: a short-term general hospital, a SNF, intermediate care, home under care of an organized home health service organization or hospice, hospice in an institutional facility, a swing bed, another IRF, a LTCH, a Medicaid nursing facility, an inpatient psychiatric facility, or a critical access hospital.	Patients who died are not included in this measure
MUC18-133	Transfer of Health Information to Provider—Post-Acute Care	The numerator is the number of LTCH patient stays with a LTCH CARE Data Set discharge/transfer assessment indicating a current reconciled medication list was provided to the subsequent provider at the time of discharge/transfer.	The denominator for this measure is the total number of LTCH patient stays, regardless of payer, ending in discharge/transfer to the following settings only: a short-term general hospital, a SNF, intermediate care, home under care of an organized home health service organization or hospice, hospice in an institutional facility, a swing bed, an IRF, another LTCH, a Medicaid nursing facility, an inpatient psychiatric facility, or a critical access hospital.	Patients who died are not included in this measure

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-135	Transfer of Health Information to Patient—Post-Acute Care	HHA: The numerator is the number of home health quality episodes with an OASIS discharge/transfer assessment indicating a current reconciled medication list was provided to the patient, family and/or caregiver at the time of discharge/transfer.	HHA Denominator: The denominator for this measure is the number of Medicare Part A, Medicare Part B, Medicare Advantage (Part C) and Medicaid covered home health quality episodes ending in discharge or transfer to the following settings only: a private home/ apartment (apt.), board/care, assisted living, group home, transitional living or home under care of organized home health service organization or hospice.	Patients who died are not included in this measure.
MUC18-136	Transfer of Health Information to Provider—Post-Acute Care	The numerator is the number of SNF resident stays with an MDS discharge/transfer assessment indicating a current reconciled medication list was provided to the subsequent provider at the time of discharge/transfer.	The denominator for this measure is the total number of SNF Medicare Part A covered resident stays ending in discharge/transfer to the following settings only: a short-term general hospital, another SNF, intermediate care, home under care of an organized home health service organization or hospice, hospice in an institutional facility, a swing bed, an IRF, a LTCH, a Medicaid nursing facility, an inpatient psychiatric facility, or a critical access hospital.	Patients/residents who died are not included in this measure

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-137	Elective Primary Hip Arthroplasty	The numerator for the Elective Primary Hip Arthroplasty measure is the sum of the ratio of observed to expected payment-standardized cost to Medicare for all episodes attributed to a clinician. This sum is then multiplied by the national average observed episode cost to generate a dollar figure. Mathematically, this is represented as: sum of (observed episode cost/expected episode cost) * national average observed cost.	The denominator for the Elective Primary Hip Arthroplasty measure is the total number of episodes from this episode group attributed to a clinician.	The following episode-level exclusions apply: (a) The beneficiary has a primary payer other than Medicare for any amount of time overlapping the episode window or in the lookback period. (b) No attributed clinician is found for the episode. (c) The beneficiary's date of birth is missing. (d) The beneficiary's death date occurred before the episode ended. (e) The beneficiary was not enrolled in Medicare Part A and B for the entirety of the lookback period plus episode window, or is enrolled in Part C for any part of the lookback period plus episode window. (f) The episode trigger claim was not performed in an office, IP, OP, or ASC setting based on its place of service. Exclusions specific to the Elective Primary Hip Arthroplasty measure are developed with input from the Musculoskeletal Disease Management - Non-Spine Clinical Subcommittee.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-138	Transfer of Health Information to Patient—Post-Acute Care	The numerator is the number of SNF resident stays with an MDS discharge/transfer assessment indicating a current reconciled medication list was provided to the patient, family and/or caregiver at the time of discharge/transfer.	The denominator for this measure is the total number of SNF Medicare Part A covered resident stays ending in discharge or transfer to the following settings only: a private home/ apartment (apt.), board/care, assisted living, group home, transitional living or home under care of organized home health service organization or hospice.	Patients/residents who died are not included in this measure
MUC18-139	Transfer of Health Information to Patient—Post-Acute Care	The numerator is the number of IRF patient stays with an IRF-PAI discharge/transfer assessment indicating a current reconciled medication list was provided to the patient, family and/or caregiver at the time of discharge/transfer.	The denominator for this measure is the total number of IRF Medicare Part A and Medicare Advantage (Part C) patient stays ending in discharge or transfer to the following settings only: a private home/ apartment (apt.), board/care, assisted living, group home, transitional living or home under care of organized home health service organization or hospice.	Patients who died are not included in this measure

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-140	Non-Emergent Coronary Artery Bypass Graft (CABG)	The numerator for the Non-Emergent Coronary Artery Bypass Graft (CABG) measure is the sum of the ratio of observed to expected payment-standardized cost to Medicare for all episodes attributed to a clinician. This sum is then multiplied by the national average observed episode cost to generate a dollar figure. Mathematically, this is represented as: sum of (observed episode cost/expected episode cost) * national average observed cost.	The denominator for the Non-Emergent Coronary Artery Bypass Graft (CABG) measure is the total number of episodes from this episode group attributed to a clinician.	The following episode-level exclusions apply: (a) The beneficiary has a primary payer other than Medicare for any amount of time overlapping the episode window or in the lookback period. (b) No attributed clinician is found for the episode. (c) The beneficiary's date of birth is missing. (d) The beneficiary's death date occurred before the episode ended. (e) The beneficiary was not enrolled in Medicare Part A and B for the entirety of the lookback period plus episode window, or is enrolled in Part C for any part of the lookback period plus episode window. (f) The episode trigger claim was not performed in an office, IP, OP, or ASC setting based on its place of service. Exclusions specific to the Non-Emergent CABG measure are developed with input from the Cardiovascular Disease Management Clinical Subcommittee.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-141	Transfer of Health Information to Patient—Post-Acute Care	The numerator is the number of LTCH patient stays with a LTCH CARE Data Set discharge/transfer assessment indicating a current reconciled medication list was provided to the patient, family and/or caregiver at the time of discharge/transfer.	The denominator for this measure is the total number of LTCH patient stays, regardless of payer, ending in discharge or transfer to the following settings only: a private home/ apartment (apt.), board/care, assisted living, group home, transitional living or home under care of organized home health service organization or hospice.	Patients who died are not included in this measure
MUC18-148	Medicare Spending Per Beneficiary (MSPB) clinician measure	The numerator for the measure is the sum of the ratio of payment-standardized observed to expected MSPB episode costs for all MSPB episodes for the TIN-NPI or TIN. The sum of the ratios is then multiplied by the national average payment-standardized observed episode cost, to convert the ratio to a dollar amount.	The denominator for the MSPB measure is the total number of MSPB episodes for the TIN-NPI or TIN.	The MSPB measure assesses costs during episodes of care initiated by acute inpatient hospital stays. Episodes for a beneficiary are excluded from the MSPB measure if they meet any of the following conditions: - the beneficiary was not continuously enrolled in both Medicare Parts A and B from 93 days prior to the index admission through 30 days after discharge. - the beneficiary's death occurred during the episode - the beneficiary is enrolled in a Medicare Advantage plan or Medicare is the secondary payer at any time during the episode window or 90-day lookback period. - the index admission for the episode did not occur in a subsection (d) hospital paid under the Inpatient Prospective

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-148 (cont'd)	Medicare Spending Per Beneficiary (MSPB) clinician measure (cont'd)			Payment System (IPPS) or an acute hospital in Maryland. - the discharge of the index admission occurred in the last 30 days of the performance period - the index admission for the episode is involved in an acute-to-acute hospital transfer (i.e., the admission ends in a hospital transfer or begins because of a hospital transfer) - the index admission inpatient claim indicates a $0 actual payment or a $0 standardized payment After applying the exclusions outlined above, all remaining episodes are included in the calculation of the MSPB measure.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-149	Total Per Capita Cost	The numerator for the measure is the sum of the risk-adjusted, specialty-adjusted Medicare Part A and Part B costs across all beneficiaries' episodes of care attributed to a TIN or TIN-NPI.	The denominator for the measure is the number of all Medicare beneficiaries' episodes of care who received Medicare-covered services and are attributed to a TIN or TIN-NPI during the performance period.	Beneficiaries are excluded from the population measured if they meet any of the following conditions: - were not enrolled in both Medicare Part A and Part B for every month during the performance period, unless part year enrollment was the result of new enrollment or death - were enrolled in a private Medicare health plan (for example, a Medicare Advantage HMO/PPO or a Medicare private FFS plan) for any month during the performance period - resided outside the United States, its territories, and its possessions during any month of the performance period.

MUC ID	Measure Title	Numerator	Denominator	Exclusions
MUC18-150	Surgical Treatment Complications for Localized Prostate Cancer	The numerator is determined by the following (in order) - Calculate the difference in the number of days with claims for incontinence or erectile dysfunction in the year after versus the year before prostate surgery for each patient - Truncate (by winsorizing) to reduce the impact of outliers - Rescale the difference from 0 (worst) to 100 (best) - Calculate the mean score for each hospital, based on all of the difference values for all of the patients treated at that hospital Measure code lists include all codes required for numerator analysis.	The denominator is determined by the following (in order): - Men with at least two ICD diagnosis codes for prostate cancer separated by at least 30 days - Codes for prostate cancer surgery (either open or minimally invasive/robotic prostatectomy) at any time after the first prostate cancer diagnosis - Age 66 or greater at time of prostate cancer diagnosis - Survived at least one year after prostate directed therapy - Continuous enrollment in Medicare Parts A & B (and no HMO enrollment) from one year before through one year after prostate directed therapy Patients are then attributed to the hospital/facility associated with the claims for the procedure code for prostatectomy. Measure code lists include all codes required for denominator analysis.	Denominator Exclusions: - Patients with metastatic disease - Patients with more than one non-dermatologic malignancy - Patients receiving chemotherapy - Patients receiving radiation - Died within one year after prostatectomy The timeframe for exclusions is the year before and year after prostate cancer surgery. Measure code lists include all codes required for exclusions.

APPENDIX B: MEASURE RATIONALES

Legend for Measure Rationales

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

Measure Title: Refers to 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
MUC18-31	Time to surgery for elderly hip fracture patients	Nine moderate strength studies evaluated patient outcomes in relation to timing of hip fracture surgery (Elliot et al 25, Fox et al 26, McGuire et al 27, Moran et al 28, Novack et al 29, Orosz et al 30, Parker et al 31, Radcliff et al 32, Siegmeth et al 33). In many of these studies the presence of increased comorbidities represented a confounding effect, and therefore delays for medical reasons were often excluded. The majority of studies favored improved outcomes in regards to mortality, pain, complications, or length of stay (Elliot et al 25, McGuire et al 27, Novack et al 29, Orosz et al 30, Parker et al 31, and Siegmeth et al 33). Although several studies showed a benefit of surgery within 48 hours, one study showed no harm with a delay up to four days for patients fit for surgery who were not delayed for medical reasons (Moran et al 28). Patients delayed due to medical reasons had the highest mortality and it is this subset of patients that could potentially benefit the most from earlier surgery. Prior to performing the literature search for this guideline, both patients and clinicians were surveyed for topics of interest related to the management of hip fractures in the elderly. These responses helped inform the PICO development by the workgroup. All PICO questions and inclusion criteria were developed a priori. AAOS staff trained in research methodology conducted a comprehensive systematic literature review, and final recommendations were developed by a multidisciplinary panel of experts. The workgroup that created these final recommendations is separate from the one that evaluated these quality measures. All included articles underwent study design quality appraisal, which assessed risks of bias/confounders that may skew the study's results. Only the best available evidence was considered for inclusion in recommendations.

MUC ID	Measure Title	Rationale
MUC18-32	Discouraging the routine use of occupational and/or physical therapy after carpal tunnel release	Routine post-operative therapy after carpal tunnel release was examined in 6 high quality studies. From these, two studies (Hochberg 2001 and Jerosch-Herold 2012) addressed interventions not relevant to current core practices of postoperative rehabilitation. The remaining four studies (Alves 2011, Fagan 2004, Pomerance 2007, and Provinciali 2000) addressed the need for supervised therapy in addition to a home program in the early postoperative period, the early use of laser, or the role of sensory reeducation in the later stages of recovery. One high quality study (Alves 2011) evaluated the use of laser administered to the carpal tunnel in 10 daily consecutive sessions at a 3J dosage and found no difference in pain/symptom reoccurrence in comparison to placebo. Two moderate quality studies (Pomerance 2007 and Provinciali 2000) compared in-clinic or therapist supervised exercise programs in addition to a home program to a home program alone. The studies were somewhat limited by an incomplete description of who delivered home programs, exercise/education content and dosage, and treatment progression. Pomerance (2007) compared a two week program directed by a therapist combined with a home program alone and found no additional benefit in terms of grip or pinch strength in comparison to the home program alone. Provinciali (2000) compared one hour sessions over 10 consecutive days of in-clinic physiotherapy comprising a multimodal program with a home program that was progressed in terms of strength/endurance. No benefit was found in outcome when measured by a CTS-specific patient reported instrument.
MUC18-38	International Prostate Symptom Score (IPSS) or American Urological Association-Symptom Index (AUA-SI) change 6-12 months after diagnosis of Benign Prostatic Hyperplasia	The symptoms of BPH are LUTS symptoms. There are other disorders with similar symptoms and need to be excluded. History, physical examination, and testing are required prior to a diagnosis of BPH. IPSS by itself is not a reliable diagnostic tool for LUTS suggestive of BPH but serves as a quantitative measure of LUTS after the diagnosis is established (DSilva,2014). Medical and surgical interventions for BPH recommend a follow up IPSS evaluation to determine effectiveness of treatment. IPSS should be evaluated at the time of diagnosis and after definitive treatment.

MUC ID	Measure Title	Rationale
MUC18-47	Multimodal Pain Management	Lamplot, Wagner and Manning conducted a randomized control trial (RCT) that found patients that receive multimodal pain interventions had lower pain scores, fewer adverse outcomes, higher satisfaction and fewer narcotics used than the cohort that received patient-controlled analgesia. Another study from Memtsoudis et al. found that hip/knee arthroplasty patients receiving two modes of non-opioid analgesia experienced almost 20% fewer respiratory complications and 26% fewer gastrointestinal complications compared to those who received opioids only. Clinical guidelines support the use of multimodal pain management strategies to manage postoperative pain based on strong evidence. They suggest use of multimodal techniques whenever possible and consideration of regional anesthesia when appropriate to the reduce need for opioids to manage postoperative pain. Citations: Lamplot, J D et al. Multimodal pain management in total knee arthroplasty. J Arthroplasty 2014, 29(2): 329-334. Memtsoudis, S G et al. Association of multimodal pain management strategies with perioperative outcomes and resource utilization: A population-based study. Anesthesiology 2018, 128(5): 891-902. American Society of Anesthesiologists Task Force on Acute Pain Management. Practice guidelines for acute pain management in the perioperative setting. An updated report by the American Society of Anesthesiologists Task Force on Acute Pain Management. Anesthesiology.2012;116(2):248-273. Chou R, Gordon DB, de Leon-Casasola O, et al. Management of postoperative pain: a clinical practice guideline from the American Pain Society, the American Society of Regional Anesthesia and Pain Medicine, and the American Society of Anesthesiologists' Committee on Regional Anesthesia, Executive Committee, and Administrative Council. J Pain.2016;17(2):131-157.

MUC ID	Measure Title	Rationale
MUC18-48	Potential Opioid Overuse	Improvement in provider performance on this measure will benefit patients primarily by reducing opioid-related morbidity and mortality. Recent research suggests an overdose mortality rate of 24.6 patients per 10,000 person-years among patients taking 200 to 250 MME per day; this rate declines to 8.3 deaths per 10,000 person-years for patients taking opioid doses of 100 to 120 MME per day (Dasgupta et al. 2016). The same study also noted that only 2.8 percent of patients were prescribed an opioid at doses greater than 150 MME per day, suggesting that this measure will target a small, but very high risk, patient population. Several peer-reviewed studies have estimated the costs associated with opioid use disorders, abuse, and dependence. In 2001, Americans lost more than $11.8 billion in societal costs because of opioid abuse (Birnbaum et al. 2011). For non-medical opioid use, this estimate rose to $53.4 billion in 2006, including $42.0 billion in lost productivity, $2.2 billion in treatment for opioid misuse, $8.2 billion in criminal justice expenses, and $944 million in medical care (Hansen et al. 2010). Lost productivity and healthcare expenditures associated with opioid abuse continue to rise; using 2007 data, Birnbaum et al. (2011) estimated lost productivity (including premature death, loss of employment, and presenteeism) cost society $25.6 billion, whereas healthcare costs rose to $25 billion (of which excess medical and drug use were the primary contributors). Estimates using 2013 data suggest total costs to society from opioid abuse and dependence exceeded $78 billion, including costs for health care, substance abuse treatment, criminal justice expenses, and lost productivity (Florence et al. 2016). Patients prescribed high-dose opioids have an approximately 10-fold increase in risk of overdose compared with those prescribed low-doses (Edlund et al. 2014). Patients on high-dose opioids are less likely to receive care consistent with guidelines and appropriate monitoring (Morasco et al. 2010). High daily dose is the most common indicator of potential opioid misuse or inappropriate prescription practices for opioids (Liu et al. 2013). Payers, providers, and patients will all benefit from the reduction of excess health care utilization associated with potential opioid overuse.

MUC ID	Measure Title	Rationale
MUC18-52	Cesarean Birth	The removal of any pressure to not perform a cesarean birth has led to a skyrocketing of hospital, state and national cesarean birth (CB) rates. Some hospitals now have CB rates over 50%. Hospitals with CB rates at 15-20% have infant outcomes that are just as good and better maternal outcomes (Gould et al., 2004). There are no data that higher rates improve any outcomes, yet the CB rates continue to rise. This measure seeks to focus attention on the most variable portion of the CB epidemic, the term labor CB in nulliparous women. This population segment accounts for the large majority of the variable portion of the CB rate, and is the area most affected by subjectivity. As compared to other CB measures, what is different about nulliparous, term singleton vertex (NTSV) CB rate (low-risk primary CB in first births) is that there are clear cut quality improvement activities that can be done to address the differences. Main et al. (2006) found that over 60% of the variation among hospitals can be attributed to first birth labor induction rates and first birth early labor admission rates. The results showed if labor was forced when the cervix was not ready the outcomes were poorer. Alfirevic et al. (2004) also showed that labor and delivery guidelines can make a difference in labor outcomes. Many authors have shown that physician factors, rather than patient characteristics or obstetric diagnoses, are the major driver for the difference in rates within a hospital (Berkowitz, et al., 1989; Goyert et al., 1989; Luthy et al., 2003). The dramatic variation in NTSV rates seen in all populations studied is striking according to Menacker (2006). Hospitals within a state (Coonrod et al., 2008; California Office of Statewide Hospital Planning and Development [OSHPD], 2007) and physicians within a hospital (Main, 1999) have rates with a 3-5 fold variation.
MUC18-57	Annual Wellness Assessment: Preventive Care	Each component measure corresponds to an NQF-endorsed measure, meaning the evidence for each measure has been evaluated by an NQF committee and determined to have enough evidence to support the measure intent.

MUC ID	Measure Title	Rationale
MUC18-62	Adult Immunization Status	Vaccines are recommended for adults to prevent serious diseases. Routine vaccination against influenza, tetanus, diphtheria and pertussis is recommended for all adults, while vaccines for herpes zoster and pneumococcal disease are recommended for older adults (Kim et al. 2017). Administration of the influenza, Tdap/Td, herpes zoster and pneumococcal vaccines can improve health and decrease health care costs by preventing severe disease and hospitalization. Evidence supporting administration of each individual vaccine follows. Influenza The influenza vaccine protects against influenza, a serious disease that can lead to hospitalization and death (Centers for Disease Control and Prevention [CDC] 2016a), particularly among older adults and vulnerable populations. It is characterized by a variety of symptoms related to the nose, throat and lungs that can range in severity (CDC 2015a), and it is easily spread (CDC 2016a). Although anyone can get the flu, people 65 and older, pregnant women, young children and those with chronic conditions are at higher risk of developing serious complications (CDC 2016a). Influenza can have severe consequences. The CDC estimates that since 2010, yearly influenza cases have ranged from 9.2-35.6 million; influenza-related hospitalizations, from 140,000-710,000; and influenza-related deaths, from 12,000-56,000 (CDC 2017a). Deaths associated with influenza are typically higher in older adults. In an analysis based on the 2010-2011 and 2012-2013 flu seasons, 71 percent-85 percent of deaths from influenza were among adults 65 and older (Grohskopf et al. 2016). Influenza is a leading cause of outpatient medical visits and worker absenteeism among adults. The average annual burden of seasonal influenza among adults 18-49 includes approximately 5 million illnesses, 2.4 million outpatient visits, 32,000 hospitalizations and 680 deaths (Grohskopf et al. 2016). A study in 2016 estimated that the cost-effectiveness ratio of the influenza vaccine was approximately $100,000 per quality-adjusted life year (Xu et al 2016). ACIP recommends routine annual influenza vaccination for all people 6 months of age and older (Grohskopf et al. 2017). For people 19 and older, any age-appropriate inactivated influenza vaccine (IIV) formulation or recombinant influenza vaccine (RIV) formulation are acceptable options. ACIP notes that live attenuated influenza vaccine (LAIV) should not be used during the 2017-2018 season for any population. Vaccination should occur before the onset of influenza activity in the community, ideally by the end of October; however, vaccination efforts should continue throughout flu season into February and March (Grohskopf et al. 2017). People who have a history of severe allergic reaction (e.g., anaphylaxis) to any component of the vaccine should not receive the influenza vaccine (CDC 2017b). Td/Tdap vaccine Tetanus, diphtheria and pertussis can have serious health effects. Tetanus results in painful muscle spasms that can cause fractures, difficulty breathing, arrhythmia and death (CDC 2015b). Complications from diphtheria include myocarditis, which can lead to heart failure, and neuritis, which may temporarily paralyze motor nerves. Death occurs in 5-10 percent of cases (CDC 2015c). Pertussis, also known as whooping cough, is a respiratory infection characterized by a prolonged cough; it is highly communicable, and infection can

MUC ID	Measure Title	Rationale
MUC18-62 (cont'd)	Adult Immunization Status (cont'd)	lead to secondary pneumonia, the most common cause of pertussis-related deaths (CDC 2015d). Due to vaccines, tetanus and diphtheria are now uncommon. On average, there were 29 reported cases of tetanus per year from 1996-2009, and nearly all were among people who had never received a tetanus vaccine or were not up to date on their booster shots (CDC 2013). In the past decade, fewer than 5 diphtheria cases were reported to the CDC, although the disease is more prevalent in other countries: In 2014, 7,321 cases of diphtheria were reported to the World Health Organization, and there are likely many more unreported cases (CDC 2016b). Pertussis is much more prevalent today than tetanus and diphtheria, even though vaccines offer protection against the disease. Before the vaccine was introduced in the 1940s, there were about 200,000 cases of pertussis annually (CDC 2015d). Since widespread use of the vaccine, pertussis cases have decreased by 80 percent (CDC 2015d). However, pertussis cases have been increasing since the 1980s; currently, there are 10,000-40,000 pertussis cases and up to 20 deaths reported each year (CDC 2015d). Pertussis is usually milder in children, adolescents and adults than in infants and young children who may not be fully immunized. Older adults are often the source of infection for infants and children (CDC 2015d). Administering the Tdap vaccine to adults helps prevent the spread of pertussis to infants and prevents such hospitalizations; in 2010, the average cost of hospitalizing an infant with pertussis was $16,339, an increase from $12,377 in 2000 (Davis 2014). Because there has been a rise in pertussis over the past several decades in the U.S., studies have evaluated the cost-effectiveness of providing Tdap immunizations to adults. One study found that providing a dose of Tdap to people at age 11 or 12, as currently recommended, and again at age 21, could reduce outpatient visits for pertussis by 4 percent and hospitalizations for pertussis by 5 percent; costs per quality-adjusted life years saved would be $204,556 (Kamiya et al. 2016). Another study found that vaccinating all adults 2-64 at least once with Tdap is cost-effective (<$50,000 per quality-adjusted life years) if pertussis incidence in adults is greater than 120 cases per 100,000 people (Lee et al. 2007). McGarry et al. found that vaccinating all adults ages 65 and older with Tdap is a cost-effective intervention and would prevent 97,000 cases of pertussis annually—from the payer perspective, it would provide a net cost savings of $44.8 million (2014). ACIP recommends that all adults 19 and older who have not yet received a dose of Tdap receive a single dose (ACIP 2012; ACIP 2011). Tdap should be administered regardless of the interval since the last tetanus or diphtheria toxoid-containing vaccine. Adults 19 and older should receive a decennial Td vaccine booster, beginning 10 years after receipt of the Tdap vaccine (Kretsinger et al. 2006). People who have a history of severe allergic reaction (e.g., anaphylaxis) to any component of the Tdap or Td vaccine should not receive it. Tdap is contraindicated for adults with a history of encephalopathy (e.g., coma or prolonged seizures) not attributable to an identifiable cause within seven days of administration of a vaccine with pertussis components (CDC 2017b). Herpes zoster vaccine The herpes zoster vaccine protects against herpes zoster, commonly known as shingles. Herpes zoster is a painful skin rash caused by reactivation of the varicella zoster virus (CDC 2016c). After a person recovers from primary infection of varicella (chickenpox), the virus stays inactive in the body and can reactivate years

MUC ID	Measure Title	Rationale
MUC18-62 (cont'd)	Adult Immunization Status (cont'd)	later. Most people typically only have one episode of herpes zoster, but second or third episodes are possible. People with compromised immune systems are at higher risk of developing herpes zoster (CDC 2016c). The most common complication of herpes zoster is post-herpetic neuralgia (PHN) (CDC 2016c), which is severe, debilitating pain at the site of the rash that has no treatment or cure. Herpes zoster can also lead to serious complications of the eye, pneumonia, hearing problems, blindness, encephalitis or death (CDC 2016d). In the U.S., there are 1 million new cases of herpes zoster each year; 1 of every 3 people will be diagnosed with herpes zoster in their lifetime (CDC 2016c). A person's risk for developing herpes zoster increases sharply after age 50 (CDC 2016c). As people age, they are more likely to develop PHN; it rarely occurs in people under 40, but can be seen in a third of untreated adults 60 and older (CDC 2016c). Between 1 and 4 percent of adults with herpes zoster are hospitalized for complications, and an estimated 96 deaths each year are directly caused by the virus (CDC 2016c). The vaccine can reduce the risk of developing herpes zoster and PHN. In 2011, total annual direct medical costs in the U.S. from herpes zoster were estimated to be $1.9 million; costs are expected to rise as the population ages (Friesen et al. 2017). A study of the cost-effectiveness of the herpes zoster vaccine among people at 50, 60 and 70 years found that vaccination at age 60 would prevent the most cases (26,147 cases per 1 million people), compared with vaccination at 50 or 70 (Hales et al. 2014). It also found that vaccination at 60 costs $86,000 per quality-adjusted life year, compared with $37,000 at 70 and $287,000 at 50 (Hales et a. 2014). There are currently two types of zoster vaccines recommended for older adults: the zoster vaccine live (ZVL) and a recombinant zoster vaccine (RZV). The ZVL is a 1-dose vaccine licensed for immunocompetent adults 50 and older; ACIP recommends ZVL for immunocompetent adults 60 and older. ZVL vaccine coverage for adults 60 and older has increased each year since ACIP first recommended it in 2008 (Dooling et al. 2018). In October 2017, the Food and Drug Administration approved the RZV for adults 50 and older. In January 2018, ACIP published a guideline recommending RZV for immunocompetent adults 50 and older, irrespective of prior receipt of varicella vaccine or ZVL (Dooling et al. 2018). RZV is a two-dose series; the second dose should be given 2-6 months after the first dose. If the second dose of RZV is given less than four weeks after the first, the second dose should be repeated; if the second dose is more than six months after the first dose, the vaccine series need not be restarted although individuals may be at higher risk for zoster. ZVL remains a recommended vaccine for immunocompetent adults 60 and older (Dooling et al. 2018). Patients with a severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component should not receive either zoster vaccine (Dooling et al. 2018). Pneumococcal vaccine Vaccines protect against pneumococcal disease, which is a common cause of illness and death in older adults and in persons with certain underlying conditions. The major clinical syndromes of pneumococcal disease include pneumonia, bacteremia and meningitis, with pneumonia being the most common (CDC 2015e). Pneumonia symptoms generally include fever, chills, pleuritic chest pain, cough with sputum,

MUC ID	Measure Title	Rationale
MUC18-62 (cont'd)	Adult Immunization Status (cont'd)	dyspnea, tachypnea, hypoxia tachycardia, malaise and weakness. There are an estimated 400,000 cases of pneumonia in the U.S. each year and a 5-7 percent mortality rate, although it may be higher among older adults and adults in nursing homes (CDC 2015f; Janssens and Krause 2004). Bacteremia, a blood infection, is another complication of pneumococcal disease (CDC 2015f). Approximately 30 percent of patients with pneumonia also have bacteremia, and 12,000 patients have bacteremia without pneumonia each year (CDC 2015f). Bacteremia has a 20 percent mortality rate among all adults and a 60 percent mortality rate among older adults. Pneumococcal disease causes 3,000-6,000 cases of meningitis each year (CDC 2015f). Meningitis symptoms may include headache, lethargy, vomiting, irritability, fever, nuchal rigidity, cranial nerve signs, seizures and coma. Meningitis has a 22 percent mortality rate among adults (CDC 2015f). Pneumococcal infections result in significant health care costs each year. Geriatric patients with pneumonia require hospitalization in nearly 90 percent of cases, and their average length of stay is twice that of younger adults (Janssens and Krause 2004). Pneumonia in the older adult population is associated with high acute-care costs and an overall impact on total direct medical costs and mortality during and after an acute episode (Thomas et al. 2012). Total medical costs for Medicare beneficiaries during and one year following a hospitalization for pneumonia were found to be $15,682 higher than matched beneficiaries without pneumonia (Thomas et al. 2012). It was estimated that in 2010, the total annual excess cost of hospital-treated pneumonia in the fee-for-service Medicare population was approximately $7 billion (Thomas et al. 2012). Pneumococcal vaccines have been shown to be highly effective in preventing invasive pneumococcal disease. When comparing costs, outcomes and quality adjusted life years, immunization with the two recommended pneumococcal vaccines was found to be more economically efficient than no vaccination, with an incremental cost-effectiveness ratio of $25,841 per quality-adjusted life year gained (Chen et al. 2014). There currently are two licensed pneumococcal vaccines in the U.S.: the 13-valent pneumococcal conjugate vaccine (PCV13) and the 23-valent pneumococcal polysaccharide vaccine (PPSV23) (Kobayashi et al. 2015). For immunocompetent adults 65 and older who have not previously received pneumococcal vaccination, ACIP recommends a dose of PCV13, followed by a dose of PPSV23 one or more years later (Kobayashi et al. 2015). Immunocompetent adults 65 and older who received a dose of PPSV23 at younger than 65 should also receive a dose of PCV13 at least one year after the initial dose of PPSV23, and then another dose of PPSV23 at least 1 year after PCV13 and at least 5 years after the most recent dose of PPSV23 (Kobayashi et al. 2015). Adults should not receive either vaccine if they have had a severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component. Adults should not receive the PCV13 vaccine if they have had severe allergic reaction after any diphtheria-toxoid-containing vaccine (CDC 2017b).

MUC ID	Measure Title	Rationale
MUC18-63	Functional Status Change for Patients with Neck Impairments	Wang YC, Cook KF, Deutscher D, Werneke MW, Hayes D, Mioduski JE. The development and psychometric properties of the patient self-report Neck Functional Status Questionnaire. J Orthop Sports Phys Ther. 2015;45(9):683-692. The findings by Wang and colleagues supported the uni-dimensionality and local independence of responses to the Neck FS PROM CAT. The items were found to have negligible differential item functioning and no ceiling or floor effects. The CAT-based measure yielded precision equal to fixed measure that included all items. N=439, age 48.4 +/- 13.8, 59% female. Deutscher D, Werneke MW, Hayes D, Mioduski JE, Cook KF, Fritz J, Woodhouse LJ, Stratford PW. Impact of risk-adjustment on provider ranking for patients with low back pain receiving physical therapy. J Orthop Sports Phys Ther. 2018 May 22:1-35 [Epub ahead of print]. https://www.ncbi.nlm.nih.gov/pubmed/29787696 The primary sample in the study by Deutscher et al. included 250,741 patients, ages 14-89, who completed the Neck FS PROM CAT at admission (age/SD=54/16; 65% women). Of these, 169,039 patients completed the Neck FS CAT at discharge, resulting in a completion rate of 67%. The scale-level reliability of the Neck FS CAT was 0.91. Standard Errors of Measurement (SEMs) were stable across the measurement continuum ranging from 3.7 to 3.9 points (range = 0 to 100), which corresponds to 6.1 to 6.4 points at the 90% confidence interval (CI). Minimal Detectable Improvement (MDI) at the 90% CI ranged between 6.6 to 7.0 points. A half standard deviation of baseline scores was 6.2 points. Minimal clinically important improvement (MCII) estimates ranged from 15 to 4 points from 1st to 4th quartile of baseline Neck FS CAT scores, respectively. Thus, greater change was needed to achieve MCII for patients with lower baseline functional status. The majority of patients (61%) demonstrated functional staging change during treatment.
MUC18-77	Use of Opioids from Multiple Providers in Persons Without Cancer	A PubMed search was conducted using combinations of the following search terms: opioid, overdose, doctor shopping, pharmacy shopping, multiple prescribers, multiple pharmacies. Articles referenced in the identified articles were scanned for relevance. The CDC Guideline and Clinical and Contextual Evidence Reviews were also reviewed for relevant references (CDC Guideline: Dowell D, Haegerich TM, Chou R. CDC Guideline for Prescribing Opioids for Chronic Pain - United States, 2016. MMWR Recomm Rep. 2016 Mar 18;65(1):1-49. doi: 10.15585/mmwr.rr6501e1. Available at: http://www.cdc.gov/drugoverdose/prescribing/guideline.html.; CDC Clinical Evidence Review. Available at: http://stacks.cdc.gov/view/cdc/38026; CDC Contextual Evidence Review. Available at: http://stacks.cdc.gov/view/cdc/38027). Further information on evidence for the measure can be found on the “National Quality Forum - Measure Testing” document in Section 1a.8.2. (National Quality Forum - Measure Testing; Section 1a.8.1.)

MUC ID	Measure Title	Rationale
MUC18-78	Use of Opioids at High Dosage in Persons Without Cancer	This measure received systematic review by Clinical Practice Guideline recommendation, other systematic review and grading of the body of evidence, and review by The Centers for Medicare and Medicaid (CMS) Part D Overutilization Monitoring System (OMS) and PubMed. Further information on evidence for the measure can be found on the "National Quality Forum - Measure Testing" document in Section 1a.8.2. (National Quality Forum - Measure Testing; Section 1a.8.1.)
MUC18-79	Use of Opioids from Multiple Providers and at High Dosage in Persons Without Cancer	This measure received systematic review by Clinical Practice Guideline recommendation, other systematic review and grading of the body of evidence, and review by The Centers for Medicare and Medicaid (CMS) Part D Overutilization Monitoring System (OMS) and PubMed. Further information on evidence for the measure can be found on the "National Quality Forum - Measure Testing" document in Section 1a.8.2. (National Quality Forum - Measure Testing; Section 1a.8.1.)
MUC18-101	Transitions from Hospice Care, Followed by Death or Acute Care	Transitions of care are broadly defined as patient movement across healthcare settings, including between providers of care and to and from home. [1] The National Academy of Medicine, formerly called the Institute of Medicine, has described care transitions as particularly vulnerable events for patients. If transitions are poorly coordinated and managed, they can cause poor health care outcomes for patients and lead to wasteful resource use. [2] Measuring transitions among hospice patients and assessing outcomes following transitions from hospice care can therefore provide valuable information about hospices' quality of care. Transitions from hospice care can occur during a patient's hospice stay or after a patient is discharged alive from hospice. Care transitions at the end of life are burdensome to patients, families, and the health care system at large because they are associated with adverse health outcomes, [3,4] lower patient and family satisfaction, [5] higher health care costs, [6,7] and fragmentation of care delivery. One national study found that over 10% of all hospice decedents experienced a care transition in the last six months of life, including to hospitals, skilled nursing facilities, home health programs, or home without hospice services. [8] Live discharges from hospice care themselves are considered a type of care transition. Though some patients can be discharged alive from hospice because their clinical status improves or stabilizes, live discharges among patients who are still considered terminally ill can be potentially concerning. A live discharge can lead to a patient dying without comprehensive symptom management and psychosocial support for the patient and family. The national rate of live discharge from hospice has declined in recent years, yet concerns about live discharge persist. The Medicare Payment Advisory Commission (MedPAC) found in their 2018 report that in 2016, 25% of providers had live discharge rates greater than 31% and 10% of providers had rates greater than 53%. The 2016 rates of live discharge among hospices in the 75th and 90th percentile are higher than they were in three preceding years. [9,10] MedPAC suggests that although some level of live discharges from hospice may be appropriate, providers with substantially higher rates of live discharge than their peers may have potential quality issues, such as inability to meet patient and caregiver needs. The report also expressed general support for outcome-based quality measures and

MUC ID	Measure Title	Rationale
MUC18-101 (cont'd)	Transitions from Hospice Care, Followed by Death or Acute Care (cont'd)	specific support for a measure that would capture the live discharge rate and burdensome transitions among hospices. Examining subsequent care transitions and other events that occur after a live discharge from hospice can also reveal potential quality of care issues. Most patients express a wish to die at home and outside of the hospital, and patients discharged alive from hospice are more likely to die in a hospital than patients who receive hospice care up until death. [11,12] A national study of live discharges found that among hospice patients who were discharged alive, nearly a quarter were admitted to the hospital, and a third of those hospitalized following live discharge died within a month of hospice discharge. [13] Many patients reenroll in hospice following live discharge, creating greater burden on patients, caregivers, and the healthcare system, regardless of the patient's outcome. [14] Live discharges from hospice are expected, for example, in cases where survival improves or patient and family preferences change. However, live discharges from hospice followed shortly by acute care utilization or death represent potentially avoidable and undesirable outcomes, and may indicate potential quality concerns. The issue of care transitions is considered critical by both the public and by hospice stakeholders and policy experts. "Avoiding unnecessary hospital/ED admissions and readmissions" was classified as a "Highly Prioritized Measurement Opportunity for Hospice Care" in NQF's Performance Measurement Coordination Strategy for Hospice and Palliative Care in 2012. [15] References: 1. The Joint Commission. (2012). Transitions of care: The need for a more effective approach to continuing patient care. Retrieved from: https://www.jointcommission.org/assets/1/18/Hot_Topics_Transitions_of_Care.pdf 2. Burton, R. (2012). Improving care transitions (Health Affairs Health Policy Brief). Retrieved from: https://www.rwjf.org/content/dam/farm/reports/issue_briefs/2012/rwjf401314. 3. Aldridge, M. D., Epstein, A. J., Brody, A. A., Lee, E. J., Cherlin, E., & Bradley, E. H. (2016). The impact of reported hospice preferred practices on hospital utilization at the end of life. Medical Care, 54(7), 657-663. 4. Phongtankuel, V., Scherban, B. A., Reid, M. C., Finley, A., Martin, A., Dennis, J., & Adelman, R. D. (2015). Why do home hospice patients return to the hospital? A study of hospice provider perspectives. Journal of Palliative Medicine, 19(1), 51-56. 5. Dolin, R., Hanson, L. C., Rosenblum, S. F., Stearns, S. C., Holmes, G. M., & Silberman, P. (2017). Factors driving live discharge from hospice: provider perspectives. Journal of Pain and Symptom Management, 53(6), 1050-1056. 6. Carlson, M. D., Herrin, J., Du, Q., Epstein, A. J., Cherlin, E., Morrison, R. S., & Bradley, E. H. (2009). Hospice characteristics and the disenrollment of patients with cancer. Health Services Research, 44(6), 2004-2021.

MUC ID	Measure Title	Rationale
MUC18-101 (cont'd)	Transitions from Hospice Care, Followed by Death or Acute Care (cont'd)	7. MacKenzie, M. A., & Hanlon, A. (2018). Health-care utilization after hospice enrollment in patients with heart failure and cancer. American Journal of Hospice and Palliative Medicine, 35(2), 229-235. 8. Wang, S.-Y., Aldridge, M. D., Gross, C. P., Canavan, M., Cherlin, E., Johnson-Hurzeler, R., & Bradley, E. (2016). Transitions between healthcare settings of hospice enrollees at the end of life. Journal of the American Geriatrics Society, 64(2), 314-322. 9. Medicare Payment Advisory Commission. (2018). Report to the Congress: Medicare payment policy. pp. 339. Retrieved from: http://medpac.gov/docs/default-source/reports/mar18_medpac_entirereport_sec.pdf?sfvrsn=0 10. Medicare Payment Advisory Commission. (2017). Report to the Congress: Medicare payment policy. pp. 322. Retrieved from: http://medpac.gov/docs/default-source/reports/mar17_entirereport.pdf 11. Institute of Medicine. (2015). Dying in America: Improving quality and honoring individual preferences near the end of life. Retrieved from: https://bmjopen.bmj.com/content/bmjopen/4/7/e005196.full.pdf https://www.nap.edu/read/18748/chapter/1. 12. Pathak, E. B., Wieten, S., & Djulbegovic, B. (2014). From hospice to hospital: Short-term follow-up study of hospice patient outcomes in a US acute care hospital surveillance system. BMJ Open. , 4(7). Retrieved from: https://bmjopen.bmj.com/content/bmjopen/4/7/e005196.full.pdf., 13. Teno, J. M., Bowman, J., Plotzke, M., Gozalo, P. L., Christian, T., Miller, S. C., Williams, C., Mor, V. (2015). Characteristics of hospice programs with problematic live discharges. Journal of Pain and Symptom Management, 50(4), 548-552. 14. Aldridge, M. D., Schlesinger, M., Barry, C. L., Morrison, R. S., McCorkle, R., Hurzeler, R., & Bradley, E. H. (2014). National hospice survey results: for-profit status, community engagement, and service. JAMA Internal Medicine, 174(4), 500-506. 15. Measure Applications Partnership. (2012). Performance measurement coordination strategy for hospice and palliative care. pp. 19-20. Retrieved from: https://www.qualityforum.org/Publications/2012/06/Performance_Measurement_Coordination_Strategy_for_Hospice_and_Palliative_Care.aspx

MUC ID	Measure Title	Rationale
MUC18-106	Initial opioid prescription compliant with CDC recommendations	This measure was developed using the CDC Guideline for Prescribing Opioids for Chronic Pain – United States, 2016 (https://www.cdc.gov/mmwr/volumes/65/rr/rr6501e1.htm), and the Surgeon General's Report on Alcohol, Drugs, and Health (https://addiction.surgeongeneral.gov/) and is therefore based on scientific evidence consistent with establishing each of the 5 components that comprise the composite. The CDC Guideline provides clarity on opioid prescribing recommendations based on the most recent scientific evidence, informed by expert opinion and stakeholder and public input. A large body of research has identified high-risk prescribing practices that contribute to the overdose epidemic (e.g., high-dose and duration prescribing, overlapping opioid and benzodiazepine prescriptions, and extended-release/long-acting [ER/LA] opioids for acute pain). This composite measure, derived from the CDC Guideline, is aimed at addressing problematic initial prescribing. It has the potential to optimize treatment and improve patient safety using evidence-based, best practices, as well as mitigate opioid pain medication misuse that contributes to the opioid overdose epidemic. CDC Guideline References 24.Bohnert AS, Valenstein M, Bair MJ, et al. Association between opioid prescribing patterns and opioid overdose-related deaths. JAMA 2011;305:1315–21. 26.Jamison RN, Sheehan KA, Scanlan E, Matthews M, Ross EL. Beliefs and attitudes about opioid prescribing and chronic pain management: survey of primary care providers. J Opioid Manag 2014;10:375–82. 27.Wilson HD, Dansie EJ, Kim MS, Moskovitz BL, Chow W, Turk DC. Clinicians' attitudes and beliefs about opioids survey (CAOS): instrument development and results of a national physician survey. J Pain 2013;14:613–27. 28.Haegerich TM, Paulozzi LJ, Manns BJ, Jones CM. What we know, and don't know, about the impact of state policy and systems-level interventions on prescription drug overdose. Drug Alcohol Depend 2014;145:34–47. 33.Liu Y, Logan JE, Paulozzi LJ, Zhang K, Jones CM. Potential misuse and inappropriate prescription practices involving opioid analgesics. Am J Manag Care 2013;19:648–65. 34.Mack KA, Zhang K, Paulozzi L, Jones C. Prescription practices involving opioid analgesics among Americans with Medicaid, 2010. J Health Care Poor Underserved 2015;26:182–98. 77.Miller M, Barber CW, Leatherman S, et al. Prescription opioid duration of action and the risk of unintentional overdose among patients receiving opioid therapy. JAMA Intern Med 2015;175:608–15 191.Chou R, Cruciani RA, Fiellin DA, et al. ; American Pain Society; Heart Rhythm Society. Methadone safety: a clinical practice guideline from the American Pain Society and College on Problems of Drug Dependence, in collaboration with the Heart Rhythm Society. J Pain 2014;15:321–37 127.Bohnert ASB, Logan JE, Ganoczy D, Dowell D. A detailed exploration into the association of prescribed opioid dosage and prescription opioid overdose deaths among patients with chronic pain. Med Care 2016. Epub ahead of print. http://journals.lww.com/lww-medicalcare/Abstract/publishahead/A_Detailed_Exploration_Into_the_Association_of.98952.aspx

MUC ID	Measure Title	Rationale
MUC18-106 (cont'd)	Initial opioid prescription compliant with CDC recommendations (cont'd)	192.Chu J, Farmer B, Ginsburg B, Hernandez S, Kenny J, Majlesi N. New York City emergency department discharge opioid prescribing guidelines. New York, NY: New York City Department of Health and Mental Hygiene; 2013. https://www1.nyc.gov/assets/doh/downloads/pdf/basas/opioid-prescribing-guidelines.pdf 193.Cheng D, Majlesi N. Clinical practice statement: emergency department opioid prescribing guidelines for the treatment of non-cancer related pain. Milwaukee, WI: American Academy of Emergency Medicine; 2013. 194.American College of Emergency Physicians. Maryland emergency department and acute care facility guidelines for prescribing opioids. Baltimore, MD: Maryland Chapter, American College of Emergency Physicians; 2014. http://www.mdacep.org/MD%20ACEP%20Pamphlet%20FINAL_April%202014.pdf 195.Paone D, Dowell D, Heller D. Preventing misuse of prescription opioid drugs. City Health Information 2011;30:23–30. 196.Thorson D, Biewen P, Bonte B, et al. Acute pain assessment and opioid prescribing protocol. Bloomington, MN: Institute for Clinical Systems Improvement; 2014. https://crh.arizona.edu/sites/default/files/u35/Opioids.pdf 197.Cantrill SV, Brown MD, Carlisle RJ, et al. ; American College of Emergency Physicians Opioid Guideline Writing Panel. Clinical policy: critical issues in the prescribing of opioids for adult patients in the emergency department. Ann Emerg Med 2012;60:499–525 212.Park TW, Saitz R, Ganoczy D, Ilgen MA, Bohnert AS. Benzodiazepine prescribing patterns and deaths from drug overdose among US veterans receiving opioid analgesics: case-cohort study. BMJ 2015;350:h2698. 213.Paquin AM, Zimmerman K, Rudolph JL. Risk versus risk: a review of benzodiazepine reduction in older adults. Expert Opin Drug Saf 2014;13:919–34. 214.Schweizer E, Case WG, Rickels K. Benzodiazepine dependence and withdrawal in elderly patients. Am J Psychiatry 1989;146:529–31.

MUC ID	Measure Title	Rationale
MUC18-107	Hospital Harm - Pressure Injury	An estimated 1.19 million hospital-acquired pressure injuries occurred in 2015.[2,8] The presence or development of a pressure injury can increase the length of a patient's hospital stay by an average of 4 days, and increase costs, which range from $20,900 to $151,700 per pressure injury.[2, 8] The rate of pressure injuries varies across hospitals, and it is well accepted that pressure injury can be reduced through best practices, suggesting opportunity for further improvement.[8] The Agency for Healthcare Research and Quality (AHRQ) published data that showed 3.1 million fewer incidents of hospital-acquired harm in 2011-2015 compared with 2010; 23% of this reduction was from a reduction in hospital-acquired pressure injuries.[8] Research has also suggested a link between a hospital's processes of care and the outcome of hospital-acquired pressure injury.[1] Due to this research, pressure injury was identified as an area for measurement and improvement. References: 1. Gunningberg L, Donaldson, N., Aydin, C., Idvall, E. Exploring variation in pressure ulcer prevalence in Sweden and the USA: Benchmarking in action. 18. 10.1111/j.1365-2753.2011.01702.x. Journal of evaluation in clinical practice. 2011: 904-910. 2. Berlowitz D, VanDeusen Lukas C, Parker V, et al. Preventing Pressure Ulcers in Hospitals- A Toolkit for Improving Quality of Care. 2012. 8. Agency for Healthcare Research and Quality. National Scorecard on Rates of Hospital-Acquired Conditions 2010 to 2015: Interim Data From National Efforts to Make Health Care Safer. 2016; https://www.ahrq.gov/professionals/quality-patient-safety/pfp/2015-interim.html?utm_source=AHRQ&utm_medium=PSLS&utm_term=&utm_content=14&utm_campaign=AHRQ_NSOHAC_2016. Accessed January 13, 2017.

MUC ID	Measure Title	Rationale
MUC18-108	Medication Reconciliation on Admission	This measure is based on a systematic review of 26 studies (Muller, 2012) and a targeted literature review that identified 16 additional studies (Andreoli, 2014; Becerra-Camargo, 2013; Becerra-Camargo, 2015; Byrne, 2017; Cater, 2013; Curatolo, 2015; Gimenez-Manzorro, 2015; Grimes, 2014; Hron, 2015; Khalil, 2016; Lea, 2016; Leguelinel-Blache, 2014; Mergenhagen, 2016; Sherr, 2011; van den Bemt, 2013; Wang, 2012) that support the measure focus since the publication of the systematic review. Among 16 recent studies identified since the systematic review, most incorporated the three components of the measure. Two studies (Khalil et al., and Mergenhagen et al.) of the three studies that evaluated ADEs (Hron et al, Khalil et al., and Mergenhagen et al.), required all three components and achieved a 35%-76 % reduction in ADE rates. Of the 42 studies that evaluated the effectiveness of improved medication reconciliation, 33 utilized outcomes that are sensitive to the direct effect of completed medication reconciliation (Note: studies could have evaluated more than one outcome). Key findings from those 33 studies are listed below: - 27 of 33 studies demonstrated a reduction in medication errors/ discrepancies - 7 of 9 studies demonstrated reduction in potential adverse drug events - 5 of 5 studies demonstrated a reduction in adverse drug events (patient injury related to drug use) The measure relies on the following two Elements of Performance standards for the Medication Reconciliation process on admission put forth in the National Patient Safety Goals by The Joint Commission (The Joint Commission, 2016): 1. Obtain information on the medications the patient is currently taking when he or she is admitted to the hospital or is seen in an outpatient setting. This information is documented in a list or other format that is useful to those who manage medications. 2. Compare the medication information the patient brought to the hospital with the medications ordered for the patient by the hospital in order to identify and resolve discrepancies. Citations: - Andreoli L, Alexandra JF, Tesmoingt C, et al. Medication reconciliation: a prospective study in an internal medicine unit. Drugs & aging. 2014;31(5):387-393. doi: 10.1007/s40266-014-0167-3. - Becerra-Camargo J, Martinez-Martinez F, Garcia-Jimenez E. A multicentre, double-blind, randomised, controlled, parallel-group study of the effectiveness of a pharmacist-acquired medication history in an emergency department. BMC health services research. 2013;13:337. doi: 10.1186/1472-6963-13-337. - Becerra-Camargo J, Martinez-Martinez F, Garcia-Jimenez E. The effect on potential adverse drug events of a pharmacist-acquired medication history in an emergency department: a multicentre, double-blind, randomised, controlled, parallel-group study. BMC health services research. 2015;15:337. doi: 10.1186/s12913-015-0990-1. - Byrne SM, Grimes TC, Jago-Byrne MC, Galvin M. Impact of team-versus ward-aligned clinical pharmacy on unintentional medication discrepancies at admission. International journal of clinical pharmacy. 2017;39(1):148-155. doi: 10.1007/s11096-016-0412-4.

MUC ID	Measure Title	Rationale
MUC18-108 (cont'd)	Medication Reconciliation on Admission (cont'd)	- Cater SW, Luzum M, Serra AE, et al. A prospective cohort study of medication reconciliation using pharmacy technicians in the emergency department to reduce medication errors among admitted patients. The Journal of emergency medicine. 2015;48(2):230-238. doi: 10.1016/j.jemermed.2014.09.065. - Curatolo N, Gutermann L, Devaquet N, Roy S, Rieutord A. Reducing medication errors at admission: 3 cycles to implement, improve and sustain medication reconciliation. International journal of clinical pharmacy. 2015;37(1):113-120. doi: 10.1007/s11096-014-0047-2. - Gimenez-Manzorro A, Romero-Jimenez RM, Calleja-Hernandez MA, Pla-Mestre R, Munoz-Calero A, Sanjurjo-Saez M. Effectiveness of an electronic tool for medication reconciliation in a general surgery department. International journal of clinical pharmacy. 2015;37(1):159-167. doi: 10.1007/s11096-014-0057-0. - Grimes TC, Deasy E, Allen A, et al. Collaborative pharmaceutical care in an Irish hospital: uncontrolled before-after study. BMJ quality & safety. 2014;23(7):574-583. doi: 10.1136/bmjqs-2013-002188. - Hron JD, Manzi S, Dionne R, et al. Electronic medication reconciliation and medication errors. International journal for quality in health care: journal of the International Society for Quality in Health Care / ISQua. 2015;27(4):314-319. doi: 10.1093/intqhc/mzv046. - Khalil V, deClifford JM, Lam S, Subramaniam A. Implementation and evaluation of a collaborative clinical pharmacist's medications reconciliation and charting service for admitted medical inpatients in a metropolitan hospital. Journal of clinical pharmacy and therapeutics. 2016;41(6):662-666. doi: 10.1111/jcpt.12442. - Lea M, Barstad I, Mathiesen L, Mowe M, Molden E. Effect of teaching and checklist implementation on accuracy of medication history recording at hospital admission. International journal of clinical pharmacy. 2016;38(1):20-24. doi: 10.1007/s11096-015-0218-9. - Leguelinel-Blache G, Arnaud F, Bouvet S, et al. Impact of admission medication reconciliation performed by clinical pharmacists on medication safety. European journal of internal medicine. 2014;25(9):808-814. doi: 10.1016/j.ejim.2014.09.012. - Mueller, S. K., Sponsler, K. C., Kripalani, S., & Schnipper, J. L. (2012). Hospital-based medication reconciliation practices: A systematic review. Archives of Internal Medicine, 172(14), 1057-1069. doi: - Mergenhagen KA, Blum SS, Kugler A, et al. Pharmacist- versus physician-initiated admission medication reconciliation: impact on adverse drug events. The American journal of geriatric pharmacotherapy. 2012;10(4):242-250. doi: 10.1016/j.amjopharm.2012.06.001. - Sherr L, Nagra N, Kulubya G, Catalan J, Clucas C, Harding R. HIV infection associated post-traumatic stress disorder and post-traumatic growth--a systematic review. Psychology, health & medicine. 2011;16(5):612-629. doi: 10.1080/13548506.2011.579991. - The Joint Commission. (2016). National patient safety goals effective January 1, 2017: Hospital Accreditation Program. Retrieved on December 13, 2016 from https://www.jointcommission.org/assets/1/6/NPSG_Chapter_HAP_Jan2017.pdf

MUC ID	Measure Title	Rationale
MUC18-108 (cont'd)	Medication Reconciliation on Admission (cont'd)	- van den Bemt PM, van der Schrieck-de Loos EM, van der Linden C, Theeuwes AM, Pol AG, Dutch CBOWHOHsSG. Effect of medication reconciliation on unintentional medication discrepancies in acute hospital admissions of elderly adults: a multicenter study. Journal of the American Geriatrics Society. 2013;61(8):1262-1268. doi: 10.1111/jgs.12380. - Wang T, Biederman S. Enhance the accuracy of medication histories for the elderly by using an electronic medication checklist. Perspect Health Inf Manag. 2012;9:1-15.
MUC18-109	Hospital Harm - Hypoglycemia	Hypoglycemia can cause a wide range of symptoms, from mild symptoms such as dizziness and confusion to more severe symptoms such as seizure or loss of consciousness. Hypoglycemia is also associated with increased in-hospital mortality,[2-4] longer hospital stays,[2, 4, 5] and higher medical costs.[2] Severe hypoglycemia events are largely avoidable by careful use of antihyperglycemic medication. Moreover, the rate of severe hypoglycemia varies across hospitals, indicating an opportunity for improvement in care. Hypoglycemia events in the hospital are among the most common adverse drug events (ADEs). In 2004, an estimated 888,000 ADEs occurred among hospitalized Medicare patients in the United States.[1,6] In a study published by the Office of the Inspector General (OIG), ADEs represented one-third of all adverse events in hospitals among Medicare patients; of those events, hypoglycemia was the third most common ADE.[7] References: 1. Classen DC, Jaser L, Budnitz DS. Adverse drug events among hospitalized Medicare patients: epidemiology and national estimates from a new approach to surveillance. Jt Comm J Qual Patient Saf. 2010;36(1):12-21. 2. Curkendall SM, Natoli JL, Alexander CM, Nathanson BH, Haidar T, Dubois RW. Economic and clinical impact of inpatient diabetic hypoglycemia. Endocr Pract. 2009;15(4):302-312. 3. Krinsley JS, Grover A. Severe hypoglycemia in critically ill patients: risk factors and outcomes. Crit Care Med. 2007;35(10):2262-2267. 4. Turchin A, Matheny ME, Shubina M, Scanlon JV, Greenwood B, Pendergrass ML. Hypoglycemia and clinical outcomes in patients with diabetes hospitalized in the general ward. Diabetes Care. 2009;32(7):1153-1157. 5. Krinsley J, Schultz MJ, Spronk PE, et al. Mild hypoglycemia is strongly associated with increased intensive care unit length of stay. Ann Intensive Care. 2011;1:49. 6. National Quality Forum. Prioritization of High-Impact Medicare Conditions and Measure Gaps: Measure Prioritization Advisory Committee Report Washington, DC: NQF;2010. 7. Office of the Inspector General (OIG), US Department of Health and Human Services. Adverse Events in Hospitals: National Incidence Among Medicare Beneficiaries. 2010.

MUC ID	Measure Title	Rationale
MUC18-115	Inpatient Chronic Obstructive Pulmonary Disease (COPD) Exacerbation	Health expenditures continue to increase in the United States. According to the National Health Expenditure Accounts, total health care spending increased by 4.6 percent in 2017, reaching $3.5 trillion (CMS, 2018). Medicare spending, which is still predominantly paid on a fee-for-service (FFS) basis, also grew by 3.6 percent, reaching $672.1 billion (CMS, 2018). However, this growth is slower than the previous two years due to a slowed growth in spending for both Medicare FFS and Medicare Advantage. In the United States, Medicare is the largest single purchaser of health care, and successfully establishing payment models under MIPS can have significant impacts on reducing costs and making care more affordable (MedPAC, 2017). COPD is a serious condition defined as the "physiologic finding of nonreversible pulmonary function impairment," and includes chronic bronchitis and emphysema (NHLBI, 2012). In the United States, COPD is the third leading cause of death, affecting approximately 24 million Americans, accounting for more than 56 percent of deaths from lung disease, and representing over 700,000 hospital admissions in 2010 (CDC, 2017). In addition, evidence from the 1988 -1994 National Health and Nutrition Examination Survey suggests that as many as 12 million people in the United States may have undiagnosed COPD (NHLBI, 2012). Exacerbation of COPD and subsequent complications lead to a large majority of COPD costs. Studies in 2008 found Medicare beneficiaries with COPD incur annual health care costs $15,000 to $20,000 greater than costs for beneficiaries without COPD, with the majority of this cost resulting from inpatient hospitalizations for COPD (Menzin, 2008). Approximately 56 percent of patients with COPD were hospitalized in 2004 compared to 14 percent for patients without COPD (Vogelmeier 2017). Hospitalization for an acute exacerbation of COPD (AECOPD) is a known cause and predictor of COPD progression (Vogelmeier, 2017). In one study, hospitalizations due to COPD cost over $19,000 on average whereas hospitalizations unrelated to COPD had an average cost below $4,000 (Menzin, 2008). Mitigation of COPD readmissions and subsequent complications therefore has potential for substantial improvement in patients' quality of life, care quality, as well as cost savings to Medicare. CDC. "Faststats: Chronic Obstructive Pulmonary Disease (COPD) Includes: Chronic Bronchitis and Emphysema." Centers for Disease Control and Prevention, 2017 https://www.cdc.gov/nchs/fastats/copd.htm. "Data Book: Health Care Spending and the Medicare Program." MedPAC, 2017 Menzin, J., L. Boulanger, J. Marton, L. Guadagno, H. Dastani, R. Dirani, A. Phillips, and H. Shah. "The Economic Burden of Chronic Obstructive Pulmonary Disease (COPD) in a U.S. Medicare Population." [In Eng]. Respir Med 102, no. 9 (Sep 2008): 1248-56. "National Health Expenditure Projections, 2017-2026." US Centers for Medicare & Medicaid Services, 2018. NHLBI. Morbidity & Mortality: 2012 Chart Book on Cardiovascular, Lung, and Blood Diseases. Edited by National Institutes of Health: National Heart, Lung, and Blood Institute, 2012. Vogelmeier, C. F., G. J. Criner, F. J. Martinez, A. Anzueto, P. J. Barnes, J. Bourbeau, B. R. Celli, et al. "Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Lung Disease 2017 Report. Gold Executive Summary." [In Eng]. Am J Respir Crit Care Med 195, no. 5 (Mar 01 2017): 557-82.

MUC ID	Measure Title	Rationale
MUC18-116	Femoral or Inguinal Hernia Repair	Health expenditures continue to increase in the United States. According to the National Health Expenditure Accounts, total health care spending increased by 4.6 percent in 2017, reaching $3.5 trillion (CMS, 2018). Medicare spending, which is still predominantly paid on a fee-for-service (FFS) basis, also grew 3.6 percent, reaching $672.1 billion (CMS, 2018). However, this growth is slower than the previous two years due to a slow growth in spending for both Medicare FFS and Medicare Advantage. In the United States, Medicare is the largest single purchaser of health care, and successfully establishing payment models under MIPS can have significant impacts on reducing costs and making care more affordable (MedPAC, 2017). Treating abdominal wall hernias, including femoral and inguinal hernias, is a common procedure. In the US, more than 1 million abdominal wall hernias are treated and or repaired annually, the majority of which are inguinal hernias (Matthews & Neumayer, 2008). On average, these hernia repair procedures cost approximately $2000 to $2500, representing nearly $2.5 billion in annual health care costs (Rutkow, 2003). Inguinal hernia repair remains one of the most performed surgical operations around the world and is a common surgical problem for older patients (Sanjay et al., 2011). Femoral or inguinal hernia repair has been shown to be safe for elderly patients, despite some surgeon reluctance to offer the procedure to elderly patients due to concerns of increased risk (Kurzer et al., 2009; Sinha et al., 2017; Wu et al., 2017). Cost calculations for hernia are confounded by the many surgical and anesthesia treatment options available, according to the International Guidelines for Groin Hernia Management (2018). Open procedures have been found to be less costly than laparoscopic procedures in some instances (Smink et al., 2009) “Data Book: Health Care Spending and the Medicare Program.” MedPAC, 2017 "International Guidelines for Groin Hernia Management." Hernia: The Journal Of Hernias And Abdominal Wall Surgery 22, no. 1 (2018): 1-165. Kurzer, M., A. Kark, and S. T. Hussain. "Day-Case Inguinal Hernia Repair in the Elderly: A Surgical Priority." Hernia: The Journal Of Hernias And Abdominal Wall Surgery 13, no. 2 (2009): 131-36. Matthews, R. Douglas and Leigh Neumayer. "Inguinal Hernia in the 21st Century: An Evidence-Based Review." Current Problems In Surgery 45, no. 4 (2008): 257-59. “National Health Expenditure Projections, 2017-2026.” US Centers for Medicare & Medicaid Services, 2018. Rutkow, Ira M. "Demographic and Socioeconomic Aspects of Hernia Repair in the United States in 2003." The Surgical Clinics Of North America 83, no. 5 (2003): 1045. Sanjay, Pandanaboyana, Heather Leaver, Irshad Shaikh, and Alan Woodward. "Lichtenstein Hernia Repair under Different Anaesthetic Techniques with Special Emphasis on Outcomes in Older People." Australasian Journal on Ageing 30, no. 2 (2011): 93-97. Sinha, Surajit, G. Srinivas, J. Montgomery, and D. DeFriend. "Outcome of Day-Case Inguinal Hernia in Elderly Patients: How Safe Is It?". Hernia: The Journal Of Hernias And Abdominal Wall Surgery 11, no. 3 (2007): 253-56.

MUC ID	Measure Title	Rationale
MUC18-116 (cont'd)	Femoral or Inguinal Hernia Repair (cont'd)	Smink, Douglas S., Ian M. Paquette, and Samuel R. G. Finlayson. "Utilization of Laparoscopic and Open Inguinal Hernia Repair: A Population-Based Analysis." Journal Of Laparoendoscopic & Advanced Surgical Techniques. Part A 19, no. 6 (2009): 745-48. Wu, J. J., B. C. Baldwin, E. Goldwater, and T. C. Counihan. "Should We Perform Elective Inguinal Hernia Repair in the Elderly?". Hernia: The Journal Of Hernias And Abdominal Wall Surgery 21, no. 1 (2017): 51-57.
MUC18-117	Lumbar Spine Fusion for Degenerative Disease, 1-3 Levels	Health expenditures continue to increase in the United States. According to the National Health Expenditure Accounts, total health care spending increased by 4.6 percent in 2017, reaching $3.5 trillion (CMS, 2018). Medicare spending, which is still predominantly paid on a fee-for-service (FFS) basis, also grew by 3.6 percent, reaching $672.1 billion (CMS, 2018). However, this growth is slower than the previous two years due to a slow growth in spending for both Medicare FFS and Medicare Advantage. In the United States, Medicare is the largest single purchaser of health care, and successfully establishing payment models under MIPS can have significant impacts on reducing costs and making care more affordable (MedPAC, 2017). Lower back pain is the most common medical problem worldwide and the top cause of years lived with disability, with over 600,000 cases in 2013, a 56.75 percent increase from 1990 (Global Burden of Disease, 2015). Common conditions responsible for lower back pain include: degenerative disk disease, spondylolysis, spondylolisthesis, trauma and spinal stenosis. Surgery is one of several options to consider for older patients with symptomatic lumbar spine disease that causes lower back pain. Between 2006 and 2012, over 6 million Medicare patients were diagnosed with lumbar degenerative conditions (Buser et al., 2017), and lumbar spine procedures are increasingly used in elderly patients to treat these conditions. For example, lumbar fusion rates have increased from 0.3 per 1000 Medicare beneficiaries in 1992 to 1.1 per 1000 in 2003 (Puvanesarajah, 2016). One study found that 5.9 per 100 patients progressed to lumbar fusion within 1 year, and there was an increase of 18.5 percent in the incidence of fusion procedures within 1 year of diagnosis between 2006 and 2011, with the age group 65 to 69 having the highest incidence (Buser et al., 2017). Furthermore, the 65 to 69 years age group also had the highest incidence of patients that underwent fusion within 1 year of diagnosis, while patients 80 to 84 and greater than 85 years of age had the greatest relative increase in fusion incidence between 2008 and 2011 (Buser et al., 2017). The cost of lumbar fusion has also increased, as noted by a 2012 study looking at the trends in spinal fusion from 1998 to 2008, where the cost per case increased from $24,676 to $81,960 (Rajaee et al., 2012). Based on a review of the Medicare Provider Analysis and Review file, total spending on lumbar spinal fusion surgery is also one of the highest admission outlays in the Medicare program, costing over $3.6 billion dollars in 2013 (Culler et al., 2016). Buser, Z., B. Ortega, A. D'Oro, W. Pannell, J. R. Cohen, J. Wang, R. Golish, M. Reed, and J. C. Wang. "Spine Degenerative Conditions and Their Treatments: National Trends in the United States of America." [In eng]. Global Spine J 8, no. 1 (Feb 2018): 57-67.

MUC ID	Measure Title	Rationale
MUC18-117 (cont'd)	Lumbar Spine Fusion for Degenerative Disease, 1-3 Levels (cont'd)	Culler, S. D., D. S. Jevsevar, K. G. Shea, K. J. McGuire, M. Schlosser, K. K. Wright, and A. W. Simon. "Incremental Hospital Cost and Length-of-Stay Associated with Treating Adverse Events among Medicare Beneficiaries Undergoing Lumbar Spinal Fusion During Fiscal Year 2013." [In eng]. Spine (Phila Pa 1976) 41, no. 20 (Oct 15 2016): 1613-20. "Data Book: Health Care Spending and the Medicare Program." MedPAC, 2017. "Global, Regional, and National Incidence, Prevalence, and Years Lived with Disability for 301 Acute and Chronic Diseases and Injuries in 188 Countries, 1990-2013: A Systematic Analysis for the Global Burden of Disease Study 2013." [In eng]. Lancet 386, no. 9995 (Aug 22 2015): 743-800. "National Health Expenditure Projections, 2017-2026." US Centers for Medicare & Medicaid Services, 2018. Puvanesarajah, V., B. C. Werner, J. M. Cancienne, A. Jain, H. Pehlivan, A. L. Shimer, A. Singla, F. Shen, and H. Hassanzadeh. "Morbid Obesity and Lumbar Fusion in Patients Older Than 65 Years: Complications, Readmissions, Costs, and Length of Stay." [In eng]. Spine (Phila Pa 1976) 42, no. 2 (Jan 15 2017): 122-27. Rajaee, S. S., H. W. Bae, L. E. Kanim, and R. B. Delamarter. "Spinal Fusion in the United States: Analysis of Trends from 1998 to 2008." [In eng]. Spine (Phila Pa 1976) 37, no. 1 (Jan 1 2012): 67-76.
MUC18-119	Psychoses/ Related Conditions	Health expenditures continue to increase in the United States. According to the National Health Expenditure Accounts, total health care spending increased by 4.6 percent in 2017, reaching $3.5 trillion (CMS, 2018). Medicare spending, which is still predominantly paid on a fee-for-service (FFS) basis, also grew 3.6 percent, reaching $672.1 billion (CMS, 2018). However, this growth is slower than the previous two years due to a slow growth in spending for both Medicare FFS and Medicare Advantage. In the United States, Medicare is the largest single purchaser of health care, and successfully establishing payment models under MIPS can have significant impacts on reducing costs and making care more affordable (MedPAC, 2017). Psychotic disorders, which are associated with disturbances in thought processing and behaviors that result in a loss of contact with reality, occur throughout the lifespan. Chronic psychotic disorders, including schizophrenia spectrum disorders, cause impairment in social, self-care and/or occupational functioning, and are among the most disabling disorders worldwide. Data from the 2010 Global Burden of Diseases, Injuries, and Risk Factors Study shows that mental and substance use disorders are the leading cause of years lived with disability. Despite being less prevalent than other disorders, schizophrenia accounted for 7.4 percent of disability-adjusted life years worldwide (Whiteford et al., 2013). Schizophrenia is diagnosed in between 0.3 percent and 1.6 percent of the US population and is one of the costliest mental illnesses, with treatment costs approximately double than that for major depression disorder and quadruple that for anxiety disorders (Desai et al., 2013; Zhu et al., 2008). Additionally, adults with schizophrenia represent a greater percent of Medicare beneficiaries than the general adult US population (approximately 1.5 percent and 1 percent, respectively) (Feldman et al., 2014). The direct costs of treating schizophrenia in the US are estimated to be between $33 and $65 billion annually, with inpatient services and medication representing the largest proportion of the costs (Wilson et al., 2011). Indirect costs represent a large cost burden as well and are estimated to cost $18.68 billion annually, which includes costs associated with lost productivity due to missed work, reduced employment and employability, premature death, and caregivers' costs (Desai et

MUC ID	Measure Title	Rationale
MUC18-119 (cont'd)	Psychoses/ Related Conditions (cont'd)	al., 2013). "Data Book: Health Care Spending and the Medicare Program." MedPAC, 2017 Desai, Pooja R., Kenneth A. Lawson, Jamie C. Barner, and Karen L. Rascati. "Estimating the Direct and Indirect Costs for Community-Dwelling Patients with Schizophrenia." Journal of Pharmaceutical Health Services Research 4, no. 4 (2013): 187-94. Feldman, Rachel, Robert A. Bailey, James Muller, Jennifer Le, and Riad Dirani. "Cost of Schizophrenia in the Medicare Program." Population Health Management 17, no. 3 (2014): 190-96. "National Health Expenditure Projections, 2017-2026." US Centers for Medicare & Medicaid Services, 2018. Whiteford, Harvey A., Louisa Degenhardt, Jürgen Rehm, Amanda J. Baxter, Alize J. Ferrari, Holly E. Erskine, Fiona J. Charlson, et al. "Global Burden of Disease Attributable to Mental and Substance Use Disorders: Findings from the Global Burden of Disease Study 2010." The Lancet 382, no. 9904 (2013): 1575-86. Wilson, Leslie S., Gitlin, Matthew, Lightwood, Jim. "Schizophrenia Costs for Newly Diagnosed Versus Previously Diagnosed Patients." The American Journal of Pharmacy Benefits, vol. 3, no. 2, 2011, pp. 107-115. Zhu, Baojin, Haya Ascher-Svanum, Douglas E. Faries, Xiaomei Peng, David Salkever, and Eric P. Slade. "Costs of Treating Patients with Schizophrenia Who Have Illness-Related Crisis Events." BMC Psychiatry 8 (2008): 72-72.
MUC18-120	Lumpectomy, Partial Mastectomy, Simple Mastectomy	Health expenditures continue to increase in the United States. According to the National Health Expenditure Accounts, total health care spending increased by 4.6 percent in 2017, reaching $3.5 trillion (CMS, 2018). Medicare spending, which is still predominantly paid on a fee-for-service (FFS) basis, also grew 3.6 percent, reaching $672.1 billion (CMS, 2018). However, this growth is slower than the previous two years due to a slow growth in spending for both Medicare FFS and Medicare Advantage. In the United States, Medicare is the largest single purchaser of health care, and successfully establishing payment models under MIPS can have significant impacts on reducing costs and making care more affordable (MedPAC, 2017). The American Cancer Society estimates that breast cancer accounts for 29 percent of all new cancer diagnoses in women and has the highest treatment costs among all cancer types; estimated at $16.5 billion in 2010 (Siegel et al., 2016, Greenup et al., 2017). Breast cancer is the second most common cause of cancer mortality for women and surgery remains the primary treatment modality. Furthermore, the adoption and use of screening mammography has resulted in increased rates of detection of early-stage breast cancer and increased demand for surgical intervention (Helvie et al., 2014). As such, the surgical treatment of breast cancer including lumpectomy, partial mastectomy, and simple mastectomy represent a significant economic burden (Al-Hilli et al., 2015). Al-Hilli, Zahraa, Kristine M. Thomsen, Elizabeth B. Habermann, James W. Jakub, and Judy C. Boughey. "Reoperation for Complications after Lumpectomy and Mastectomy for Breast Cancer from the 2012 National Surgical Quality Improvement Program (Acs-Nsqip)." Annals Of Surgical Oncology 22 Suppl 3 (2015): S459-S69. "Data Book: Health Care Spending and the Medicare Program." MedPAC, 2017.

MUC ID	Measure Title	Rationale
MUC18-120 (cont'd)	Lumpectomy, Partial Mastectomy, Simple Mastectomy (cont'd)	Greenup, Rachel A., Rachel C. Blitzblau, Kevin L. Houck, Julie Ann Sosa, Janet Horton, Jeffrey M. Peppercorn, Alphonse G. Taghian, Barbara L. Smith, and E. Shelley Hwang. "Cost Implications of an Evidence-Based Approach to Radiation Treatment after Lumpectomy for Early-Stage Breast Cancer." Journal Of Oncology Practice 13, no. 4 (2017): e283-e90. Helvie, Mark A., Joanne T. Chang, R. Edward Hendrick, and Mousumi Banerjee. "Reduction in Late-Stage Breast Cancer Incidence in the Mammography Era: Implications for Overdiagnosis of Invasive Cancer." Cancer 120, no. 17 (2014): 2649-56. "National Health Expenditure Projections, 2017-2026." US Centers for Medicare & Medicaid Services, 2018. Siegel, Rebecca L., Kimberly D. Miller, and Ahmedin Jemal. "Cancer Statistics, 2016." CA: A Cancer Journal For Clinicians 66, no. 1 (2016): 7-30.
MUC18-121	Acute Kidney Injury Requiring New Inpatient Dialysis	Health expenditures continue to increase in the United States. According to the National Health Expenditure Accounts, total health care spending increased by 4.6 percent in 2017, reaching $3.5 trillion (CMS, 2018). Medicare spending, which is still predominantly paid on a fee-for-service (FFS) basis, also grew 3.6 percent, reaching $672.1 billion (CMS, 2018). However, this growth is slower than the previous two years due to a slow growth in spending for both Medicare FFS and Medicare Advantage. In the United States, Medicare is the largest single purchaser of health care, and successfully establishing payment models under MIPS can have significant impacts on reducing costs and making care more affordable (MedPAC, 2017). AKI is one of the most serious complications among hospitalized patients. It is associated with a significant number of acute and chronic conditions, worse operative outcomes, increased mortality, and high resource utilization (Lysak et al., 2017; Hsu et al., 2016). The severity of AKI is associated with worse outcomes, and negatively affects length of stay, resource use, and in-hospital and post-discharge costs. The annual expenditure of hospital-based AKI exceeds $10 billion, and each year there is approximately 600,000 cases of AKI (Lysak et al., 2017; Chawla et al., 2011). From 2000 to 2014, hospitalization rates for dialysis-requiring AKI increased by 57% among adults with diagnosed diabetes and by 64% among adults without diagnosed diabetes (Pavkov et al., 2018). In 2015, 4.3 percent of Medicare beneficiaries experienced a hospitalization complicated by AKI (USRDS, 2017). Older patients in particular have higher rates for poor outcomes, including a greater chance of nonrecovery renal function upon discharge after treatment (Coca et al., 2011). In 2009, the inpatient case fatality rate for a single episode of AKI-D was 23.5 percent (Hsu et al., 2012). Therefore, developing a measure that leads to improved care for, or prevention of, AKI-D could lead to significant cost savings. Chawla, Lakhmir S, Richard L Amdur, Susan Amodeo, Paul L Kimmel, and Carlos E Palant. "The Severity of Acute Kidney Injury Predicts Progression to Chronic Kidney Disease." Kidney International, vol. 79, no. 12, 2011, pp. 1361-1369. Coca, Steven G, Kerry C Cho, and Chi-yuan Hsu. "Acute Kidney Injury in the Elderly: Predisposition to Chronic Kidney Diseases and Vice Versa." Nephron Clinical Practice, vol. 119, 2011, pp. c19-c24. "Data Book: Health Care Spending and the Medicare Program." MedPAC, 2017

MUC ID	Measure Title	Rationale
MUC18-121 (cont'd)	Acute Kidney Injury Requiring New Inpatient Dialysis (cont'd)	Hsu, Raymond K, Charles E McCulloch, Michael Heung, Rajiv Saran, Vahakn B Shahinian, Meda E Pavkov, Nilka Ríos Burrows, Neil R Powe, and Chi-yuan Hsu, for the Centers for Disease Control and Prevention Chronic Kidney Disease Surveillance Team. "Exploring Potential Reasons for the Temporal Trend in Dialysis-Requiring AKI in the United States." The Clinical Journal of the American Society of Nephrology, vol. 11, no. 1, 2016, pp. 14-20. Hsu, Raymond K, Charles E McCulloch, R Adams Dudley, Lowell J Lo, and Chi-yuan Hsu. "Temporal Changes in incidence of Dialysis-Requiring AKI." Journal of the American Society of Nephrology, vol. 24, no. 1, 2012, pp. 37-42 Lysak, Nicholas, Azra Bihorac, and Charles Hobson. "Mortality and Cost of Acute and Chronic Kidney Disease After Cardiac Surgery." Current Opinion in Anesthesiology, vol. 30, no. 1, 2017, pp. 113-117. "National Health Expenditure Projections, 2017-2026." US Centers for Medicare & Medicaid Services, 2018. Pavkov, Meda E, Jessica L. Harding, and Nilka Ríos Burrows. "Trends in Hospitalizations for Acute Kidney Injury — United States, 2000–2014." MMWR Morb Mortal Wkly Rep, vol. 67, no. 10, 2018, pp. 289–293. United States Renal Data System. 2017 USRDS annual data report: Epidemiology of kidney disease in the United States. National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2017.
MUC18-122	Lower Gastrointestinal Hemorrhage	Health expenditures continue to increase in the United States. According to the National Health Expenditure Accounts, total health care spending increased by 4.6 percent in 2017, reaching $3.5 trillion (CMS, 2018). Medicare spending, which is still predominantly paid on a fee-for-service (FFS) basis, also grew 3.6 percent, reaching $672.1 billion (CMS, 2018). However, this growth is slower than the previous two years due to a slow growth in spending for both Medicare FFS and Medicare Advantage. In the United States, Medicare is the largest single purchaser of health care, and successfully establishing payment models under MIPS can have significant impacts on reducing costs and making care more affordable (MedPAC, 2017). Gastrointestinal (GI) diseases are highly prevalent, costly, and utilize a significant amount of health care resources, especially in the Medicare population (Peery et al., 2015). Gastrointestinal bleeding is the most common cause of hospitalizations for gastrointestinal diseases, and over 500,000 patients are hospitalized annually for GI bleeds (Gralnek & Strate, 2017; Strate & Gralnek, 2016). Lower gastrointestinal bleeding (LGIB) is responsible for approximately 30-40 percent of all GI bleeding cases, with an incidence of around 36 per 100,000 persons (Gralnek & Strate, 2016; Parekh et al., 2014). Typically, bleeding resolves spontaneously for most patients with LGIB. However, tests and procedures to determine the bleeding source, as well as preventative treatments, may still be initiated to mitigate the risk for future catastrophic bleeding episodes (Gralnek & Strate, 2016). Patients who experience LGIB without spontaneous resolution are at risk for significant complications, including severe hemodynamic compromise, which may necessitate urgent and aggressive resuscitation and intervention measures. Morbidity and mortality also increase significantly for patients who are older and for those with preexisting medical conditions, leading to higher costs and resource use, particularly for Medicare patients (Jansen et al, 2009).

MUC ID	Measure Title	Rationale
MUC18-122 (cont'd)	Lower Gastrointestinal Hemorrhage (cont'd)	The three most common causes of LGIB are diverticulosis, vascular ectasia, and hemorrhoids (Ghassemi & Jensen, 2013). On average, $33,630 is spent per Medicare patient for further evaluation of obscure GI bleeding (OGIB) (Parekh et al., 2014). Diverticular disease as a whole is responsible for around 300,000 hospitalizations annually, costing the United States approximately 2.6 billion dollars per year (Papageorge et al., 2016). Ghassemi, Kevin A and Dennis M Jensen. "Lower GI Bleeding: Epidemiology and Management." Current Gastroenterology Reports vol. 15, no. 7, 2013. Gralnek, Ian M, Ziv Neeman, and Lisa L Strate. "Acute Lower Gastrointestinal Bleeding." The New England Journal of Medicine, no. 376, 2017, pp. 1054-1063. "Data Book: Health Care Spending and the Medicare Program." MedPAC, 2017 Jansen, Antje, Sabine Harenberg, Uwe Grenda, and Christoph Elsing. "Risk Factors for Colonic Diverticular Bleeding: A Westernized Community Based Hospital Study." World Journal of Gastroenterology, vol. 15, no. 4, 2009, pp. 457-461. Papageorge, Christina M, Gregory D Kennedy, and Evie H Carchman. "National Trends in Short-term Outcomes Following Non-emergent Surgery for Diverticular Disease." Journal of Gastrointestinal Surgery, vol. 20, 2016, pp. 1376-1387. Parekh, Parth J, Ross C Buerlein, Rouzbeh Shams, Harlan Vingan, and David A Johnson. "Evaluation of Gastrointestinal Bleeding: Update of Current Radiologic Strategies." World Journal of Gastrointestinal Pharmacology and Therapeutics, vol. 5, no. 4, 2014, pp. 200-208. Peery, Ann F, Seth D Crockett, Alfred S Barrit, Evan S Dellon, Swathi Eluri, Lisa M Gangarosa, Elizabeth T Jensen, Jennifer L Lund, Sarina Pasricha, Thomas Runge, Monica Schmidt, Nicholas J Shaheen, and Robert S Sandler. "Burden of Gastrointestinal, Liver, and Pancreatic Diseases in the United States." Gastroenterology, vol. 149, no. 7, 2015, pp. 1731-1741. "National Health Expenditure Projections, 2017-2026." US Centers for Medicare & Medicaid Services, 2018. Strate, Lisa L and Ian M Gralnek. "ACG Clinical Guideline: Management of Patients with Acute Lower Gastrointestinal Bleeding." The American Journal of Gastroenterology, vol. 111, 2016, pp. 459-474.

MUC ID	Measure Title	Rationale
MUC18-123	Renal or Ureteral Stone Surgical Treatment	Health expenditures continue to increase in the United States. According to the National Health Expenditure Accounts, total health care spending increased by 4.6 percent in 2017, reaching $3.5 trillion (CMS, 2018). Medicare spending, which is still predominantly paid on a fee-for-service (FFS) basis, also grew 3.6 percent, reaching $672.1 billion (CMS, 2018). However, this growth is slower than the previous two years due to a slow growth in spending for both Medicare FFS and Medicare Advantage. In the United States, Medicare is the largest single purchaser of health care, and successfully establishing payment models under MIPS can have significant impacts on reducing costs and making care more affordable (MedPAC, 2017). Urinary stone disease, or urolithiasis, is one of the most common and expensive urologic conditions. In the United States, one in 11 people will have a history of urinary stones in their lifetime, and approximately 50 percent of patients will experience a recurrence within 5 years of their first urinary stone (Scales et al., 2012). Urolithiasis is the second most expensive urologic problem, accounting for $2.1 billion of $11 billion spent annually on urologic diseases (NIH, 2007). From 2003 to 2007, the total expenditure among Medicare beneficiaries 65 and older for treatment of urinary tract stones exceeded $1.04 billion each year (HHS, 2012). Urolithiasis tends to be more severe in geriatric patients, who also have a two-fold increase risk of being hospitalized for treatment (Arampatzis et al., 2012). The treatment of urinary stones has a significant economic impact on health care spending, making this an important measure to establish to reduce costs related to renal and ureteral stone surgical treatment. Arampatzis, Spyridon, Gregor Lindner, Filiz Irmak, Georg-Christian Funk, Heinz Zimmermann, and Aristomenis K Exadaktylos. “Geriatric Urolithiasis in the Emergency Department: Risk Factors for Hospitalization and Emergency Management Patterns of Acute Urolithiasis.” BMC Nephrology, no.13, 2012, pp. 117. “Data Book: Health Care Spending and the Medicare Program.” MedPAC, 2017 Table 14-46. Economic Impact of Urologic Disease. In:Chapter 14. Litwin MS, Saigal CS, editors. Urologic Diseases in America. US Department of Health and Human Services, Public Health Service, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases. Washington, DC: US Government Printing Office, 2012; NIH Publication No. 12-7865 pp. 486. “National Health Expenditure Projections, 2017-2026.” US Centers for Medicare & Medicaid Services, 2018. “Urologic Diseases Cost Americans $11 Billion a Year.” National Institutes of Health, 2007. Scales, Jr. Charles D, Alexandria C Smith, Janet M Hanley, Christopher S Saigal, and Urologic Diseases in America Project. “Prevalence of Kidney Stones in the United States.” European Urology, vol. 62, no. 1, 2012, pp. 160-165.

MUC ID	Measure Title	Rationale
MUC18-126	Hemodialysis Access Creation	Health expenditures continue to increase in the United States. According to the National Health Expenditure Accounts, total health care spending increased by 4.6 percent in 2017, reaching $3.5 trillion (CMS, 2018). Medicare spending, which is still predominantly paid on a fee-for-service (FFS) basis, also grew 3.6 percent, reaching $672.1 billion (CMS, 2018). However, this growth is slower than the previous two years due to a slow growth in spending for both Medicare FFS and Medicare Advantage. In the United States, Medicare is the largest single purchaser of health care, and successfully establishing payment models under MIPS can have significant impacts on reducing costs and making care more affordable (MedPAC, 2017). Because of a growing and aging population, the prevalence of beneficiaries with end-stage renal disease (ESRD) and enrollment for dialysis is rising (Ahmed et al., 2018). In 2015, there were 124,114 newly reported cases of ESRD, reaching a total of 703,243 people with ESRD for the year (NIH, 2017). Over 207,000 of those individuals were aged 65 and older, and accounted for approximately half of all individuals who received hemodialysis access for that year, which is a 22 percent increase from 2010 (NIH, 2017). The number ESRD cases increases by approximately 20,000 per year, with individuals aged 65 to 75 having the highest prevalence of ESRD and individuals aged 75 and older having the highest rate of new ESRD cases (NIH, 2017). Though the ESRD population is less than 1 percent of the total Medicare population, they accounted for 7.1 percent of Medicare spending in 2015. The United States Renal Data System (USRDS) 2017 Annual Data Report found that Medicare spent $33.9 billion on beneficiaries with ESRD, and when combined with the cost of Chronic Kidney Disease (CKD), a total of over $98 billion. For hemodialysis care, Medicare spent a total of $88,750 per patient per year, excluding unknown modalities, and $1,677 for vascular access procedures (procedures to place or create vascular accesses and procedures to maintain them) (NIH, 2017). Ahmed, Osman, Ketan Patel, Rana Rabei, Mikin V Patel, Michael Ginsburg, Bishir Clayton, and Bulent Arslan. "Hemodialysis Access Maintenance in the Medicare Population: An Analysis Over a Decade of Trends by Provider Specialty and Site of Service." Journal Of Vascular And Interventional Radiology, JVIR vol. 29, no. 2, 2018, pp. 159-169 “Data Book: Health Care Spending and the Medicare Program.” MedPAC, 2017 “National Health Expenditure Projections, 2017-2026.” US Centers for Medicare & Medicaid Services, 2018. United States Renal Data System, 2017 Annual Data Report: Epidemiology of Kidney Disease in the United States. National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2017.

MUC ID	Measure Title	Rationale
MUC18-131	Transfer of Health Information to Provider—Post-Acute Care	The communication of health information, such as that of a medication list, is critical to ensuring safe and effective patient transitions from one health care setting to another. The focus of this measure is the timely communication of health information, such as medication information at PAC discharge/transfer. Health information that is incomplete or missing, such as medication information, increases the likelihood of a patient/resident safety risk, often life-threatening. [1,2,3,4,5,6] Older adults are particularly vulnerable to adverse health outcomes due to insufficient medication information on the part of their health care providers, and their higher likelihood for multiple comorbid chronic conditions, polypharmacy, and complicated transitions between care settings. [7, 8]. Hospitalized patients discharged to SNFs had an average of 13 medications on their hospital discharge list [9], thus SNF and other PAC providers often are in the position of starting complex new medication regimens with little knowledge of the patient or their medication history. Furthermore, medication discrepancies are common, and found to occur in as many as three quarters of SNF admissions and 86 percent of all transitions.[10,11] Older patients being discharged to settings other than their home were more likely to experience a medication discrepancy, increasing their likelihood of experiencing an adverse event. [12] PAC patients often have complicated medication regimens and require efficient and effective communication and coordination of care between settings, including detailed transfer of medication information. Inter-institutional communication regarding medication regimens is a key factor to improving care transitions and reducing harm to patients. [13,14] Many care transition models, programs, and best practices emphasize the importance of timely communication and information exchange between discharging/ transferring and receiving providers, including medication information. [15,16,17] A comprehensive medication list is an important means of communication this information. The transfer of the patient's discharge medication information to their next providers and to the patients, in the form of a medication list, is common practice, and supported by discharge planning requirements for participation in Medicare and Medicaid programs. Most PAC EHR systems generate a discharge medication list. However, the content included in the medication lists varies and are not standardized. Other critical medication information may not be included in the medication lists provided at care transitions. Furthermore, these lists are often sent as a hard copy, rather than electronically to the recipient's EHR system or through interoperable exchange. A pharmacist study identified multiple opportunities to optimize nursing facility discharge medication lists in order to increase patient safety and potentially reduce readmissions. [18]. They noted that nursing facility settings have not made many improvements in discharge medication lists as hospitals have. The pharmacists also identified ideal components of a SNF discharge facility list, including an electronic medication list to minimize human error. An objective of this measure is to improve and standardize the type of medication list information transferred to providers, and, to increase, over time, the secure, timely, electronic transfer of the reconciled medication list using HIT standards. PAC provider adoption of EHRs and participation in health Information exchange can reduce provider

MUC ID	Measure Title	Rationale
MUC18-131 (cont'd)	Transfer of Health Information to Provider—Post-Acute Care (cont'd)	burden through the use and reuse of healthcare data, and supports high quality, personalized, and efficient healthcare, care coordination and person-centered care. Further, the interoperability provisions of the 21st Century Cures Act provide a strong framework to enable electronic sharing and interoperable exchange of medication list information. 1. Kwan, J. L., Lo, L., Sampson, M., & Shojania, K. G. (2013). Medication reconciliation during transitions of care as a patient safety strategy: a systematic review. Annals of Internal Medicine, 158(5), 397-403. 2. Boockvar, K. S., Blum, S., Kugler, A., Livote, E., Mergenhagen, K. A., Nebeker, J. R., & Yeh, J. (2011). Effect of admission medication reconciliation on adverse drug events from admission medication changes. Archives of Internal Medicine, 171(9), 860-861. 3. Bell, C. M., Brener, S. S., Gunraj, N., Huo, C., Bierman, A. S., Scales, D. C., & Urbach, D. R. (2011). Association of ICU or hospital admission with unintentional discontinuation of medications for chronic diseases. JAMA, 306(8), 840-847. 4. Basey, A. J., Krska, J., Kennedy, T. D., & Mackridge, A. J. (2014). Prescribing errors on admission to hospital and their potential impact: a mixed-methods study. BMJ Quality & Safety, 23(1), 17-25. 5. Desai, R., Williams, C. E., Greene, S. B., Pierson, S., & Hansen, R. A. (2011). Medication errors during patient transitions into nursing homes: characteristics and association with patient harm. The American Journal of Geriatric Pharmacotherapy, 9(6), 413-422. 6. Boling, P.A. (2009). Care transitions and home health care. Clinical Geriatric Medicine Feb;25(1):135-48. 7. Chhabra, P. T., Rattinger, G. B., Dutcher, S. K., Hare, M. E., Parsons, K., L., & Zuckerman, I. H. (2012). Medication reconciliation during the transition to and from long-term care settings: a systematic review. Res Social Adm Pharm 8(1), 60-75. 8. Levinson, D. R., & General, I. (2014). Adverse events in skilled nursing facilities: national incidence among Medicare beneficiaries. Washington, DC: U.S. Department of Health and Human Services, Office of the Inspector General. 9. Bell, S. P., Vasilevskis, E. E., Saraf, A. A., Jacobsen, J. M. L., Kripalani, S., Mixon, A. S., ... & Simmons, S. F. (2016). Geriatric syndromes in hospitalized older adults discharged to skilled nursing facilities. Journal of the American Geriatrics Society, 64(4), 715-722. 10. Tjia, J., Bonner, A., Briesacher, B. A., McGee, S., Terrill, E., Miller, K. (2009). Medication discrepancies upon hospital to skilled nursing facility transitions. J Gen Intern Med, 24(5), 630-635. 11. Sinvani, L. D., et al. (2013). Medication reconciliation in continuum of care transitions: a moving target. J Am Med Dir Assoc, 14(9), 668-672 12. Manias, E., Annaikis, N., Considine, J., Weerasuriya, R., & Kusljic, S. (2017). Patient-, medication- and environment-related factors affecting medication discrepancies in older patients. Collegian, 24, 571-577. 13. Oakes, S. L., et al. (2011). Transitional care of the long-term care patient. Clin Geriatr Med, 27(2), 259-271. 14. Starmer A. J, Spector N. D., Srivastava R., et al. (2014). Changes in Medical Errors after Implementation of a Handoff Program. N Engl J Med, 37(1), 1803-1812.

MUC ID	Measure Title	Rationale
MUC18-131 (cont'd)	Transfer of Health Information to Provider—Post-Acute Care (cont'd)	15. U.S. Agency for Healthcare Research and Quality. (2016). National healthcare quality and disparities report chartbook on care coordination (Pub. No. 16-0015-6-EF). Rockville, MD: Agency for Healthcare Research and Quality. 16. Murray, L. M., & Laditka, S. B. (2010). Care transitions by older adults from nursing homes to hospitals: Implications for long-term care practice, geriatrics education, and research. Journal of the American Medical Directors Association, 11(4), 231-238. 17. LaMantia, M. A., Scheunemann, L. P., Viera, A. J., Busby-Whitehead, J., & Hanson, L.C. (2010). Interventions to improve transitional care between nursing homes and hospitals: a systematic review. Journal of the American Geriatrics Society, 58(4), 777-782. 18. Backes, A.C., Cash, P., &Jordan, J. (2016). Optimizing the use of discharge medication lists in nursing facilities. Consult Pharm, 31, 493-499.
MUC18-132	Transfer of Health Information to Provider—Post-Acute Care	The communication of health information, such as that of a medication list, is critical to ensuring safe and effective patient transitions from one health care setting to another. The focus of this measure is the timely communication of health information, such as medication information at PAC discharge/transfer. Health information that is incomplete or missing, such as medication information, increases the likelihood of a patient/resident safety risk, often life-threatening. [1,2,3,4,5,6] Older adults are particularly vulnerable to adverse health outcomes due to insufficient medication information on the part of their health care providers, and their higher likelihood for multiple comorbid chronic conditions, polypharmacy, and complicated transitions between care settings. [7, 8]. Hospitalized patients discharged to SNFs had an average of 13 medications on their hospital discharge list [9], thus SNF and other PAC providers often are in the position of starting complex new medication regimens with little knowledge of the patient or their medication history. Furthermore, medication discrepancies are common, and found to occur in as many as three quarters of SNF admissions and 86 percent of all transitions.[10,11] Older patients being discharged to settings other than their home were more likely to experience a medication discrepancy, increasing their likelihood of experiencing an adverse event. [12] PAC patients often have complicated medication regimens and require efficient and effective communication and coordination of care between settings, including detailed transfer of medication information. Inter-institutional communication regarding medication regimens is a key factor to improving care transitions and reducing harm to patients. [13,14] Many care transition models, programs, and best practices emphasize the importance of timely communication and information exchange between discharging/ transferring and receiving providers, including medication information. [15,16,17] A comprehensive medication list is an important means of communication this information. The transfer of the patient's discharge medication information to their next providers and to the patients, in the form of a medication list, is common practice, and supported by discharge planning requirements for participation in Medicare and Medicaid programs. Most PAC EHR systems generate a discharge medication list. However, the content included in the medication lists varies and are not standardized. Other critical

MUC ID	Measure Title	Rationale
MUC18-132 (cont'd)	Transfer of Health Information to Provider—Post-Acute Care (cont'd)	medication information may not be included in the medication lists provided at care transitions. Furthermore, these lists are often sent as a hard copy, rather than electronically to the recipient's EHR system or through interoperable exchange. A pharmacist study identified multiple opportunities to optimize nursing facility discharge medication lists in order to increase patient safety and potentially reduce readmissions. [18]. They noted that nursing facility settings have not made many improvements in discharge medication lists as hospitals have. The pharmacists also identified ideal components of a SNF discharge facility list, including an electronic medication list to minimize human error. An objective of this measure is to improve and standardize the type of medication list information transferred to providers, and, to increase, over time, the secure, timely, electronic transfer of the reconciled medication list using HIT standards. PAC provider adoption of EHRs and participation in health Information exchange can reduce provider burden through the use and reuse of healthcare data, and supports high quality, personalized, and efficient healthcare, care coordination and person-centered care. Further, the interoperability provisions of the 21st Century Cures Act provide a strong framework to enable electronic sharing and interoperable exchange of medication list information. 1. Kwan, J. L., Lo, L., Sampson, M., & Shojania, K. G. (2013). Medication reconciliation during transitions of care as a patient safety strategy: a systematic review. Annals of Internal Medicine, 158(5), 397-403. 2. Boockvar, K. S., Blum, S., Kugler, A., Livote, E., Mergenhagen, K. A., Nebeker, J. R., & Yeh, J. (2011). Effect of admission medication reconciliation on adverse drug events from admission medication changes. Archives of Internal Medicine, 171(9), 860-861. 3. Bell, C. M., Brener, S. S., Gunraj, N., Huo, C., Bierman, A. S., Scales, D. C., & Urbach, D. R. (2011). Association of ICU or hospital admission with unintentional discontinuation of medications for chronic diseases. JAMA, 306(8), 840-847. 4. Basey, A. J., Krska, J., Kennedy, T. D., & Mackridge, A. J. (2014). Prescribing errors on admission to hospital and their potential impact: a mixed-methods study. BMJ Quality & Safety, 23(1), 17-25. 5. Desai, R., Williams, C. E., Greene, S. B., Pierson, S., & Hansen, R. A. (2011). Medication errors during patient transitions into nursing homes: characteristics and association with patient harm. The American Journal of Geriatric Pharmacotherapy, 9(6), 413-422. 6. Boling, P.A. (2009). Care transitions and home health care. Clinical Geriatric Medicine Feb;25(1):135-48. 7. Chhabra, P. T., Rattinger, G. B., Dutcher, S. K., Hare, M. E., Parsons, K., L., & Zuckerman, I. H. (2012). Medication reconciliation during the transition to and from long-term care settings: a systematic review. Res Social Adm Pharm 8(1), 60-75. 8. Levinson, D. R., & General, I. (2014). Adverse events in skilled nursing facilities: national incidence among Medicare beneficiaries. Washington, DC: U.S. Department of Health and Human Services, Office of the Inspector General.

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MUC18-132 (cont'd)	Transfer of Health Information to Provider—Post-Acute Care (cont'd)	9. Bell, S. P., Vasilevskis, E. E., Saraf, A. A., Jacobsen, J. M. L., Kripalani, S., Mixon, A. S., ... & Simmons, S. F. (2016). Geriatric syndromes in hospitalized older adults discharged to skilled nursing facilities. Journal of the American Geriatrics Society, 64(4), 715-722. 10. Tjia, J., Bonner, A., Briesacher, B. A., McGee, S., Terrill, E., Miller, K. (2009). Medication discrepancies upon hospital to skilled nursing facility transitions. J Gen Intern Med, 24(5), 630-635. 11. Sinvani, L. D., et al. (2013). Medication reconciliation in continuum of care transitions: a moving target. J Am Med Dir Assoc, 14(9), 668-672 12. Manias, E., Annaikis, N., Considine, J., Weerasuriya, R., & Kusljic, S. (2017). Patient-, medication- and environment-related factors affecting medication discrepancies in older patients. Collegian, 24, 571-577. 13. Oakes, S. L., et al. (2011). Transitional care of the long-term care patient. Clin Geriatr Med, 27(2), 259-271. 14. Starmer A. J, Spector N. D., Srivastava R., et al. (2014). Changes in Medical Errors after Implementation of a Handoff Program. N Engl J Med, 37(1), 1803-1812. 15. U.S. Agency for Healthcare Research and Quality. (2016). National healthcare quality and disparities report chartbook on care coordination (Pub. No. 16-0015-6-EF). Rockville, MD: Agency for Healthcare Research and Quality. 16. Murray, L. M., & Laditka, S. B. (2010). Care transitions by older adults from nursing homes to hospitals: Implications for long-term care practice, geriatrics education, and research. Journal of the American Medical Directors Association, 11(4), 231-238. 17. LaMantia, M. A., Scheunemann, L. P., Viera, A. J., Busby-Whitehead, J., & Hanson, L.C. (2010). Interventions to improve transitional care between nursing homes and hospitals: a systematic review. Journal of the American Geriatrics Society, 58(4), 777-782. 18. Backes, A.C., Cash, P., &Jordan, J. (2016). Optimizing the use of discharge medication lists in nursing facilities. Consult Pharm, 31, 493-499.

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MUC18-133	Transfer of Health Information to Provider—Post-Acute Care	The communication of health information, such as that of a medication list, is critical to ensuring safe and effective patient transitions from one health care setting to another. The focus of this measure is the timely communication of health information, such as medication information at PAC discharge/transfer. Health information that is incomplete or missing, such as medication information, increases the likelihood of a patient/resident safety risk, often life-threatening. [1,2,3,4,5,6] Older adults are particularly vulnerable to adverse health outcomes due to insufficient medication information on the part of their health care providers, and their higher likelihood for multiple comorbid chronic conditions, polypharmacy, and complicated transitions between care settings. [7, 8]. Hospitalized patients discharged to SNFs had an average of 13 medications on their hospital discharge list [9], thus SNF and other PAC providers often are in the position of starting complex new medication regimens with little knowledge of the patient or their medication history. Furthermore, medication discrepancies are common, and found to occur in as many as three quarters of SNF admissions and 86 percent of all transitions.[10,11] Older patients being discharged to settings other than their home were more likely to experience a medication discrepancy, increasing their likelihood of experiencing an adverse event. [12] PAC patients often have complicated medication regimens and require efficient and effective communication and coordination of care between settings, including detailed transfer of medication information. Inter-institutional communication regarding medication regimens is a key factor to improving care transitions and reducing harm to patients. [13,14] Many care transition models, programs, and best practices emphasize the importance of timely communication and information exchange between discharging/ transferring and receiving providers, including medication information. [15,16,17] A comprehensive medication list is an important means of communication this information. The transfer of the patient's discharge medication information to their next providers and to the patients, in the form of a medication list, is common practice, and supported by discharge planning requirements for participation in Medicare and Medicaid programs. Most PAC EHR systems generate a discharge medication list. However, the content included in the medication lists varies and are not standardized. Other critical medication information may not be included in the medication lists provided at care transitions. Furthermore, these lists are often sent as a hard copy, rather than electronically to the recipient's EHR system or through interoperable exchange. A pharmacist study identified multiple opportunities to optimize nursing facility discharge medication lists in order to increase patient safety and potentially reduce readmissions. [18]. They noted that nursing facility settings have not made many improvements in discharge medication lists as hospitals have. The pharmacists also identified ideal components of a SNF discharge facility list, including an electronic medication list to minimize human error. An objective of this measure is to improve and standardize the type of medication list information transferred to providers, and, to increase, over time, the secure, timely, electronic transfer of the reconciled medication list using HIT standards. PAC provider adoption of EHRs and participation in health Information exchange can reduce provider

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MUC18-133 (cont'd)	Transfer of Health Information to Provider—Post-Acute Care (cont'd)	burden through the use and reuse of healthcare data, and supports high quality, personalized, and efficient healthcare, care coordination and person-centered care. Further, the interoperability provisions of the 21st Century Cures Act provide a strong framework to enable electronic sharing and interoperable exchange of medication list information. 1. Kwan, J. L., Lo, L., Sampson, M., & Shojania, K. G. (2013). Medication reconciliation during transitions of care as a patient safety strategy: a systematic review. Annals of Internal Medicine, 158(5), 397-403. 2. Boockvar, K. S., Blum, S., Kugler, A., Livote, E., Mergenhagen, K. A., Nebeker, J. R., & Yeh, J. (2011). Effect of admission medication reconciliation on adverse drug events from admission medication changes. Archives of Internal Medicine, 171(9), 860-861. 3. Bell, C. M., Brener, S. S., Gunraj, N., Huo, C., Bierman, A. S., Scales, D. C., & Urbach, D. R. (2011). Association of ICU or hospital admission with unintentional discontinuation of medications for chronic diseases. JAMA, 306(8), 840-847. 4. Basey, A. J., Krska, J., Kennedy, T. D., & Mackridge, A. J. (2014). Prescribing errors on admission to hospital and their potential impact: a mixed-methods study. BMJ Quality & Safety, 23(1), 17-25. 5. Desai, R., Williams, C. E., Greene, S. B., Pierson, S., & Hansen, R. A. (2011). Medication errors during patient transitions into nursing homes: characteristics and association with patient harm. The American Journal of Geriatric Pharmacotherapy, 9(6), 413-422. 6. Boling, P.A. (2009). Care transitions and home health care. Clinical Geriatric Medicine Feb;25(1):135-48. 7. Chhabra, P. T., Rattinger, G. B., Dutcher, S. K., Hare, M. E., Parsons, K., L., & Zuckerman, I. H. (2012). Medication reconciliation during the transition to and from long-term care settings: a systematic review. Res Social Adm Pharm 8(1), 60-75. 8. Levinson, D. R., & General, I. (2014). Adverse events in skilled nursing facilities: national incidence among Medicare beneficiaries. Washington, DC: U.S. Department of Health and Human Services, Office of the Inspector General. 9. Bell, S. P., Vasilevskis, E. E., Saraf, A. A., Jacobsen, J. M. L., Kripalani, S., Mixon, A. S., ... & Simmons, S. F. (2016). Geriatric syndromes in hospitalized older adults discharged to skilled nursing facilities. Journal of the American Geriatrics Society, 64(4), 715-722. 10. Tjia, J., Bonner, A., Briesacher, B. A., McGee, S., Terrill, E., Miller, K. (2009). Medication discrepancies upon hospital to skilled nursing facility transitions. J Gen Intern Med, 24(5), 630-635. 11. Sinvani, L. D., et al. (2013). Medication reconciliation in continuum of care transitions: a moving target. J Am Med Dir Assoc, 14(9), 668-672 12. Manias, E., Annaikis, N., Considine, J., Weerasuriya, R., & Kusljic, S. (2017). Patient-, medication- and environment-related factors affecting medication discrepancies in older patients. Collegian, 24, 571-577. 13. Oakes, S. L., et al. (2011). Transitional care of the long-term care patient. Clin Geriatr Med, 27(2), 259-271. 14. Starmer A. J, Spector N. D., Srivastava R., et al. (2014). Changes in Medical Errors after Implementation of a Handoff Program. N Engl J Med, 37(1), 1803-1812.

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MUC18-133 (cont'd)	Transfer of Health Information to Provider—Post-Acute Care (cont'd)	15. U.S. Agency for Healthcare Research and Quality. (2016). National healthcare quality and disparities report chartbook on care coordination (Pub. No. 16-0015-6-EF). Rockville, MD: Agency for Healthcare Research and Quality. 16. Murray, L. M., & Laditka, S. B. (2010). Care transitions by older adults from nursing homes to hospitals: Implications for long-term care practice, geriatrics education, and research. Journal of the American Medical Directors Association, 11(4), 231-238. 17. LaMantia, M. A., Scheunemann, L. P., Viera, A. J., Busby-Whitehead, J., & Hanson, L.C. (2010). Interventions to improve transitional care between nursing homes and hospitals: a systematic review. Journal of the American Geriatrics Society, 58(4), 777-782. 18. Backes, A.C., Cash, P., &Jordan, J. (2016). Optimizing the use of discharge medication lists in nursing facilities. Consult Pharm, 31, 493-499.
MUC18-135	Transfer of Health Information to Patient—Post-Acute Care	The communication of health information, such as that of a medication list, is critical to ensuring safe and effective patient transitions from one health care setting to another. The focus of this measure is the timely communication of health information, such as medication information at PAC discharge/transfer. Incomplete or missing health information such as medications information increases the likelihood of a patient/resident safety risk, often life-threatening. [1,2,3,4,5] Older adults are particularly vulnerable to adverse health outcomes due to insufficient medication information on the part of health care providers due to their higher likelihood for multiple comorbid chronic conditions, polypharmacy, and complicated transitions between care settings. [6] Upon discharge from a post-acute care setting, older adults may be faced with numerous medication changes, appointments, and follow-up details which are especially difficult for individuals with cognitive or functional impairments and/or challenging social circumstances. PAC patients often have complicated medication regimens and require efficient and effective communication and coordination of care between settings, including detailed transfer of medication information to prevent potentially deadly adverse effects. Inter-institutional communication regarding medication regimens is a key factor to improving care transitions and reducing harm to patients. [8] When care transitions are enhanced through care coordination activities, such as expedited patient information flow, these activities can reduce duplication of care services and costs of care, resolve conflicting care plans and prevent medical errors. [9] The transfer of the patient's discharge medication information to the patient, family, and/or caregiver, in the form of a medication list, is common practice, and supported by discharge planning requirements for participation in Medicare and Medicaid programs. Most PAC EHR systems generate a discharge medication list. However, the content included in the medication lists varies and are not standardized. Other critical medication information may not be included in the medication lists provided to patients at care transitions. Furthermore, these lists may not be written in plain, jargon-free language that the patient understands. A pharmacist study identified multiple opportunities to optimize nursing facility discharge medication lists in order to increase patient safety and potentially reduce readmissions. [10] They noted that nursing facility settings have not made many improvements in discharge medication lists as hospitals have. The

MUC ID	Measure Title	Rationale
MUC18-135 (cont'd)	Transfer of Health Information to Patient—Post-Acute Care (cont'd)	pharmacists also identified ideal components of a SNF discharge facility list, providing indications in layperson terms, removing irrelevant information, and maximizing readability. An objective of this measure is to improve and standardize the type of medication list information transferred to patients, and to increase, over time, the secure, timely, electronic transfer of the reconciled medication list electronically (e.g., through patient portals) through PAC EHR systems and using HIT standards. PAC provider adoption of EHRs and participation in health Information exchange can reduce provider burden through the use and reuse of healthcare data, and supports high quality, personalized, and efficient healthcare, care coordination and person-centered care. Further, the interoperability provisions of the 21st Century Cures Act provide a strong framework to enable electronic sharing and interoperable exchange of medication list information. 1. Minto-Pennant, S. (2016). Roadmap to quality: Effective medication reconciliation minimizes errors in a long-term care setting. Journal of the American Medical Directors Association, 17(3), B21-B21. 2. Boockvar, K. S., Blum, S., Kugler, A., Livote, E., Mergenhagen, K. A., Nebeker, J. R., & Yeh, J. (2011). Effect of admission medication reconciliation on adverse drug events from admission medication changes. Archives of Internal Medicine, 171(9), 860-861. 3. Bell, C. M., Brener, S. S., Gunraj, N., Huo, C., Bierman, A. S., Scales, D. C., & Urbach, D. R. (2011). Association of ICU or hospital admission with unintentional discontinuation of medications for chronic diseases. JAMA, 306(8), 840-847. 4. Basey, A. J., Krska, J., Kennedy, T. D., & Mackridge, A. J. (2014). Prescribing errors on admission to hospital and their potential impact: a mixed-methods study. BMJ Quality & Safety, 23(1), 17-25. 5. Desai, R., Williams, C. E., Greene, S. B., Pierson, S., & Hansen, R. A. (2011). Medication errors during patient transitions into nursing homes: characteristics and association with patient harm. The American Journal of Geriatric Pharmacotherapy, 9(6), 413-422. 6. Chhabra, P. T., Rattinger, G. B., Dutcher, S. K., Hare, M. E., Parsons, K., L., & Zuckerman, I. H. (2012). Medication reconciliation during the transition to and from long-term care settings: a systematic review. Res Social Adm Pharm 8(1), 60-75. 7. Oakes, S. L., et al. (2011). Transitional care of the long-term care patient. Clin Geriatr Med, 27(2), 259-271. 8. Mor, V., Intrator, O., Feng, Z., & Grabowski, D. C. (2010). The revolving door of rehospitalization from skilled nursing facilities. Health Affairs, 29(1), 57-64. 9. Starmer A. J, Spector N. D., Srivastava R., et al. (2014). Changes in Medical Errors after Implementation of a Handoff Program. N Engl J Med, 37(1), 1803-1812. 10. Backes, A.C., Cash, P., &Jordan, J. (2016). Optimizing the use of discharge medication lists in nursing facilities. Consult Pharm, 31, 493-499.

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MUC18-136 (cont'd)	Transfer of Health Information to Provider—Post-Acute Care (cont'd)	burden through the use and reuse of healthcare data, and supports high quality, personalized, and efficient healthcare, care coordination and person-centered care. Further, the interoperability provisions of the 21st Century Cures Act provide a strong framework to enable electronic sharing and interoperable exchange of medication list information. 1. Kwan, J. L., Lo, L., Sampson, M., & Shojania, K. G. (2013). Medication reconciliation during transitions of care as a patient safety strategy: a systematic review. Annals of Internal Medicine, 158(5), 397-403. 2. Boockvar, K. S., Blum, S., Kugler, A., Livote, E., Mergenhagen, K. A., Nebeker, J. R., & Yeh, J. (2011). Effect of admission medication reconciliation on adverse drug events from admission medication changes. Archives of Internal Medicine, 171(9), 860-861. 3. Bell, C. M., Brener, S. S., Gunraj, N., Huo, C., Bierman, A. S., Scales, D. C., & Urbach, D. R. (2011). Association of ICU or hospital admission with unintentional discontinuation of medications for chronic diseases. JAMA, 306(8), 840-847. 4. Basey, A. J., Krska, J., Kennedy, T. D., & Mackridge, A. J. (2014). Prescribing errors on admission to hospital and their potential impact: a mixed-methods study. BMJ Quality & Safety, 23(1), 17-25. 5. Desai, R., Williams, C. E., Greene, S. B., Pierson, S., & Hansen, R. A. (2011). Medication errors during patient transitions into nursing homes: characteristics and association with patient harm. The American Journal of Geriatric Pharmacotherapy, 9(6), 413-422. 6. Boling, P.A. (2009). Care transitions and home health care. Clinical Geriatric Medicine Feb;25(1):135-48. 7. Chhabra, P. T., Rattinger, G. B., Dutcher, S. K., Hare, M. E., Parsons, K., L., & Zuckerman, I. H. (2012). Medication reconciliation during the transition to and from long-term care settings: a systematic review. Res Social Adm Pharm 8(1), 60-75. 8. Levinson, D. R., & General, I. (2014). Adverse events in skilled nursing facilities: national incidence among Medicare beneficiaries. Washington, DC: U.S. Department of Health and Human Services, Office of the Inspector General. 9. Bell, S. P., Vasilevskis, E. E., Saraf, A. A., Jacobsen, J. M. L., Kripalani, S., Mixon, A. S., ... & Simmons, S. F. (2016). Geriatric syndromes in hospitalized older adults discharged to skilled nursing facilities. Journal of the American Geriatrics Society, 64(4), 715-722. 10. Tjia, J., Bonner, A., Briesacher, B. A., McGee, S., Terrill, E., Miller, K. (2009). Medication discrepancies upon hospital to skilled nursing facility transitions. J Gen Intern Med, 24(5), 630-635. 11. Sinvani, L. D., et al. (2013). Medication reconciliation in continuum of care transitions: a moving target. J Am Med Dir Assoc, 14(9), 668-672 12. Manias, E., Annaikis, N., Considine, J., Weerasuriya, R., & Kusljic, S. (2017). Patient-, medication- and environment-related factors affecting medication discrepancies in older patients. Collegian, 24, 571-577. 13. Oakes, S. L., et al. (2011). Transitional care of the long-term care patient. Clin Geriatr Med, 27(2), 259-271. 14. Starmer A. J, Spector N. D., Srivastava R., et al. (2014). Changes in Medical Errors after Implementation of a Handoff Program. N Engl J Med, 37(1), 1803-1812.

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MUC18-136 (cont'd)	Transfer of Health Information to Provider—Post-Acute Care (cont'd)	15. U.S. Agency for Healthcare Research and Quality. (2016). National healthcare quality and disparities report chartbook on care coordination (Pub. No. 16-0015-6-EF). Rockville, MD: Agency for Healthcare Research and Quality. 16. Murray, L. M., & Laditka, S. B. (2010). Care transitions by older adults from nursing homes to hospitals: Implications for long-term care practice, geriatrics education, and research. Journal of the American Medical Directors Association, 11(4), 231-238. 17. LaMantia, M. A., Scheunemann, L. P., Viera, A. J., Busby-Whitehead, J., & Hanson, L.C. (2010). Interventions to improve transitional care between nursing homes and hospitals: a systematic review. Journal of the American Geriatrics Society, 58(4), 777-782. 18. Backes, A.C., Cash, P., &Jordan, J. (2016). Optimizing the use of discharge medication lists in nursing facilities. Consult Pharm, 31, 493-499.
MUC18-137	Elective Primary Hip Arthroplasty	Health expenditures continue to increase in the United States. According to the National Health Expenditure Accounts, total health care spending increased by 4.6 percent in 2017, reaching $3.5 trillion (CMS, 2018). Medicare spending, which is still predominantly paid on a fee-for-service (FFS) basis, also grew 3.6 percent, reaching $672.1 billion (CMS, 2018). However, this growth is slower than the previous two years due to a slow growth in spending for both Medicare FFS and Medicare Advantage. In the United States, Medicare is the largest single purchaser of health care, and successfully establishing payment models under MIPS can have significant impacts on reducing costs and making care more affordable (MedPAC, 2017). Joint replacement surgery is a common procedure in the older population. According to a 2015 study, the 2010 prevalence of total hip replacement in the United States population was 0.83 percent, and increased with age, reaching 1.49 percent at sixty years, and 5.87 percent at ninety years of age. There were an estimated 2.5 million individuals with total hip replacement in 2010, and the demand for primary Total Hip Arthroplasties (THAs) is estimated to grow by 174 percent between 2005 and 2030 (Kremers et al., 2015; Kurtz et al., 2007). Studies also suggest that hip arthroplasty accounts for a significant share of Medicare spending. A 2008 study found that the utilization of elective joint arthroplasty increases and Medicare becomes the primary payer after age 65 for these arthroplasties (Matlock, 2008). A 2016 study estimated that CMS payments per episode totaled between $18,030 and $21,661, depending on the presence of obesity (Meller et al., 2016). Hospital reimbursement for total hip replacement and knee replacement represented the largest payment group for CMS in 2008, combining for 4.6% of total payments (AHD, 2013). American Hospital Directory (AHD). American Hospital Directory, 2013. Available at: http://www.ahd.com/ip_ipps08.html. Accessed January 29, 2014. "Data Book: Health Care Spending and the Medicare Program." MedPAC, 2017 Kremers et al. (2015). "Prevalence of Total Hip and Knee Replacement in the United States." Journal of Bone and Joint Surgery 97(17):1386-97. Kurtz et al. (2007). "Projections of primary and revision hip and knee arthroplasty in the United States from 2005 to 2030." Journal of Bone and Joint Surgery 89(4):780-5.

MUC ID	Measure Title	Rationale
MUC18-137 (cont'd)	Elective Primary Hip Arthroplasty (cont'd)	Matlock, Dan. (2008). "Utilization of Elective Hip and Knee Arthroplasty by Age and Payer." Clinical Orthopaedics and Related Research 466(4): 914-919. Meller, M. M., et al. (2016). "Surgical Risks and Costs of Care are Greater in Patients Who Are Super Obese and Undergoing THA." Clinical Orthopaedics and Related Research 474(11): 2472-2481. "National Health Expenditure Projections, 2017-2026." US Centers for Medicare & Medicaid Services, 2018.
MUC18-138	Transfer of Health Information to Patient—Post-Acute Care	The communication of health information, such as that of a reconciled medication list, is critical to ensuring safe and effective patient transitions from one health care setting to another. The focus of this measure is the timely communication of health information, such as medication information at PAC discharge/transfer. Incomplete or missing health information such as medications information increases the likelihood of a patient/resident safety risk, often life-threatening. [1,2,3,4,5] Older adults are particularly vulnerable to adverse health outcomes due to insufficient medication information on the part of health care providers due to their higher likelihood for multiple comorbid chronic conditions, polypharmacy, and complicated transitions between care settings. [6] Upon discharge from a post-acute care setting, older adults may be faced with numerous medication changes, appointments, and follow-up details which are especially difficult for individuals with cognitive or functional impairments and/or challenging social circumstances. PAC patients often have complicated medication regimens and require efficient and effective communication and coordination of care between settings, including detailed transfer of medication information to prevent potentially deadly adverse effects. Inter-institutional communication regarding medication regimens is a key factor to improving care transitions and reducing harm to patients. [8] When care transitions are enhanced through care coordination activities, such as expedited patient information flow, these activities can reduce duplication of care services and costs of care, resolve conflicting care plans and prevent medical errors. [9] The transfer of the patient's discharge medication information to the patient, family, and/or caregiver, in the form of a list, is common practice, and supported by discharge planning requirements for participation in Medicare and Medicaid programs. Most PAC EHR systems generate a discharge medication list. However, the content included in the medication lists varies and are not standardized. Other critical medication information may not be included in the medication lists provided to patients at care transitions. Furthermore, these lists may not be written in plain, jargon-free language that the patient understands. A pharmacist study identified multiple opportunities to optimize nursing facility discharge medication lists in order to increase patient safety and potentially reduce readmissions. [10] They noted that nursing facility settings have not made many improvements in discharge medication lists as hospitals have. The pharmacists also identified ideal components of a SNF discharge facility list, providing indications in layperson terms, removing irrelevant information, and maximizing readability. An objective of this measure is to improve and standardize the type of medication information transferred to patients, and to increase, over time, the secure, timely, electronic transfer of the medication list electronically (e.g., through patient portals) through PAC EHR systems and using HIT standards. PAC provider adoption of EHRs and participation in health Information exchange can reduce provider

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MUC18-138 (cont'd)	Transfer of Health Information to Patient—Post-Acute Care (cont'd)	burden through the use and reuse of healthcare data, and supports high quality, personalized, and efficient healthcare, care coordination and person-centered care. Further, the interoperability provisions of the 21st Century Cures Act provide a strong framework to enable electronic sharing and interoperable exchange of medication information. 1. Minto-Pennant, S. (2016). Roadmap to quality: Effective medication reconciliation minimizes errors in a long-term care setting. Journal of the American Medical Directors Association, 17(3), B21-B21. 2. Boockvar, K. S., Blum, S., Kugler, A., Livote, E., Mergenhagen, K. A., Nebeker, J. R., & Yeh, J. (2011). Effect of admission medication reconciliation on adverse drug events from admission medication changes. Archives of Internal Medicine, 171(9), 860-861. 3. Bell, C. M., Brener, S. S., Gunraj, N., Huo, C., Bierman, A. S., Scales, D. C., & Urbach, D. R. (2011). Association of ICU or hospital admission with unintentional discontinuation of medications for chronic diseases. JAMA, 306(8), 840-847. 4. Basey, A. J., Krska, J., Kennedy, T. D., & Mackridge, A. J. (2014). Prescribing errors on admission to hospital and their potential impact: a mixed-methods study. BMJ Quality & Safety, 23(1), 17-25. 5. Desai, R., Williams, C. E., Greene, S. B., Pierson, S., & Hansen, R. A. (2011). Medication errors during patient transitions into nursing homes: characteristics and association with patient harm. The American Journal of Geriatric Pharmacotherapy, 9(6), 413-422. 6. Chhabra, P. T., Rattinger, G. B., Dutcher, S. K., Hare, M. E., Parsons, K., L., & Zuckerman, I. H. (2012). Medication reconciliation during the transition to and from long-term care settings: a systematic review. Res Social Adm Pharm 8(1), 60-75. 7. Oakes, S. L., et al. (2011). Transitional care of the long-term care patient. Clin Geriatr Med, 27(2), 259-271. 8. Mor, V., Intrator, O., Feng, Z., & Grabowski, D. C. (2010). The revolving door of rehospitalization from skilled nursing facilities. Health Affairs, 29(1), 57-64. 9. Starmer A. J, Spector N. D., Srivastava R., et al. (2014). Changes in Medical Errors after Implementation of a Handoff Program. N Engl J Med, 37(1), 1803-1812. 10. Backes, A.C., Cash, P., &Jordan, J. (2016). Optimizing the use of discharge medication lists in nursing facilities. Consult Pharm, 31, 493-499.

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MUC18-139	Transfer of Health Information to Patient—Post-Acute Care	The communication of health information, such as that of a reconciled medication list, is critical to ensuring safe and effective patient transitions from one health care setting to another. The focus of this measure is the timely communication of health information, such as medication information at PAC discharge/transfer. Incomplete or missing health information such as medications information increases the likelihood of a patient/resident safety risk, often life-threatening. [1,2,3,4,5] Older adults are particularly vulnerable to adverse health outcomes due to insufficient medication information on the part of health care providers due to their higher likelihood for multiple comorbid chronic conditions, polypharmacy, and complicated transitions between care settings. [6] Upon discharge from a post-acute care setting, older adults may be faced with numerous medication changes, appointments, and follow-up details which are especially difficult for individuals with cognitive or functional impairments and/or challenging social circumstances. PAC patients often have complicated medication regimens and require efficient and effective communication and coordination of care between settings, including detailed transfer of medication information to prevent potentially deadly adverse effects. Inter-institutional communication regarding medication regimens is a key factor to improving care transitions and reducing harm to patients. [8] When care transitions are enhanced through care coordination activities, such as expedited patient information flow, these activities can reduce duplication of care services and costs of care, resolve conflicting care plans and prevent medical errors. [9] The transfer of the patient's discharge medication information to the patient, family, and/or caregiver, in the form of a list, is common practice, and supported by discharge planning requirements for participation in Medicare and Medicaid programs. Most PAC EHR systems generate a discharge medication list. However, the content included in the medication lists varies and are not standardized. Other critical medication information may not be included in the medication lists provided to patients at care transitions. Furthermore, these lists may not be written in plain, jargon-free language that the patient understands. A pharmacist study identified multiple opportunities to optimize nursing facility discharge medication lists in order to increase patient safety and potentially reduce readmissions. [10] They noted that nursing facility settings have not made many improvements in discharge medication lists as hospitals have. The pharmacists also identified ideal components of a SNF discharge facility list, providing indications in layperson terms, removing irrelevant information, and maximizing readability. An objective of this measure is to improve and standardize the type of medication information transferred to patients, and to increase, over time, the secure, timely, electronic transfer of the medication list electronically (e.g., through patient portals) through PAC EHR systems and using HIT standards. PAC provider adoption of EHRs and participation in health Information exchange can reduce provider burden through the use and reuse of healthcare data, and supports high quality, personalized, and efficient healthcare, care coordination and person-centered care. Further, the interoperability provisions of the 21st Century Cures Act provide a strong framework to enable electronic sharing and interoperable exchange of medication information.

MUC ID	Measure Title	Rationale
MUC18-139 (cont'd)	Transfer of Health Information to Patient—Post-Acute Care (cont'd)	1. Minto-Pennant, S. (2016). Roadmap to quality: Effective medication reconciliation minimizes errors in a long-term care setting. Journal of the American Medical Directors Association, 17(3), B21-B21. 2. Boockvar, K. S., Blum, S., Kugler, A., Livote, E., Mergenhagen, K. A., Nebeker, J. R., & Yeh, J. (2011). Effect of admission medication reconciliation on adverse drug events from admission medication changes. Archives of Internal Medicine, 171(9), 860-861. 3. Bell, C. M., Brener, S. S., Gunraj, N., Huo, C., Bierman, A. S., Scales, D. C., & Urbach, D. R. (2011). Association of ICU or hospital admission with unintentional discontinuation of medications for chronic diseases. JAMA, 306(8), 840-847. 4. Basey, A. J., Krska, J., Kennedy, T. D., & Mackridge, A. J. (2014). Prescribing errors on admission to hospital and their potential impact: a mixed-methods study. BMJ Quality & Safety, 23(1), 17-25. 5. Desai, R., Williams, C. E., Greene, S. B., Pierson, S., & Hansen, R. A. (2011). Medication errors during patient transitions into nursing homes: characteristics and association with patient harm. The American Journal of Geriatric Pharmacotherapy, 9(6), 413-422. 6. Chhabra, P. T., Rattinger, G. B., Dutcher, S. K., Hare, M. E., Parsons, K., L., & Zuckerman, I. H. (2012). Medication reconciliation during the transition to and from long-term care settings: a systematic review. Res Social Adm Pharm 8(1), 60-75. 7. Oakes, S. L., et al. (2011). Transitional care of the long-term care patient. Clin Geriatr Med, 27(2), 259-271. 8. Mor, V., Intrator, O., Feng, Z., & Grabowski, D. C. (2010). The revolving door of rehospitalization from skilled nursing facilities. Health Affairs, 29(1), 57-64. 9. Starmer A. J, Spector N. D., Srivastava R., et al. (2014). Changes in Medical Errors after Implementation of a Handoff Program. N Engl J Med, 37(1), 1803-1812. 10. Backes, A.C., Cash, P., &Jordan, J. (2016). Optimizing the use of discharge medication lists in nursing facilities. Consult Pharm, 31, 493-499.

MUC ID	Measure Title	Rationale
MUC18-140	Non-Emergent Coronary Artery Bypass Graft (CABG)	Health expenditures continue to increase in the United States. According to the National Health Expenditure Accounts, total health care spending increased by 4.6 percent in 2017, reaching $3.5 trillion (CMS, 2018). Medicare spending, which is still predominantly paid on a fee-for-service (FFS) basis, also grew by 3.6 percent, reaching $672.1 billion (CMS, 2018). However, this growth is slower than the previous two years due to a slow growth in spending for both Medicare FFS and Medicare Advantage. In the United States, Medicare is the largest single purchaser of health care, and successfully establishing payment models under MIPS can have significant impacts on reducing costs and making care more affordable (MedPAC, 2017). CABG is a major component of the management of advanced coronary artery disease (CAD), although its use has decreased since 2000. According to a 2016 study, an average of approximately 100,000 Medicare beneficiaries underwent CABG surgery annually between 2000 and 2012 with a steady decline in the number of procedures performed from 131,385 in 2000 to 71,086 in 2012 (McNeely et al., 2016). A 2011 study using Medicare outpatient hospital claims and the Healthcare Cost and Utilization Project's Nationwide Inpatient Sample for data between 2001 and 2008 found that the annual CABG surgery rate in the United States decreased from about 17 per 10,000 adults in 2001 to about 11 per 10,000 adults in 2008 (Epstein et al., 2011). This decline is due in part to changes in patient populations and treatment options, including wider use of coronary stenting. Still, CABG remains a standard therapy and one of the most commonly used treatment options for CAD in patients with multi-vessel disease or diabetes (ElBardissi et al., 2012). ElBardissi, Andrew W., Sary F. Aranki, Shubin Sheng, Sean M. O'Brien, Caprice C. Greenberg, and James S. Gammie. "Trends in Isolated Coronary Artery Bypass Grafting: An Analysis of the Society of Thoracic Surgeons Adult Cardiac Surgery Database." The Journal of Thoracic and Cardiovascular Surgery 143, no. 2 (2012): 273-81. Epstein, Andrew J., Daniel Polsky, Feifei Yang, Lin Yang, and Peter W. Groeneveld. "Coronary Revascularization Trends in the United States, 2001-2008." JAMA 305, no. 17 (2011): 1769-76. "Data Book: Health Care Spending and the Medicare Program." MedPAC, 2017 McNeely, Christian, Stephen Markwell, and Christina Vassileva. "Trends in Patient Characteristics and Outcomes of Coronary Artery Bypass Grafting in the 2000 to 2012 Medicare Population." The Annals Of Thoracic Surgery 102, no. 1 (2016): 132-38. "National Health Expenditure Projections, 2017-2026." US Centers for Medicare & Medicaid Services, 2018.

MUC ID	Measure Title	Rationale
MUC18-141	Transfer of Health Information to Patient—Post-Acute Care	The communication of health information, such as that of a reconciled medication list, is critical to ensuring safe and effective patient transitions from one health care setting to another. The focus of this measure is the timely communication of health information, such as medication information at PAC discharge/transfer. Incomplete or missing health information such as medications information increases the likelihood of a patient/resident safety risk, often life-threatening. [1,2,3,4,5] Older adults are particularly vulnerable to adverse health outcomes due to insufficient medication information on the part of health care providers due to their higher likelihood for multiple comorbid chronic conditions, polypharmacy, and complicated transitions between care settings. [6] Upon discharge from a post-acute care setting, older adults may be faced with numerous medication changes, appointments, and follow-up details which are especially difficult for individuals with cognitive or functional impairments and/or challenging social circumstances. PAC patients often have complicated medication regimens and require efficient and effective communication and coordination of care between settings, including detailed transfer of medication information to prevent potentially deadly adverse effects. Inter-institutional communication regarding medication regimens is a key factor to improving care transitions and reducing harm to patients. [8] When care transitions are enhanced through care coordination activities, such as expedited patient information flow, these activities can reduce duplication of care services and costs of care, resolve conflicting care plans and prevent medical errors. [9] The transfer of the patient's discharge medication information to the patient, family, and/or caregiver, in the form of a list, is common practice, and supported by discharge planning requirements for participation in Medicare and Medicaid programs. Most PAC EHR systems generate a discharge medication list. However, the content included in the medication lists varies and are not standardized. Other critical medication information may not be included in the medication lists provided to patients at care transitions. Furthermore, these lists may not be written in plain, jargon-free language that the patient understands. A pharmacist study identified multiple opportunities to optimize nursing facility discharge medication lists in order to increase patient safety and potentially reduce readmissions. [10] They noted that nursing facility settings have not made many improvements in discharge medication lists as hospitals have. The pharmacists also identified ideal components of a SNF discharge facility list, providing indications in layperson terms, removing irrelevant information, and maximizing readability. An objective of this measure is to improve and standardize the type of medication information transferred to patients, and to increase, over time, the secure, timely, electronic transfer of the medication list electronically (e.g., through patient portals) through PAC EHR systems and using HIT standards. PAC provider adoption of EHRs and participation in health Information exchange can reduce provider burden through the use and reuse of healthcare data, and supports high quality, personalized, and efficient healthcare, care coordination and person-centered care. Further, the interoperability provisions of the 21st Century Cures Act provide a strong framework to enable electronic sharing and interoperable exchange of medication information.

MUC ID	Measure Title	Rationale
MUC18-141 (cont'd)	Transfer of Health Information to Patient—Post-Acute Care (cont'd)	1. Minto-Pennant, S. (2016). Roadmap to quality: Effective medication reconciliation minimizes errors in a long-term care setting. Journal of the American Medical Directors Association, 17(3), B21-B21. 2. Boockvar, K. S., Blum, S., Kugler, A., Livote, E., Mergenhagen, K. A., Nebeker, J. R., & Yeh, J. (2011). Effect of admission medication reconciliation on adverse drug events from admission medication changes. Archives of Internal Medicine, 171(9), 860-861. 3. Bell, C. M., Brener, S. S., Gunraj, N., Huo, C., Bierman, A. S., Scales, D. C., & Urbach, D. R. (2011). Association of ICU or hospital admission with unintentional discontinuation of medications for chronic diseases. JAMA, 306(8), 840-847. 4. Basey, A. J., Krska, J., Kennedy, T. D., & Mackridge, A. J. (2014). Prescribing errors on admission to hospital and their potential impact: a mixed-methods study. BMJ Quality & Safety, 23(1), 17-25. 5. Desai, R., Williams, C. E., Greene, S. B., Pierson, S., & Hansen, R. A. (2011). Medication errors during patient transitions into nursing homes: characteristics and association with patient harm. The American Journal of Geriatric Pharmacotherapy, 9(6), 413-422. 6. Chhabra, P. T., Rattinger, G. B., Dutcher, S. K., Hare, M. E., Parsons, K., L., & Zuckerman, I. H. (2012). Medication reconciliation during the transition to and from long-term care settings: a systematic review. Res Social Adm Pharm 8(1), 60-75. 7. Oakes, S. L., et al. (2011). Transitional care of the long-term care patient. Clin Geriatr Med, 27(2), 259-271. 8. Mor, V., Intrator, O., Feng, Z., & Grabowski, D. C. (2010). The revolving door of rehospitalization from skilled nursing facilities. Health Affairs, 29(1), 57-64. 9. Starmer A. J, Spector N. D., Srivastava R., et al. (2014). Changes in Medical Errors after Implementation of a Handoff Program. N Engl J Med, 37(1), 1803-1812. 10. Backes, A.C., Cash, P., &Jordan, J. (2016). Optimizing the use of discharge medication lists in nursing facilities. Consult Pharm, 31, 493-499.

MUC ID	Measure Title	Rationale
MUC18-148	Medicare Spending Per Beneficiary (MSPB) clinician measure	CMS and Acumen, LLC are undertaking a re-evaluation of the MSPB clinician measure. The Blueprint for the CMS Measure Management System (V 13.0, May 2017) provides a basis for measure re-evaluation. This document describes a "CMS ad hoc review" as a "limited examination of the measure based on new information" (CMS 2017). This new information can come from a variety of sources including ongoing surveillance of the scientific literature or from stakeholders. In this case, the motivation for CMS and Acumen to pursue re-evaluation is to address stakeholder feedback received via public comment in 2016. As discussed further in the Recommendation for the Measure section, stakeholders expressed a desire for the measure to be more actionable for clinicians and more statistically reliable. Aside from these particular stakeholder concerns, the MSPB clinician measure continues to be important as a means of measuring Medicare spending. Health expenditures continue to increase in the United States. According to the National Health Expenditure Accounts, total health care spending is estimated to have increased by 4.6 percent in 2017, reaching $3.5 trillion (CMS, 2018). Medicare spending grew more slowly in 2017 than in the previous two years due to slowed growth in spending for both Medicare FFS and Medicare Advantage. Nonetheless, spending for Medicare, which is still predominantly paid on a fee-for-service (FFS) basis, still grew by 3.6 percent, reaching $672.1 billion (CMS, 2018). In 2016, Medicare FFS paid $183 billion for approximately 10 million Medicare inpatient admissions and 200 million outpatient services, which reflects a 2.3 percent increase in hospital spending per FFS beneficiary between 2015 and 2016 (MedPAC, 2018). In the United States, Medicare is the largest single purchaser of health care, and successfully establishing payment models under MIPS can have significant impacts on reducing costs and making care more affordable (MedPAC, 2017). "Blueprint for the CMS Measures Management System. Version 13.0." US Centers for Medicare & Medicaid Services, 2017. "Data Book: Health Care Spending and the Medicare Program." MedPAC, 2017. "National Health Expenditure Projections, 2017-2026." US Centers for Medicare & Medicaid Services, 2018. "Report to the Congress: Medicare Payment Policy." MedPAC, 2018.

MUC ID	Measure Title	Rationale
MUC18-149	Total Per Capita Cost	CMS and Acumen, LLC are undertaking a re-evaluation of the TPCC measure. The Blueprint for the CMS Measure Management System (V 13.0, May 2017) provides a basis for measure re-evaluation. This document describes a "CMS ad hoc review" as a "limited examination of the measure based on new information" (CMS 2017). This new information can come from a variety of sources including ongoing surveillance of the scientific literature or from stakeholders. In this case, the motivation for CMS and Acumen to pursue re-evaluation is to address stakeholder feedback received via public comment in 2016. As discussed further in the Recommendation for the Measure section, stakeholders expressed a desire for the measure to be more actionable for clinicians. Aside from these particular stakeholder concerns, the TPCC measure continues to be important as a means of measuring Medicare spending. Health expenditures continue to increase in the United States. According to the National Health Expenditure Accounts, total health care spending is estimated to have increased by 4.6 percent in 2017, reaching $3.5 trillion (CMS, 2018). Medicare spending grew more slowly in 2017 than in the previous two years due to slowed growth in spending for both Medicare FFS and Medicare Advantage. Nonetheless, spending for Medicare, which is still predominantly paid on a fee-for-service (FFS) basis, still grew by 3.6 percent, reaching $672.1 billion (CMS, 2018). Spending on services for physicians and other health professionals totaled $69.9 billion and accounted for 15 percent of Medicare FFS spending in 2016 (MedPAC, 2018). In the United States, Medicare is the largest single purchaser of health care, and successfully establishing payment models under MIPS can have significant impacts on reducing costs and making care more affordable (MedPAC, 2017). Given the focus of the TPCC measure, it is also worth focusing more specifically on the importance of establishing successful payment models for primary care management. The American Academy of Family Physicians (AAFP) notes that numerous studies have found reductions to the total cost of care for patients in a Patient-Centered Medical Home (PCMH), brought about by the provision of primary care management services, and ranging from 4.4% to 11.2% for especially high-cost, elderly patients (AAFP, 2018). Primary care management can lead to such savings in various ways, including by improving the treatment of chronic conditions, obviating the need for high-cost hospital or emergency department services. Another impact that primary care management can have is directing patients to lower cost hospitals for the provision of necessary inpatient services. Given these potential linkages between primary care management and cost savings, it is critical to measure the costs of primary care management in a manner that captures broader healthcare costs influenced by primary care. "Blueprint for the CMS Measures Management System. Version 13.0." US Centers for Medicare & Medicaid Services, 2017. "Data Book: Health Care Spending and the Medicare Program." MedPAC, 2017. "National Health Expenditure Projections, 2017-2026." US Centers for Medicare & Medicaid Services, 2018. "Report to the Congress: Medicare Payment Policy." MedPAC, 2018. "Valuation of Care Management Performed by Primary Care Services: An Issue Brief." American Academy of Family Physicians, 2018.

MUC ID	Measure Title	Rationale
MUC18-150	Surgical Treatment Complications for Localized Prostate Cancer	Prostate cancer is the most common non-dermatologic malignancy among men in the United States, with an estimated 180,000 new cases/year.1 Approximately 80% of patients are diagnosed with localized disease, and therefore may be eligible for prostate directed therapy.1 This could involve surgical removal of the prostate, radiation therapy, or both. The vast majority of patients who undergo prostate-directed therapy survive, but these treatments can have serious and potentially longstanding adverse effects, including incontinence, urinary tract obstruction, hydronephrosis, erectile dysfunction, urinary fistula formation, hematuria, cystitis, bowel fistula, proctitis/colitis, bowel bleeding, diarrhea, rectal/anal fissure, abscess, stricture, incision hernia, infection, or others.2-23 Patients consistently report that these adverse effects, which are patient-centered outcomes, can have a significant detrimental impact on their quality of life.15,24 Clinical trials and population-based data have been used to determine whether different prostate-directed treatments result in different patient-centered outcomes. These studies have evaluated a range of prostate-directed treatments, including open radical prostatectomy, robot-assisted radical prostatectomy, minimally invasive radical prostatectomy, brachytherapy, external beam radiation therapy, conformal radiation therapy, intensity modulated radiation therapy (IMRT), and proton therapy, demonstrating that some treatments are associated with inferior patient-centered outcomes when compared to others. A number of these studies used Medicare claims after therapy for prostate cancer to identify specific outcome.2-18,20,21,23,25-35 However, very few studies have explored whether the patient-centered outcomes experienced after prostate-directed therapy vary by treating facility. Studies of other cancers have demonstrated that outcomes can vary by treating facility. For example, operative mortality after major cancer surgery varies inversely with hospital volume.36 Further, we are aware of no quality measures accessing facility variation in respect to patient-centered outcomes. Such measures would be highly relevant to patients, facilities, and payers. Outcomes-based quality measures describing the extent of that variation could be a value tool to foster quality improvement and optimize outcomes for patients with localized prostate cancer. In support of that goal, the International Consortium for Health Outcome Measurement (ICHOM) developed a Localized Prostate Cancer Standard Set (http://www.ichom.org/medical-conditions/localized-prostate-cancer/). This Standard Set reflects a rigorous, evidence-based consensus approach to identify key outcomes for prostate cancer patients. Complications of prostate-directed surgical treatments were among the recommended outcomes. Our measure, Surgical Treatment Complications for Localized Prostate Cancer, reflects complete development and validation of feasible measures addressing complications of prostatectomy. Ultimately, the outcomes selected for this measure are urinary incontinence and erectile dysfunction. A strong body of literature, including numerous recent systematic reviews, have demonstrated the burden of UI and ED for men following localized prostate surgery and ED.37-41

APPENDIX C: MEASURES LISTED BY PROGRAM

December 1, 2018

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Chronic and Post-Acute Care Measures Programs

Home Health Quality Reporting Program

MUC ID	CMS Program[9]	Measure Title	Quality Priority	Meaningful Measure Area
MUC18-131	HH QRP	Transfer of Health Information to Provider—Post-Acute Care	Promote Effective Communication & Coordination of Care	Transfer of Health Information and Interoperability
MUC18-135	HH QRP	Transfer of Health Information to Patient—Post-Acute Care	Promote Effective Communication & Coordination of Care	Transfer of Health Information and Interoperability

Hospice Quality Reporting Program

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
MUC18-101	HQRP	Transitions from Hospice Care, Followed by Death or Acute Care	Promote Effective Communication & Coordination of Care	Admissions and Readmissions to Hospitals

Inpatient Rehabilitation Facility Quality Reporting Program

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
MUC18-132	IRF QRP	Transfer of Health Information to Provider—Post-Acute Care	Promote Effective Communication & Coordination of Care	Transfer of Health Information and Interoperability
MUC18-139	IRF QRP	Transfer of Health Information to Patient—Post-Acute Care	Promote Effective Communication & Coordination of Care	Transfer of Health Information and Interoperability

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

Long-Term Care Hospital Quality Reporting Program

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
MUC18-133	LTCH QRP	Transfer of Health Information to Provider—Post-Acute Care	Promote Effective Communication & Coordination of Care	Transfer of Health Information and Interoperability
MUC18-141	LTCH QRP	Transfer of Health Information to Patient—Post-Acute Care	Promote Effective Communication & Coordination of Care	Transfer of Health Information and Interoperability

Skilled Nursing Facility Quality Reporting Program

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
MUC18-136	SNF QRP	Transfer of Health Information to Provider—Post-Acute Care	Promote Effective Communication & Coordination of Care	Transfer of Health Information and Interoperability
MUC18-138	SNF QRP	Transfer of Health Information to Patient—Post-Acute Care	Promote Effective Communication & Coordination of Care	Transfer of Health Information and Interoperability

Skilled Nursing Facility Value-Based Purchasing Program

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
No new candidate measures were approved for consideration under this program in the current year.				

Ambulatory Care and Meaningful Use Measures Programs

Medicare Shared Savings Program

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
MUC18-62	MSSP	Adult Immunization Status	Promote Effective Prevention & Treatment of Chronic Disease	Preventive Care
MUC18-77	MSSP	Use of Opioids from Multiple Providers in Persons Without Cancer	Promote Effective Prevention & Treatment of Chronic Disease	Prevention and Treatment of Opioid and Substance Use Disorders
MUC18-78	MSSP	Use of Opioids at High Dosage in Persons Without Cancer	Promote Effective Prevention & Treatment of Chronic Disease	Prevention and Treatment of Opioid and Substance Use Disorders
MUC18-79	MSSP	Use of Opioids from Multiple Providers and at High Dosage in Persons Without Cancer	Promote Effective Prevention & Treatment of Chronic Disease	Prevention and Treatment of Opioid and Substance Use Disorders
MUC18-106	MSSP	Initial opioid prescription compliant with CDC recommendations	Promote Effective Prevention and Treatment of Chronic Disease	Prevention and Treatment of Opioid and Substance Use Disorders

Merit-Based Incentive Payment System-Cost (MIPS-Cost)

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
MUC18-115	MIPS-Cost	Inpatient Chronic Obstructive Pulmonary Disease (COPD) Exacerbation	Make Care Affordable	Patient-focused Episode of Care
MUC18-116	MIPS-Cost	Femoral or Inguinal Hernia Repair	Make Care Affordable	Patient-focused Episode of Care
MUC18-117	MIPS-Cost	Lumbar Spine Fusion for Degenerative Disease, 1-3 Levels	Make Care Affordable	Patient-focused Episode of Care
MUC18-119	MIPS-Cost	Psychoses/Related Conditions	Make Care Affordable	Patient-focused Episode of Care

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
MUC18-120	MIPS-Cost	Lumpectomy, Partial Mastectomy, Simple Mastectomy	Make Care Affordable	Patient-focused Episode of Care
MUC18-121	MIPS-Cost	Acute Kidney Injury Requiring New Inpatient Dialysis	Make Care Affordable	Patient-focused Episode of Care
MUC18-122	MIPS-Cost	Lower Gastrointestinal Hemorrhage	Make Care Affordable	Patient-focused Episode of Care
MUC18-123	MIPS-Cost	Renal or Ureteral Stone Surgical Treatment	Make Care Affordable	Patient-focused Episode of Care
MUC18-126	MIPS-Cost	Hemodialysis Access Creation	Make Care Affordable	Patient-focused Episode of Care
MUC18-137	MIPS-Cost	Elective Primary Hip Arthroplasty	Make Care Affordable	Patient-focused Episode of Care
MUC18-140	MIPS-Cost	Non-Emergent Coronary Artery Bypass Graft (CABG)	Make Care Affordable	Patient-focused Episode of Care
MUC18-148	MIPS-Cost	Medicare Spending Per Beneficiary (MSPB) clinician measure	Make Care Affordable	Patient-focused Episode of Care
MUC18-149	MIPS-Cost	Total Per Capita Cost	Make Care Affordable	Risk adjusted total cost of care

Merit-Based Incentive Payment System-Quality (MIPS-Quality)

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
MUC18-31	MIPS-Quality	Time to surgery for elderly hip fracture patients	Make Care Safer by Reducing Harm Caused in the Delivery of Care	Preventable Healthcare Harm
MUC18-32	MIPS-Quality	Discouraging the routine use of occupational and/or physical therapy after carpal tunnel release	Make Care Affordable	Appropriate Use of Healthcare

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
MUC18-38	MIPS-Quality	International Prostate Symptom Score (IPSS) or American Urological Association-Symptom Index (AUA-SI) change 6-12 months after diagnosis of Benign Prostatic Hyperplasia	Strengthen Person & Family Engagement as Partners in their Care	Patient Reported Functional Outcomes
MUC18-47	MIPS-Quality	Multimodal Pain Management	Promote Effective Prevention & Treatment of Chronic Disease	Prevention and Treatment of Opioid and Substance Use Disorders
MUC18-48	MIPS-Quality	Potential Opioid Overuse	Make Care Safer by Reducing Harm Caused in the Delivery of Care	Preventable Healthcare Harm
MUC18-57	MIPS-Quality	Annual Wellness Assessment: Preventive Care	Promote Effective Prevention & Treatment of Chronic Disease	Preventive Care
MUC18-62	MIPS-Quality	Adult Immunization Status	Promote Effective Prevention & Treatment of Chronic Disease	Preventive Care
MUC18-63	MIPS-Quality	Functional Status Change for Patients with Neck Impairments	Strengthen Person & Family Engagement as Partners in their Care	Patient Reported Functional Outcomes

Hospital Measures Programs

Ambulatory Surgical Center Quality Reporting

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
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	Quality Priority	Meaningful Measure Area
No new candidate measures were approved for consideration under this program in the current year.				

Hospital-Acquired Condition Reduction Program

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
No new candidate measures were approved for consideration under this program in the current year.				

Hospital Inpatient Quality Reporting

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
MUC18-52	HIQR	Cesarean Birth	Make Care Safer by Reducing Harm Caused in the Delivery of Care	Healthcare-associated Infections
MUC18-107	HIQR	Hospital Harm - Pressure Injury	Make Care Safer by Reducing Harm Caused in the Delivery of Care	Preventable Healthcare Harm
MUC18-109	HIQR	Hospital Harm - Hypoglycemia	Make Care Safer by Reducing Harm Caused in the Delivery of Care	Preventable Healthcare Harm

Hospital Outpatient Quality Reporting

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
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	Quality Priority	Meaningful Measure Area
No new candidate measures were approved for consideration under this program in the current year.				

Hospital Value-Based Purchasing

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
No new candidate measures were approved for consideration under this program in the current year.				

Inpatient Psychiatric Facility Quality Reporting

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
MUC18-108	IPFQR	Medication Reconciliation on Admission	Promote Effective Communication & Coordination of Care	Medication Management

Medicare and Medicaid EHR Incentive Program for Eligible Hospitals and Critical Access Hospitals

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
MUC18-52	EHR Incentive/EH/CAH	Cesarean Birth	Make Care Safer by Reducing Harm Caused in the Delivery of Care	Healthcare-associated Infections
MUC18-107	EHR Incentive/EH/CAH	Hospital Harm - Pressure Injury	Make Care Safer by Reducing Harm Caused in the Delivery of Care	Preventable Healthcare Harm
MUC18-109	EHR Incentive/EH/CAH	Hospital Harm - Hypoglycemia	Make Care Safer by Reducing Harm Caused in the Delivery of Care	Preventable Healthcare Harm

PPS-Exempt Cancer Hospital Quality Reporting

MUC ID	CMS Program	Measure Title	Quality Priority	Meaningful Measure Area
MUC18-150	PCHQR	Surgical Treatment Complications for Localized Prostate Cancer	Make Care Safer by Reducing Harm Caused in the Delivery of Care	Preventable Healthcare Harm