
Core Measures

Version 9
Rapid Cycle Evaluation
Innovation Center

March 28, 2013

SUMMARY

INTRODUCTION

In an effort to enhance understanding of initiatives and to establish a consistent framework for performance measurement and quality improvement, the Rapid Cycle Evaluation Group aims to align indicators used for evaluations across the Innovation Center. Measurement alignment is necessary for the Innovation Center to examine the overall impact of its programs on the health of populations, quality, and efficiency of care, and to compare the effectiveness of different models.

MEASURE INCLUSION PROCESS

As a way to coordinate with other movements both external and internal to CMS, the list includes, but is not limited to, measures recommended by the Measure Applications Partnership, Patient-Centered Medical Home Collaborative, National Committee for Quality Assurance, CMS quality reporting programs, and AHRQ standards. In addition, measures identified in this core list were compared against a scan of monitoring and evaluation measures that CMS have used or considered in the past.

A majority of the indicators found in this document have been endorsed by the National Quality Forum (NQF). Because NQF employs a consensus-based approach to assess the feasibility, reliability, validity, and usability of quality performance measures, and is the premier organization for evaluating and endorsing health care performance measures¹, we encourage the use of NQF endorsed measures to the extent possible. In the absence of an NQF endorsed standard, we have identified indicators or recommendations from other sources that we believe are appropriate for use.

ALIGNMENT AND USE

Due to a multitude of diverse programs, unique intervention approaches, and varying availability of data, no parsimonious set will adequately serve as indicators for any of our programs. This core list is intended to identify a minimum set of meaningful measures for CMMI evaluations and other analysis. We acknowledge that there are many measurement gaps and that not all measures are applicable to all patients and settings. We ask our contractors and intramural researchers to align with the indicators in the core list conceptually, and to align with the indicators operationally when possible. In other words, these measures should be used as they are specified when applicable and broadened and modified as appropriate to the population being studied. For additional indicators that are not available on this “core” list, we have assembled a much longer menu of possible indicators and measurement areas to consider.

For NQF endorsed measure specific information² and technical specifications, please contact the Measure Steward. The contact information for each Measure Steward can be found by the measure ID on the NQF website: http://www.qualityforum.org/Measures_List.aspx.

¹ *Selecting Quality and Resource Use Measures: A Decision Guide for Community Quality Collaboratives*. AHRQ Publication No. 09(10)-0073, May 2010. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.ahrq.gov/qual/perfmeasguide/>

² The level of analysis and setting is defined by the Measure Stewards and has not been standardized in this document.

Level of Analysis (Classification Category): Level(s) at which measurement is assessed.

- **G/P**—Group/Practice. Two or more healthcare clinicians/providers who practice together, either at a single geographic location or at multiple locations.
- **HP**—Health Plan. An organization that acts as an insurer for an enrolled population.
- **Individual**—An individual healthcare clinician/provider, which may include but is not limited to, a physician, a nurse, and an allied health professional.
- **IDS**—Integrated delivery system. A healthcare entity that may include a variety of facilities and/or services including, but not limited to, hospitals, medical groups, skilled nursing facilities, home health, and/or insurance vehicles. This includes delivery systems that assume responsibility across settings for the complete patient-focused episode of care, such as accountable care organizations.
- **Individual**—An individual healthcare clinician/provider, which may include but is not limited to, a physician, a nurse, and an allied health professional.
- **Regional**—A group of individuals within a geographical area that exists within or across one or more states.

Setting (Classification Category): Settings or services for which the measure applies and is assessed

- **CO**—Clinician Office. Setting in which outpatient healthcare services are provided by physicians or other healthcare providers, including but not limited to, primary care, family practice, general internal medicine, and faculty practice plans.
- **C/UC**—Clinic /Urgent Care. Setting in which urgent care services are provided. Urgent care services are medically necessary services which are required for an illness or injury that would not result in further disability or death if not treated immediately, but require professional attention and have the potential to develop such a threat if treatment is delayed longer than 24 hours.
- **Facility**—A single entity that provides healthcare, which may include but is not limited to, a hospital, nursing home, dialysis center, and home health agency.
- **H/ACF**—Hospital/Acute Care Facility. Setting in which healthcare services, including but not limited to, diagnostic, therapeutic, medical, surgical, obstetric, and nursing are provided, by or under the supervision of physicians, to patients admitted for a variety of health conditions.
- **HH**—Home Health. Limited part-time or intermittent skilled nursing care and home health aide services, physical therapy, occupational therapy, speech-language therapy, medical social services, durable medical equipment (such as wheelchairs, hospital beds, oxygen, and walkers), medical supplies, and other services that are provided to a patient in his/her home or place of residence.
- **IPBH**—Inpatient (**IP**) behavioral health/psychiatric services.
- **NH/SNF**—Nursing Home/Skilled Nursing Facility. Setting in which healthcare services are provided under medical supervision and continuous nursing care for patients who do not require the degree of care and treatment which a hospital provides and who, because of their physical or mental condition, require continuous nursing care and services above the level of room and board.
- **OP**—Outpatient.
- **Rehab**—Rehabilitation. Setting in which long-term, comprehensive rehabilitation services are provided to patients for the alleviation or amelioration of the disabling effects of illness. These services are provided by various health professionals including, but not limited to, nurses and physical, occupational, and speech therapists.

Domains and Descriptions

The following measure types and associated definitions³ reflect the organization of measures found in this document. Measures may fall under multiple domains and can be cross-cutting.

Structure	Process	Outcome	Care Experience	Cost and Resource Use
<p>HIT Utilization Measures related to use of HIT</p>	<p>Preventive Care Measures examining provision of preventive care</p> <p>Clinical Care Measures assessing adherence to processes of care</p> <p>Care Coordination Measures assessing relationship and communication between providers and patients, including plan of care development and follow-up; follow-up to tests, referrals, etc.; availability of patient information to necessary caregivers/patient/family members; and care transition issues</p>	<p>Mortality Mortality measures including disease-specific or all-cause, reported for a specific time period</p> <p>Morbidity Intermediate outcome measures that describe level of health or disease</p> <p>Functional and Health Status Change Assessment tools that examine changes in patient outcomes related to functional and other health</p> <p>Safety Outcomes Measures assessing outcomes of poor safety practices</p>	<p>Patient, Care Giver Experience Measures or surveys that use feedback from patients and their families about their experience with care</p>	<p>Cost of Care Measures and recommendations for calculating cost of care</p> <p>Readmissions Measures related to n-day readmissions</p> <p>Ambulatory Care Sensitive Condition (ACSC) Admissions Measures tied to hospitalizations for which quality outpatient care can potentially prevent, or for which early intervention can prevent complications or more severe disease</p> <p>ER/ED Visits: Measures tied to utilization of the ED/ER</p>

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.

Process: A healthcare service provided to, or on behalf of, a patient. This may include, but is not limited to, measures that may address adherence to recommendations for clinical practice based on evidence or consensus.

Outcome: The health state of a patient (or change in health status) resulting from healthcare— desirable or adverse.

Care Experience: Patient and their care givers' experience of care

Cost and Resource Use: Counting 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 (i.e., monetize the health service or resource use units)

³ Definitions are based on those provided by NQF and AHRQ available at: <http://www.qualityforum.org/Home.aspx>, and at: http://www.qualityindicators.ahrq.gov/Downloads/Software/SAS/V21R3A/pqi_guide_rev3.pdf

Domain		NQF ID	Measure Title and Description	Setting	
				Level of Analysis	
Structure	HIT Utilization	0486	Adoption of Medication e-Prescribing Documents whether provider has adopted a qualified e-Prescribing system and the extent of use in the ambulatory setting	CO G/P, Individual	
		0488	Adoption of Health Information Technology Documents whether provider has adopted and is using health information technology. To qualify, the provider must have adopted and be using a certified/qualified EHR	All Settings Individual	
		0489	Ability for Providers with HIT to Receive Laboratory Data Electronically Directly into their Qualified/Certified EHR System as Discrete Searchable Data Documents the extent to which a provider uses certified/qualified EHR system that incorporates an electronic data interchange with one or more laboratories allowing for direct electronic transmission of laboratory data into the EHR as discrete searchable data elements	CO, Other G/P, Individual	
Process	Preventive Care	0038	Childhood Immunization Status Measure calculates a rate for each recommended vaccines and nine separate combination rates.	CO Individual	
		0041	Influenza Vaccination Percentage of patients aged 6 months and older seen for a visit between October 1 and the end of February who received an influenza immunization OR patient reported previous receipt of an influenza immunization	CO Individual	
		0043	Pneumonia Vaccination Status for Older adults Percentage of patients 65 years of age and older who ever received a pneumococcal vaccination	CO Individual	
		0028	Measure Pair: A) Tobacco Use Assessment, B) Tobacco Cessation Intervention A) Percentage of patients who were queried about tobacco use one or more times during the two-year measurement period, B)Percentage of patients identified as tobacco users who received cessation intervention during the two-year measurement period	CO Individual	
		0034	Colorectal Cancer Screening Percentage of members 50-75 years of age who had appropriate screening for colorectal cancer	CO Individual, Team, G/P,HP	
		1392	Well-Child Visits in the First 15 Months of Life Percentage of members who turned 15 months old during the measurement year and who had the following number of well-child visits with a PCP during their first 15 months of life.	CO HP, IDS, Regional	
		1516	Well-Child Visits in the Third, Fourth, Fifth, and Sixth Years of Life Percentage of members 3–6 years of age who received one or more well-child visits with a PCP during the measurement year	CO HP, IDS, Regional	
		0024	Body Mass Index (BMI) 2 through 18 Years of Age Percentage children, 2 through 18 years of age, whose weight is classified based on BMI percentile for age and gender	CO Individual	
		0421	Adult Weight Screening and Follow-Up Percentage of patients aged 18 years and older with a calculated BMI documented in the medical record AND if the most recent BMI is outside the parameters, a follow up plan is documented	All All	
	Clinical Care	Medication	0541	Proportion of Days Covered: 5 Rates by Therapeutic Category Percentage of patients 18 years and older who met the proportion of days covered threshold of 80% during the measurement year. Rate is calculated separately for the following medication categories: Beta-Blockers, ACEI/ARB, Calcium-Channel Blockers, Diabetes Medication, Statins	CO, HH, Other All Levels
		Diabetes	0055	Eye Exam Percentage of adult patients with diabetes aged 18-75 years who received an eye screening for diabetic retinal disease during the measurement year	CO G/P, Individual
			0056	Foot Exam Percentage of adult patients with diabetes aged 18-75 years who received a foot exam (visual inspection, sensory exam with monofilament, or pulse exam)	CO Individual
			0062	Urine Protein Screening Percentage of adult diabetes patients aged 18-75 years with at least one test for microalbumin during the measurement year or who had evidence of medical attention for existing nephropathy (diagnosis of nephropathy or documentation of microalbuminuria or albuminuria)	CO Individual, G/P, IDS,Reg.

Domain		NQF ID	Measure Title and Description	Setting	
				Level of Analysis	
Process	Clinical Care	CAD	0066	ACE Inhibitor or ARB Therapy–Diabetes and/or LVSD Percentage of patients aged 18 years and older with a diagnosis of CAD seen within a 12 month period who also have diabetes or a current or prior LVEF <40% who were prescribed ACE inhibitor or ARB therapy	CO, OP, HH, C/UC,NH/SNF G/P, Individual
			0067	Oral Antiplatelet Therapy Prescribed for Patients with CAD Percentage of patients aged 18 years and older with a diagnosis of CAD seen within a 12 month period who were prescribed aspirin or clopidogrel	CO, OP, HH, C/UC,NH/SNF G/P, Individual
			0070	Beta-Blocker Therapy—Prior MI or LVEF<40% Percentage of patients aged 18 years and older with a diagnosis of CAD seen within a 12 month period who also have prior MI or a current or prior LVEF <40% who were prescribed beta-blocker therapy	CO, OP, HH, C/UC, NH/SNF G/P, Individual
			0074	Lipid Control Percentage of patients aged 18 years and older with a diagnosis of CAD seen within a 12 month period who have a LDL-C result <100 mg/dL OR patients who have a LDL-C result >=100 mg/dL and have a documented plan of care to achieve LDL-C <100mg/dL, including at a minimum the prescription of a statin	CO, OP, HH, C/UC, NH/SNF G/P, Individual
		HF	0083	Beta-blocker Therapy for Left Ventricular Systolic Dysfunction Percentage of patients aged 18 years and older with a diagnosis of heart failure with a current or prior LVEF < 40% who were prescribed beta-blocker therapy either within a 12 month period when seen in the outpatient setting or at hospital discharge	C/UC, CO, HH, H/ACF, NH/SNF Facility, G/P, Individual
			IVD	0068	Use of Aspirin or Another Antithrombotic Percentage of patients 18 years and older with IVD who were discharged alive for AMI, CABG or PCI from January 1–November 1 of the year prior to the measurement year, or who had a diagnosis of IVD during the measurement year and the year prior to the measurement year and who had use of aspirin or another antithrombotic during the measurement year.
		0075		Complete Lipid Profile and LDL Control <100 Percentage of patients 18 years of age and older who were discharged alive for AMI, CABG or PCI from January 1–November 1 of the year prior to the measurement year, or who had a diagnosis of IVD during the measurement year and the year prior to measurement year, who had each of the following during the measurement year: Complete Lipid Profile and LDL-C control <100 mg/dL	All Settings G/P, Individual
		AMI	0164	Fibrinolytic Therapy Received Within 30 Minutes of Hospital Arrival Percentage of AMI patients with ST-segment elevation or LBBB on the ECG closest to arrival time receiving fibrinolytic therapy during the hospital stay and having a time from hospital arrival to fibrinolysis of 30 minutes or less	H/ACF Facility, Reg.
				Fibrinolytic Therapy Received Within 30 Minutes of ED Arrival Emergency Department AMI patients receiving fibrinolytic therapy during the ED stay and having a time from ED arrival to fibrinolysis of 30 minutes or less	H/ACF, C/UC Facility, Reg.
			0163	Primary PCI Received within 90 Minutes of Hospital Arrival Percentage of AMI patients with ST-segment elevation or LBBB on the ECG closest to arrival time receiving primary PCI during the hospital stay with a time from hospital arrival to PCI of 90 minutes or less	H/ACF Facility, Reg.
				Median Time to Transfer to Another Facility for Acute Coronary Intervention Median time from ED arrival to time of transfer to another facility for acute coronary intervention	H/ACF, C/UC All Levels
			0102	COPD: Bronchodilator Therapy Percentage of symptomatic patients with COPD who were prescribed an inhaled bronchodilator	CO Individual
		Respiratory	0001	Asthma: Asthma Assessment Percentage of patients who were evaluated during at least one office visit for the frequency of daytime and nocturnal asthma symptoms	CO Individual
				0047	Asthma: Pharmacologic Therapy Percentage of all patients with mild, moderate, or severe persistent asthma who were prescribed either the preferred long-term control medication (inhaled corticosteroid) or an acceptable alternative treatment

Domain		NQF ID	Measure Title and Description	Setting	
				Level of Analysis	
Process	Clinical Care	Drug Dependence	0004	Initiation and Engagement of Alcohol and Other Drug Dependence Treatment The percentage of adolescent and adult members with a new episode of alcohol or other drug (AOD) dependence who received the following. a) Initiation of AOD Treatment: The percentage of members who initiate treatment through an IP AOD admission, OP visit, intensive OP encounter or partial hospitalization within 14 days of the diagnosis. b) Engagement of AOD Treatment: The percentage of members who initiated treatment and who had two or more additional services with a diagnosis of AOD within 30 days of the initiation visit.	CO, H/ACF G/P, HP, Individual, IDS, Reg.
			0529	Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time Surgical patients whose prophylactic antibiotics were discontinued within 24 hours after Anesthesia End Time (48 hours for CABG or Other Cardiac Surgery). The Society of Thoracic Surgeons Practice Guideline for Antibiotic Prophylaxis in Cardiac Surgery (2006) indicates that there is no reason to extend antibiotics beyond 48 hours for cardiac surgery and very explicitly states that antibiotics should not be extended beyond 48 hours even with tubes and drains in place for cardiac surgery.	H/ACF Facility
		0218	Surgery Patients Who Received Appropriate VTE Prophylaxis Within 24 Hours Pre/post-surgery Percentage of surgery patients who received appropriate Venous Thromboembolism (VTE) Prophylaxis within 24 hours prior to surgery to 24 hours after surgery end time	H/ACF All Levels	
		Mental Health	0418	Screening for Clinical Depression Percentage of patients aged 18 years and older screened for clinical depression using an standardized tool and follow-up plan documented	CO, H/ACF, NH/SNF Individual
			0557	Post-Discharge Continuing Care Plan Created Patients discharged from a hospital-based IP psychiatric setting with a continuing care plan created overall and stratified by age groups ⁴	H/ACF Facility
			0558	Post-Discharge Continuing Plan Transmitted to Next Level of Care Provider Upon Discharge Patients discharged from a hospital-based IP psychiatric setting with a continuing care plan provided to the next level of care clinician or entity overall and stratified by age groups ⁵	H/ACF Facility
			0576	Follow-Up After Hospitalization for Mental Illness Percentage of discharges for members 6 years of age and older who were hospitalized for treatment of selected mental health disorders and who had an OP visit, an intensive OP encounter, or partial hospitalization with a mental health practitioner. Two rates are reported: 1) the percentage of members who received follow-up within 30 days of discharge, 2) the percent of members who received follow-up within 7 days of discharge	CO, IPBS, OPBS Individual, HP, G/P, IDS, Reg
			1391	Frequency of Ongoing Prenatal Care Measure examines the percentage of Medicaid deliveries that received various numbers of expected prenatal visits.	CO Health Plan, IDS, Regional
		Care Coordination	0228	3-Item Care Transition Measure Uni-dimensional patient self-reported survey that measure the quality of preparation for care transitions (to be included in HCAHPS)	H/ACF Facility
	0648		Care Transition Record Transmitted to Health Care Professional Percentage of patients, regardless of age, discharged from an inpatient facility to home or any other site of care for whom a transition record was transmitted to the designated health care provider for follow-up care within 24 hours.	H/ACF, Rehab, NH/SNF Facility, IDS	
	0647		Transition Record with Specified Elements Received by Discharged Patients Percentage of patients, regardless of age, discharged from an inpatient facility to home or any other site of care, or their caregiver(s), who received a transition record (and with whom a review of all included information was documented) at the time of discharge	H/ACF, Rehab, NH/SNF Facility, IDS	

⁴ Paired measure with HBIPS-7

⁵ Paired measure with HBIPS-6

Domain		NQF ID	Measure Title and Description	Setting	
				Level of Analysis	
Process	Care Coordination	0097	Medication Reconciliation Percentage of patients aged 65 years and older discharged from any IP facility (e.g. hospital, skilled nursing facility, or rehabilitation facility) and seen within 60 days following discharge in the office by the physician providing on-going care who had a reconciliation of the discharge medications with the current medication list in the medical record documented	CO Individual	
		0229, 0230	30-Day Mortality Rate, Risk Adjusted The measure estimates a hospital-level risk-standardized mortality rate (RSMR), defined as death from any cause within 30 days after the index admission date, for patients 18 and older discharged from the hospital. These measures are specified for HF and AMI.	H/ACF Facility	
Outcome	Morbidity	0729	Optimal Diabetes Care The percentage of patients 18-75 with a diagnosis of diabetes, who have optimally managed modifiable risk factors (A1c<8.0%, LDL<100 mg/dL, blood pressure<140/90 mm Hg, tobacco non-use and daily aspirin usage for patients with diagnosis of IVD) with the intent of preventing or reducing future complications associated with poorly managed diabetes.	CO G/P, IDS	
		0018	HTN: Controlling High Blood Pressure Percentage of patients > 18 years of age with a diagnosis of hypertension in the first six months of the measurement year or any time prior with last BP < 140/90 mm Hg	All Settings G/P, Individual	
		0469	Elective Delivery Prior to 39 Completed Weeks Gestation Percentage of babies electively delivered prior to 39 completed weeks gestation	H/ACF Facility	
		0471	Cesarean Rate for Low-Risk First Birth Women Percentage of low-risk first birth women (aka NTSV CS rate: nulliparous, term, singleton, vertex) with a Cesarean rate that has the most variation among practitioners, hospitals, regions and states	H/ACF Facility	
		0716	Healthy Term Newborn Percent of term singleton live births (excluding those with diagnoses originating in the fetal period) who DO NOT have significant complications during birth or the nursery care	H/ACF Facility, IDS, Team Reg.	
	Functional and Health Status Change	Clinician Assessment		Continuity Assessment Record and Evaluation Tool (CARE Tool)⁶ The CARE Tool was developed for CMS for the purpose of creating a uniform patient assessment instrument at acute hospital discharge and at post acute care admission and discharge. CARE is designed to measure outcomes in physical and medical treatments while controlling for factors that affect outcomes, such as cognitive impairments and social and environmental factors. Four major domains are included in the tools: medical, functional, cognitive impairments, and social/environmental factors.	
				CARE-F and CARE-C Assessment Tools for Nursing Facilities, Day Rehabilitation Programs, and Other ambulatory Settings in the Community⁷ Under the DOTPA project, three versions of the assessment tool for nursing facilities, day rehabilitation programs, and other ambulatory settings in the community were developed. These assessments encompass distinct domains of patient need and utilize a set of patient self-assessment items (based on the AM-PAC) and clinician-reported items (based on the CARE tool).	
		Patient Reported	0429, 0430	Activity Measure for Post Acute Care (AM-PAC)-CMS DOTPA Short Form Public Domain Version The AM-PAC is a functional status assessment instrument developed specifically for use in facility and community dwelling post acute care patients. Unlike traditional functional outcome measures which are disease, condition, or setting-specific, the AM-PAC was designed to be used across patient diagnoses, conditions and settings where post acute care is being provided; therefore, the AM-PAC is useful for developing benchmarks and for examining functional outcomes over an episode of post acute care, as patients move across care settings. ⁸	C/O, HH, H/ACF, NH/SNF Facility, Individual
	Safety		0299	Surgical Site Infection Percentage of surgical site infections occurring within thirty days after the operative procedure if no implant is left in place or with one year if an implant is in place in patients who had an NHSN operative procedure performed during a specified time period and the infection appears to be related to the operative procedure.	H/ACF Facility

⁶ See <http://www.pacdemo.rti.org/meetingInfo.cfm?cid=caretool> for additional information.

⁷ See <http://optherapy.rti.org/AssessmentTools.aspx> for additional information.

⁸ Contact jun.li@cms.hhs.gov for additional information on the CMS DOTPA Short Form public domain version.

Domain		NQF ID	Measure Title and Description	Setting
				Level of Analysis
Outcome	Safety	0531	Patient Safety for Selected Indicators A composite measure of potentially preventable adverse events for selected indicators including pressure ulcers, iatrogenic pneumothorax, central venous catheter-related bloodstream infections, postop ip fracture, postop hemorrhage or hematoma, postop physiologic and metabolic derangements, postop respiratory failure, postop PE or DVT, postop sepsis, postop wound dehiscence, accidental puncture or laceration	H/ACF Facility
		Patient, Care Giver Experience	0005-0009, 0517, 0691-0693, 0258	CAHPS® surveys Consumer Assessment of Healthcare Providers and Systems (CAHPS®) surveys ask consumers and patients to report on and evaluate their experiences with health care. We recommend the usage of CAHPS surveys in every setting of care for which they are available.
0208	Family Evaluation of Hospice Composite Score: Derived from responses to 17 items on the Family Evaluation of Hospice Care (FEHC) survey presented as a single score ranging from 0 to 100.		Hospice Facility, National	
0209	Comfortable Dying: Pain Brought to a Comfortable Level Within 48 Hours of Initial Assessment Number of patients who report being uncomfortable because of pain at the initial assessment (after admission to hospice) services who report pain was brought to a comfortable level within 48 hours.		Facility, National	
Cost and Resource Use	Cost of Care	Total Cost of Care	Total Medicare Part A and B Cost Calculation Recommendations⁹ (allowed amounts) a. Price standardize for DSH, IME, and area wages. Method of pricing should be transparent and standardized when possible to reflect underlying utilization changes and not artifacts of the Medicare payment system. b. No routine truncation of extreme values except those related to obvious data errors. If truncation is necessary, model diagnostics and sensitivity analyses are recommended c. Recommend risk adjustment d. Partial year observations or incomplete calendar year FFS claims should be annualized by prorating and then down weighting. For deaths, consideration should be given to annualizing partial year costs in a way that accounts for the exponential increase in monthly costs as death approaches ¹⁰ .	
			IP Episode	Medicare Spending Per Beneficiary, Risk-adjusted and Price Standardized MSPB measure evaluates hospitals' efficiency relative to the efficiency of the median hospital. Specifically, the MSPB Measure assesses the cost to Medicare of services performed by hospitals and other healthcare providers during an MSPB episode, which comprises the period immediately prior to, during, and following a patient's hospital stay
	Readmissions	1789	Hospital All-Cause Unplanned Readmissions, Risk Adjusted Hospital-wide, all-cause, risk standardized readmission rate (RSRR) following hospitalization for all conditions and procedures	H/ACF Facility
	ACSC	0274	Diabetes Long-term Complications The number of discharges for long-term diabetes complications per 100,000 population Age 18 Years and Older in a Metro Area or county in a one year time period	H/ACF County or City, State
Cost and Resource Use	ACSC	0275	Chronic Obstructive Pulmonary Disease This measure is used to assess the number of admissions for COPD per 100,000 population	H/ACF County, City, State
		0277	Congestive Heart Failure Admission Rate Percent of county population with an admissions for CHF	CO County, City, State
		0279	Bacterial Pneumonia Number of admissions for bacterial pneumonia per 100,000 population	H/ACF County or City, State
		0283	Adult Asthma Number of admissions for asthma in adults per 100,000 population	CO County, City, State

⁹ See Appendix A for more details

¹⁰ Lubitz J, Riley G. Trends in Medicare Payments in the Last Year of Life. N Engl J Med 1993; 328: 1092-1096

Domain		NQF ID	Measure Title and Description	Setting
				Level of Analysis
Cost and Resource Use	ACSC	0281	Urinary Tract Infection Admission Rate Number of discharges for urinary tract infection per 100,000 population age 18 years and older in a metro area or county in a one year time period	H/ACF County, City, State
	ER/ED		Hospital ED Visit Rate that did not Result in Hospital Admission, by Condition Numerator: All beneficiaries attributed to the Group Practice Reporting Option (GPRO) group with a given CCW indicator, sum the number of ED visits identified in the Outpatient SAF as specified by ResDac ¹¹ . Denominator: Count number of beneficiaries attributed to the GPRO group with a given CCW flag. <i>Note: Please also consider ED observation unit visit rates</i>	

¹¹ http://www.resdac.org/Tools/TBs/TN-003_EmergencyRoominClaims_508.pdf

Total Cost of Care Measurement Recommendations

The following principles are recommendations for meaningful measurement of fee-for-service Medicare Part A and B costs. Exceptions to these guidelines should be fully explained and well justified.

Price Standardization: To adjust for payment system variation that is not directly related to utilization decisions.

Recommendation: Standardize for area wages (WI, GPCI, etc.), disproportionate share hospital (DSH), and Indirect Medical Education (IME). Other standardization criteria may also apply, such as for site of service differentials, COLA, CAHs, etc depending on the research question of interest. For trend analysis and comparisons over multiple years, constant dollar adjustment shall be considered to account for inflations.

Rationale: The basic unit of analysis should be related to changes in utilization and not to artifacts of the Medicare payment system.

Truncation: To remove extreme values in data, but not to obscure the effects of outliers

Recommendation: Do not routinely truncate extreme values, except those related to obvious data errors. If truncation is necessary, a variety of model diagnostics and sensitivity analyses is recommended to ascertain whether spurious data points are driving the conclusions that are being drawn from the model. In that case, censoring observations may be justified.

Rationale: The inclusion of all values including high-cost patients will provide a more reliable measure of the cost to the Medicare program.

Risk Adjustment: To reduce the variation in expenditures that stem from differences in risk factors

Recommendation: Risk adjustment techniques should be applied to data when appropriate for the analysis. Depending on the analysis and time periods involved, a demographic model leading up to a full HCC model may be considered. HCCs would be an appropriate risk adjuster in most cases, and is available as a prospective or concurrent adjuster, depending on the research question being addressed.

Rationale: In order to account for inherent population risk differences, comparisons between different populations will generally require risk adjustment. However, in cases where the population characteristics can be controlled or propensity matched, less reliance may be made in applying risk adjustment models. For programs where the objective is to reduce risk factors, risk adjustment must be carefully applied so as to not adjust away the benefits of the intervention.

Partial year beneficiary data: To account for partial year participation

Recommendation: Beneficiaries with partial year claims history should not be routinely excluded from analysis. In most cases, partial year costs can be annualized, and those observations assigned lesser weights in the analysis, based on the proportion of the year during which claims experience was observed. In the case of deaths, consideration should be given to annualizing partial year costs in a way that accounts for the exponential increase in monthly costs as death approaches.

Rationale: Partial year beneficiary data can be informative, and can skew the analysis if routinely ignored. Deaths represent a partial year situation of special importance because of the high costs and heavy use of services in the last months of life. Please see: *Lubitz J, Riley G. Trends in Medicare Payments in the Last Year of Life. N Engl J Med 1993; 328: 1092-1096*