MEASURE APPLICATIONS PARTNERSHIP

MAP Families of Measures

PUBLIC COMMENT DRAFT

NATIONAL QUALITY FORUM

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Families of Measures

The performance gap between the value of what we want and what we get from our healthcare system is enormous. Performance measures are tools to help us understand what and how to improve and whether we are making progress in closing the gap. The Measure Applications Partnership (MAP) makes coordinated and upstream recommendations on measure use, with the goal of improving health outcomes, providing consistent and meaningful information, and identifying measures that will drive value.

The current siloed delivery system has perpetuated a siloed approach to performance measurement. Performance measures currently used in public-reporting and performance-based payment programs are criticized for a lack of consistency across uses, in both strategic focus and technical measure specifications. Additionally, performance measurement efforts have typically been disease- and setting-specific, leading to a proliferation of measures that assess single aspects of care, rather than broader patient-centered measures that assess quality across settings and time. Performance measurement efforts must be better coordinated to make progress toward the National Quality Strategy (NQS) goals, improve health outcomes, and enhance the efficiency of the delivery system.

To strengthen signals about desired changes and provide stronger incentives to providers and clinicians, MAP will promote alignment of performance measurement across public- and private-sector initiatives that use measures to drive value. Strategically aligning public reporting and performance-based payment programs across care settings, levels of analysis, populations, and payers will encourage delivery of patient-centered care, reduction in providers' data collection burden, and emergence of a comprehensive picture of quality.

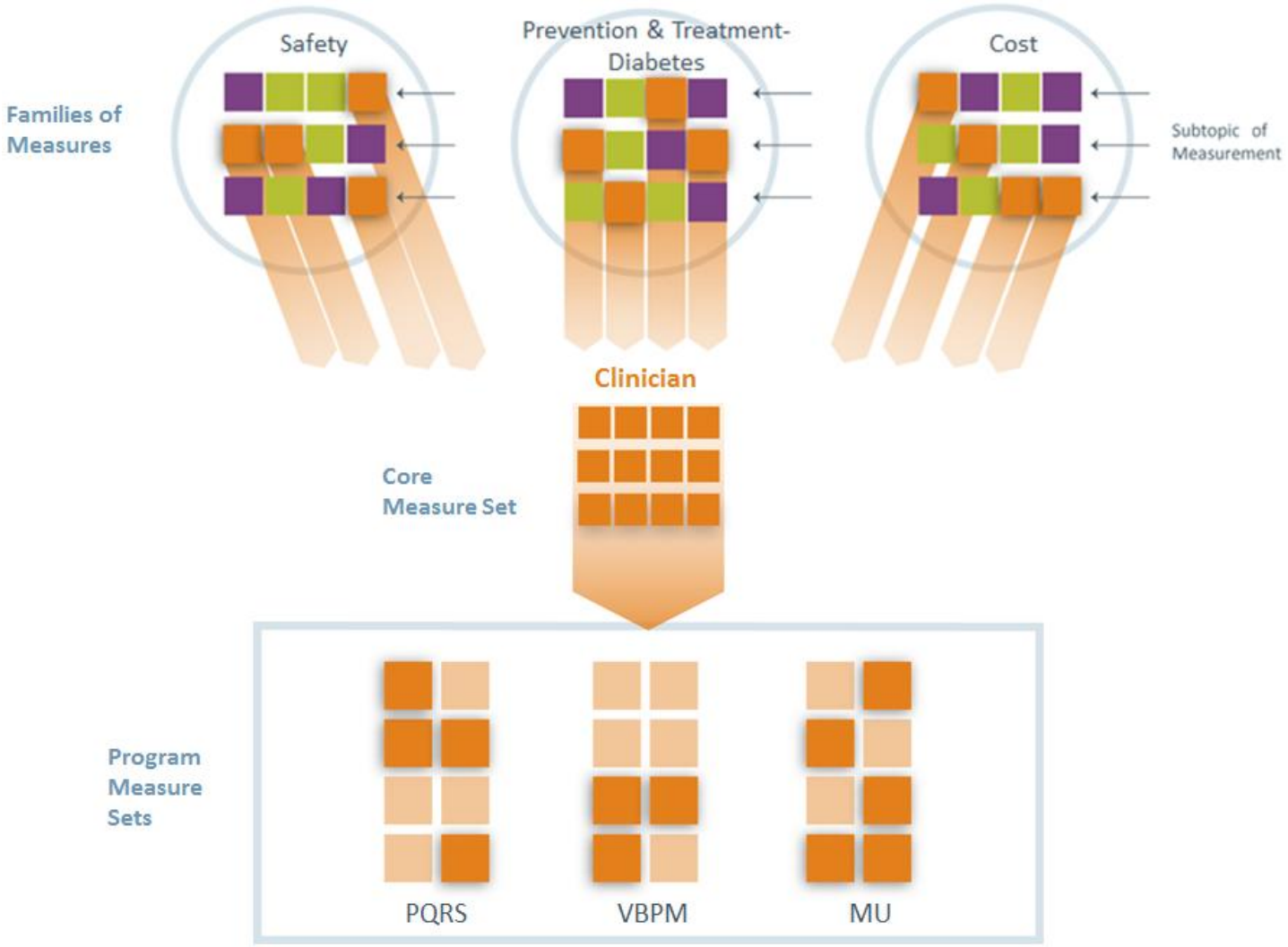
As a primary tactic to achieve alignment of performance measurement, MAP has identified families of measures—sets of related available measures and measure gaps that span programs, care settings, levels of analysis, and populations for specific topic areas related to the National Quality Strategy (NQS) priorities and high-impact conditions. Families indicate the highest priorities for measurement and best available measures within a particular topic, as well as critical measure gaps that need to be filled to enable a more complete assessment of quality.

Families of measures are intended to build on, not duplicate, the NQF-endorsement process, which focuses on the properties of individual measures. MAP's role is to identify measures that will work well together within program measure sets to accomplish the objectives of specific programs. MAP first looks to the portfolio of NQF-endorsed measures when identifying measures for families of measures and program measure sets.

MAP will use the families of measures to guide its pre-rulemaking recommendations on the selection of measure sets for specific federal programs. As the performance measurement programs are typically setting- or population-specific, MAP will repackage the families of measures into core measure sets—sets of available measures and gaps specific to a care setting, level of analysis, or population drawn from the families of measures—to encourage the best use of available measures in specific public- and private-sector programs. While MAP's pre-rulemaking input is not limited to measures from core measure sets, such measures represent a starting place for identifying the highest-leverage opportunities for addressing performance gaps.

Figure 1 illustrates how core measure sets and program measure sets are populated from families of measures. The boxes represent individual performance measures. In this example, the orange boxes represent measures that are specified for individual clinician or group practice levels of analysis.

Figure 1 Families of Measures Populating a Core Measure Set and Program Measure Sets



MAP's phased approach to identifying families of measures initially focused on three NQS priorities—Safety, Care Coordination, and Prevention and Treatment of the Leading Causes of Mortality. Within the prevention and treatment priority, MAP has identified families of measures for two high-impact conditions—cardiovascular disease and diabetes. MAP chose to address these topics first as they build on MAP's prior work (e.g., MAP Safety Coordination Strategy) or represent areas in which there has been a history of measure alignment issues (e.g., cardiovascular care). Families of measures also include measure gaps, and MAP has begun to define gap-filling pathways by identifying and prioritizing measure gaps, along with potential barriers and solutions to filling those gaps.

Approach to Identifying Families of Measures

MAP convened time-limited task forces, drawn from the membership of the MAP Coordinating Committee and workgroups, to advise the MAP Coordinating Committee (see Appendix A for the Coordinating Committee roster) on the identification of families of measures. Liaisons from the National Priorities Partnership (NPP) and NQF measure endorsement project Steering Committees also served on the task forces to provide insight from the NPP's input to the NQS and relevant endorsement project findings. The 40-member Safety/Care Coordination Task Force (see Appendix B for the task force roster) advised the Coordinating Committee on families of measures for the safety and care coordination NQS priorities. The 24-member Cardiovascular/Diabetes Task Force (see Appendix C for the task force roster) advised the Coordinating Committee on families of measures for cardiovascular conditions and diabetes, within the NQS prevention and treatment of the leading causes of mortality priority. Each task force held two in-person meetings to develop the families of measures. The agendas and materials for the task force and Coordinating Committee meetings can be found on the NQF website.

MAP engaged in a deliberate, four-step process to identify the first four families of measures:

1. Identify and prioritize high-leverage opportunities for improvement

   Within each NQS priority or high-impact condition, MAP first identified and prioritized the areas of measurement that are considered the highest-leverage opportunities for improvement, guided by the IOM criteria of impact, inclusiveness, and improvability.[1] To prioritize the areas of measurement based on impact, MAP used the goals and associated metrics in the NQS 2012 Annual Progress Report to Congress. The NQS goals and metrics were selected based on evidence and multi-stakeholder input and represent the highest-leverage opportunities to improve health and provide better, more affordable care. Additionally, MAP emphasized measurement areas that are related to known disparities and inefficiencies in the system, such as overuse of care. Further, MAP identified the highest-leverage improvement opportunities across the lifespan and the patient-focused episode of care, recognizing that measurement opportunities vary by a person's age and their trajectory of care. Appendix D contains an impact, inclusiveness, and improvability analysis for the high leverage measurement opportunities within each family.

2. Scan for measures that address the high-leverage opportunities

   Next, MAP scanned for available measures that address the high-leverage improvement opportunities. The review included the NQF-endorsed portfolio of measures, measures used in federal programs (including current measures and measures under consideration during the first year of MAP pre-rulemaking deliberations), and measures used in other public- (i.e., Million Hearts Campaign and Partnership for Patients) and private-sector efforts (e.g., eValue8, IHA P4P, Bridges to Excellence, other purchaser and payer value-based purchasing programs, recognition programs, and Board certification programs). The MAP Safety/Care Coordination Task Force reviewed 316 measures related to patient safety and 135 measures related to care coordination. The MAP Cardiovascular/Diabetes Task Force reviewed 225 measures related to primary prevention, treatment, secondary prevention, and cost of care for cardiovascular conditions and diabetes. MAP recognizes this scan of measures was not comprehensive and aims to work with stakeholders to identify additional measures in use.

3. Define the family of measures for each high-leverage opportunity

   Subsequently, MAP used the Measure Selection Criteria (see Appendix E for MAP Measure Selection Criteria) as a guide for considering: (1) how measures address relevant care settings, populations, and levels of analysis; (2)

[1] Institute of Medicine. Priority Areas for National Action: Transforming Health Care Quality. Available at: http://iom.edu/Reports/2003/Priority-Areas-for-National-Action-Transforming-Health-Care-Quality.aspx. Last accessed August 2012.

if measures are harmonized across settings, populations, levels of analysis; (3) appropriate types of measures, including outcome, process, structure, and patient experience measures; and (4) attention to parsimony, with the intent of identifying only the most important measures for driving change. Finally, when constructing each family, MAP considered whether the family adequately addresses issues such as cost of care, disparities, and the needs of vulnerable populations.

4. Establish gap-filling pathways

When selecting available measures for each family, MAP identified the high-leverage improvement opportunities that lack adequate performance measures as measure gaps. Where no measures were currently available to address gaps, MAP generated measure ideas that should be developed to fill the gaps. Additionally, MAP made recommendations to measure developers for potentially modifying existing measures that do not adequately address the high-leverage opportunities but currently are considered the best alternative. The recommended modifications included expansion to additional settings, levels of analysis, and populations. With gaps identified, MAP began to prioritize and explore ways to promote gap-filling. Measure developers participated in MAP task force meetings, providing information about where they are currently developing or planning to develop measures that would address the gaps identified by MAP. Measure developers also raised barriers to measure development and ways that MAP could help remove the barriers.

Safety Family of Measures

Patient safety is a key NQS priority and remains a significant concern within our healthcare system. One study recently identified rates of injuries to patients associated with their healthcare to be in excess of 25 events per 100 admissions[i]. Harm befalling patients as a result of receiving healthcare services has significant impact on patients, caregivers, clinicians, and the overall health system. Adverse events can result in reduced quality of life and additional care needed for patients, increased emotional strain on caregivers and clinicians, and greater healthcare spending.

One of the major recommendations that emerged from the first year of MAP's work was to identify "*a national core set of safety measures that are applicable to all patients.*" In this report, MAP builds on this recommendation by providing input on a family of measures for safety that includes existing measures and gap areas across settings, levels of analysis, and public and private sector programs. The safety family of measures is intended to serve as the national core set, as well as to inform MAP's pre-rulemaking activities.

MAP's approach to developing a safety family of measures involved first identifying and prioritizing high-leverage opportunities for improvement. MAP considered the NQS goals for the priority of "making care safer by reducing harm caused in the delivery of care," which are reducing: 1) preventable hospital admissions and readmissions, 2) incidence of adverse healthcare-associated conditions, and 3) harm from inappropriate or unnecessary care. In identifying and prioritizing high-leverage opportunities, MAP also honed in on the key focus areas of HHS' Partnership for Patients and the Healthcare-Acquired Infection Initiative, as well as the Medicare Hospital-Acquired Conditions program (See Appendix D, High leverage measurement opportunities background).

Using the groundwork laid by these initiatives, MAP identified nine priority topic areas for aligning safety measurement, which were broken into a number of subtopics. The topics and subtopics addressed within the measure family are displayed in Table 1.

Table 1 – Safety Priority Topic and Subtopic Areas

Topic	Subtopic
Healthcare-Acquired Infections	Catheter-Associated Urinary Tract Infections (CAUTI)
	Central Line-Associated Blood Stream Infections (CLABSI)
	Methicillin-Resistant Staphylococcus aureus (MRSA)
	C. difficile
	Surgical Site Infection
	Sepsis
	Ventilator-Associated Pneumonia (VAP)
Medication/Infusion Safety	Adverse Drug Events
	Blood Incompatibility
	Manifestations of Poor Glycemic Control
Pain Management	Effectiveness, Medication Overuse, Patient Experience
Venous Thromboembolism	Deep Vein Thrombosis (DVT)
	Pulmonary Embolism (PE)
Perioperative/Procedural Safety	Foreign Object Retained After Surgery
	Trauma (burn, shock, laceration, puncture, iatrogenic pneumothorax)

	Air Embolism
Injuries from Immobility	Pressure Ulcers
	Falls
Safety-Related Overuse & Appropriateness	Imaging
	Antibiotics
Obstetrical Adverse Events	Pre-Delivery, Delivery, Post-Delivery
Complications-Related Mortality	Failure to Rescue

Themes from the Identification of the Safety Family of Measures

Four themes resonated throughout MAP's identification of the safety family of measures: the importance of creating and maintaining a culture of safety, the need for patient and caregiver engagement in treatment planning and decisions, challenges to reporting meaningful safety information, and cost of care implications.

Culture of Safety

An overarching theme from the safety discussions was the importance of creating a "culture of safety" at every site of care. This culture of safety is person-centered and requires multidisciplinary teamwork to protect patients from potential harm. It requires a non-punitive environment in which health professionals, of all types and at all levels, are encouraged to report errors and adverse events, with a true emphasis on the needs of the patient and family. Establishing a culture of safety requires organizational leadership to be actively engaged, as leaders play a critical role in demonstrating the importance of patient safety through their decisions. Currently, performance measurement is extremely limited in this area. As measurement continues to evolve, it will be essential to identify effective methods for assessing an organizational culture of safety.

Patient and Caregiver Engagement

The importance of including patient and caregiver preferences in treatment planning and decisions was another dominant theme in MAP's discussion about the safety family of measures. Matching treatments to patient goals can prevent harmful complications and side effects by reducing unwanted treatment and testing. MAP encourages the increased development and use of patient-reported outcome measures to assess patient understanding and alignment of treatment with patient goals. MAP plans to identify a patient and family engagement measure family as part of its future work.

Reporting Meaningful Safety Information

The challenge of providing meaningful performance information related to patient safety was another significant theme during MAP's safety discussions regarding reporting rare events, making comparisons, and supporting consumer decision-making. The messaging and context in which rare, serious reportable events are reported is critical. The occurrence of these kinds of events is very low by definition. To address concerns around the small numbers, MAP suggests creating a single composite measure that encompasses the most significant events. This composite could potentially be used for public reporting and payment programs while still providing the necessary detail for quality improvement purposes. Additionally, the use of standard definitions in safety measurement is important so that providers across all settings can accurately benchmark against one another to

ensure consumers and purchasers can make informed choices. Finally, reporting performance scores as rates, rather than ratios, provides more understandable information for consumer decision-making.

Cost of Care Implications

Over the years, there have been many studies trying to quantify the cost of adverse events that occur within healthcare settings. Regardless of the actual dollar amount, it is understood that unsafe care is costly. The intent of selecting performance measures for a safety family is to promote reductions in the occurrence of adverse events across a variety of areas. MAP also recognized that there was a strong relationship between appropriate care and safe care. More specifically, MAP considered cost of care through the inclusion of overuse measures in the safety family of measures that could result in potential harm to patients. Throughout its deliberations, MAP frequently discussed the importance of balancing the risk of a treatment or test with the benefit of that treatment or having that test result. MAP plans to identify a measure family focusing on cost of care measures as part of its future work.

Selecting a Safety Family of Measures

In order to identify existing measures for the safety measure family, MAP considered 316 measures that focused on the nine safety topic areas (Table 1). From this list, MAP identified for the family 55 existing measures as well as several gap areas. MAP noted the limitations of existing measures and suggested possible modifications that could allow a measure to be applied more broadly or show more meaningful results.

Although process measures that are tied closely to desired outcomes support improvement in healthcare, MAP preferred outcome measures over process and structural measures in selecting the family. The consensus was that outcome measures provide more flexibility for providers working to improve their quality, and more actionable information for purchasers deciding which healthcare options they should provide to their employees as well as patients making individual choices about where to receive care.

In discussions about data sources, MAP favored clinical data abstracted from the medical record, though it is more resource intensive to collect, over administrative data derived from billing codes and claims. As adoption of HIT becomes more widespread, it is anticipated that the ability to gather clinical data directly from the medical record will become more feasible.

Healthcare-Acquired Infections

MAP preferred the Center for Disease Control and Prevention's National Healthcare Safety Network (NHSN) methodology and chose four NHSN outcome measures for high-impact HAIs. Two of these, addressing C. difficile (NQF #1717) and MRSA (NQF #1716), were included in the family, pending completion of the NQF endorsement process. MAP also included a surgical site infection outcome measure (NQF #0753), encouraging expansion of the measure to include additional procedures and the pediatric population. The HAI measure group also includes a Surgical Care Improvement Project (SCIP) infection process measure (NQF #0529) with the suggestion to expand to office-based and ambulatory surgery center settings. This measure was chosen from among three measures that assess the timing and use of prophylactic antibiotics in surgery. While all three measures address concerns about rising costs and increasing antibiotic resistance related to antibiotic use, MAP determined it was more parsimonious to include the measure focused on appropriate discontinuation, since antibiotics must be administered in order to be discontinued. An influenza vaccination coverage measure for healthcare personnel

(NQF #0431) was included with the recommendation to expand the denominator to all personnel working at the facility, rather than just healthcare personnel. MAP also included two measures to address sepsis: an outcome measure specifically designed to capture information about low-birth rate infants that develop sepsis (NQF #0304) and a composite measure that analyzes emergency department adult patients who develop severe sepsis and septic shock (NQF #0500). MAP noted that post-discharge follow-up for infection is an important missing component in HAI measurement.

Ultimately, MAP did not put forward a measure that captures ventilator associated pneumonia, but noted that this is an important safety topic that needs to be addressed. Measure development is underway for ventilator-associated event monitoring, and MAP would support a well-constructed measure that is specified for broad settings in this area.

Table 2. Healthcare-Acquired Infections Measures and Gaps for the Safety Family of Measures

NQF # and Status	Measure	MAP Findings
#0138 Endorsed	National Healthcare Safety Network (NHSN) Catheter-Associated Urinary Tract Infection (CAUTI) Outcome Measure	Measure should be expanded beyond current settings.
#0139 Endorsed	National Healthcare Safety Network (NHSN) Central Line-Associated Bloodstream Infection (CLABSI) Outcome Measure	Measure should be expanded beyond current settings.
#0304 Endorsed	Late Sepsis or Meningitis in Very Low Birth Weight (VLBW) Neonates (risk-adjusted)	
#0431 Endorsed	Influenza Vaccination Coverage among Healthcare Personnel	Measure should be expanded to all personnel working at healthcare facilities.
#0500 Endorsed	Severe Sepsis and Septic Shock: Management Bundle	
#0529 Endorsed	SCIP INF–3 Prophylactic Antibiotics Discontinued within 24 Hours after Surgery End Time (48 hours for cardiac surgery)	Measure should be expanded to ASC and office-based procedures.
#1716 Submitted	National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Methicillin-resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure	Measure should be included pending receipt of NQF endorsement.
#1717 Submitted	National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure	Measure should be included pending receipt of NQF endorsement.
Healthcare-Acquired Infections Priority Gap Areas	• VRE outcome measure • Ventilator-associated events for acute, PAC, LTCH and home health settings • Post-discharge follow up on infections in ambulatory settings • Special considerations for the pediatric population related to ventilator associated events and C. difficile • Infection measures reported as rates, rather than ratios (more meaningful to consumers) • Sepsis (healthcare-acquired and community-acquired) incidence, early detection and monitoring	

Medication/Infusion Safety

MAP included seven measures in the safety family that address medication and infusion safety while acknowledging the great need for further measure development in this area. Discussion regarding this complex

topic reflected the varied concerns of the group, such as the lack of strong outcome measures and the need to expand measure denominators to include broader populations. MAP recommended the Improvement in Management of Oral Medications measure (#0176), suggesting that the specifications be expanded to include other outpatient settings, in addition to the home health setting. Themes from the discussion revolved around the importance of patient-reported measures about understanding the purpose, dosage, and potential side effects of their medications. Though MAP included the Reconciled Medication List Received by Discharged Patients measure (NQF #0646), it was noted that a reconciled medication list is not sufficient if the patient does not also understand the information on the list. Given the importance of medication reconciliation in preventing adverse drug events, the measure was included in the family but with strong recommendation that it be replaced by a more person-centered measure. This raised the important role of the community pharmacist in providing patient education, and the need for improved health literacy of multiple stakeholders.

Shared accountability among providers was another theme throughout these discussions, as mistakes often occur during care transitions when the possibilities become greater for the administration of the wrong medication, wrong dosage, drug-allergy, or drug-drug interactions. In light of these possibilities, MAP included Drugs to be avoided in the elderly: a. Patients Who Receive at Least One Drug to be Avoided, b. Patients Who Receive at Least Two Different Drugs to be Avoided (NQF #0022) and recommended the creation of similar measures where appropriate to assess drugs to be avoided for other populations. They also noted that medication reconciliation must include monitoring for all over-the-counter medications and supplements patients may be taking, in addition to prescribed medications. MAP also recognized the need for electronic prescribing, as evidenced by its recommendation of Adoption of Medication e-Prescribing (NQF #0486) for the safety family of measures. MAP also recognized the particular importance of medication safety for psychiatric medications and plans to address this topic within the mental and behavioral health family of measures expected to be identified as part of MAP's next phase of work.

Table 3. Medication/Infusion Safety Measures and Gaps for the Safety Family of Measures

NQF # and Status	Measure	MAP Findings
#0176 Endorsed	Improvement in Management of Oral Medications	Measure should be expanded to clinician office/clinic.
#0419 Endorsed	Documentation of Current Medications in the Medical Record	Measure should be expanded to include acute care facility.
#0646 Endorsed	Reconciled Medication List Received by Discharged Patients (Inpatient Discharges to Home/Self Care or Any Other Site of Care)	
#0554 Endorsed	Medication Reconciliation Post-Discharge (MRP)	Consider a shortened time window for reconciliation for this measure.
#0486 Endorsed	Adoption of Medication e-Prescribing	Measure should be expanded to include how e-prescribing is used.
#0293 Endorsed	Medication Information	Measure should be expanded beyond discharges from the ED.
#0022 Endorsed	Drugs to be Avoided in the Elderly: a. Patients who Receive at Least One Drug to be Avoided, b. Patients who Receive at Least Two Different Drugs to be Avoided.	

Medication/Infusion Safety Priority Gap Areas	• Outcomes – injury/mortality related to inappropriate drug management • Patient-reported measures of understanding medications (purpose, dosage, side effects, etc.) • Total number of adverse drug events that occur within all settings (including administration of wrong medication, wrong dosage, drug-allergy or drug-drug interactions) • Polypharmacy and use of unnecessary medications for all ages, especially with high-risk medications • Comprehensive medication review • Use of antipsychotics with patients that have dementia or Alzheimer's disease • Role of community pharmacist or home health in reconciliation • Blood Incompatibility • Manifestations of Poor Glycemic Control • Air Embolism

Pain Management

In discussions about pain management, MAP recognized that pain is a universal and often inevitable complication of illness and treatment that needs to be managed across settings. MAP noted that managing pain involves a careful balance of avoiding under-treatment and over-treatment, and working closely with patients to understand their needs and goals. MAP noted that several federal public reporting programs, such as Hospital, Nursing Home, and Home Health Compare, have already incorporated pain management and experience measures into their measure sets.

MAP included five measures that assess and treat pain in the safety family of measures. Many of the measures available for pain management are currently specified for hospice and palliative care, such as its Comfortable Dying measure (NQF #0209) and the Hospice and Palliative Care – Pain Screening, and Pain Assessment measures (NQF #1634, #1637); MAP therefore recommended that these be included in the family but be expanded to a broader population and age range. MAP also included Improvement in Pain Interfering with Activity (NQF #0177), a home health measure that MAP encouraged broadening to other settings, and Patients Treated with an Opioid who are Given a Bowel Regimen (NQF #1617), a measure currently focused on pain management in the vulnerable adult population but addressing a potential complication applicable to all populations.

Table 4. Pain Management Measures and Gaps for the Safety Family of Measures

NQF # and Status	Measure	MAP Findings
#0177 Endorsed	Improvement in Pain Interfering with Activity	Measure should be expanded beyond home health to all care settings.
#0209 Endorsed	Comfortable Dying: Pain Brought to a Comfortable Level Within 48 Hours of Initial Assessment	Measure should be expanded beyond the hospice setting.
#1617 Endorsed	Patients Treated with an Opioid who are Given a Bowel Regimen	
#1634 Endorsed	Hospice and Palliative Care – Pain Screening	Measure should be expanded beyond hospice or palliative care patients.

#1637 Endorsed	Hospice and Palliative Care – Pain Assessment	Measure should be expanded beyond hospice or palliative care patients.
Pain Management Priority Gap Areas	• Effectiveness of pain management paired with patient experience and balanced by overuse/misuse monitoring • Assessment of depression with pain	

Venous Thromboembolism

MAP chose four measures addressing deep vein thrombosis/pulmonary embolism (DVT/PE) for its safety measure family. Two of these measures—one focused on DVT and the other on PE—identify patients who are appropriately on anticoagulation for at least three months after the diagnosis (NQF #0581, #0593), and one captures the number of potentially preventable venous thromboembolisms (VTE) that occur in a facility (NQF #0376). A notable theme from this discussion was that evidence suggests the existing process measures are closely aligned with outcomes for this particular condition; all of the above are process measures. MAP did choose Post-operative PE or DVT (NQF #0450) as an outcome measure for surgical patients with the recommendation to expand the specifications to all medical patients. Therapeutic monitoring for adherence to VTE medications and medication side effects to protect against possible undesirable consequences of using medications rather than mechanical interventions to prevent and treat VTE is important. MAP also wanted to see expanded settings for many of these measures that are currently specified only for acute care facilities.

Table 5. Venous Thromboembolism Measures and Gaps for the Safety Family of Measures

NQF # and Status	Measure	MAP Findings
#0376 Endorsed	VTE-6: Incidence of Potentially-Preventable VTE	Measure should reflect updated evidence (use of pharmacologic versus mechanical interventions).
#0450 Endorsed	PSI 12: Post-Operative PE or DVT	Measure should be expanded to include medical patients.
#0581 Endorsed	Deep Vein Thrombosis Anticoagulation >= 3 Months	Measure requires pharmacy plan and should be expanded to include maintained in therapeutic range. Could combine measure with #0593.
#0593 Endorsed	Pulmonary Embolism Anticoagulation >= 3 Months	Measure requires pharmacy plan and should be expanded to include maintained in therapeutic range. Could combine measure with #0581.
Venous Thromboembolism Priority Gap Areas	• Adherence to VTE medications, monitoring of therapeutic levels and medication side effects • Monitoring for VTE recurrence • VTE outcome measures for ASCs and PAC/LTC settings	

Perioperative/Procedural Safety

Due to the rare occurrence of many of the measures in the perioperative/procedural safety topic, (e.g. foreign object retained after surgery, burn, laceration, puncture, iatrogenic pneumothorax) discussion revolved around the unique challenges of measuring and reporting these events. MAP noted the importance to consumers of

reporting these events, despite their rare occurrence; unlike many healthcare topics and conditions, information about adverse events resonates with the general public. MAP recognized concerns regarding reporting these serious events due to the small numbers, and suggested creating a single composite measure that encompasses the most significant serious reportable events. Although complications composites are available for both the adult and pediatric populations, MAP reviewed the component measures of each composite and decided against including the composite measures, so composites of serious report events remains a gap. For the safety family, it recommended six available measures that capture information about these events such as Accidental puncture or laceration (NQF #0344), Foreign Body Left in During Procedure (NQF #0363), and Wrong Site, Wrong Side, Wrong Patient, Wrong Procedure, Wrong Implant (NQF #0267).

Additionally, MAP recognized that perioperative/procedural safety is a subtopic for which checklists are particularly useful, and therefore recommended that the Safe Surgery Checklist measure be brought forward for NQF endorsement and inclusion into the safety measure family. For all remaining six measures chosen for this subtopic, the group noted that the measures should be expanded to include all settings in which relevant procedures are performed. Further, MAP sought a measure addressing iatrogenic pneumothorax, but raised concerned that the denominator of the currently available measure is too broad and should be specified to only apply to "at risk" patients in a facility to capture accurate data.

Table 6. Perioperative/Procedural Safety Measures and Gaps for the Safety Family of Measures

NQF # and Status	Measure	MAP Findings
#0263 Endorsed	ASC-1: Patient Burn -Percentage of ASC admissions Experiencing a Burn Prior to Discharge	Measure should be expanded to include all procedural settings.
#0267 Endorsed	ASC-3: Wrong Site, Wrong Side, Wrong Patient, Wrong Procedure, Wrong Implant	Measure should be expanded to include all procedural settings.
#0344 Endorsed	Accidental Puncture or Laceration (PDI 1) (risk adjusted)	Measure should be expanded to include all procedural settings.
#0345 Endorsed	PSI 15: Accidental Puncture or Laceration	Measure should be expanded to include all procedural settings.
#0362 Endorsed	Foreign Body Left after Procedure (PDI 3)	Measure should be expanded to include all procedural settings.
#0363 Endorsed	Foreign Body Left in During Procedure (PSI 5)	Measure should be expanded to include all procedural settings.
Not Endorsed	Safe Surgery Checklist	Measure should be brought to NQF for endorsement.
Perioperative/Procedural Safety Priority Gap Areas	• Single composite measure that encompasses all, or most significant, "never events" • Iatrogenic Pneumothorax measures: modify denominator to include patients receiving treatments putting them at risk for this complication • Anesthesia events (inter-op MI, corneal abrasion, broken tooth, etc.) • Perioperative respiratory events • Perioperative blood loss or transfusion/over-transfusion • Altered mental status in Perioperative period	

Injuries from Immobility

Of the six measures recommended for the safety family that address injuries from immobility, MAP focused largely on outcome and paired measures, specifically addressing falls and pressure ulcers. Recognizing the tension between keeping patients safe and "excess safety," MAP cautioned that it will be important to monitor for unintended consequences potentially resulting from application of these measures, such as increased use of indwelling catheters or decreased patient ambulation. MAP reaffirmed the importance of having a culture of safety in place for all facilities to responsibly manage adverse events if they occur, and encourage disclosing, rather than hiding, negative outcomes.

MAP noted the need for a standard definition of falls across settings, as well as consistent staging requirements for pressure ulcer measurement (e.g., inclusion of pressure ulcers that are stages 3 and 4). Although it is more resource intensive for providers to conduct a one-day prevalence study to gather data for the measure, MAP recommended a Pressure Ulcer Prevalence measure (NQF #0201). MAP noted that measures monitoring the use of restraints and seclusion are also related to safety; however, MAP deferred review of those measures to identification the future mental and behavioral health family of measures.

Table 7. Injuries from Immobility Measures and Gaps for the Safety Family of Measures

NQF # and Status	Measure	MAP Findings
#0141 Endorsed (paired with #0202)	Patient Fall Rate	
#0181 Endorsed	Increase in Number of Pressure Ulcers	
#0201 Endorsed	Pressure Ulcer Prevalence	
#0202 Endorsed (paired with #0141)	Falls with Injury	
#0266 Endorsed	ASC-2: Patient Fall	Measures 0141 and 0202 should be harmonized.
#0674 Endorsed	Percent of Residents Experiencing One or More Falls with Major Injury (Long Stay)	
Injuries from Immobility Priority Gap Areas	• Standard definition of falls across settings to avoid potential confusion related to two different fall rates • Evaluating bone density, prevention and treatment of osteoporosis in ambulatory settings	

Safety-Related Overuse and Appropriateness

MAP established that for the purpose of selecting overuse measures for the safety family, measures that assess harm to the patient should be given high priority. MAP highlighted the need to weigh the benefits and risks prior to ordering tests and treatments. Factors include time, money, and physical and emotional stress on vulnerable patients and their caregivers. MAP emphasized that care should match patient goals and preferences in addition to being evidence-based.

MAP chose twelve measures involving appropriate use of tests and treatments for the safety family. All of these were process measures; however, the consensus was that these were important processes to include in the absence of better outcome measures. Examples include Low Back Pain: Use of Imaging Studies (NQF #0052) and Antibiotic Treatment for Adults with Acute Bronchitis: Avoidance of Inappropriate Use (NQF #0058). Among the twelve measures, MAP included three measures specified for the pediatric population, such as Appropriate Treatment for Children with Upper Respiratory Infection (NQF #0069). MAP indicated concern over lack of measures related to radiation exposure to children caused by imaging overuse and encouraged measure development to address this critical issue.

MAP noted a need to improve communication about the scores of these measures: a lower score is a positive indicator for some of the measures and for others a lower score is a negative indicator, which can be confusing. For example, for the Appropriate Testing for Children with Pharyngitis measure (NQF #0002), a higher score indicates better performance (i.e. appropriate testing); whereas for the Appropriate Treatment for Children with Upper Respiratory Infection measure (NQF #0069), a lower score is preferable. When publicly reporting measure results, a brief explanation of how to interpret the directionality of measure results should accompany the results.

Table 8. Safety-Related Overuse & Appropriateness Measures and Gaps for the Safety Family of Measures

NQF # and Status	Measure	MAP Findings
#0002 Endorsed	Appropriate Testing for Children with Pharyngitis	
#0052 Endorsed	Low Back Pain: Use of Imaging Studies	Measure should be expanded to include individuals over 50 years old.
#0058 Endorsed	Antibiotic Treatment for Adults with Acute Bronchitis: Avoidance of Inappropriate Use	
#0069 Endorsed	Appropriate Treatment for Children with Upper Respiratory Infection (URI)	
#0305 Endorsed	LBP: Surgical Timing	
#0309 Endorsed	LBP: Appropriate Use of Epidural Steroid Injections	
#0656 Endorsed	Otitis Media with Effusion: Systemic Corticosteroids – Avoidance of Inappropriate Use	
#0657 Endorsed	Percentage of Patients Aged 2 months through 12 years with a Diagnosis of OME who were not Prescribed Systemic Antimicrobials	
#0659 Endorsed	Endoscopy & Polyp Surveillance: Colonoscopy Interval for Patients with a History of Adenomatous Polyps- Avoidance of Inappropriate Use	
#0667 Endorsed	Inappropriate Pulmonary CT Imaging for Patients at Low Risk for Pulmonary Embolism	
#0668 Endorsed	Appropriate Head CT Imaging in Adults with Mild Traumatic Brain Injury	
#0755 Endorsed	Appropriate Cervical Spine Radiography and CT Imaging in Trauma	

NQF # and Status	Measure	MAP Findings
Safety-Related Overuse & Appropriateness Priority Gap Areas	• Consistency in scoring for public reporting: should be clear if high or low scores are desired • Chemotherapy appropriateness, including dosing • Over diagnosis, under diagnosis, misdiagnosis • Use of sedatives, hypnotics, atypical anti-psychotics, pain medications (with chronic pain management) • Treatment given that is not matched to patient goals, especially with palliative and end-of-life care • Antibiotic use for sinusitis • Use of cardiac CT and stenting • Use of radiographic imaging in the pediatric population	

Obstetrical Adverse Events

MAP included four measures related to obstetrical adverse events in the safety family of measures: three outcome measures and one process measure. MAP deliberated carefully about whether to include a measure of healthy term births. A unique aspect of maternity care is that ostensibly no illness or injury is being treated; rather, the clinical team is assisting in a normal biological process that should result in a healthy outcome. In addition, the health of both mother and baby at the time of delivery are heavily influenced by prenatal care, or lack thereof. MAP's consensus was that a system measure that captures whether this healthy outcome was attained is important. Given the measures available, MAP included both the Healthy Term Newborn measure (NQF #0716) and the Under 1500 gram Infant Not Delivered at Appropriate Level of Care measure (NQF #0477) in the family as representative of healthcare system success. Further, MAP included a measure of elective deliveries prior to 39 weeks gestation (NQF #0469) and a measure of elective C-sections (NQF #0471), but cautioned that monitoring for potential undesirable consequences, such as providers waiting too long to deliver babies, is important. These two measures should be reported with the Healthy Term Newborn measure as a balancing measure. MAP also noted that maternity care makes up a significant portion of healthcare services, and there is a dearth of measures in this area.

Table 9. Obstetrical Adverse Events Measures and Gaps for the Safety Family of Measures

NQF # and Status	Measure	MAP Findings
#0469 Endorsed	PC-01 Elective Delivery Prior to 39 Completed Weeks Gestation	The contraindications list should be expanded for this measure.
#0471 Endorsed	PC-02 Cesarean Section	
#0477 Endorsed	Under 1500g Infant Not Delivered at Appropriate Level of Care	
#0716 Endorsed	Healthy Term Newborn	
Obstetrical Adverse Event Priority Gap Areas	• Obstetrical adverse event index • Overall complications composite measure • Measures using NHSN definitions for infections in newborns	

Complications-Related Mortality

MAP believed that measuring mortality is extremely important, and equally important to measure accurately. MAP recommended one complications-related mortality outcome measure for the safety family, Death Among Surgical Inpatients with Serious, Treatable Complications (NQF #0351). Complications-related mortality raised several measurement concerns, such as lack of a present-on-admission (POA) indicator for some measures—where without this exclusion, measure results may be misleading. Another concern raised was the quality of information conveyed through public reporting of a measure. MAP noted that to make meaningful distinctions between low and high-performing hospitals, mortality measures need proper risk-adjustment, exclusions, and POA indicators. In addition, mortality measures need to be constructed in such a way as not to penalize providers that are delivering hospice and/or palliative care in accordance with the patient's preferences.

Table 10. Complications-Related Mortality Measure and Gaps for the Safety Family of Measures

NQF # and Status	Measure	MAP Findings
#0351 Endorsed	Death among Surgical Inpatients with Serious, Treatable Complications (PSI 4)	Measure should include POA indicators.
Complications-Related Mortality Priority Gap Areas	• Preferably expressed as a ratio instead of percentage • Questions of how to accommodate small numbers • Expand to PAC/LTC settings • Failure to Rescue	

Care Coordination Family of Measures

Care coordination is about what happens in the space between providers. Successful care coordination encompasses effective communication, accurate transmission of information, and appropriate care, helping to reduce errors and avoidable hospital admissions, readmissions, and emergency department visits. However, the current system is comprised of individuals (e.g., patients, clinicians) and entities (e.g., hospitals, post-acute providers, community agencies) that lack the processes and infrastructure necessary to meaningfully exchange information with one another in a timely and effective manner (See Appendix D, High leverage measurement opportunities background).

In developing the care coordination family of measures, MAP considered the NQS goals for the priority of "promoting effective communication and coordination of care," which are: 1) improving the quality of care transitions and communications across care settings, 2) improving the quality of life for patients with chronic illness and disability by following a current care plan that anticipates and addresses pain and symptom management, psychosocial needs, and functional status, and 3) establishing shared accountability and integration of communities and health care systems to improve quality of care and reduce health disparities. Additionally, MAP sought to build on prior NQF work addressing care coordination quality measurement including the NQF-Endorsed Definition and Framework for Measuring and Reporting Care Coordination and the Preferred Practices and Performance Measures for Measuring and Reporting Care Coordination to identify high-leverage opportunities for measurement and existing quality measures that could be implemented immediately.

Using these prior efforts as a foundation, MAP identified six priority topic areas for aligning care coordination quality measurement, which were broken into a number of subtopics based on available measures. The topics and subtopics addressed within the measure family are displayed in Table 11.

Table 11 – Care Coordination Priority Topic and Subtopic Areas

Topic	Subtopic
Avoidable Admissions and Readmissions	Avoidable Admissions
	Avoidable Readmissions
	Avoidable ED Visits
System Infrastructure Support	Health Information Technology (HIT)
	Medical Homes; Accountable Care Organizations
	Tracking/Reminder Systems
Care Transitions	Effectiveness
	Timeliness
Communication	Patient Communication
	Provider Communication
Care Planning	General
	Condition Specific
	Patient Preference at End of Life
Patient Surveys Related to Care Coordination	Patient Experience and Perception of Care Coordination

Also included within this section of the report is additional guidance from MAP on the selection and implementation of avoidable admission and readmission measures. Acknowledging the unique complexity of measurement in this area, the NQF Board of Directors asked MAP to develop a guidance document about the use of avoidable admission and readmission measures in specific programs to be used by program implementers as well as MAP during its annual pre-rulemaking deliberations

Themes from the Identification of the Care Coordination Family of Measures

Five major themes emerged from MAP's discussions related to care coordination. These included the importance of person and caregiver engagement, access to resources in the community, involvement of the entire healthcare system in coordination of care, continued challenges of collecting meaningful data for quality measurement, and cost of care implications.

Person and Caregiver Engagement

MAP emphasized that person and caregiver engagement should be the focus of a care coordination family of measures. The NQF definition of care coordination is a "function that helps ensure that the patient's needs and preferences for health services and information sharing across people, functions, and sites are met over time[ii]." Person and caregiver engagement should cross the lifespan and care settings, actively involving the individual in managing disease and reducing burden. MAP underscored the importance of communication, shared decision-making and including individuals and their families/caregivers in care planning, promoting self-management and health literacy. Care should be aligned with patient goals and preferences to prevent the provision of unwanted treatments or unnecessary institutional placements, and the care plan should address the person's psychosocial needs and functional status. Additionally, MAP noted that measures should assess person and caregiver understanding and agreement with the plan of care as well as the person's ability to manage the necessary self-care.

MAP also discussed different perspectives on the breadth of optimal care coordination. MAP emphasized the need to promote independent living by considering multiple aspects of wellness and extending care coordination beyond healthcare to incorporate social supports and other types of services. For example, the Money Follows the Person (MFP) and Cash and Counseling programs are redoubling longstanding efforts by CMS and states to safely transition individuals with disabilities from institutions to community settings. Engaging in person-centered care planning and two-way communication is vital to the success of these efforts. MAP plans to identify a person and family engagement measure family to continue work in this area.

Access to Community Resources

MAP recognized the vital role that community resources play in allowing individuals to live well on a day-to-day basis while staying as independent as possible and receiving the "right" level of care. Resources such as home health, supportive services, telehealth, and community pharmacists are crucial parts of self-management and effective care transitions. Access to such services improves quality of life while helping to prevent avoidable hospital admissions and readmissions as well as reducing overuse and inefficiencies. MAP recognized the importance of integrating community resources into transitions and care plans through assessing the ability of patients to connect with resources available in their community and helping facilitate that connection. Measures are needed to address the role of the community and referrals to necessary community services.

System-Wide Engagement in Care Coordination

MAP acknowledged that truly successful care coordination only occurs when the entire healthcare system is engaged: promoting wellness and preventing, delaying, or minimizing the progression of disease or disability as a person's care needs evolve over time and across settings. Care coordination addresses the space between providers and existing measures fail to capture shared accountability throughout the system and community. Available care coordination measures are mostly hospital-centric, reinforcing the silos within the system. While these measures can show system success, measures specified for only one setting or level of analysis do not hold the entire system accountable. For many long-term care users, including frail elders and individuals with multiple chronic conditions or disabilities, these measures do not address the ongoing need for the coordination of different types of services. MAP also recognized measures that address the care coordination needs of behavioral health patients as a gap area.

Existing measures of clinician care coordination are generally physician-focused and do not apply to other members of the multidisciplinary care team, such as nurses, social workers, and allied health professionals. MAP recognized the need for measures that move beyond the traditional physician-patient dyad to reflect the vital role of other disciplines. MAP also noted the need for additional measures reflecting more integrated models of care promoting shared accountability across the system including, but not limited to, developing or modifying measures for accountable care organizations (ACOs) or patient-centered medical homes (PCMHs).

Data Issues

MAP discussed issues of data sources and data collection for care coordination measures. Provider communication measures need to address both the sending and receiving of information, but current measures lack this bi-directionality. Recognizing the challenges of current care silos and lack of EHR interoperability, MAP noted the need for continued development of health records that use common data elements and can be exchanged and used for automated, real-time measurement systems as patients receive care at multiple sites. More comprehensive patient-reported data relating to care coordination is also needed. Patients and caregivers provide a practical viewpoint and add great value to defining effective care coordination process components. MAP encourages further development of patient-reported measures of care coordination.

Cost of Care Implications

Care coordination impacts both quality and cost: preventing harmful and costly complications, improving patient outcomes, and lowering costs by reducing readmissions, ED visits, and duplicative services. Poor care coordination can lead to overuse, misuse, and inefficiency, driving up costs while simultaneously lowering quality through duplication and unnecessary services. The rate of hospital readmissions among Medicare beneficiaries within 30 days of discharge is one indicator of good care coordination. Nearly 20% of Medicare patients discharged from the hospital are readmitted within 30 days, translating to 2.6 million seniors readmitted at a cost of over $26 billion every year[iii]. Better care coordination can lead to fewer readmissions and ED visits, improving outcomes and satisfaction, while reducing costs. MAP plans to identify a cost of care measure family as part of its future work.

MAP Guidance for the Selection of Avoidable Admission and Readmission Measures

MAP's Role

Recognizing the complexity inherent in measuring and safely reducing avoidable readmissions, the NQF Board of Directors asked MAP to develop guidance for implementing readmission measures for public reporting and performance-based payment programs, in the context of care coordination and shared accountability. This document is intended to provide guidance to program implementers and to MAP members during pre-rulemaking deliberations about the use of avoidable admission and readmission measures in specific programs. The identification of measures for specific programs, which is the focus of the pre-rulemaking process, is beyond the scope of this document. The document defines principles for reducing avoidable admissions and readmissions and the measurement issues that should be taken into account when choosing avoidable admission and readmission measures for programs.

Background

Safely reducing avoidable admissions and readmissions represents a substantial opportunity for improvement in health care quality and affordability. The National Quality Strategy promotes effective communication and care coordination through improving the quality of care transitions and communications across settings. The HHS Partnership for Patients initiative has identified readmissions as a priority, setting an ambitious goal of reducing avoidable readmissions by 20% by the end of 2013. To this end, payers and purchasers in the public and private sectors, in collaboration with providers and health professionals, are working to better coordinate care and reduce avoidable admissions and readmissions.

The gap between current performance and what is achievable is enormous. About one in five Medicare beneficiaries who have been hospitalized are readmitted within 30 days, increasing costs in the Medicare program by billions of dollars. Although Medicare beneficiaries are more likely to be readmitted, private sector purchasers also spend billions of dollars each year on rehospitalizations. Patients and families bear multiple burdens associated with avoidable admissions and readmissions, in terms of prolonged illness and pain, unnecessary exposure to harm, emotional distress, loss of productivity, inconvenience, and added cost.

Addressing avoidable admissions and readmissions is complex and will require a fundamental transformation of our approaches to healthcare delivery and financing. Readmissions that are planned or are unrelated to the initial admission are likely necessary for good care. However, avoidable admissions and readmissions are caused by problems with coordination of care delivery related to the quality of inpatient or post-acute treatment, poor communication, inadequate care planning, lack of patient involvement with and understanding of the treatment plan, and inadequate community supports.

Just as the causes of avoidable admissions and readmissions are multi-factorial, so are the solutions. Effective coordination of care delivery requires all of those involved in care delivery to look beyond their walls and identify partners in improving care. Hospitals play a central role in reducing avoidable readmissions, but health professionals (particularly primary care providers) and other post-acute providers (such as nursing homes and home health providers) also have equally important roles. In addition, health plans can contribute data and incentives. Perhaps most importantly, patients and their support systems in the community, are essential partners in reducing avoidable admissions and readmissions and must be fully integrated into any improvement strategy.

Performance measurement also plays an important role in motivating efforts to safely reduce avoidable admissions and readmissions. Measurement provides readily available information to focus improvement efforts and drive change and accountability for improvement. However, measurement is not a perfect science, and misuse of performance measurement information can have undesirable effects. Close monitoring is needed to understand and mitigate potential undesired effects of measurement.

Principles for Avoidable Admissions and Readmissions

To guide the selection of measures that will encourage care coordination and safely reduce avoidable admissions and readmissions, MAP identified the following principles and corresponding high-leverage actions:

- **Promote shared accountability**. Reducing avoidable admissions and readmissions requires the coordinated efforts of everyone involved in patient care across the continuum. New multi-disciplinary teams and creative partnerships are needed to build a coordinated approach to care centered on the patient, and new payment and delivery models are needed to incentivize integration across the system. Two examples that could provide the right incentives are accountable care organizations and patient-centered medical homes, financed by shared savings, bundled payments, or global payments. MAP identified the importance of identifying a single point of contact for care coordination, most often a primary care provider. MAP also noted the need for development of health professionals' care coordination skills and capacity to work within patient-centered, team-based models of care to promote shared accountability.
- **Engage patients as partners**. Patients and their caregivers have the best information about their needs and contact points associated with their care. As such, their active engagement as partners in care is essential for safely reducing avoidable admissions and readmissions. Patients should serve in leadership roles, such as governance boards, and provide input into the design and implementation of policies and programs. Individuals should be partners in their care planning to ensure they help shape their goals for care, fully understand their care plans, and receive the support they need to be accountable for their roles in the process. Providers must account for differing levels of health literacy and activation among patients and for various life circumstances. MAP identified focusing on the needs of complex patients, such as persons with mental illness or children with poorly-controlled asthma, to be an effective starting place for engaging patients.
- **Ensure effective transitions**. One of the greatest contributing factors to reducing avoidable readmissions is safe and effective transitions from one care setting to the next, including to home. All of the other principles and interventions discussed here contribute to smooth, patient-centered transitions, including effective communication with patients and among providers, and engaging patients and community resources throughout the process. MAP identified additional factors that support effective transitions, including follow-up appointments made and kept, phone call follow-up, and prescriptions filled and medications taken properly.
- **Communicate across transitions**. Timely exchange of information, so that the right person has the right information at the right time, is key to reducing avoidable admissions and readmissions. Two-way communication with patients and patient education are important so that everyone involved understands the care plan. Communication among providers is important to ensure all are following the same care plan and handoffs are completed. MAP noted that because health plans have relationships with a variety of providers and related organizations, health plans can be pivotal in ensuring that important information is shared with providers to track patient progress across settings.

- **Engage communities as partners**. Patient and caregiver readiness for discharge from inpatient or post-acute care depends on the supports that will be available to them once they return home or to community-based care. Numerous community-based resources are available, but providers and patients may be unaware of or unable to access the programs. For patients with long-term care needs, local agencies can assist individual in navigating support options, such as home-delivered meals, transportation, and personal care attendant services.

Implementation Issues for Avoidable Admission and Readmission Measures

MAP delved deeply into issues related to performance measurement for avoidable admissions and readmissions. MAP reviewed the available measures to determine which should be included in the care coordination family of measures and identified measure gaps for which current measures do not exist or may need refinement. In addition, MAP raised potential implementation issues associated with the use of avoidable admission and readmission measures.

In deliberations about which avoidable admission and readmission measures should be included in the care coordination family, MAP identified a number of issues to inform the use of these measures in programs:

- Readmission measures should be part of a **suite of measures to promote a system of patient-centered care coordination**. The suite should assess performance of all entities and individuals who are jointly accountable for safely reducing avoidable readmissions, should include measures of both avoidable admissions and readmissions, and should address important care coordination processes as well as readmission outcomes. Process measures and patient-reported measures of experience with care can help guide basic actions that are fundamental to improving outcomes.
- **All-cause and condition-specific measures of avoidable admissions and readmissions are both important**. All-cause measures provide aggregate information that is easier for the public to interpret and flexibility for providers to determine the most effective interventions for their highest-priority improvement opportunities across conditions. Condition-specific measures provide actionable information for those working to improve performance in condition-specific domains.
- **Monitoring is necessary to understand and quickly mitigate potential unintended consequences** of measuring avoidable admissions and readmissions. Potential undesirable effects of measurement include delaying needed care, gaming to improve measurement results (e.g., changing thresholds by admitting less sick patients), and disadvantaging those caring for higher-risk populations. Monitoring options include mortality rates, average length of stay, observation days, emergency department visits, patient experience, post-discharge follow-up rates, time in post-acute care versus at home, and financial impact on safety net providers.
- **Risk adjustment** alone cannot address all of the nuances inherent in the complexity of measuring avoidable admissions and readmissions. Institutional providers, health professionals, and health plans have very different resources available to serve very different patient populations. Similar entities should be compared to each other. Program implementers should consider stratifying measures by population to enable fair comparisons. In addition, program implementers should consider adjustments to payments, rather than adjustments to measures, to address equity issues.
- MAP explored the appropriate **time window** for avoidable readmission measures, specifically considering the trade-off between precise attribution and broader accountability. Most measures use a

30-day window to encourage accountability, but many issues may arise during this period that are beyond the provider's control.

- Avoidable readmission measures should **exclude planned and unrelated readmissions**, to avoid penalizing providers for readmissions that are necessary for high quality care. The National Uniform Billing Committee has identified new billing codes that can be used to identify planned and unrelated readmissions on claims.
- **Lack of available data** also raises measurement issues. Many of the primary drivers of avoidable admissions and readmissions do not have readily available data sources (e.g., homelessness, inability to perform activities of daily living). In addition, measuring avoidable admissions and readmissions for rural facilities can be challenging due to small sample size issues that call for aggregation solutions.

Selecting a Care Coordination Family of Measures

In identifying the care coordination measure family, MAP considered a total of 135 measures focusing on the six care coordination topic areas (Table 11). A set of 62 available measures and a number of measure gaps were identified. MAP noted the limitations of existing measures and possible modifications that could allow a measure to be applied more broadly or to show more meaningful results.

Avoidable Admission and Readmission Measures

The available measures of avoidable admissions and readmissions are generally hospital-centric, though the underlying issues are not exclusively related to the quality of care received in the hospital setting. These hospital measures have prompted improvement, but MAP recognized that measurement needs to be expanded to promote shared accountability for all entities across the care continuum. In the meantime, MAP included several existing measures in the care coordination family to signal the significance of the issue and commitment to safely reducing avoidable admissions and readmissions.

MAP included four measures of avoidable admissions and emergency department visits in the care coordination family. Two of these measures are specific to patients who are receiving home care services and subsequently are hospitalized or visit the emergency department (NQF #0171, #0173). MAP recommended that similar measures be developed for other post-acute and long-term care settings. Another measure addresses admissions for patients undergoing procedures in an ambulatory surgery center (NQF #0265). MAP also included a measure assessing the number of patients with asthma, a pediatric high-impact condition, who have one or more emergency department visits during a 12-month period (NQF #1381).

MAP had a lengthy discussion about whether to include potentially avoidable complications measures for hospitalized patients with acute myocardial infarction, stroke, and pneumonia (NQF #0704, #0705, #0708) in the care coordination family. MAP chose to include these measures in the family, finding that they were meaningful to consumers and promoted parsimony, as each measure addresses multiple complications as well as readmissions. MAP also included a similar, broader measure of potentially avoidable complications for patients with any of six chronic conditions over a calendar year (NQF #0709). MAP noted that none of these complications measures included an indicator for whether the condition was present on admission, which should be considered for future refinement of these measures.

MAP discussed which of the available readmissions measures—considering both condition-specific and hospital-wide approaches—to include in the care coordination family. Ultimately, MAP chose the Health Plan All-Cause Readmissions measure (NQF #1768) and the Hospital-Wide All-Cause Unplanned Readmission measure (NQF #1789). Though both types of measures are important and may suit specific program purposes, MAP found that inclusion of the all-plan and hospital-wide measures in the family to be the more parsimonious option. In addition, MAP noted that all-cause measures promote system-wide improvement for all conditions. MAP was also concerned that multiple differing condition-specific measures addressing the same area of performance could cause confusion by overloading the public, purchasers, and providers with too much information.

Purchasers are encouraging health plans to assume more accountability for avoidable readmissions, and the Plan All-Cause Readmissions measure (NQF #1768) helps illustrate plans' roles. However, the measure does not take planned versus unplanned readmissions into account. In addition, when publicly reporting measure results, similar health plans should be compared with one another. For example, health plans exclusively serving vulnerable populations should not be compared to health plans serving broader, potentially healthier populations.

The Hospital-Wide All-Cause Unplanned Readmission measure (NQF #1789) has the advantages of aggregating readmissions for multiple conditions, excluding planned readmissions, and including risk adjustment. Some MAP members raised that comparisons using this measure should be limited to hospitals serving similar populations. In addition, some MAP members cautioned that use of the measure should be better understood through phased implementation before it is used for performance-based payment to avoid unfairly penalizing safety net hospitals serving vulnerable populations.

Table 12. Avoidable Admissions/Readmissions Measures and Gaps for the Care Coordination Family of Measures

NQF # and Status	Measure	MAP Findings
#0171 Endorsed	Acute Care Hospitalization (risk-adjusted)	Measure could be expanded to more post-acute and long-term care settings in the future.
#0173 Endorsed	Emergent Care (risk adjusted)	Measure could be expanded to more post-acute and long-term care settings in the future.
#0265 Endorsed	Hospital Transfer/Admission	
#0704 Endorsed	Proportion of Patients Hospitalized with AMI that have a Potentially Avoidable Complication (during the Index Stay or in the 30-day Post-Discharge Period)	Measure should be modified to include an indicator of POA status.
#0705 Endorsed	Proportion of Patients Hospitalized with Stroke that have a Potentially Avoidable Complication (during the Index Stay or in the 30-day Post-Discharge Period)	Measure should be modified to include an indicator of POA status.
#0708 Endorsed	Proportion of Patients Hospitalized with Pneumonia that have a Potentially Avoidable Complication (during the Index Stay or in the 30-day Post-Discharge Period)	Measure should be modified to include an indicator of POA status.
#0709 Endorsed	Proportion of Patients with a Chronic Condition that have a Potentially Avoidable Complication During a Calendar Year.	Measure should be modified to include an indicator of POA status.

NQF # and Status	Measure	MAP Findings
#1381 Endorsed	Asthma Emergency Department Visits	
#1768 Endorsed	Plan All-Cause Readmissions	Measure does not indicate planned vs. unplanned readmissions. Measure should be used with balancing measures of mortality, average of stay, ED visits, observation days, post-discharge follow-up, and patient experience.
#1789 Endorsed	Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)	Measure should be used with balancing measures of mortality, length of stay, ED visits, observation days, post-discharge follow-up, and patient experience.
Avoidable Admissions/ Readmissions Priority Gap Areas	• Shared accountability and attribution across the continuum • Community role; patient's ability to connect to available resources • All populations and causes of admissions/readmissions • Modify PQI measures to address accountability for ACOs. Modify population to include all patients with the disease (if applicable).	

System and Infrastructure Support

MAP reviewed measures that address the role of systems and infrastructure in promoting communication and effective care coordination and selected one measure for the family, Medical Home System Survey (NQF #1909). This measure is provider-reported at the practice level and should be coupled with a patient-reported measure. MAP stressed the need for further measure development in this area. As existing measures reference the current infrastructure, future measure development should address new technologies and models of care to drive improvement. Moreover, continued development of interoperable health records is needed. MAP emphasized that it is not enough to measure EHR capacity; rather, measures must show both the successful sending and receiving of information across the numerous sites where patients receive care. MAP considered two measures of EHR use for the family—The Ability for Providers with HIT to Receive Laboratory Data Electronically Directly into their Qualified/Certified EHR System as Discrete Searchable Data Elements (NQF #0489) and Tracking of Clinical Results Between Visits (NQF #0491)—but ultimately did not include these in the family as they do not look at EHR effectiveness and address only one-sided communication.

Additionally, MAP noted the need for better measures of care coordination across the system where current measures are outdated and/or not inclusive of all patient populations. For example, the measure Medical Home for Children and Adolescents (NQF #0724) addresses only the pediatric population within medical homes, but does not include adults or ACOs. Complex, chronically ill patients should be included in the populations for medical home measures, as these patients stand to benefit the most from care coordination provided by a medical home. Finally, measures should move beyond the physician-led medical home to the clinician-led medical home, recognizing the role of other disciplines within this model.

Table 13. System and Infrastructure Support Measures and Gaps for the Care Coordination Family of Measures

NQF # and Status	Measure	MAP Findings
#1909 Endorsed	Medical Home System Survey	Should be reported with a balancing patient-reported survey.
System and Infrastructure Support Priority Gap Areas	• Move beyond EHR capacity to measures of interoperability of EHRs, enhanced communication • Measures of "systemness," including but not limited to ACOs, PCMHs	

Care Transitions

MAP defined a successful transition as one that was timely, prevented avoidable readmissions or ED visits, and was aligned with patient and caregiver preferences. While many currently available measures focus on the hospital setting, MAP attempted to include measures that address transitions across the continuum when available to improve the quality of care transitions and communication across settings.

Care transition measures included in the family attempted to address two major questions related to successful transitions: 1) Did the patient get to the next needed site of care? 2) Was the necessary information about the patient available to the next site of care in a timely manner? While few available measures address the first question, a number of measures were included in the family as a starting point. Stressing the importance of continuing care in an outpatient setting, MAP included three measures addressing transitions to the next site of care: two measures assessing follow-up visits (NQF #0576 and #0403) and one assessing if the patient began home health care in a timely manner (NQF #0526).

MAP took a broader view and included measures that address timeliness from both inter- and intra-facility perspectives and focused on the hospital setting because of measures currently available. One measure, Median Time to Transfer to Another Facility for Acute Coronary Intervention (NQF #0290), was included to assess timely transitions from one facility to the next, stressing the high-impact and time-sensitive nature of treatment for AMI. MAP also included five additional measures addressing AMI: one measure involving time to ECG (NQF #0289) and four involving time to treatment with PCI or fibrinolysis (NQF #0164, #0287, #0288, #0163). One measure involving the timely availability of CT results for stroke patients (NQF #0661) was also added to the family.

MAP considered three additional intra-facility measures addressing emergency department (ED) throughput: Median Time from ED Arrival to ED Departure for Admitted ED Patients (NQF #0495), Median Time from ED Arrival to ED Departure for Discharged ED Patients (NQF #0496), and Admit Decision Time to ED Departure Time for Admitted Patients (NQF #0497). MAP recognized that ED crowding is a significant concern, especially for patients and their families, and can lead to increased suffering and poor patient outcomes. However, MAP

raised concerns about subjectivity of the timing component required to calculate these measures. Moreover, ED timeliness can vary greatly by situation, type of patient, and reason for visit. Ultimately, MAP concluded that these measures primarily monitor internal inefficiency are not the highest priority for the care coordination measure family, though the measures may be well-suited to the purposes of particular programs. MAP recommended moving beyond measures of timeliness to measures assessing other aspects of quality of care in the ED to ensure patients receive the right care in an efficient manner.

Unsuccessful care transitions can result in avoidable readmissions and ED visits, endangering patients and driving up the cost of care. While these issues can be failures of the system, MAP included the 30-Day Post-Hospital Discharge Care Transition Composite Measures for AMI, heart failure, and pneumonia measures (NQF #0698, #0699, #0707) in the care coordination family. These complex, risk-adjusted composites evaluate readmissions, ED visits, and evaluation and management (E&M) coded follow-up visits. A caveat to these measures is that the E&M visit requirement does not allow for innovative care transition programs such as home visits by nurses. As it is important for a patient to receive follow-up care in a timely fashion, the measure could be modified to a 7-day window for E&M visits. Some MAP members urged better understanding of how these measures perform before they are considered for performance-based payment programs, to ensure that hospitals are not unfairly penalized for events outside of their control. Additionally, PICU Unplanned Readmission Rate (NQF #0335) was included to address readmission to the ICU from a lower level of care or following discharge.

Recognizing that person and family/caregiver engagement and communication is key to successful care transitions, MAP included the 3-Item Care Transition Measure (CTM-3) (NQF #0228) in the family This patient-reported measure assesses inclusion of patient preferences in the care plan, understanding of self-care, and medication management. Although HCAHPS currently includes the items from CTM-3, this measure was also included in the family separately as it can be applied to facilities other than hospitals. MAP also discussed that the CTM-3 survey could be modified to allow for evaluation before discharge to proactively address potential issues with care transitions and self-management.

A number of measure gaps were identified for the care transitions subtopic. Currently, many measures use time as the primary outcome to determine if a transition was successful. MAP recommended that transition measures look beyond just timeliness to assess the quality of the transition, including the quality of communication with the patient and caregiver. There is also a need for measures of patient transition to next provider/site of care across all settings including transitions that are not hospital-related, such as transitions from primary care to specialty care, clinician to community pharmacist, and nursing home to home health care. MAP also recognized the need for measures addressing referrals and access to community resources and services.

Table 14. Care Transitions Measures and Gaps for the Care Coordination Family of Measures

NQF # and Status	Measure	MAP Findings
#0163 Endorsed	Primary PCI Received within 90 Minutes of Hospital Arrival	
#0164 Endorsed	AMI-7a- Fibrinolytic Therapy Received within 30 minutes of Hospital Arrival	
#0228 Endorsed	3-Item Care Transition Measure (CTM-3)	Measure should be tested for administration prior to discharge.

NQF # and Status	Measure	MAP Findings
#0287 Endorsed	Median to Fibrinolysis	
#0288 Endorsed	OP-2: AMI Emergency Department Acute Myocardial Infarction (AMI) Patients with ST-segment Elevation or LBBB on the ECG Closest to Arrival time Receiving Fibrinolytic Therapy During the Stay and Having a Time from ED Arrival to Fibrinolysis of 30 minutes or Less.	
#0289 Endorsed	Median Time to ECG	
#0290 Endorsed	Median Time to Transfer to Another Facility for Acute Coronary Intervention	
#0335 Endorsed	PICU Unplanned Readmission Rate	
#0403 Endorsed	HIV/AIDS: Medical Visit	
#0526 Endorsed	Timely Initiation of Care	
#0576 Endorsed	Follow-Up After Hospitalization for Mental Illness	
#0661 Endorsed	OP-23: ED-Head CT Scan Results for Acute Ischemic Stroke or Hemorrhagic Stroke who Received Head CT Scan Interpretation Within 45 minutes of Arrival	
#0698 Endorsed	30-Day Post-Hospital AMI Discharge Care Transition Composite Measure	Measure could be modified to have a narrow window for follow-up evaluation and management visit.
#0699 Endorsed	30-Day Post-Hospital HF Discharge Care Transition Composite Measure	Measure could be modified to have a narrow window for follow-up evaluation and management visit.
#0707 Endorsed*	30-day Post Hospital Pneumonia Discharge Transition Composite Measure	Measure could be modified to have a narrow window for follow-up evaluation and management visit.
Care Transitions Priority Gap Areas	• Transition measures that look beyond timeliness • Measures of patient transition to next provider/site of care across all settings ○ Includes non-hospital transitions (examples: primary care to specialty care, clinician to community pharmacist, nursing home to home health) as well as transitions to community services • Measures of intra-facility transitions	

Communication

Communication involves all healthcare team members working within the same shared plan of care, readily available consultation notes and progress reports, engaging the person and family, shared decision-making, use of various communication methodologies, and maintenance of privacy with access to information[iv].Recognizing the central role of the patient as a member of the care team and the importance of person and family engagement, MAP evaluated measures that consider provider-to-patient communication, as well as provider-to-provider communication, for inclusion in the measure family.

To address patient communication, MAP included three measures in the care coordination family: Transition Record with Specified Elements Received by Discharged Patients (Inpatient Discharges to Home/Self Care or Any Other Site of Care) (NQF #0647), Timely Transmission of Transition Record (Inpatient Discharges to Home/Self Care or Any Other Site of Care) (NQF #0648), and Transition Record with Specified Elements Received by Discharged Patients (Emergency Department Discharges to Ambulatory Care [Home/Self Care]) (NQF #0649). As patient communication is vital to successful transitions, these measures help ensure that patients receive necessary information when discharged, facilitating self-care and coordination with subsequent providers. MAP recommends that these measures be expanded to address patient understanding of the information received and capability for self-management of conditions and treatments, particularly medications.

MAP included five measures addressing provider communication when transferring patients from the ED to another acute care facility: Administrative Communication (NQF #0291), Patient Information (NQF #0294), Physician Information (NQF #0295), Nursing Information (NQF #0296), and Procedures and Tests (NQF #0297). MAP suggests that these measures could be combined into one composite measure to demonstrate the rapid transfer of information.

Communication with the next site of care is a crucial element of care coordination; however, it is often difficult to know if the necessary patient information was available in a timely manner. There is a need to move beyond current checkbox measures of communication to measure the sending and receiving of information using common elements providing the "right" information to support patient care. Measures are also needed to address communication outside the inpatient setting. Additionally, communication measures need to address simultaneous information sharing, as patients frequently see multiple providers at the same time. Health Information Exchanges and EHRs are intended to improve communication of relevant patient information from one setting to the next, and MAP recommends the development of measures that assess if these technologies and care models are facilitating the successful bi-directional transfer of information.

Measures of person-centered communication are needed to assess if the right information was given at the right time and aligned with patient preferences. These measures should include all patients, including those with multiple chronic conditions, frailty, disability, or other medical complexities. These measures should consider health literacy and a person's ability to manage their care. Additionally, these measures should be culturally sensitive to prevent communication barriers caused by ethnicity, language, or religion. Person-centered measures of communication should address if the information was understood, not just received. MAP also recommends development of measures that assess the role of personal health records and how they can facilitate communication through interoperable records that can be exchanged across sites of care.

Table 15. Communication Measures and Gaps for the Care Coordination Family of Measures

NQF # and Status	Measure	MAP Findings
#0291 Endorsed	Administrative Communication	Measure should be combined into a composite with #0294, #0295, #0296, and #0297.
#0294 Endorsed	Patient Information	Measure should be combined into a composite with #0291, #0295, #0296, and #0297.
#0295 Endorsed	Physician Information	Measure should be combined into a composite with #0291, #0294, #0296, and #0297.

#0296 Endorsed	Nursing Information	Measure should be combined into a composite with #0291, #0294, #0295, and #0297.
#0297 Endorsed	Procedures and Tests	Measure should be combined into a composite with #0291, #0294, #0295, and #0296.
#0310 Endorsed	LBP: Shared Decision Making	
#0647 Endorsed	Transition Record with Specified Elements Received by Discharged Patients (Inpatient Discharges to Home/Self Care or Any Other Site of Care) (Inpatient Discharges to Home/Self Care or Any Other Site of Care)	
#0648 Endorsed	Timely Transmission of Transition Record (Inpatient Discharges to Home/Self Care or Any Other Site of Care)	
#0649 Endorsed	Transition Record with Specified Elements Received by Discharged Patients (Emergency Department Discharges to Ambulatory Care [Home/Self Care])	

Communication Priority Gap Areas	• Communication measures should address both simultaneous and subsequent information sharing across all settings
	• Move beyond current checkbox measures of communication to address both the sending and receiving of adequate information
	• Measures of person-centered communication
	  ○ Right information was given at the right time and aligned with patient preferences
	  ▪ Cultural sensitivity—ethnicity, language, religion
	  ▪ Multiple chronic conditions, frailty, disability, medical complexity
	  ○ Address patient understanding of information, not just receiving information
	  ○ Role for personal health records
	• Opportunity to leverage HIT; role of HIT/HIE in communication process
	  ○ Need to address overuse, misuse, inefficiencies created by poor communication	

Care Planning

The NQF-Endorsed Definition and Framework for Measuring Care Coordination calls for patients to have a proactive plan of care and follow-up—an established and current care plan that anticipates routine needs and actively tracks up-to-date progress toward patient goals. The care plan should be jointly created and managed by the patient/caregiver and provider and should assess the patient's current and longstanding needs with goals that reflect those needs[v]. The care plan should address elements such as pain and symptom management, psychosocial needs, and functional status. While there is still a greater need for measures – that are not in the "check the box" category – assessing the development of a care plan mutually agreed to by the patient and provider, MAP included a number of care planning measures in the family, stressing the importance of a plan that that includes patient preferences at the end of life, is developed through shared decision-making, and facilitates continuing care across sites.

The Definition and Framework for Measuring Care Coordination recognized that patients at the end of life are particularly vulnerable to fragmented care and poor care planning[vi]. To help address this issue, MAP included four NQF-endorsed hospice measures (NQF #0211, #0213, #0215, #0216) to assess the outcome of successful care planning for patients at the end of life. MAP recommended that these measures be expanded beyond

cancer care to include all chronically ill patients at the end of life. These measures could also be developed into a composite.

Recognizing that all patients need an advance care plan but frequently do not have one, MAP included two measures addressing creation of advance care plans. The first, Advance Care Plan (NQF #0326), measures the creation of a plan in the outpatient setting; the second, Patients Admitted to ICU who Have Care Preferences Documented (NQF #1626), revisits advance care planning within 48 hours of admission to the ICU. MAP recommends the expansion of measures assessing advance care planning beyond elderly or critically/terminally ill patients to ensure all patients have an advance care plan.

MAP emphasized the need to move beyond patient adherence to a care plan to active involvement in the planning process. Person and family engagement is crucial to ensuring the care plan is aligned with patient goals and that the patient and caregiver are able to understand and manage necessary self-care. Recognizing the importance of a care plan that is mutually agreed to by the patient and provider, MAP stressed the importance of shared decision-making and included the one available measure addressing this area in the family: Low Back Pain: Shared Decision-Making (NQF #0310). MAP noted shared decision-making, including and beyond care planning, as a significant gap area.

Emphasizing the importance of discharge planning, two measures addressing continuing care plans were included in the family: HBIPS-6 Post discharge continuing care plan created (NQF #0557) and HBIPS-7 Post discharge continuing care plan transmitted to next level of care provider upon discharge (NQF #0558). MAP noted these measures could include a timeframe for the creation and transmission of the care plan to ensure information is sent in a timely way. MAP also recommended further development of measures addressing a shared plan of care for all patients, including assessing continuity within the plan of care.

Table 16. Care Planning Measures and Gaps for the Care Coordination Family of Measures

NQF # and Status	Measure	MAP Findings
#0211 Endorsed	Proportion with More than One Emergency Room Visit in the Last Days of Life	Measure should be expanded beyond cancer patients to all chronically ill patients at end of life. Hospice measures could be paired or made into a composite.
#0213 Endorsed	Proportion Admitted to the ICU in the Last 30 Days of Life	Measure should be expanded beyond cancer patients to all chronically ill patients at end of life. Hospice measures could be paired or made into a composite.
#0215 Endorsed	Proportion Not Admitted to Hospice	Measure should be expanded beyond cancer patients to all chronically ill patients at end of life. Hospice measures could be paired or made into a composite.
#0216 Endorsed	Proportion Admitted to Hospice for Less than 3 Days	Measure should be expanded beyond cancer patients to all chronically ill patients at end of life. Hospice measures could be paired or made into a composite.
#0326 Endorsed	Advance Care Plan	Measure should be expanded to patients under 65 years old.
#0557 Endorsed	HBIPS-6 Post Discharge Continuing Care Plan Created	Measure could be expanded to address both the sending and receiving of information. Measure should be modified to include a time element to information transmission and could be composited with #0558.

#0558 Endorsed	HBIPS-7 Post Discharge Continuing Care Plan Transmitted to Next Level of Care Provider Upon Discharge	Measure could be expanded to address both the sending and receiving of information. Measure should be modified to include a time element to information transmission and could be composited with #0557.
#1626 Endorsed	Patients Admitted to ICU who Have Care Preferences Documented	Measure should be expanded beyond "vulnerable adults" to include all ICU patients.
Care Planning Priority Gap Areas	• Shared decision-making and care planning; interactive care plan ○ All people should have care plan, created early in the care process ○ Plan agreed to by the patient and provider and given to patient, including advanced care plan ○ Plan shared among all providers seeing the patient (integrated); multidisciplinary ○ Identified primary provider responsible for the care plan	

Patient Experience with Care Coordination

Existing patient experience surveys were included in the care coordination family of measures as a way to gather patient-reported information relevant to care coordination. Patient surveys capture patient perceptions of the effectiveness of care coordination efforts and can indicate lack of patients' involvement in their care, crucial to promoting self-management. MAP included the suite of CAHPS surveys to broadly measure patients' perspectives across the various care settings. Additionally, the Young Adult Health Care Survey (YAHCS) (NQF #0010), the Inpatient Consumer Survey (ICS) (NQF #0726), the Family Evaluation of Hospice Care (FEHC) (NQF #0208), and the Consumer Assessments and Reports of End of Life (CARE) (NQF #1632) were included to address the unique needs of the adolescent, inpatient behavioral health, and hospice populations. However, MAP identified several limitations to using existing instruments to promote care coordination. Current survey measures reinforce silos in the system by failing to cross care settings, recognize the shared accountability of multi-disciplinary teams, or include the provider perspective.

MAP also discussed a number of data issues with the existing surveys. While it is important to gather patient-reported data, collecting and analyzing this data can be challenging to both the patient and provider. To maintain reliability and validity, often the entire instrument must be completed and scored. Additionally, the survey scores and results must be reported in a way that is meaningful to promote improvement in care coordination. Reporting only total scores provides insufficient detail to support quality improvement in this area. The ability to report scores on individual items or composites related to care coordination is necessary to provide the meaningful granularity, but not all items have been validated for individual reporting. The development of electronic versions of existing instruments may help facilitate the collection and use of patient-reported data.

MAP recommends the development of a comprehensive care coordination survey that looks across the episode of care and settings to address transitions and communication. Common questions would allow better insights into coordination and patient experiences across the continuum. The care coordination survey should include patients of all ages and their caregivers as well as recognize the accountability of the multi-disciplinary team.

Table 17 – Patient Survey Measures and Gaps for the Care Coordination Family of Measures

NQF # and Status	Measure	MAP Findings
#0005 Endorsed	CAHPS Clinician/Group Surveys - (Adult Primary Care, Pediatric Care, and Specialist Care Surveys)	
#0006 Endorsed	CAHPS Health Plan Survey v 4.0 - Adult Questionnaire	
#0007 Endorsed	NCQA Supplemental Items for CAHPS® 4.0 Adult Questionnaire	
#0008 Endorsed	Experience of Care and Health Outcomes (ECHO) Survey (behavioral health, managed care versions)	
#0009 Endorsed	CAHPS Health Plan Survey v 3.0 Children with Chronic Conditions Supplement	Survey should be expanded to include the adult population.
#0010 Endorsed	Young Adult Health Care Survey (YAHCS)	Survey should be tested down to the clinician level.
#0166 Endorsed	HCAHPS	
#0208 Endorsed	Family Evaluation of Hospice Care	
#0258 Endorsed	CAHPS In-Center Hemodialysis Survey	
#0517 Endorsed	CAHPS® Home Health Care Survey	
#0691 Endorsed	Consumer Assessment of Health Providers and Systems (CAHPS®) Nursing Home Survey: Discharged Resident Instrument	
#0692 Endorsed	Consumer Assessment of Health Providers and Systems (CAHPS®) Nursing Home Survey: Long-Stay Resident Instrument	
#0693 Endorsed	Consumer Assessment of Health Providers and Systems (CAHPS®) Nursing Home Survey: Family Member Instrument	
#0725 Endorsed	Validated Family-Centered Survey Questionnaire for Parents' and Patients' Experiences during Inpatient Pediatric Hospital Stay	
#0726 Endorsed	Inpatient Consumer Survey (ICS) Consumer Evaluation of Inpatient Behavioral Healthcare Services	
#1632 Endorsed	CARE - Consumer Assessments and Reports of End of Life	
#1741 Endorsed	Patient Experience with Surgical Care Based on the Consumer Assessment of Healthcare Providers and Systems (CAHPS)® Surgical Care Survey	

Patient Surveys Priority Gap Areas	• Need to address patients who cannot self-report/issues with surrogate reporting
	• Existing surveys
	  ○ Need surveys in electronic format
	  ○ Test national-level surveys for reporting out at the organization and/or clinician level
	  ○ Bring Medical Home CG-CAHPS forward for NQF endorsement
	• Comprehensive care coordination survey that looks across episode and settings, particularly with the development of medical homes and ACOs
	  ○ Include all ages
	  ○ Recognize accountability of the multi-disciplinary team
	• Survey/composite measure of provider perspective of care coordination
	  ○ Timely and effective communication among providers	

[i] Lindrigan CP, Parry GJ, Bones CB et al. Temporal trends in rates of patient harm resulting from medical care. N Engl J Med, 2010;363(22):2124-2134.

[ii] National Quality Forum (NQF). NQF-Endorsed Definition and Framework for Measuring and Reporting Care Coordination, Washington, DC; NQF 2006. Available at www.qualityforum.org/projects/care_coordination.aspx. Last accessed August 2012.

[iii] Department of Health and Human Services (DHHS), *Partnership for Patients: Better Care, Lower Costs*, Washington, DC: DHHS, 2011. Available at www.healthcare.gov/center/programs/partnership. Last accessed August 2012.

[iv] NQF. Preferred Practices and Performance Measures for Measuring and Reporting Care Coordination. Washington, DC: NQF; 2010. Available at www.qualityforum.org/projects/care_coordination.aspx. Last accessed August 2012.

[v] NQF. NQF-Endorsed Definition and Framework for Measuring and Reporting Care Coordination, Washington, DC; NQF 2006. Available at www.qualityforum.org/projects/care_coordination.aspx. Last accessed August 2012.

[vi] NQF. NQF-Endorsed Definition and Framework for Measuring and Reporting Care Coordination, Washington, DC; NQF 2006. Available at www.qualityforum.org/projects/care_coordination.aspx. Last accessed August 2012.

Prevention and Treatment of the Leading Causes of Mortality: Cardiovascular Conditions and Diabetes Families of Measures

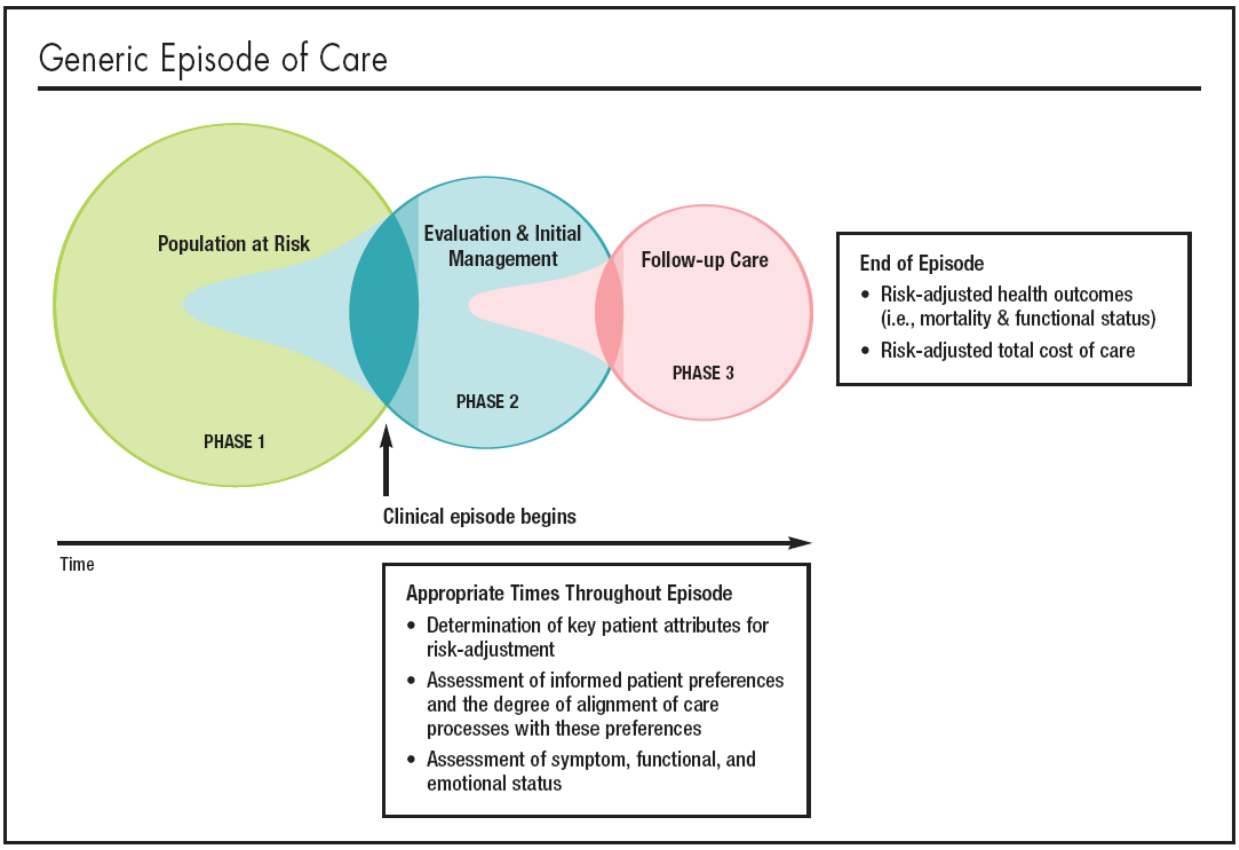
To promote the most effective prevention and treatment for the leading causes of mortality, the NQS establishes three goals: community interventions that result in improvement of social, economic, and environmental factors; interventions that result in adoption of the most important healthy lifestyle behaviors across the lifespan; and receipt of effective clinical preventive services across the lifespan in clinical and community settings. The initial focus area in the NQS for achievement of the prevention and treatment goals is cardiovascular health. Aligning with the NQS, MAP's identification of a prevention and treatment family of measures focuses on cardiovascular conditions; however, MAP expanded the scope of the family of measures to address an additional high-impact condition, diabetes, as an opportunity exists to coordinate prevention efforts for both conditions. Additionally, there are known disparities in care for cardiovascular conditions and diabetes, further highlighting the need to address these conditions first under the prevention and treatment family of measures.

Themes from the Identification of the Cardiovascular Conditions and Diabetes Families of Measures

In identifying the prevention and treatment family of measures, MAP relied on several principles: person-centered approach, improving outcomes, and identifying the fewest measures needed to address the high-leverage improvement opportunities.

A **person-centered approach to measurement** considers stages of health and healthcare across the lifecycle (MAP Measure Selection Criterion #6: pertaining to measurement across the person-centered episode of care). In identifying the diabetes and cardiovascular care families of measures, MAP's work built on the Patient-Focused Episodes of Care Model,[i] the Multiple Chronic Conditions Framework for Performance Measurement,[ii] and findings from previous MAP reports. The patient-focused episode of care consists of three phases for evaluating the efficiency of care over time: the population at risk, evaluation and initial management, and follow-up care. Consistent with the person-centered approach to measurement, MAP considered the gaps in performance at each phase of the episode of care. The high-leverage opportunities for measurement in cardiovascular care and diabetes represent opportunities to measure identified performance gaps. Figure 1 below represents the patient-focused episode of care.

Figure 1. Patient-Focused Episode of Care



Recognizing that many individuals with cardiovascular conditions and diabetes have other chronic conditions, MAP considered how the high-leverage opportunities for measurement address people with multiple chronic conditions. The NQF-endorsed Multiple Chronic Conditions Measurement Framework identifies the highest-leverage areas for measurement to be relevant disease-specific clinical outcome measures, along with measures that cut across conditions (e.g., quality of life, shared decision-making, function, care transitions). For the cardiovascular and diabetes families of measures, MAP identified measures and measure gaps representing the most salient condition-specific measures, as other families will address cross-cutting measures (e.g., patient and family engagement, care coordination). In addition, MAP recognized the important link between depression and chronic disease, noting that MAP expects to develop a mental and behavioral health family of measures in a subsequent phase of work. Further, the MAP Coordination Strategy for Post-Acute and Long Term Care Performance Measurement[iii] emphasized that the complex needs of patients in post-acute and long-term care settings are best addressed by cross-cutting measures, rather than the measures that focus on a single condition; therefore, MAP did not select measures for post-acute and long-term care settings for these disease-specific families of measures.

MAP seeks to **improve outcomes** in the highest-leverage areas. Accordingly, MAP focused on outcome measures and processes most closely linked with driving toward improved outcomes. For example, outcome measures assessing control (e.g., blood pressure control) were preferred over process measures assessing screening and testing. Similarly, process measures assessing time to procedures (e.g., receiving percutaneous coronary intervention (PCI) upon hospital arrival within 90 minutes or less) were preferred over process measures that assess steps in care delivery (e.g. troponin results for acute myocardial infarction patients). Generally, this approach emphasizes assessing overall care management and systems-level improvement, rather than discrete care processes. However, MAP recognized that

structure and process measures may be the most appropriate for a program's specific purpose, particularly in newer areas of measurement.

A family of measures seeks to align measures across settings and levels of analysis. MAP sought to **identify the fewest measures necessary to address the high-leverage improvement opportunities** (MAP Measure Selection Criteria #3, and 8 addressing high-impact conditions and parsimony). To create a parsimonious set of measures, MAP focused on the highest-impact opportunities at each phase of the episode of care that will improve quality in cardiovascular and diabetes care. MAP considered the inclusiveness—capturing a broad range of individuals with regard to age, gender, socioeconomic status, and ethnicity/ race—of a measure when selecting measures for the family. Accordingly, MAP sought to include measures with broad denominator populations (e.g., blood pressure control for all individuals) for accountability purposes that could then be stratified by more discrete populations (e.g., blood pressure control for individuals with cardiovascular conditions) for quality improvement.

Within the highest-leverage opportunities, MAP considered the **applicable settings and levels of analysis**. MAP notes that assessment at each level of the system—individual clinician, clinician groups, facilities, systems, and populations—provides a comprehensive picture of quality and helps identify targeted interventions at each level. Thus, MAP selected measures that cross levels of analysis and settings where those measures were available. Recognizing that few measures will address all relevant settings and levels of analysis, MAP also selected measures that address one particular setting or level of analysis, focusing on measures that assess similar aspects of care. Additionally, MAP recognizes that all areas of measurement may not be suitable to attribute to all levels of the system. For example, mortality measures, which imply broad accountability, are best attributed to at a facility or system, rather than to a clinician.

Primary Prevention of Cardiovascular Conditions and Diabetes

Primary prevention addresses the first phase of the patient-focused episode of care, the population at risk. At this phase, there is an opportunity to identify risk factors and intervene prior to disease presentation. Strong evidence supports that addressing risk factors reduces the incidence of cardiovascular conditions and diabetes.

The Million Hearts initiative encourages targeted focus on the "ABCS"—aspirin for people at risk, blood pressure control, cholesterol management, and smoking cessation. Additional lifestyle risk factors, such as obesity and physical activity, also contribute to the incidence of cardiovascular conditions and diabetes.[iv] Accordingly, MAP identified the highest leverage opportunities for assessing primary prevention of cardiovascular conditions as blood pressure control, lipid control, smoking prevention/cessation, diet/nutrition, activity/exercise, and weight/obesity.

Each of the high-leverage opportunities substantially influences cardiovascular and/or diabetes risk, representing performance gaps that if closed will improve the health status of the population. For perspective, approximately one-third of adults in the U.S. has high blood pressure,[v] and 1 in 6 have high cholesterol levels.[vi] In both cases, many individuals are not even aware they have these risk factors.[vii] About 19% of American adults smoke cigarettes, and smoking remains the leading cause of preventable death in the U.S.[viii] In addition, diet, activity, and obesity are closely linked. Over one-third of U.S. adults are now obese, placing them at higher risk of diabetes, heart disease, stroke, and other conditions.[ix]

While the purpose of primary prevention is to assess the care provided to the population at risk (those who do not yet have the disease), MAP sought to select measures that are inclusive of the entire population, regardless of the presence or absence of a condition. This approach helped achieve a parsimonious set of measures. Measures could be stratified by condition or other risk factors to support quality improvement activities. However, MAP did recognize that lipid control and blood pressure control are critical aspects of secondary prevention for cardiovascular conditions and diabetes, so some condition-specific measures were included (NQF #0064, Lipid control is noted in Table 1, Diabetes Measures Selected for Family).

MAP identified measures that address the high leverage opportunities of tobacco cessation (NQF #0028, #1406, #1651, #1654) and blood pressure control (NQF #0018). For lifestyle management measures, MAP identified measures that address weight and obesity (NQF #0421, #0024), with physical activity/exercise and diet/nutrition identified as measure gaps. MAP recognizes that the lifestyle management opportunities are influenced by social determinates of health (e.g., SES, availability of community-based resources, resources to meet daily needs); accordingly, lifestyle measures of attainment should be reserved for the community level, while clinicians and facilities should be accountable for assessment and counseling. MAP also identified measure gaps for lipid control and whether cardiometabolic risk was assessed and then acted on.

Table 1. Primary Prevention of Cardiovascular Conditions and Diabetes Measures Selected for Family

NQF # and Status	Measure	MAP Findings
Smoking Cessation/Tobacco Use		
0028 Endorsed	Measure pair: a. Tobacco Use Assessment, b. Tobacco Cessation Intervention	
1406 Endorsed	Risky Behavior Assessment or Counseling by Age 13 Years	
1651 Recommended	TAM-1 Tobacco Use Screening	
1654 Deferred	TAM-2 Tobacco Use Treatment Provided or Offered	
Lifestyle Management		
0421 Endorsed	Adult Weight Screening and Follow-Up	
0024 Endorsed	Body Mass Index (BMI) 2 through 18 years of age	
Blood Pressure		
0018 Endorsed	Controlling High Blood Pressure	
GAPS		
Lipid Control	• All levels of analysis	
Smoking Cessation	• Outcomes of smoking cessation interventions	
Lifestyle management	• Physical activity/ exercise, diet/nutrition across all levels of analysis and settings	
Cardiometabolic Risk	• Across all levels of analysis and settings	

Cost of Care

To cover each of the aims of the NQS, including affordability, MAP addressed cost of care within each family of measures. Additionally, MAP plans to identify a cost of care family of measures. When considering cost of care

measures for prevention and treatment of diabetes and cardiovascular conditions, MAP recognized that cost of care measurement is relatively nascent and multiple methodological and implementation issues persist, resulting in multiple measure gaps. At the same time, there are many cost of care measurement needs—both direct and indirect costs, cost to different entities (e.g., cost to patients, cost to payers and purchasers), and cost per episodes versus total cost—all of which provide useful information from different perspectives. Finally, there are only a handful of cost of care measures in the portfolio of NQF-endorsed measures.

Recognizing the challenges inherent in cost of care measurement, MAP strongly supported incorporating cost measures into the cardiovascular and diabetes families of measures to gain experience measuring cost of care. Noting that measures will need to be improved and refined with broader use, MAP recommended caution in using cost measures for payment incentives at this time. Further, MAP recommends ultimately linking cost measures with outcome measures for an overall assessment of efficiency. MAP initially preferred population-based, rather than condition-specific or procedure-specific, measures as a starting place in order to gain experience and understand the costs across a system.

Table 2. Cost of Care Measures Selected for Family

NQF # and Status	Measure	MAP Findings
1598 Endorsed	Total Resource Use Population-based PMPM Index	
1604 Endorsed	Total Cost of Care Population-based PMPM Index	

Cardiovascular Conditions

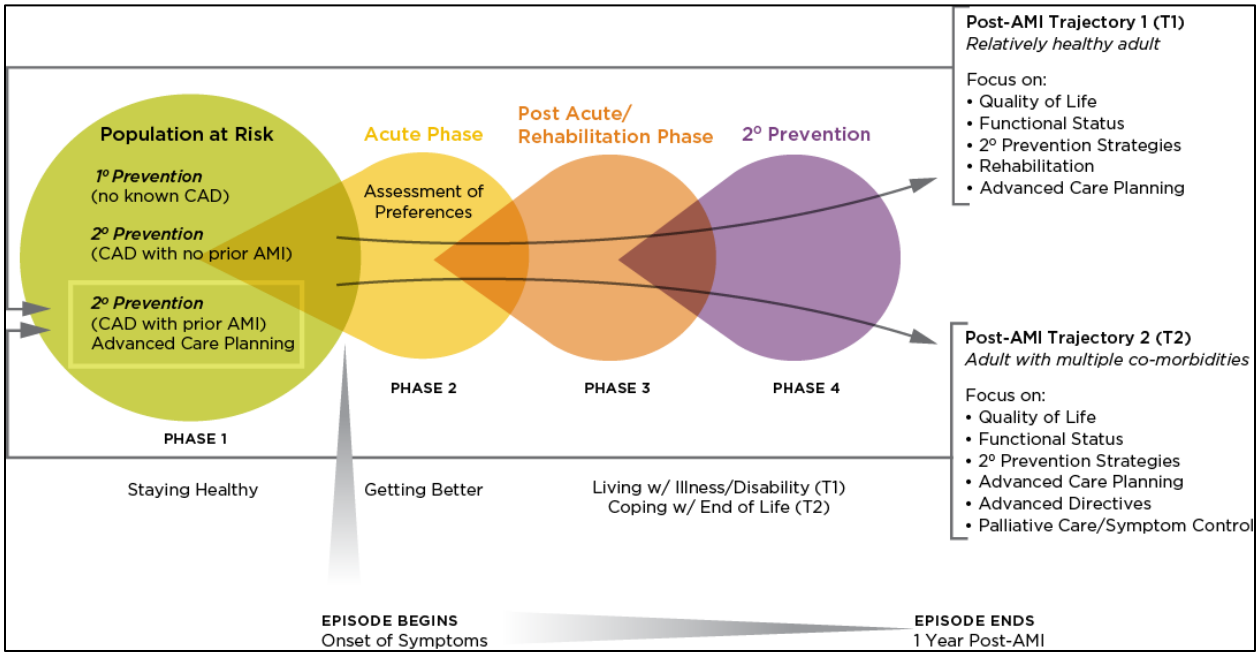
Beyond primary prevention for the population at risk, the remaining phases of the patient-focused episode of care address evaluation and management, and then initial management and follow-up care. To cover the highest-leverage opportunities in cardiovascular care, MAP focused on the cardiovascular conditions identified as high-impact conditions based on prevalence, associated morbidity and mortality, and cost of care (see Appendix E, Medicare High-Impact Conditions list). The high-impact cardiovascular conditions are ischemic heart disease, stroke/TIA, atrial fibrillation, and heart failure.

Each of the high-impact cardiovascular conditions causes substantial morbidity and mortality, presenting substantial opportunity to improve care delivery and outcomes. Approximately 935,000 individuals have a heart attack in the U.S. each year, resulting in about 130,000 deaths.[x] Nearly 800,000 people have a stroke annually, making it the fourth leading cause of death and a leading cause of serious long-term disability.[xi] Atrial fibrillation is the most common arrhythmia, affecting over 2 million Americans; it causes substantial morbidity and costs billions of dollars for treatment each year.[xii] In addition, heart failure leads to approximately 200,000 deaths annually, as well as high treatment costs. [xiii]

Acute Cardiovascular Conditions

When the episode of care is adapted for acute conditions, the population at risk phase remains and is followed by the acute phase, the post-acute/rehabilitation phase, and the secondary prevention phase. Figure 2 below represents the patient-focused episode of care for acute cardiovascular conditions.

Figure 2. Patient-Focused Episode of Care for Acute Cardiovascular Conditions



During the acute phase, the highest leverage opportunities are those outcomes associated with diagnosis, procedures, and medication. In general, MAP preferred process measures that assess aspects later in the trajectory of care in settings that offer a broad range of services (e.g., median time to PCI). However, patients may present with AMI in settings that do not provide a full range of services. In these settings, process measures assessing intermediate steps (i.e., median time to ECG) may enhance accountability. As such, MAP recognizes that ideally the outcome should be measured, but the family should also include important structure and process measures to hold the entire system accountable.

In the post-acute phase, MAP emphasized the need for patient-reported outcome measures related to rehabilitation services and access to rehabilitation services. Care coordination is also important to successful rehabilitation services, given the transitions between acute care and rehabilitation care settings (see page 17 for Care Coordination Family of Measures). For rehabilitation-specific measures, many existing measures assess ordering rehabilitation services without determining the outcomes of those services or even if the services were received. Other existing measures have limitations as they represent specific functional status measures (e.g., swallowing, writing) that may not be broadly applicable to many individuals with any one condition. Finally, in the secondary prevention phase, MAP emphasized the need to assess medication management, focusing on persistence of medications over time (i.e., number of days the patient is taking the medication), rather than on fill rates or on clinician ordering of medications just in the acute care setting or at the time of discharge. Measures that assess medication possession ratios and proportion of days covered are currently available, but MAP preferred measures that assess whether patients are actually taking their prescribed medications.

MAP identified measures to address the high level opportunities for cardiovascular conditions—diagnostics, procedures, complications, rehabilitation and medications. For ischemic heart disease, MAP selected measures that address timing to procedures to ECG (NQF #0289, #0696), medication management and persistence (NQF #0068, #0066, #0070, #0075), and referral to rehabilitation (NQF #0642). MAP also selected a measure related to complications for ischemic heart disease (NQF #0709). For stroke/TIA MAP selected measures assessing diagnostics (NQF #0661), medication management (NQF #0437, #0241), and rehabilitations assessment (NQF #0441). Across both stroke and ischemic heart disease, gaps include obtaining rehabilitations services, outcomes related to rehabilitation, medication persistence and medication persistence. Additionally, MAP noted the need for measures assessing the appropriateness of CABG and PCI; while measures assessing overuse of imaging exist, a composite is needed.

Table 3. Acute Cardiovascular Conditions Measures Selected for Family

NQF # and Status	Measure	MAP Findings
Ischemic Heart Disease		
0289 Endorsed	Median Time to ECG	This an intermediate process measure and should be used in facilities that do not offer PCI; facilities offering PCI should report NQF #0163.
0163 Endorsed	Primary PCI received within 90 minutes of Hospital Arrival	This measure is preferred to NQF #0289 (median time to ECG) for facilities offering PCI, as it assesses processes more closely linked with outcomes.
0669 Endorsed	Cardiac Imaging for Preoperative Risk Assessment for Non-Cardiac Low-Risk Surgery	
0670 Endorsed	Cardiac stress imaging not meeting appropriate use criteria: Preoperative evaluation in low risk surgery patients	
0671 Endorsed	Cardiac stress imaging not meeting appropriate use criteria: Routine testing after percutaneous coronary intervention (PCI)	
0672 Endorsed	Cardiac stress imaging not meeting appropriate use criteria: Testing in asymptomatic, low risk patients	
0355 Endorsed	Bilateral Cardiac Catheterization Rate (IQI 25)	
0696 Endorsed	The STS CABG Composite Score	
0287 Endorsed 0288 Endorsed	Median time to Fibrinolysis Fibrinolytic Therapy Received within 30 Min of ED Arrival	
0068 Endorsed	IVD: use of Aspirin or another antithrombotic	
0066 Endorsed	Chronic Stable Coronary Artery Disease:	

	ACE Inhibitor or ARB Therapy--Diabetes or Left Ventricular Systolic Dysfunction (LVEF <40%)	
NQF # and Status	**Measure**	**MAP Findings**
Ischemic Heart Disease		
0070 Endorsed	Chronic Stable Coronary Artery Disease: Beta-Blocker Therapy--Prior Myocardial Infarction (MI) or Left Ventricular Systolic Dysfunction (LVEF <40%)	
0075 Endorsed	IVD: Complete lipid profile and LDL control <100	
0642 Endorsed	Cardiac Rehabilitation Patient Referral From an Inpatient Setting	MAP noted a prominent measure gap in patient-reported outcomes measures for rehabilitation. While measure #0642 focuses on referrals, MAP recognizes an opportunity for increased rates of referral for cardiac conditions
0709 Endorsed	Proportion of patients with a chronic condition that have a potentially avoidable complication during a calendar year.	Explore expanding the denominator population to include individuals over 65. Consider how to provide data stratified by condition.
Stroke		
0661 Endorsed	OP–23: ED–Head CT Scan Results for Acute Ischemic Stroke or Hemorrhagic Stroke who Received Head CT Scan Interpretation Within 45 minutes of Arrival.	
0437 Endorsed	Stroke and Stroke Rehabilitation: Thrombolytic Therapy	
0241 Endorsed	Stroke and Stroke Rehabilitation: Anticoagulant Therapy Prescribed for Atrial Fibrillation at Discharge	
0441 Endorsed	Assessed for Rehabilitation	MAP noted a prominent measure gap in patient-reported outcomes measures for rehabilitation; however, MAP recognizes the importance of the intermediate step to determine if rehabilitation services are needed.
GAPS		
Diagnostics/Procedures	• Composite measure assessing appropriateness of all cardiac imaging. The composite should be able to be stratified by procedure for quality improvement purposes • Appropriateness of CABG and PCI at the provider and system levels of analysis	
Rehabilitation	• Patient-reported outcomes related to rehabilitation, assessed at the facility,	

	system, and community levels of analysis
Medication Persistence	• Medication management measures that focus on persistence of medications (patients taking medications) for secondary prevention ○ ACE/ARB, beta blocker, statin persistence for ischemic heart disease ○ Anticoagulants, statins, and hypertensive medication for stroke

Chronic Cardiovascular Conditions

MAP considered measurement opportunities for the evaluation and ongoing management phase and follow-up care phase on the episode of care. Within the evaluation and initial management phase of care, the highest-leverage opportunities focus on identifying patient preferences and care coordination; however, MAP will address these topics in other families of measures that cut across diseases (see page 17 for care coordination family of measures). For the follow-up care phase, MAP emphasized the need for medication management measures that focus on the persistence of medications, rather than ordering or prescribing medications. Several aspects of medication management have been assessed for a long time and, when the measure is "topped out," it no longer represents a significant opportunity for improvement. MAP identified measures to address some aspects of medication management (NQF #1525, #0081, 0083), noting that other aspects of medication management (i.e., persistence of ACE/ARBs, beta blockers) remain gaps. Additionally, MAP noted the need for measures addressing early identification of decompensated heart failure and assessment of functional status.

Table 4. Chronic Cardiovascular Condition Measures Selected for Family

NQF # and Status	Measure	MAP Findings
Atrial Fibrillation		
1525 Endorsed	Chronic Anticoagulation Therapy	
Heart Failure		
0081 Endorsed	Heart Failure (HF): Angiotensin-Converting Enzyme (ACE) Inhibitor or Angiotensin Receptor Blocker (ARB) Therapy for Left Ventricular Systolic Dysfunction (LVSD)	While MAP emphasizes measures assessing persistence of medications, there is variation in prescribing ACE/ARBs across providers.
0083 Endorsed	Heart Failure : Beta-blocker therapy for Left Ventricular Systolic Dysfunction	
GAPS		
Functional Status	• Assessment of functional status at all levels of analysis and settings	
Medications	• Medication management measures the focus on persistence of medications (patients taking medications) as part of follow-up care ○ ACE/ARB , beta blockers	
Diagnostics	• Early identification of heart failure decompensation	

Mortality

Recognizing that mortality indicators are meaningful outcome measures for providers and consumers, MAP included measures of mortality in the cardiovascular family of measures. MAP preferred a 30-day period to extend the window of accountability beyond acute hospitalization. Similarly, MAP preferred an all-cause mortality rate to capture the multiple

factors that can contribute to death. For example, an individual who dies of heart failure may have multiple factors contributing to death, of which heart failure is only one. While mortality measures exclude patients who are receiving the Medicare hospice benefit, MAP notes that mortality measures also need to account for patients receiving palliative care.

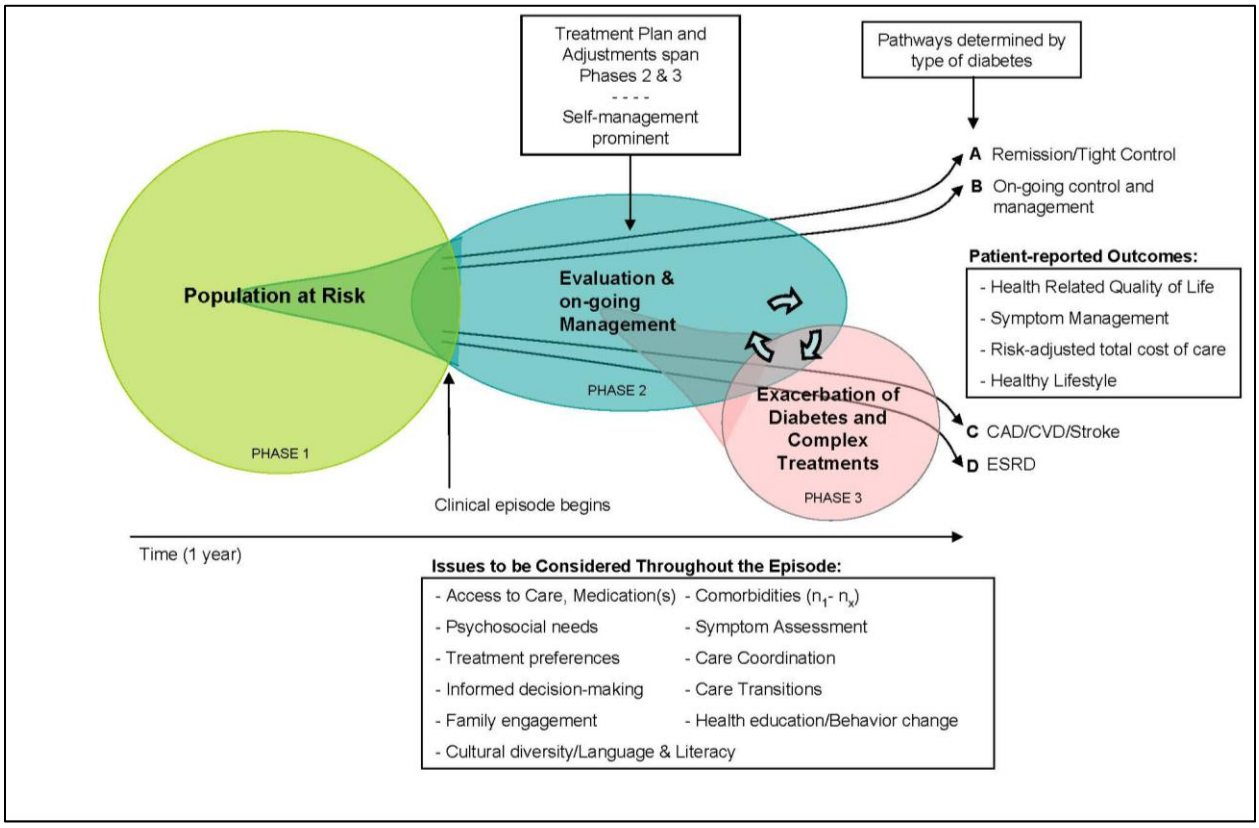
Table 5. Cardiovascular Conditions Mortality Measures Selected for Family

NQF # and Status	Measure	MAP Findings
0119 Endorsed (part of 0696 composite)	Risk-Adjusted Operative Mortality for CABG	
0122 Endorsed	Risk-Adjusted Operative Mortality MV Replacement + CABG Surgery	
0230 Endorsed	Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization for patients 18 and older	
0535 Endorsed	30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock	
0536 Endorsed	This measure estimates hospital risk-standardized 30-day all-cause mortality rate following percutaneous coronary intervention (PCI) in patients who are 18 years of age or older with STEMI or cardiogenic shock at the time of procedure. The measure uses clinical data available in the National Cardiovascular Data Registry (NCDR) CathPCI Registry for risk adjustment. For the purpose of development, the measure cohort was derived in a Medicare fee-for-service (FFS) population of patients 65 years of age or older with a PCI.	
0229 Endorsed	Heart failure (HF) 30-day mortality rate	

Diabetes

Diabetes is the seventh leading cause of death in the U.S., and leads to significant morbidity and costs. It is estimated that about 8% of the U.S. population has diabetes.[xiv] The diabetes adaptation of the episode of care model begins with the population at risk, followed by the evaluation and on-going management of care phase, and then the exacerbation of diabetes and complex treatments phase. Figure 3 below represents the patient-focused episode of care for diabetes.

Figure 3. Patient-Focused Episode of Care for Diabetes



Diabetes care requires significant self-management. MAP noted the need for good measures of patient and family engagement for assessing diabetes care, but preferred broadly-applicable measures of engagement, rather than condition-specific measures for diabetes only. MAP will be identifying a patient and family engagement family of measures in its next phase of work.

MAP identified high-leverage improvement opportunities across the episode of care for diabetes. Within the evaluation and ongoing-management phase, implementation of evidence-based guidelines for glycemic control, blood pressure control, and lipid control can lead to incremental improvements and reduction in the risk of complications. Within the exacerbation of diabetes and complex treatment phase, ongoing evaluation and management of dental health, eye health, as well as prevention of peripheral neuropathy and nephropathy, are opportunities for measurement. MAP noted that focusing on upstream evaluation and ongoing management can prevent downstream complications. Accordingly, to identify a parsimonious set of measures, MAP emphasized individual measures of evaluation and on-going management rather than individual measures assessing management of exacerbations of diabetes and complex treatments. Issues related to the exacerbation of diabetes and complex treatments could be included in a composite measure that assesses whether diabetes care is comprehensive. Accordingly, MAP identified measures to address

glycemic control and lipid control (NQF #0575, #0064), noting that upstream measures of diabetes management are more suitable for the family of measures than measures of downstream sequelae of diabetes.

When identifying diabetes composite measures to be included in the family, MAP determined that both available composite measures are valuable and reflect two different approaches to measurement. One composite combines the rates of its individual components into an average score, while the other composite uses all-or-none scoring. MAP noted that attribution and program purpose should be considered when incorporating these composites into programs. A phasing strategy could be applied such that composites using average scoring could be implemented first, and then, as performance improves, composites using all-or-nothing scoring could be implemented to raise the bar.

Table 6. Diabetes Measures Selected for Family

NQF # and Status	Measure	MAP Findings
0575 Endorsed	Comprehensive Diabetes Care: HbA1c control (<8.0%)	
0064 Endorsed	Diabetes Measure Pair: A Lipid management: low density lipoprotein cholesterol (LDL-C) <130, B Lipid management: LDL-C <100	MAP notes that forthcoming NHLBH guidelines could change the LDL targets. Adjusting measures to align with new guidelines will be addressed through the NQF-endorsement process.
Composites		
0729 Endorsed	Optimal Diabetes Care	MAP suggests that both diabetes composites consider addressing BMI.
0731 Endorsed	Comprehensive Diabetes Care	
GAPS		
Glycemic Control	• Measures addressing glycemic control for complex patients (e.g. geriatric population, multiple chronic conditions) at the clinician, facility and system levels of analysis • Pediatric glycemic control • Measures addressing glycemic control at the facility level	
Lipid Control	• Measures addressing lipid control at the facility level of analysis	
Sequelae of exacerbations	• Measures addressing sequelae of diabetes exacerbations at all levels of analyses	

Summary of the Prevention and Treatment Family of Measures

The tables below summarize the prevention and treatment family of measures along the patient-focused episode of care. As the primary prevention measures apply to both cardiovascular conditions and diabetes care, the measures are repeated in each table.

The bolded high leverage opportunities represent areas where the task force has identified measures to populate the family; non-bolded entries are considered gaps.

Acute Cardiovascular Conditions Family of Measures

	Primary Prevention		Acute Phase		Post-Acute/Rehab Phase		Secondary Prevention
	Outpatient	Inpatient	Outpatient	Inpatient	Outpatient	Inpatient	Outpatient
Clinician Group/ Individual	• **Smoking Cessation/ Tobacco Use (0028, 1406);** • **Lifestyle Management – Weight/Obesity (0024, 0421)** • **Blood Pressure Control (0018)** • Lipid Control • Lifestyle Management – Diet/nutrition • Lifestyle Management – Activity/Exercise • Cardiometabolic risk	• Smoking Cessation/ Tobacco Use	• **IHD Complications (0709)**	• **IHD Procedures – CABG (0696)** • **Stroke Anticoag for afib at d/c (0241)**	• **IHD Complications (0709)**	• **IHD Rehab (0642)**	• **IHD Medications – Aspirin (0068)** • **IHD Medications – ACE/ARB (0066)** • **IHD Medications – Beta Blocker (0070)** • **IHD Secondary Prevention – Lipids (0075)**

	Primary Prevention		Acute Phase		Post-Acute/Rehab Phase		Secondary Prevention
	Outpatient	Inpatient	Outpatient	Inpatient	Outpatient	Inpatient	Outpatient
	• **Resource Use (1598 and1604)**						
Provider/ Facility	• Smoking Cessation/ Tobacco Use • Lipid Control • Lifestyle Management – Weight/Obesity • Lifestyle Management – Diet/nutrition • Lifestyle Management – Activity/Exercise • Cardiometabolic risk	• **Smoking Cessation/ Tobacco Use (1651, 1654)**	• **IHD Diagnostic - ECG (0289)** • **IHD Medications - fibrinolysis (0287/ 0288)** • **Stroke Diagnostic - CT (0661)** • **IHD** *Cardiac imaging (NQF 0669, 0670, 0671, 0672)*	• **IHD Diagnostic - ECG (0289)** • **IHD Procedures - PCI(0163)** • **IHD Procedures - CABG (0696)** • **IHD Medications - fibrinolysis (0287/0288)** • **IHD** *Bilateral cardiac cath (0355)* • **IHD** Cardiac imaging composite • **IHD** Appropriateness for CABG and non-emergent PCI • **Stroke Diagnostic - CT (0661)**	• **IHD** Outcomes related to rehab • **Stroke** Anticoagulants, statins, anti-hypertensive • **Stroke** Obtaining rehab services • **Stroke** Outcomes related to rehab (includes functional status) • **Mortality – IHD AMI (0230)** • **Mortality – IHD PCI (535)** • **Mortality – IHD PCI (536)** • **Mortality – HF (229)**	• **IHD** Outcomes related to rehab • **Stroke Rehab – assessment (0441)** • **Stroke** Obtaining rehab services • **Stroke** Outcomes related to rehab (includes functional status) • **Mortality – IHD AMI (0230)** • **Mortality – IHD PCI (535)** **Mortality – IHD PCI (536)** • **Mortality – HF (229)**	• **Stroke** Anticoagulants, statins, anti-hypertensive • **Stroke** High risk medication management

	Primary Prevention		Acute Phase		Post-Acute/Rehab Phase		Secondary Prevention
	Outpatient	Inpatient	Outpatient	Inpatient	Outpatient	Inpatient	Outpatient
				• **Stroke Medications - Thrombolytic (0437)** • **Mortality – IHD CABG (0119)** • **Mortality – IHD CABG/MV (0122)**			
System	• **Lifestyle Management – Weight/Obesity (0024)** • **Blood Pressure Control (0018)** • Smoking Cessation/ Tobacco Use • Lipid Control • Blood pressure Control • screening • Lifestyle Management – Diet/nutrition • Lifestyle Management – Activity/Exercise • Cardiometabolic risk		• **IHD Complications (0709)** • IHD Cardiac imaging composite • IHD Global resource measures • IHD Appropriateness for CABG and non-emergent PCI • **Stroke Medications -Thrombolytic (0437)**		• **IHD Complications (0709)** • **IHD Rehab (0642)** • IHD outcomes related to rehab • **Stroke** Anticoagulants, statins, anti-hypertensive • **Stroke** obtaining rehab services		• **IHD Secondary Prevention – Lipids (0075)** • **Stroke** Anticoagulants, statins, anti-hypertensive • **IHD** Medications--ACE/ARB, beta blocker, statin persistence
	• **Resource Use (1598 and1604)**						

	Primary Prevention		Acute Phase		Post-Acute/Rehab Phase		Secondary Prevention
	Outpatient	Inpatient	Outpatient	Inpatient	Outpatient	Inpatient	Outpatient
Community	• **Smoking Cessation/Tobacco Use (1406, 1651, 1654);** • **Lifestyle Management – Weight/Obesity (0024, 0421)** • **Blood Pressure Control (0018)** • Cardiometabolic risk • Lipid Control • Lifestyle Management – Diet/nutrition • Lifestyle Management – Activity/Exercise		• **IHD Diagnostic – ECG (0289)** • **IHD Procedures – PCI (0163)** • **IHD Procedures – CABG (0696)** • **IHD Medications – Fibrinolysis (0287/ 0288)** • **IHD Complications (0709)** • **IHD** *Cardiac imaging (0669)* • **Stroke Medications -Thrombolytic (0437)** • **Mortality – IHD – CABG (0119)** • **Mortality – IHD CABG/MV (0122)**		• **IHD Avoidable complication (0709)** • **IHD** Outcomes related to rehab • **Stroke Rehab – assessment (0441)** • **Stroke** Anticoagulants, statins, anti-hypertensive		• **Stroke** Anticoagulants, statins, anti-hypertensive • **IHD** Medications-- ACE/ARB, beta blocker, statin persistence
	• **Resource Use (1598 and1604)**						

Table 8. Chronic Cardiovascular Conditions Family of Measures

	Primary Prevention		Evaluation and Initial Management		Follow-Up Care
	Outpatient	Inpatient	Outpatient	Inpatient	Outpatient
Clinician Group/ Individual	• **Smoking Cessation/ Tobacco Use (0028, 1406);** • **Lifestyle Management – Weight/Obesity (0024, 0421)** • **Blood Pressure Control (0018)**	• Smoking Cessation/ Tobacco Use	• **HF** Functional status	• **HF** Functional status	• **Afib Medications – anti-coagulation (1525)** • **HF Medications – ACE/ARB(0081)** • **HF Medications – Beta -blocker (0083)** • **HF** Medications--

	Primary Prevention		Evaluation and Initial Management		Follow-Up Care
	Outpatient	Inpatient	Outpatient	Inpatient	Outpatient
	• Lipid Control • Lifestyle Management –Diet/nutrition • Lifestyle Management – Activity/Exercise • Cardiometabolic risk				ACE/ARB, beta blocker persistence
	• **Resource Use (1598 and 1604)**				
Provider/ Facility	• Smoking Cessation/ Tobacco Use • Lipid Control • Lifestyle Management – Weight/Obesity • Lifestyle Management –Diet/nutrition • Lifestyle Management – Activity/Exercise • Cardiometabolic risk	• **Smoking Cessation/ Tobacco Use (1651, 1654)**	• **HF** Functional status • **Mortality – HF (229)**	• **HF** Functional status • **Mortality – HF (229)**	• **HF Medications – Beta -blocker (0083)** • **HF** Medications-- ACE/ARB, beta blocker persistence • **HF** Early identification of decompensated HF
System	• **Lifestyle Management – Weight/Obesity (0024)** • **Blood Pressure Control (0018)** • Smoking Cessation/ Tobacco Use • Lipid Control • Blood pressure Control • screening • Lifestyle Management –Diet/nutrition • Lifestyle Management – Activity/Exercise • Cardiometabolic risk		• Mortality • **HF** Functional status		• **HF** Medications-- ACE/ARB, beta blocker persistence
	• **Resource Use (1598 and 1604)**				

	Primary Prevention		Evaluation and Initial Management		Follow-Up Care
	Outpatient	Inpatient	Outpatient	Inpatient	Outpatient
Community	• **Smoking Cessation/Tobacco Use (1406, 1651, 1654);** • **Lifestyle Management – Weight/Obesity (0024, 0421)** • **Blood Pressure Control (0018)** • Cardiometabolic risk • Lipid Control • Lifestyle Management –Diet/nutrition • Lifestyle Management – Activity/Exercise		• Mortality • **HF** Functional status		• **HF** Medications--ACE/ARB, beta blocker persistence
	• **Resource Use (1598 and 1604)**				

Table 9. Diabetes Family of Measures

	Primary Prevention of CV and DM		Evaluation & ongoing management		Exacerbation of Diabetes and Complex Treatments	
	Outpatient	Inpatient	Outpatient	Inpatient	Outpatient	Inpatient
Clinician Group/ Individual	• **Smoking Cessation/ Tobacco Use (0028, 1406);** • **Lifestyle Management – Weight/Obesity (0024, 0421)** • **Blood Pressure Control (0018)** • Lipid Control • Lifestyle	• Smoking Cessation/ Tobacco Use	• **Glycemic control/ HbA1c (0575);** • **Lipid Control (0064)** • **Composite (0729 and 0731)** • Glycemic control for complex patients • Pediatric glycemic control • Lifestyle	• No high-leverage opportunities for measurement	• Sequelae of diabetes exacerbations	• No high-leverage opportunities for measurement

	Primary Prevention of CV and DM		Evaluation & ongoing management		Exacerbation of Diabetes and Complex Treatments	
	Outpatient	Inpatient	Outpatient	Inpatient	Outpatient	Inpatient
	Management – Diet/nutrition • Lifestyle Management – Activity/Exercise • Cardiometabolic risk		Management – Diet/nutrition • Lifestyle Management – Activity/Exercise • Blood Pressure Control			
	• Resource Use (1598 and 1604)					
Provider/ Facility	• Smoking Cessation/ Tobacco Use • Lipid Control • Lifestyle Management – Weight/Obesity • Lifestyle Management – Diet/nutrition • Lifestyle Management – Activity/Exercise • Cardiometabolic risk	• **Smoking Cessation/ Tobacco Use (1651, 1654)**	• Glycemic control/ HbA1c • Glycemic control for complex patients • Pediatric glycemic control • Lipid Control • Lifestyle Management – Diet/nutrition • Lifestyle Management – Activity/Exercise • Blood Pressure Control	• No high-leverage opportunities for measurement	• Sequelae of diabetes exacerbations	• No high-leverage opportunities for measurement
	• Resource Use (1598 and 1604)					

	Primary Prevention of CV and DM		Evaluation & ongoing management		Exacerbation of Diabetes and Complex Treatments	
	Outpatient	Inpatient	Outpatient	Inpatient	Outpatient	Inpatient
System	• **Lifestyle Management – Weight/Obesity (0024)** • **Blood Pressure Control (0018)** • Smoking Cessation/ Tobacco Use • Lipid Control • Blood pressure Control • screening • Lifestyle Management –Diet/nutrition • Lifestyle Management – Activity/Exercise • Cardiometabolic risk		• **Composite (0729 and 0731)** • **Glycemic control/ HbA1c (0575)** • **Lipid Control (0064)** • Glycemic control for complex patients • Pediatric glycemic control • Lipid Control • Lifestyle Management –Diet/nutrition • Lifestyle Management – Activity/Exercise • Blood Pressure Control		• Sequelae of diabetes exacerbations	• No high-leverage opportunities for measurement
	• Resource Use (1598 and 1604)					
Community	• **Smoking Cessation/Tobacco Use (1406, 1651, 1654);** • **Lifestyle Management – Weight/Obesity (0024, 0421)** • **Blood Pressure Control (0018)** • Cardiometabolic risk • Lipid Control • Lifestyle Management –Diet/nutrition • Lifestyle Management – Activity/Exercise		• **Glycemic control/ HbA1c (0575);** • **Lipid Control (0064)** • Lifestyle Management –Diet/nutrition • Lifestyle Management – Activity/Exercise • Blood Pressure Control		• Sequelae of diabetes exacerbations	
	• Resource Use (1598 and 1604)					

[i] National Quality Forum (NQF), *Measurement Framework: Evaluating Efficiency Across Patient-Focused Episodes of Care*, Washington, DC: NQF; 2009. Available at http://www.qualityforum.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=25912. Last accessed August 2012.
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Gap-Filling Pathways: Defining MAP's Role and Next Steps

Gaps in performance measurement are of great interest and concern to those who receive, purchase, and provide care. Without a coordinated approach among measure developers, funders, program implementers, and other stakeholders, mismatches will exist between what is desired for measure development and what is ultimately generated. Partnerships such as MAP and NPP are well-positioned to shed light on measure development needs by bringing stakeholders together to focus on the highest leverage areas for measurement under the NQS.

MAP Gap-Filling Strategy

MAP recently put forth its three-year strategic plan, that includes tactics for addressing measure gaps, where MAP serves as a catalyzing agent for gap-filling through systematic identification and categorization of measure gaps along the measure lifecycle (see Figure 1). Successful development and implementation of measures follows a multi-step process: the measure lifecycle is initiated by identification of performance gaps and measure ideas to fill those gaps; moves forward with the development, testing, and endorsement of potential measures; and eventually completes with implementation and evaluation of measure impact.

By pinpointing where measure development is stalled along the steps of the measure lifecycle, barriers and potential solutions may become more evident. For example, where a gap requiring *de novo* measure development is identified, MAP will suggest measure ideas. Where an existing measure should be expanded to additional populations and settings, MAP will signal development and testing gaps. Where an implementation gap exists for an endorsed measure, MAP will define a measure implementation phasing strategy.

Figure 1. Measure Lifecycle Diagram

Five Major Themes in Measure Gaps

Throughout its first and second years of work, MAP has generated detailed lists of measure gaps within its coordination strategy reports for clinician performance measurement programs, post-acute and long-term care settings, PPS-exempt cancer hospitals, hospice and palliative care, and the dual-eligible beneficiary population. During its first annual pre-rulemaking process, MAP also enumerated important measure gaps for nearly twenty specific federal public reporting and performance-based payment programs. Common themes in measure gaps have emerged from MAP's various analyses, and five of the most frequently reiterated types of measure gaps are discussed below.

Two of the five major themes in gap identification are the desire for more **person-centered measurement** and assessment of effective **bi-directional communication** between patients and their providers and care teams. MAP has prioritized the need for measures that focus on function, goal attainment, and patient and family engagement. Person-centered measures should also be oriented toward integrated models of health care delivery, helping to move beyond the existing setting-based silos of care and measurement. To uphold a person-centered approach to health care, MAP has also emphasized that communication must be two-way between patients and their providers and care teams. MAP has focused on moving away from "low-bar" process measures regarding patient-provider communication, pushing toward the development of measures that assess whether patients have been actively involved within the care planning process and whether shared decision-making has occurred.

The third important gap area centers on **outcome measures**, where MAP's specific gap examples have included patient-reported outcomes of functional status, measures capturing the occurrence of injury due to adverse drug events, calculation of global cardiometabolic risk, and assessment of cancer and stage-specific survival rates. For example, MAP's evaluation of existing process and structural measures of medication reconciliation, lab monitoring for chronic medications, and electronic prescribing, have led to an urgent call for outcome measures related to adverse drug events (ADE). These measures should capture injury or mortality from ADEs across all care settings, including events of wrong medication, wrong dosage, drug-allergy, and contraindicated drug-drug interactions. While MAP consistently calls out gaps in outcome measures and looks toward the promise of HIT in the collection and reporting of outcomes data, there has also been an acknowledgement of the continuing need for structural measures that may be useful until EHR systems become more widespread.

A fourth theme for measure gaps relates to measures of **affordability**. MAP members repeatedly noted the limited number of available NQF-endorsed measures that focus on cost of care, and more importantly, the lack of measures assessing efficiency (i.e., the quality of services provided for each health care dollar spent). MAP has indicated that measures of resource use and total cost are needed to evaluate practice patterns, must be linked to measures of quality, and should aspire to be more global in accounting for a patient's trajectory of care across settings and conditions. As such, efficiency of care measures—measures where cost and quality are considered in relation to one another—remain a major gap area.

The fifth major gap area pertains to suggested **modifications** to measures that appear too narrow in terms of the population, setting, or some other component. MAP has previously noted that measures related to care transitions are too often focused on the inpatient hospital setting and should consider transitions to and from nursing homes, rehabilitation facilities, and home care. MAP has also suggested modifications to the denominator populations for various performance measures. Measures related to care planning and advanced directives are relevant to many, if not all, patient populations. For example, certain existing care planning measures limited solely to cancer patients could be expanded to apply to patients with other conditions. MAP also raised concern about selected measures that were restricted to certain age groups. For instance, measures focusing on avoidable admissions and readmissions do not include pediatric populations. Rather than proposing that all of these be labeled as gaps necessitating *de novo* measure development, recommendations from MAP have pointed out

opportunities to enhance the existing measures by expanding their specifications. Modified measures may need reconsideration under the NQF endorsement and maintenance process, depending on the extent of the change.

Illustrative Examples of Person-Centered Care and Bi-Directional Communication Measure Gaps

As part of MAP's second-year activities, a series of task force meetings were convened to develop four families of measures for safety, care coordination, diabetes, and cardiovascular disease. A small sample of measure developers was invited to participate in these meetings to share their reactions to the measure gaps identified by MAP, and to inform any efforts underway to address the gap areas.

To better illustrate the type of gap identification and prioritization efforts that MAP has engaged in thus far, specific measure gap examples and measure developer feedback are reviewed below. These examples relate to person-centered care and bi-directional communication, and address the NQS priorities for ensuring that individuals and their families are engaged as care partners, and promoting effective communication and coordination of care. While some existing performance measures have begun to address these priority areas, MAP has noted a significant need for new and better measures to cover the topics more thoroughly.

One example is the assessment of care planning. Prior work by MAP had highlighted that current performance measures do not adequately capture person-centered care planning and implementation, particularly in the dual-eligible beneficiary population. This issue was reaffirmed at the task force meetings. Since an effective care plan needs to incorporate patient preferences, performance measures related to care planning need to assess this critical aspect. Patient involvement should also be evaluated at each stage of care delivery.

Person-centered care near the end of life is another area where MAP has identified measure gaps, with particular focus on the role of shared decision-making. The MAP Performance Measurement Coordination Strategy for Hospice and Palliative Care previously emphasized this point. Individuals and their families must be given the opportunity to make informed choices about the type of care received during this difficult phase of life. Not only is it critical to measure the initial timeliness of making individuals aware of their options, but also the degree to which care continues to be informed by the patient's preferences across settings and over time.

An additional example is the need for better measures about medication reconciliation. A number of MAP members highlighted that measures should reflect patient understanding of medication information, rather than simply using a "checkbox" approach to indicate that medication information was provided to a patient. Prescriptions can involve substantial amounts of associated information, such as the purpose of the medication dosage, storage, special precautions, and potential side effects. Understanding all of this information can be challenging for any individual, let alone one who may be cognitively impaired or a non-native English speaker. Current performance measures that accurately assess the level of bi-directional communication about medications are lacking.

More broadly, MAP has frequently identified gaps in performance measures that do not adequately account for potential disparities and cultural sensitivity. Race, ethnicity, gender, language, religion, and other such factors may profoundly affect a patient's health and health care. In particular, MAP members noted that measures should account for these characteristics when they can influence the ability of an individual to receive appropriate and timely care.

Barriers to Measure Gap-Filling

Despite increasing clarity on where high-priority measurement gaps exist, a variety of barriers stand in the way of addressing these gaps. Measure developers have indicated that the "low hanging fruit" is gone, leaving the most challenging measurement areas to be tackled. Some of the principal barriers include:

- **Funding streams** for measure development are limited. Creating new measures can be a lengthy and costly endeavor. One to two years of funding is often required to simply develop and test a measure, as well as additional time for endorsement and resources for maintenance. Further, the continued standardization of performance measures may diminish the business case for private sector entities to invest in developing their own measures.
- **Lack of evidence** exists to support valid measure design on certain concepts. In particular, little or no evidence may be available for developing measures in new or evolving domains. An example would be attempting to measure the degree of integration between a health system and long-term supports and services for an individual. This is even more challenging for sub-populations with greater needs and weaker existing support networks.
- **Data required for implementation** of innovative measures is not readily available. The need for patient-reported data is a prime example. Assessing the effectiveness of bi-directional communication is difficult without access to the patient's input. However, current systems are frequently not set up to efficiently collect, aggregate, and share patient-reported data.
- **Attribution** within performance measures remains a challenge. This is particularly an issue for the domain of care coordination, where identifying which individual or group is responsible for breakdowns in the care process is problematic. Further, targeted development funds may inadvertently contribute to "siloed" measurement and lack of shared accountability, as requests for measure development in the past have often been focused on use in setting-specific programs.

Measure developers expressed many shared viewpoints with MAP about measurement gaps. For example, developers agreed that there is a need to "raise the bar" on the standards set by care coordination measures. NCQA has made care coordination and safety in the ambulatory care setting a strategic priority, and this includes leveraging EHR usage across institutions. ONC has been actively working on development of eMeasures that focus on care coordination.

Data limitations are a key barrier for measures developers. ONC suggested a future scenario where patients (rather than health care personnel) directly enter acknowledgment of individual care plans in an EHR, which could establish a reservoir of reliable patient-reported data in an organized system. This data could then be utilized for eMeasures. EHRs can also serve as a means to collect more data on

individual demographics and patient attributes. With access to patient race, ethnicity, gender, primary language, and other similar data, measures can be designed to stratify on these characteristics to detect disparities.

Measure developers stressed the continued need for greater specificity and prioritization of unfilled gaps. Clear and mutual agreement on definitions, such as what truly constitutes a "shared" care plan, is essential. MAP has evolved in describing measurement gaps in greater detail, such as in the Final Report to HHS on Measuring Healthcare Quality for the Dual Eligible Beneficiary Population, but still does not consistently get to the level of specification that developers need to move ahead most expeditiously. Perhaps more importantly, prioritizing which of these gaps is most critical, yet feasible to address in the near-term, would also expedite gap-filling.

The various measure gap examples discussed above, along with some of the barriers and potential future directions, are summarized in Table 1 below.

Table 1 - Gaps in Measures That Are Person-Centered and Focused on Bi-Directional Communication

Gap Example	Where Gap Was Identified	Barriers to Gap-Filling	Potential Next Steps
Person-Centered End-of-Life Care *Lack of measures that adequately assess the degree to which patients and their families have been involved in making decisions about end-of-life preferences and care*	Pre-Rulemaking Report, Performance Measurement Coordination Strategy for Hospice and Palliative Care	<u>Evidence</u> *Research on the most effective practices may be lacking* <u>Data Sources</u> *Patient-reported data often not consistently collected or integrated* <u>Funding</u> *Incentives are limited for creating new measures to track patient involvement and understanding* <u>Attribution</u> *Challenging to attribute breakdowns in the*	Consider incorporating patient acknowledgment of a care plan directly through an EHR Leverage EHR use across institutions and actively develop eMeasures that focus on care coordination Prioritize and fund translation of validated survey instruments on patient-centered and coordinated care in to measures EHRs can be used to collect more granular data on race, ethnicity, language, gender, and other demographic
Coordination of Patient Preferences *Relatively few measures account for whether the care team is communicating with the patient at every stage of care planning and delivery, engaging in shared decision-making, and facilitating the timely transfer of patient-derived information*	Pre-Rulemaking Report, Care Coordination Family of Measures, Dual Eligible Beneficiaries Report		
Bi-Directional Communication *Measures do not sufficiently reflect provider receipt/use of patient feedback or patient understanding of information from the physician. For example, medication education measures often use a "checkbox" simply indicating that the patient*	Care Coordination Family of Measures, Safety Family of Measures, Dual Eligible Beneficiaries Report		

was provided the information		*care process within a coordinated care environment*	information, which can then be incorporated into measures
Disparities/Special Populations *Measures are not necessarily specified in ways to identify and report health care disparities or detect progress toward health equity*	Care Coordination Family of Measures, Dual Eligible Beneficiaries Report		

MAP's Role and Next Steps

Leadership is needed for establishing a well-funded, national measure development agenda to address priority measure gaps. MAP members have expressed frustration with the pace of measure development for important areas, such as care coordination and patient-reported outcomes, and are concerned that "business as usual" will not lead to timely availability of the performance measures needed. In discussing MAP's role in gap-filling pathways, members agree that MAP's responsibility includes the identification and prioritization of measure gaps, along with more specific suggestions on ideas that should be developed into measures.

While it is not MAP's role to set funding priorities, design business models, or make data available for measure development, MAP can clearly signal the highest priority gaps to measure developers, funders, and other stakeholders. MAP's work should be synergistic with other efforts to identify and prioritize measure gaps, including NQF's annual report on measure gaps, which includes interviews with measure developers and draws on findings from NQF measure endorsement, NPP, and MAP.

In summary, there are daunting challenges with the funding, data, and processes needed to develop measures in areas where gaps have been identified. However, MAP can play a significant role in making progress on gap-filling by: 1) identifying and categorizing measurement gaps; 2) prioritizing the gaps based on the expected value and relative feasibility of addressing them; and 3) providing specific ideas about what measures are needed to fill the gaps.

Appendix A

ROSTER FOR THE MAP COORDINATING COMMITTEE

CO-CHAIRS (VOTING)
George Isham, MD, MS
Elizabeth McGlynn, PhD, MPP

ORGANIZATIONAL MEMBERS (VOTING)	REPRESENTATIVES
AARP	Joyce Dubow, MUP
Academy of Managed Care Pharmacy	Marissa Schlaifer, RPh, MS
AdvaMed	Steven Brotman, MD, JD
AFL-CIO	Gerald Shea
America's Health Insurance Plans	Aparna Higgins, MA
American College of Physicians	David Baker, MD, MPH, FACP
American College of Surgeons	Frank Opelka, MD, FACS
American Hospital Association	Rhonda Anderson, RN, DNSc, FAAN
American Medical Association	Carl Sirio, MD
American Medical Group Association	Sam Lin, MD, PhD, MBA
American Nurses Association	Marla Weston, PhD, RN
Catalyst for Payment Reform	Suzanne Delbanco, PhD
Consumers Union	Doris Peter, PhD
Federation of American Hospitals	Chip N. Kahn
LeadingAge (formerly AAHSA)	Cheryl Phillips, MD, AGSF
Maine Health Management Coalition	Elizabeth Mitchell
National Association of Medicaid Directors	Foster Gesten, MD
National Partnership for Women and Families	Christine Bechtel, MA
Pacific Business Group on Health	William Kramer, MBA

EXPERTISE	INDIVIDUAL SUBJECT MATTER EXPERT MEMBERS (VOTING)
Child Health	Richard Antonelli, MD, MS
Population Health	Bobbie Berkowitz, PhD, RN, CNAA, FAAN
Disparities	Joseph Betancourt, MD, MPH
Rural Health	Ira Moscovice, PhD
Mental Health	Harold Pincus, MD
Post-Acute Care/ Home Health/ Hospice	Carol Raphael, MPA

Appendix A

FEDERAL GOVERNMENT MEMBERS (NON-VOTING, EX OFFICIO)	REPRESENTATIVES
Agency for Healthcare Research and Quality (AHRQ)	Nancy Wilson, MD, MPH
Centers for Disease Control and Prevention (CDC)	Chesley Richards, MD, MPH
Centers for Medicare & Medicaid Services (CMS)	Patrick Conway, MD, MSc
Health Resources and Services Administration (HRSA)	Ahmed Calvo, MD, MPH
Office of Personnel Management/FEHBP (OPM)	John O'Brien
Office of the National Coordinator for HIT (ONC)	Kevin Larsen, MD

ACCREDITATION/CERTIFICATION LIAISONS (NON-VOTING)	REPRESENTATIVES
American Board of Medical Specialties	Christine Cassel, MD
National Committee for Quality Assurance	Peggy O'Kane, MHS
The Joint Commission	Mark Chassin, MD, FACP, MPP, MPH

Appendix B

ROSTER FOR THE MAP SAFETY AND CARE COORDINATION TASK FORCE

CHAIR (VOTING)
Frank G. Opelka, MD, FACS

ORGANIZATIONAL MEMBERS (VOTING)	REPRESENTATIVES
Alliance of Dedicated Cancer Centers	Ronald Walters, MD, MBA, MHA, MS
American Hospital Association	Richard Umbdenstock
American Organization of Nurse Executives	Patricia Conway-Morana, RN
American Society of Health System Pharmacists	Shekhar Mehta, PharmD, MS
Blue Cross Blue Shield of Massachusetts	Jane Franke, RN, MHA, CPHQ
Building Services 32BJ Health Fund	Barbara Caress
Iowa Healthcare Collaborative	Lance Roberts, PhD
Memphis Business Group on Health	Cristie Upshaw Travis, MSHA
Mothers Against Medical Error	Helen Haskell, MA
National Association of Children's Hospitals and Related Institutions	Andrea Benin, MD
National Rural Health Association	Brock Slabach, MPH, FACHE
Pacific Business Group on Health	David Hopkins, PhD
Premier, Inc.	Richard Bankowitz, MD, MBA, FACP

EXPERTISE	INDIVIDUAL SUBJECT MATTER EXPERT MEMBERS (VOTING)
Patient Safety	Mitchell Levy, MD, FCCM, FCCP
Palliative Care	R. Sean Morrison, MD
State Policy	Dolores Mitchell
GE Healthcare	Dana Alexander
Patient Experience	Dale Shaller, MPA
Safety Net	Bruce Siegel, MD, MPH
Mental Health	Ann Marie Sullivan, MD
Payer	Rhonda Robinson Beale, MD
Payer	MaryAnne Lindeblad, BSN, MPH

PAYERS (VOTING)	REPRESENTATIVES
Aetna	Randall Krakauer, MD
America's Health Insurance Plans	Aparna Higgins, MA
CIGNA	Dick Salmon, MD, PhD
Humana	Thomas James III, MD
LA Care Health Plan	Laura Linebach, RN, BSN, MBA
National Association of Medicaid Directors	Foster Gesten, MD

Appendix B

PAYERS (VOTING)	REPRESENTATIVES
National Health Policy Group	Rich Bringewatt

PURCHASERS (VOTING)	REPRESENTATIVES
Catalyst for Payment Reform	Suzanne Delbanco, PhD
Pacific Business Group on Health	William Kramer, MBA
The Alliance	Cheryl DeMars, MSSW

FEDERAL GOVERNMENT MEMBERS (NON-VOTING, EX OFFICIO)	REPRESENTATIVES
Agency for Healthcare Research and Quality (AHRQ)	John Bott, MSSW, MBA
Centers for Disease Control and Prevention (CDC)	Chesley Richards, MD, MPH, FACP
Centers for Medicare & Medicaid Services (CMS)	Shaheen Halim, PhD, CPC-A
Office of the National Coordinator for HIT (ONC)	Kevin Larsen, MD
Veterans Health Administration (VHA)	Michael Kelley, MD
Health Resources and Services Administration (HRSA)	Ian Corbridge, MPH, RN
Office of Personnel Management/FEHBP (OPM)	John O'Brien

LIAISONS	
NPP (Safety)	Laura Cranston
NPP (Care Coordination)	Susan Frampton
CDP (Safety)	Bill Conway
CDP (Care Coordination)	Gerri Lamb

MAP COORDINATING COMMITTEE CO-CHAIRS (NON-VOTING, EX OFFICIO)
George J. Isham, MD, MS
Elizabeth A. McGlynn, PhD, MPP

Appendix C

ROSTER FOR THE MAP CARDIOVASCULAR AND DIABETES CARE TASK FORCE

CHAIR (VOTING)
Chris Cassel, MD

ORGANIZATIONAL MEMBERS (VOTING)	REPRESENTATIVES
Academy of Managed Care Pharmacy	Marissa Schlaifer, RPh, MS
Aetna	Randall Krakauer, MD
American Academy of Family Physicians	Bruce Bagley, MD
American Association for Retired Persons	Joyce Dubow, MUP
American College of Cardiology	Paul Casale, MD, FACC
American College of Emergency Physicians	Bruce Auerbach, MD, FACC
American Hospital Association	Rhonda Anderson, RN, DNSc, FAAN
American Medical Directors Association	David Polakoff, MD, MsC
American Medical Rehabilitation Providers Association	Suzanne Snyder, PT
Consumers' CHECKBOOK	Robert Krughoff, JD
Iowa Healthcare Collaborative	Lance Roberts, PhD
Minnesota Community Measurement	Beth Averbeck, MD
National Committee for Quality Assurance	Peggy O'Kane, MHS
Physician Consortium for Performance Improvement	Mark Metersky, MD
Premier, Inc.	Richard Bankowitz, MD, MBA, FACP
The Alliance	Amy Moyer

EXPERTISE	INDIVIDUAL SUBJECT MATTER EXPERT MEMBERS (VOTING)
Population Health	Eugene Nelson, MPH, DSc
Health IT/ Patient Reported Outcome Measures	James Walker, MD, FACP

FEDERAL GOVERNMENT MEMBERS (NON-VOTING, EX OFFICIO)	REPRESENTATIVES
Centers for Medicare & Medicaid Services (CMS)	Michael Rapp, MD, JD, FACEP
Health Resources and Service Administration (HRSA)	Ahmed Calvo, MD, MPH
Office of the National Coordinator for HIT (ONC)	Joshua Seidman, MD, PhD

LIAISONS (NON-VOTING, EX OFFICIO)	REPRESENTATIVES
Centers for Disease Control and Prevention (CDC)	Peter Briss, MD, MPH (NPP)
Centers for Disease Control and Prevention (CDC)	Mary George, MD, MSPH (CDP)

Appendix C

MAP COORDINATING COMMITTEE CO-CHAIRS (NON-VOTING, EX OFFICIO)
George J. Isham, MD, MS
Elizabeth A. McGlynn, PhD, MPP

Appendix D

High-Leverage Measurement Opportunities – Background Information

In order to facilitate assessment and prioritization of potential high-leverage measurement opportunities, the framework previously used by the Institute of Medicine (*Priority Areas for National Action: Transforming Health Care Quality*, 2003) for identifying priority areas in health care quality improvement was adopted:

- **Impact**—the extent of the burden— disability, mortality, and economic costs—imposed by a condition, including effects on patients, families, communities, and societies.
- **Improvability**—the extent of the gap between current practice and evidence-based best practice and the likelihood that the gap can be closed and conditions improved through change in an area; and the opportunity to achieve dramatic improvements in the six national quality aims identified in the Quality Chasm report (safety, effectiveness, patient-centeredness, timeliness, efficiency and equity).
- **Inclusiveness**—the relevance of an area to a broad range of individuals with regard to age, gender, socioeconomic status, and ethnicity/race (equity); the generalizability of associated quality improvement strategies to many types of conditions and illnesses across the spectrum of health care (representativeness); and the breadth of change effected through such strategies across a range of health care settings and providers (reach).

These three criteria - impact, improvability, and inclusiveness - were used as a structure for background information compiled about the various topics and subtopics of interest. This information was presented to MAP committee members to provide context for discussion on which issues were most important to address within each measure family. Preference for source data was given to government agencies and centers (e.g. CDC, CMS, AHRQ), though additional resources included peer-reviewed literature, NQF publications, and articles from other non-profits and industry. The tables below summarize the information by family, followed by the corresponding citations for the reference material.

IOM Criteria Applied to Safety Topic Areas

Topic	Impact	Improvability	Inclusiveness
Venous Thromboembolism (VTE)	▫ Per the Partnership for Patients, there are >100,000 cases per year of hospital patients having VTE ▫ Most common preventable cause of hospital death (AHRQ, 2008); an estimated 10-30% of patients die within 30 days ▫ Estimate of cost per patient in a recent study was $7.6 – 16.6 k/year	▫ Partnership for Patients estimates that 40% of VTEs are currently preventable ▫ Effective evidence-based guidelines for reducing VTEs available	▫ Affects broad populations , but is more likely with certain risk factors (e.g. older age, limited mobility, genetic history, certain concurrent conditions) ▫ Applies across settings, and strategies for improvement may be used broadly
Catheter-Associated Urinary Tract Infection	▫ Most common type of Healthcare-Acquired Infection; as many as 560,000 CAUTI episodes occur annually	▫ The Partnership for Patients estimates that 40% of CAUTI episodes are currently preventable	▫ Affects a fairly broad population; tends to be more applicable to inpatient settings

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Topic	Impact	Improvability	Inclusiveness
(CAUTI)	▫ Less cost and mortality relative to other HAIs, but high rate of occurrence still makes a large impact	▫ A variety of evidence-based guidelines for prevention are available	
Central Line-Associated Bloodstream Infection (CLABSI)	▫ Frequent and serious; mortality rate of 12-25% per Partnership for Patients ▫ Billions of dollars in excess cost to the U.S. healthcare system	▫ The Partnership for Patients estimates that 50% of CLABSI episodes are preventable ▫ A variety of evidence-based guidelines for prevention are available	▫ Most applicable to sub-populations with other comorbidities, often within inpatient settings
Surgical Site Infections (SSI)	▫ CDC estimated that >110,000 SSIs occurred in 2009; total annual costs in U.S. hospitals estimated to be >$3.2 billion	▫ The Partnership for Patients estimates that 35% of all SSIs are currently preventable ▫ A variety of evidence-based guidelines are available, including several applicable to multiple surgical categories	▫ Applies to patients that have undergone surgical procedures, and therefore strategies applied to somewhat limited range of settings
Ventilator-Associated Pneumonia (VAP)	▫ Relatively frequent and serious, with potential for significant associated costs; Partnership for Patients indicates there are about 40,000 events and 6,000 deaths annually	▫ The Partnership for Patients estimates that 50% of VAP episodes are preventable ▫ A variety of evidence-based guidelines for prevention are available	▫ Most applicable to sub-populations with other comorbidities within inpatient settings
Clostridium difficile (C. diff)	▫ Hospital visits due to C. diff infection tripled in the past decade ▫ Linked to 14,000 deaths in the U.S. annually ▫ >$1 billion in extra health care costs annually	▫ Infection control measures and more cautious antibiotic use are effective for preventing C. diff infections	▫ Risk of infection and mortality generally increased in older individuals ▫ Involves multiple settings due to risk factors implicated
Methicillin-resistant Staphylococcus aureus (MRSA)	▫ Approximately 94k invasive MRSA infection occur in the U.S. annually, associated with about 19k deaths (CDC MRSA toolkit) ▫ Healthcare-related MRSA infections are often more severe and include bloodstream infections, SSIs, or pneumonia	▫ Specific guidelines available, and basic infection control practices noted to be effective for prevention ▫ 2010 CDC study indicated that invasive MRSA infections that began in hospitals declined 28% from 2005-2008	▫ Affects a fairly broad population; there are condition-specific considerations with different settings
Pressure Ulcers	▫ Over 2.5 million people get pressure ulcers annually (in health care settings and home); accounts for between 8-28% of all documented hospital-acquired conditions ▫ Higher stage ulcers increase risk for infection and possibly death	▫ The Partnership for Patients estimates that 50% of the most severe pressure ulcers in acute care settings are preventable ▫ Several evidence-based guidelines and an extensive AHRQ toolkit is available	▫ Certain populations (e.g. elderly and those with limited mobility) at higher risk; capability exists for changes across healthcare settings
Falls	▫ Fall episodes occur frequently within hospitals and other healthcare facilities, but the level of resulting	▫ The Partnership for Patients estimates that 25% of fall injuries are	▫ Applies somewhat broadly , but certain groups are at much

Topic	Impact	Improvability	Inclusiveness
	harm varies substantially ▫ Estimates vary, but over 29,000 preventable falls may be occurring in hospitals annually	preventable ▫ Evidence-based guidelines for fall injury prevention are available, but strategies have been challenging to establish	higher risk (e.g. elderly and individuals with disabilities); there are setting-specific considerations
Trauma (burns, shock, laceration, etc.)	▫ Burns, shock, lacerations, and other such incidents in healthcare settings can lead to serious harms and costs ▫ Incidence rates vary depending on grouping and sub-population	▫ Limited guidelines exist for preventing non-specific health care related trauma, though some exist for specific procedures or topic areas (e.g. preventing Operating Room fires)	▫ Applies to a broad range of patients, more often in hospital settings
Iatrogenic Pneumothorax	▫ Potentially serious complication of procedures near the lung ▫ An RTI study of FY 2009 Medicare hospital data indicated there were 20,836 discharges with this HAC, and estimated total increase in payments >$10 million ▫ With treatment, mortality rate relatively low if otherwise healthy	▫ A 2012 RTI report update for CMS indicated that there is one current guideline with recommendations addressing prevention of iatrogenic pneumothorax ▫ Ultrasound guidance for CVC placement likely underutilized	▫ Applies most often to patients in a hospital setting with other comorbidities due to the type of initiating procedures
Foreign Object Retained After Surgery	▫ Potentially serious but relatively uncommon ▫ 2012 RTI report for CMS indicates there were 241 discharges with this HAC among the >10 million FFS discharges subject to POA coding rules in FY 2009	▫ There are several evidence-based guidelines, but the fairly low incidence of the event limits the magnitude of change possible	▫ Applies to patients that have undergone surgical procedures, and therefore strategies applied to somewhat limited range of settings
Air Embolism	▫ Potentially serious but relatively uncommon event ▫ Incidence difficult to estimate, but a RTI study of FY 2009 CMS hospital data indicated the rate of discharges with this secondary diagnosis at risk was <0.1 per 1000 at risk	▫ Limited information available on opportunities for improvement, potentially due to the low incidence rates ▫ A 2012 RTI report update for CMS indicated that there are no current guidelines that address prevention of air embolism	▫ Most likely to affect individuals after select procedures (e.g. neurosurgical and otolaryngological surgery, intravascular catheters, and positive pressure ventilation) that are generally hospital-based
Adverse Drug Events	▫ Hospital patients experience approximately 1.9 million adverse drug events annually (PFP website); mortality estimates vary widely ▫ Estimated >700,000 ED visits occur for ADE's in the US annually ▫ Studies cited in the 2007 IOM report on Preventing Medication Errors indicate conservative estimates of preventable ADEs in long-term care and ambulatory care number 800,000 and 530,000, respectively ▫ Estimated financial impact >$4 billion annually	▫ PFP estimates that 50% of ADEs in hospitals are preventable ▫ Many efficacious error prevention strategies available per IOM report	▫ Affects a wide range of individuals, though more in elderly and individuals with multiple comorbidities; applies across conditions, settings, and programs
Manifestations of Poor Glycemic	▫ Moderate to low incidence; 2012 RTI report for CMS indicates there	▫ Several evidence-based guidelines are available	▫ Limited in conditions; may apply across

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Topic	Impact	Improvability	Inclusiveness
Control	were 424 discharges with this HAC among the >10 million FFS discharges subject to POA coding rules in FY 2009 ▫ Moderate cost impact – per RTI report above, approximately $2 million in excess cost estimated for this population ▫ May have broader implications if considered beyond HAC criteria	▫ Fairly low incidence limits the potential magnitude of change	settings
Blood Incompatibility	▫ Relatively uncommon. The rate of admission for transfusion reactions, age 18 or over in the U.S. for 2008 was .06 per 100,000 ▫ 2012 RTI report for CMS indicates there were only 13 discharges with this HAC among the >10 million FFS discharges subject to POA coding rules in FY 2009	▫ 2012 RTI report indicated there are no U.S. guidelines for prevention, but two international guidelines exist ▫ Low incidence limits the potential magnitude of change	▫ Tends to apply to a more limited subset of the population and settings
Obstetrical Adverse Events	▫ Obstetrical adverse events occur in approximately 9% of all deliveries in the U.S. ▫ Wide range of severity, including permanent injuries to the infant and maternal death and $$	▫ The Partnership for Patients estimates that 30% of obstetrical adverse events are preventable ▫ Several evidence-based approaches have been successfully implemented by hospitals and hospital systems	▫ Women of childbearing age and the fetus or infant are the population at risk; strategies are most applicable to inpatient hospital settings due to the focus on the period of labor and delivery
Imaging Overuse (CT, Contrast, Radiation)	▫ The U.S. population's total ionizing radiation exposure has nearly doubled in the past 20 years, in large part due to increased use of CT, nuclear medicine, and interventional fluoroscopy ▫ Concerns exist over exposure risks, as well as costs ▫ Much variability in usage of imaging services across the U.S.	▫ Up to 30-50% of imaging exams may not be medically necessary ▫ Guidelines for avoiding inappropriate imaging are available (e.g. ACR)	▫ Applies to broad range of individuals and variety of conditions; involves both inpatient and outpatient settings
Antibiotic Overuse (appropriate use/drug selection, culture /sensitivity testing)	▫ Major public health issue due to the potential for antibiotic resistance, which is associated with increased risk of hospitalization and death, as well as higher costs ▫ May lead to more side effects, allergic reactions, C. diff infections ▫ Per the CDC, current data suggests >10 million courses of antibiotics are prescribed each year unnecessarily	▫ Guidelines for avoiding inappropriate use of antibiotics are available, particularly for upper respiratory infections	▫ Broad implications for the general population; applies to both inpatient and outpatient settings

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Appendix D

IOM Criteria Applied to Care Coordination Topic Areas

Topic	Impact	Improvability	Inclusiveness
Avoidable Admissions & Readmissions	• Approximately 19% of Medicare beneficiaries (~ 2 million/year) who are discharged from a hospital are readmitted within 30 days • In non-obstetric Medicaid patients ages 21-64 hospitalized in 2007, about 1 in 10 had >=1 readmission within 30 days • Costs of avoidable hospital readmissions may be as high as $25 billion per year	• Across all insured patients, about 11% of readmissions are estimated to be avoidable • About 13% of adult non-obstetric hospitalizations are estimated to be preventable	• Applies to a wide range of individuals; transitioning can occur from various settings • There are challenges accounting for patient factors such as income status, social support structure, underlying disability, race, ethnicity, English proficiency, etc.
Medical Homes	• A healthcare home should be the usual source of care selected by a patient, and function as the central point for coordinating care around the patient's needs and preferences • The patient-centered medical home (PCMH, or medical home) aims to reinvigorate primary care and achieve the triple aim of better quality, lower costs, and improved experience of care	• A systematic review of early evidence on effectiveness of the PCMH found varied interventions, but most were not fundamental practice transformations; "some favorable effects" were observed on the triple aim outcomes for certain interventions, with a few negative effects on costs, but mostly inconclusive results	• Relevant to the general population • Medical homes are practices that deliver patient-centered care, coordinate care across providers and settings, and have robust information technology to facilitate information transfer
Health Information Technology (HIT)	• "Successful deployment of healthcare information systems provides the critical link to improving care coordination" • Increasing evidence is becoming available that HIT can help prevent adverse events, improve quality, enhance communication, and facilitate lower administrative costs	• Electronic health information systems have potential to improve communication across settings and providers; however, it is essential that systems be interoperable, with communication protocols established between providers and the ability to share all relevant patient information	• Relevant to the general population • Implications for coordination of care across providers and settings

Appendix D

Topic	Impact	Improvability	Inclusiveness
Care Transitions	• Transitions can be a critical phase; hand-offs are estimated to be a factor in about 35% of The Joint Commission's sentinel events	• Results have varied; an example program, The Care Transitions Intervention® led to a 30% reduction in hospital readmissions in a RCT, and further study indicates it can be effective in real world implementation • Incorporating the patient's perspective and ensuring needs are met during transitions may help reduce subsequent hospitalization	• Relevant to the general population • Implications for coordination of care across providers and settings
Communication	• Communication involves all healthcare team members working within the same shared plan of care, ready availability of consultation notes and progress reports, shared decision-making with the patient and family, use of various communication methodologies, and maintenance of privacy with access to information • Surveys have indicated that millions of patients receive inconsistent information from providers	• Evidence exists that communication between providers and across settings also needs much improvement, particularly when considering that most patients with chronic conditions receive care from multiple providers	• Relevant broadly, but self-reported poor communication with providers is more common among patients who are older or who have more severe conditions • Implications for coordination of care across providers and settings
Care Planning	• Proactive plan of Care and follow-up involves an established and current care plan that anticipates routine needs and actively tracks up-to-date progress on the patient's and family's long- and short-term goals	• Research on the isolated effect of care planning is limited and shows somewhat mixed results, with studies tending to focus on specific conditions	• Plans of care are particularly important for patients with chronic diseases, and are vital during transitions for facilitating communication, tracking meds, follow-up, etc. • Implications for coordination of care across providers and settings

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Appendix D

IOM Criteria Applied to Cardiovascular Disease and Diabetes Topic Areas

Topic	Impact	Improvability	Inclusiveness
Smoking cessation & Tobacco use	• 19.3% of adults age 18 and over currently smoke cigarettes • Nearly 1 in 4 high school seniors is a regular cigarette smoker • Smoking is the leading cause of preventable death in U.S. • Cigarette smokers are 2-4 times more likely to develop coronary heart disease, and have about double the risk of stroke	• Though progress has been made in reducing tobacco use, there are still millions of smokers; evidence-based guidelines and effective strategies for tobacco screening and cessation programs exist	• Affects a wide range of the population and variety of conditions; higher smoking rates occur among American Indians/ Alaska Natives, adults with lower education levels, and adults below poverty level
Nutrition, Exercise, and Weight Management	• Healthy diets and regular physical activity are associated with decreased risk of type 2 diabetes, hypertension, obesity, and many other chronic conditions • CDC data shows that 36% of adults and 17% of children/adolescents are obese; obesity-related conditions include heart disease, stroke, and type 2 diabetes	• There are a variety of evidence-based interventions for promoting physical activity and healthy eating (e.g. CDC Strategy Guides) • The USPSTF recommends that clinicians screen all adults for obesity and offer intensive counseling and behavioral interventions for obese adults	• Affects a broad range of individuals, and strategies/ capability for change can be applied widely; generally more applicable to outpatient & community settings • There are racial and ethnic disparities, as well as geographic variability, in obesity prevalence
Lipid Screening	• Individuals with high cholesterol levels have about twice the risk for heart disease • There is good evidence that when abnormally high cholesterol levels are identified, lipid-lowering treatment can substantially decrease risk of heart disease	• Lipid disorders are common, but can remain undetected for an extended period due to lack of symptoms • Strong evidence-based guidelines exist about screening for lipid disorders in selected sub-populations (e.g. USPSTF)	• Affects a broad range of individuals, and strategies/ capability for change can be applied widely; screening most often done in outpatient settings
Blood Pressure Screening	• Hypertension is a major risk factor for heart disease and stroke • In 2010, CDC data indicated hypertension was estimated to cost the U.S. $93 billion	• Per the CDC, around 20% of adults with high blood pressure are not aware that they have it • Strong evidence-based guidelines exist about screening for high blood pressure in adults (e.g. USPSTF)	• Affects a broad range of individuals, and strategies/ capability for change can be applied widely; screening most often done in outpatient or community settings
Diabetes Screening	• Individuals with pre-diabetes have increased risk of type 2 diabetes, heart disease, and stroke • Weight loss and increased	• It is estimated that of the 25.8 million people in the U.S. with diabetes, 7 million are still	• Affects a broad range of individuals, but racial and ethnic difference exist in the prevalence of

Topic	Impact	Improvability	Inclusiveness
	physical activity can prevent or delay type 2 diabetes	undiagnosed • Evidence-based guidelines exist regarding screening for diabetes in certain at–risk populations, such as individuals with elevated blood pressure (USPSTF)	diabetes • Strategies/capability for change can be applied widely; screening most often done in outpatient or community settings
Aspirin	• Aspirin is an inexpensive intervention that can decrease the incidence of cardiovascular events, including myocardial infarction in men and ischemic strokes in women	• Evidence-based guidelines exist for recommending aspirin use in at–risk populations when the potential benefit outweighs the potential harms (USPSTF) • There are many individuals at risk of cardiac events despite lack of a previous history of myocardial infarction or stroke	• Affects a broad range of individuals, but age, gender, and racial/ethnic differences exist in the prevalence of risk factors • Strategies/capability for change can be applied widely; applies primarily to outpatient or community settings
Diabetes: Glycemic Control	• Per the CDC, studies have shown that glycemic control benefits individuals with either type 1 or type 2 diabetes • It is estimated that each percentage point drop in A1c blood test levels can reduce the risk of microvascular complications by 40%	• There are effective tests and therapies for glucose control, yet many people with diabetes are not well-controlled • Evidence-based guidelines exist regarding assessment and treatment	• Relevant to all individuals with diabetes; chronic management tends to be most applicable to outpatient or LTC settings, with different acute care needs • Strategies/capability for change can be applied widely but may be more challenging for some sub-populations (e.g. children and elderly)
Diabetes: Lifestyle Management and Vaccination	• Healthy eating and physical activity can be effective, relatively low-cost mechanisms to manage diabetes with low risk of adverse effects • Smoking cessation decreases risk of cardiovascular events and other complications among individuals with diabetes • Influenza, Pneumococcal, and Hep B vaccination can help prevent serious illnesses to which a person with diabetes may be particularly susceptible	• Studies such as the Look AHEAD trial have provided evidence that lifestyle management can achieve weight loss, improve control of diabetes, and decrease cardiovascular risk • Influenza and Pneumococcal immunization rates in younger adults with diabetes suboptimal	• Relevant to all individuals with diabetes; chronic management tends to be most applicable to outpatient or LTC settings
Diabetes: Blood Pressure Control	• In general, approximately every 10 mmHg reduction in systolic	• While approximately 1 in 3 American	• Relevant to all individuals with

Topic	Impact	Improvability	Inclusiveness
	BP results in a 12% decrease in risk of diabetes complications • Among individuals with diabetes, improved control of blood pressure can reduce risk of cardiovascular disease by 33-50%	adults have problems with high blood pressure, the condition is not well-controlled in half of these individuals • Evidence-based guidelines exist for blood pressure management among individuals with diabetes	diabetes; chronic management tends to be most applicable to outpatient or LTC settings, with different acute care needs • Strategies/capability for change apply widely
Diabetes: Lipid Control	• Individuals with type 2 DM have increased prevalence of abnormal lipid levels, a factor in their higher risk of CVD • Improved control of LDL cholesterol may decrease cardiovascular complications by 20-50%	• Almost two-thirds of adults with history of high LDL cholesterol do not have their levels under control • Evidence-based guidelines exist for lipid management among individuals with diabetes	• Relevant to all individuals with diabetes; chronic management tends to be most applicable to outpatient or LTC settings • Strategies/capability for change apply widely
Diabetes: Dental Care	• Periodontal disease is more common in people with diabetes. Young adults with diabetes have about twice the risk as those without diabetes • Around one-third of people with diabetes have severe periodontal disease, including loss of attachment of gums to the teeth	• Controlling blood glucose levels, consistent dental self-care, and regular visits to a dentist are generally recommended to help prevent serious mouth problems • Evidence-based guidelines are limited	• Relevant to all individuals with diabetes; chronic management tends to be most applicable to outpatient or LTC settings • Strategies may need to be tailored based on the population due to social and environmental factors
Diabetes: Peripheral Neuropathy	• In 2008, over 70,000 people with diabetes had a leg or foot amputated; people with diabetes are 8x as likely to lose a leg or foot to amputation	• Comprehensive foot care programs can reduce amputation rates by 45-85% • Studies indicate that good blood sugar control slows the onset/progression of complications that can lead to lower extremity complications	• Relevant to all individuals with diabetes; chronic management tends to be most applicable to outpatient or LTC settings
Diabetes: Eye Care	• Diabetes is the leading cause of blindness among adults age 20-74 years old • More severe or poorly controlled diabetes over a longer period increases the risk of retinopathy • Symptoms of diabetic retinopathy usually do not occur until after severe eye damage	• Detecting and treating diabetic eye disease with laser therapy can decrease severe vision loss by about 50-60% • About 65% of adults with diabetes and poor vision can be helped by eyeglasses	• Relevant to all individuals with diabetes; chronic management tends to be mostly in outpatient or LTC settings • Disparities in age, race, and ethnicity exist in obtaining

Topic	Impact	Improvability	Inclusiveness
			periodic eye exams
Diabetes: Nephropathy	• Diabetes is the leading cause of kidney failure (44% of all new cases); in 2008, a total of 202,290 people with ESRD due to diabetes were on chronic dialysis or had previously had a kidney transplant • Development of severe kidney disease significantly impairs quality of life and increases costs of care	• Detecting and treating early diabetic kidney disease by lowering BP can reduce decline in kidney function by 30-70% • ACEIs and ARBs reduce proteinuria by about 35%	• Relevant to all individuals with diabetes, though disparities exist (e.g. African Americans are more likely than whites to develop ESRD); chronic management tends to be most applicable to outpatient or LTC settings
Cardiovascular Disease: Lipid and Blood Pressure Control	• The number of people living with cardiovascular disease has increased as the general population ages, with CHD being the leading cause of death in the U.S. • Among individuals with existing cardiovascular disease, maintaining desirable lipid and blood pressure levels can reduce risk of MI and death, as well as the need for heart bypass surgery or angioplasty	• Evidence-based guidelines and effective therapies exist for lipid and blood pressure management for individuals with cardiovascular disease; NHLBI ATP and JNC guideline updates are anticipated to be released this year • Studies on the use of recommended therapies indicate that many patients not receiving optimal treatment	• Applies to a broad population of individuals with CHD or CHD equivalents; chronic management tends to be most applicable for outpatient or LTC settings
Cardiovascular Disease: Lifestyle Management and Vaccines	• Healthy eating, exercise, weight management, and avoidance of tobacco and heavy alcohol use can all reduce risk of cardiovascular events among individuals with established cardiovascular disease • Influenza and Pneumococcal vaccinations are recommended for individuals with CVD to reduce complications of infection • Such interventions have the potential to make substantial impacts at a population level, with relatively small risk of adverse events	• Evidence-based guidelines exist for recommended approaches to promote smoking cessation, increased physical activity, weight management, and immunization • Studies indicate that many patients with cardiovascular disease are not receiving appropriate counseling or other interventions	• Applies to a broad population; chronic management tends to be most applicable to outpatient or community settings
Ischemic Heart Disease: Medication therapy	• About 935,000 heart attacks occur in the U.S. annually, resulting in approximately 130,000 deaths • Antithrombotic therapy can have a major impact in acute settings, as well as for long-term prevention of cardiac	• Evidence-based guidelines exist for medication therapy in different settings and sub-populations of patients with ischemic heart disease (e.g. ACC/AHA)	• Applies to a broad range of individuals with ischemic heart disease, and includes multiple settings; risk of adverse medication effects is higher in

Topic	Impact	Improvability	Inclusiveness
	events • Beta blockers and ACEIs/ARBs are highly effective long-term treatments in appropriate patients • Other medications may play a useful role for select populations	• Studies on use of recommended therapies show many patients are not receiving indicated medications or are not consistently adherent to their regimens	the elderly
Ischemic Heart Disease: Procedures	• Coronary artery bypass grafting (CABG), percutaneous coronary intervention (PCI), and related procedures can be used very effectively in select sub-populations of patients with ischemic heart disease • Procedural treatment is more often indicated for severe and/or acute-care issues • Some attention has been given to potential overuse of interventional cardiac procedures	• Evidence-based guidelines exist for use of interventional procedures in various sub-populations of patients with ischemic heart disease (e.g. ACC/AHA) • A notable amount of variation in use of procedures by region indicates there may be opportunities to improve adherence to guidelines	• Applies to a broad range of individuals with ischemic heart disease, but more applicable to inpatient settings
Stroke/TIA: Treatments	• Approximately 795,000 people have a stroke each year in the U.S.; estimated direct and indirect costs of stroke were $53.9 billion in 2010 • Acute management with thrombolytic therapy and/or other interventions is a critical factor in the disposition of patient outcomes • Sub-acute and long-term management include consideration for antithrombotic therapy, control of risk factors/complications, potential need for revascularization, and addressing rehabilitation	• Evidence-based guidelines exist for treatment of stroke (e.g. AHA/ASA) • Several large studies have indicated that stroke guideline adherence is lower than desired; efforts such as the Get With The Guidelines® program from the AHA/ASA are striving for improvement	• Applies to a broad range of individuals; acute management issues occur predominately within inpatient settings and longer-term management shifts to outpatient and LTC settings
Heart Failure: Treatments	• In the U.S., approximately 5.8 million people have heart failure (HF); estimated costs of HF in 2010 were $39.2 billion • Appropriate management includes monitoring signs/symptoms, addressing modifiable risk factors, medication therapy (ACEIs/ARBs, diuretics, beta blockers, and/or aldosterone antagonists) as appropriate, and consideration for ICD and cardiac resynchronization therapy when indicated	• Evidence-based guidelines exist for treatment of HF (e.g. ACC/AHA) • Heart failure death rates vary substantially by region; age-adjusted rate (among those 65+) per 100,000 in the U.S. ranged from 41.6 to 344.3 in 2006	• Applies to a broad population, though more in elderly; management issues can apply across settings, with acute exacerbations mainly inpatient
Atrial Fibrillation: Treatments	• A-fib is the most common arrhythmia; affected about 2.66 million people in 2010, but	• Evidence-based guidelines exist for management (e.g.	• Applies to a fairly broad population, incidence increases

Topic	Impact	Improvability	Inclusiveness
	estimated to be up to 12 million in 2050 • Estimated cost for treatment of atrial fibrillation in 2005 was $6.65 billion • Treatments include lifestyle changes, medications for heart rate and/or rhythm control, and surgery; anti-thrombotic therapy is also important to consider for decreasing stroke risk	ACCF/AHA/HRS) • Use of recommended therapy, such as antithrombotic therapy in high-risk patients, is suboptimal	with age; many management issues apply across settings, though acute complications are most often handled as an inpatient
Cardiovascular Rehabilitation	• Many cardiovascular conditions/events produce long-term consequences • There is evidence that cardiac rehabilitation can improve outcomes in certain patients, particularly post-MI • Certain components of rehabilitation may be more efficacious than others	• Consensus recommendations exist for appropriate composition and utilization of cardiac rehabilitation programs (e.g. AACVPR/AHA) • Opportunities exist for expanding adoption of successful programs and enhancing care standardization	• Applies to a broad population of individuals with cardiovascular conditions, but most often to those with more severe disease • Issues are relevant across a variety of settings as patients transition through various phases of treatment
Appropriate/Overuse of Services	• Unnecessary tests and procedures waste health care resources and have the potential to do harm • Costs may be significant – e.g. for Cardiovascular disease: Kale et al estimated excess direct costs of using expensive brand-name statins for initiating lipid lowering therapy at around $5.8 billion per year, and of annual ECGs by adults presenting for general medical exams to be $6-$38 million	• It is estimated that as much as 30% of care is duplicative or unnecessary; recommendations for avoiding certain tests or treatments based on evidence (or lack thereof) have begun to emerge, such as the Choosing Wisely® campaign	• Affects a broad range of individuals; strategies/capability for change can be applied widely, though is more applicable in certain regions

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MAP "WORKING" MEASURE SELECTION CRITERIA

NATIONAL QUALITY FORUM

1. Measures within the program measure set are NQF-endorsed or meet the requirements for expedited review

Measures within the program measure set are NQF-endorsed, indicating that they have met the following criteria: important to measure and report, scientifically acceptable measure properties, usable, and feasible. Measures within the program measure set that are not NQF-endorsed but meet requirements for expedited review, including measures in widespread use and/or tested, may be recommended by MAP, contingent on subsequent endorsement. These measures will be submitted for expedited review.

Response option: Strongly Agree / Agree / Disagree / Strongly Disagree

Measures within the program measure set are NQF-endorsed or meet requirements for expedited review (including measures in widespread use and/or tested)

Additional Implementation Consideration: Individual endorsed measures may require additional discussion and may be excluded from the program measure set if there is evidence that implementing the measure would result in undesirable unintended consequences.

2. Program measure set adequately addresses each of the National Quality Strategy (NQS) priorities

Demonstrated by measures addressing each of the National Quality Strategy (NQS) priorities:

Subcriterion 2.1	Safer care
Subcriterion 2.2	Effective care coordination
Subcriterion 2.3	Preventing and treating leading causes of mortality and morbidity
Subcriterion 2.4	Person- and family-centered care
Subcriterion 2.5	Supporting better health in communities
Subcriterion 2.6	Making care more affordable

Response option for each subcriterion: Strongly Agree / Agree / Disagree / Strongly Disagree:

NQS priority is adequately addressed in the program measure set

3. Program measure set adequately addresses high-impact conditions relevant to the program's intended population(s) (e.g., children, adult non-Medicare, older adults, dual eligible beneficiaries)

Demonstrated by the program measure set addressing Medicare High-Impact Conditions; Child Health Conditions and risks; or conditions of high prevalence, high disease burden, and high cost relevant to the program's intended population(s). (Refer to tables 1 and 2 for Medicare High-Impact Conditions and Child Health Conditions determined by the NQF Measure Prioritization Advisory Committee.)

Response option: Strongly Agree / Agree / Disagree / Strongly Disagree:

Program measure set adequately addresses high-impact conditions relevant to the program.

4. Program measure set promotes alignment with specific program attributes, as well as alignment across programs

Demonstrated by a program measure set that is applicable to the intended care setting(s), level(s) of analysis, and population(s) relevant to the program.

Response option for each subcriterion: Strongly Agree / Agree / Disagree / Strongly Disagree

Subcriterion 4.1	Program measure set is applicable to the program's intended care setting(s)
Subcriterion 4.2	Program measure set is applicable to the program's intended level(s) of analysis
Subcriterion 4.3	Program measure set is applicable to the program's population(s)

5. Program measure set includes an appropriate mix of measure types

Demonstrated by a program measure set that includes an appropriate mix of process, outcome, experience of care, cost/resource use/appropriateness, and structural measures necessary for the specific program attributes.

Response option for each subcriterion: Strongly Agree / Agree / Disagree / Strongly Disagree

Subcriterion 5.1	Outcome measures are adequately represented in the program measure set
Subcriterion 5.2	Process measures are adequately represented in the program measure set
Subcriterion 5.3	Experience of care measures are adequately represented in the program measure set (e.g. patient, family, caregiver)
Subcriterion 5.4	Cost/resource use/appropriateness measures are adequately represented in the program measure set
Subcriterion 5.5	Structural measures and measures of access are represented in the program measure set when appropriate

6. Program measure set enables measurement across the person-centered episode of care [1]

Demonstrated by assessment of the person's trajectory across providers, settings, and time.

Response option for each subcriterion: Strongly Agree / Agree / Disagree / Strongly Disagree

Subcriterion 6.1	Measures within the program measure set are applicable across relevant providers
Subcriterion 6.2	Measures within the program measure set are applicable across relevant settings
Subcriterion 6.3	Program measure set adequately measures patient care across time

1 National Quality Forum (NQF), Measurement Framework: Evaluating Efficiency Across Patient-Focused Episodes of Care, Washington, DC: NQF; 2010.

7. Program measure set includes considerations for healthcare disparities[2]

Demonstrated by a program measure set that promotes equitable access and treatment by considering healthcare disparities. Factors include addressing race, ethnicity, socioeconomic status, language, gender, age disparities, or geographical considerations considerations (e.g., urban vs. rural). Program measure set also can address populations at risk for healthcare disparities (e.g., people with behavioral/mental illness).

Response option for each subcriterion: Strongly Agree / Agree / Disagree / Strongly Disagree

Subcriterion 7.1 Program measure set includes measures that directly assess healthcare disparities (e.g., interpreter services)

Subcriterion 7.2 Program measure set includes measures that are sensitive to disparities measurement (e.g., beta blocker treatment after a heart attack)

8. Program measure set promotes parsimony

Demonstrated by a program measure set that supports efficient (i.e., minimum number of measures and the least effort) use of resources for data collection and reporting and supports multiple programs and measurement applications. The program measure set should balance the degree of effort associated with measurement and its opportunity to improve quality.

Response option for each subcriterion: Strongly Agree / Agree / Disagree / Strongly Disagree

Subcriterion 8.1 Program measure set demonstrates efficiency (i.e., minimum number of measures and the least burdensome)

Subcriterion 8.2 Program measure set can be used across multiple programs or applications (e.g., Meaningful Use, Physician Quality Reporting System [PQRS])

2 NQF, *Healthcare Disparities Measurement*, Washington, DC: NQF; 2011.

Table 1: National Quality Strategy Priorities

1. Making care safer by reducing harm caused in the delivery of care.
2. Ensuring that each person and family is engaged as partners in their care.
3. Promoting effective communication and coordination of care.
4. Promoting the most effective prevention and treatment practices for the leading causes of mortality, starting with cardiovascular disease.
5. Working with communities to promote wide use of best practices to enable healthy living.
6. Making quality care more affordable for individuals, families, employers, and governments by developing and spreading new healthcare delivery models.

Table 2: High-Impact Conditions:

Medicare Conditions
1. Major Depression
2. Congestive Heart Failure
3. Ischemic Heart Disease
4. Diabetes
5. Stroke/Transient Ischemic Attack
6. Alzheimer's Disease
7. Breast Cancer
8. Chronic Obstructive Pulmonary Disease
9. Acute Myocardial Infarction
10. Colorectal Cancer
11. Hip/Pelvic Fracture
12. Chronic Renal Disease
13. Prostate Cancer
14. Rheumatoid Arthritis/Osteoarthritis
15. Atrial Fibrillation
16. Lung Cancer
17. Cataract
18. Osteoporosis
19. Glaucoma
20. Endometrial Cancer

Child Health Conditions and Risks
1. Tobacco Use
2. Overweight/Obese (≥85th percentile BMI for age)
3. Risk of Developmental Delays or Behavioral Problems
4. Oral Health
5. Diabetes
6. Asthma
7. Depression
8. Behavior or Conduct Problems
9. Chronic Ear Infections (3 or more in the past year)
10. Autism, Asperger's, PDD, ASD
11. Developmental Delay (diag.)
12. Environmental Allergies (hay fever, respiratory or skin allergies)
13. Learning Disability
14. Anxiety Problems
15. ADD/ADHD
16. Vision Problems not Corrected by Glasses
17. Bone, Joint, or Muscle Problems
18. Migraine Headaches
19. Food or Digestive Allergy
20. Hearing Problems
21. Stuttering, Stammering, or Other Speech Problems
22. Brain Injury or Concussion
23. Epilepsy or Seizure Disorder
24. Tourette Syndrome

MAP "WORKING" MEASURE SELECTION CRITERIA INTERPRETIVE GUIDE

NATIONAL QUALITY FORUM

Instructions for applying the measure selection criteria:

The measure selection criteria are designed to assist MAP Coordinating Committee and workgroup members in assessing measure sets used in payment and public reporting programs. The criteria have been developed with feedback from the MAP Coordinating Committee, workgroups, and public comment. The criteria are intended to facilitate a structured thought process that results in generating discussion. A rating scale of *Strongly Agree, Agree, Disagree, Strongly Disagree* is offered for each criterion or sub-criterion. An open text box is included in the response tool to capture reflections on the rationale for ratings.

The eight criteria areas are designed to assist in determining whether a measure set is aligned with its intended use and whether the set best reflects 'quality' health and healthcare. The term "measure set" can refer to a collection of measures--for a program, condition, procedure, topic, or population. For the purposes of MAP moving forward, we will qualify all uses of the term measure set to refer to either a "program measure set," a "core measure set" for a setting, or a "condition measure set." The following eight criteria apply to the evaluation of program measure sets; a subset of the criteria apply to condition measure sets.

FOR CRITERION 1 – NQF ENDORSEMENT:

The optimal option is for all measures in the program measure set to be NQF endorsed or ready for NQF expedited review. The endorsement process evaluates individual measures against four main criteria:

1. **'Importance to measure and report"**–how well the measure addresses a specific national health goal/ priority, addresses an area where a performance gap exists, and demonstrates evidence to support the measure focus;
2. **'Scientific acceptability of the measurement properties'** – evaluates the extent to which each measure produces consistent (reliable) and credible (valid) results about the quality of care.
3. **'Usability'-** the extent to which intended audiences (e.g., consumers, purchasers, providers, and policy makers) can understand the results of the measure and are likely to find the measure results useful for decision making.
4. **'Feasibility'** – the extent to which the required data are readily available, retrievable without undue burden, and can be implemented for performance measures.

To be recommended by MAP, a measure that is not NQF-endorsed must meet the following requirements, so that it can be submitted for expedited review:

- the extent to which the measure(s) under consideration has been sufficiently tested and/or in widespread use
- whether the scope of the project/measure set is relatively narrow
- time-sensitive legislative/regulatory mandate for the measure(s)
- Measures that are NQF-endorsed are broadly available for quality improvement and public accountability programs. In some instances, there may be evidence that implementation challenges

and/or unintended negative consequences of measurement to individuals or populations may outweigh benefits associated with the use of the performance measure. Additional consideration and discussion by the MAP workgroup or Coordinating Committee may be appropriate prior to selection. To raise concerns on particular measures, please make a note in the included text box under this criterion.

FOR CRITERION 2 – PROGRAM MEASURE SET ADDRESSES THE NATIONAL QUALITY STRATEGY PRIORITIES:

The program's set of measures is expected to adequately address each of the NQS priorities as described in criterion 2.1-2.6. The definition of "adequate" rests on the expert judgment of the Coordinating Committee or workgroup member using the selection criteria. This assessment should consider the current landscape of NQF-endorsed measures available for selection within each of the priority areas.

FOR CRITERION 3 – PROGRAM MEASURE SET ADDRESSES HIGH-IMPACT CONDITIONS:

When evaluating the program measure set, measures that adequately capture information on high-impact conditions should be included based on their relevance to the program's intended population. High-priority Medicare and child health conditions have been determined by NQF's Measure Prioritization Advisory Committee and are included to provide guidance. For programs intended to address high-impact conditions for populations other than Medicare beneficiaries and children (e.g., adult non-Medicare and dual eligible beneficiaries), high-impact conditions can be demonstrated by their high prevalence, high disease burden, and high costs relevant to the program. Examples of other on-going efforts may include research or literature on the adult Medicaid population or other common populations. The definition of "adequate" rests on the expert judgment of the Coordinating Committee or workgroup member using the selection criteria.

FOR CRITERION 4 – PROGRAM MEASURE SET PROMOTES ALIGNMENT WITH SPECIFIC PROGRAM ATTRIBUTES, AS WELL AS ALIGNMENT ACROSS PROGRAMS:

The program measure sets should align with the attributes of the specific program for which they intend to be used. Background material on the program being evaluated and its intended purpose are provided to help with applying the criteria. This should assist with making discernments about the intended care setting(s), level(s) of analysis, and population(s). While the program measure set should address the unique aims of a given program, the overall goal is to harmonize measurement across programs, settings, and between the public and private sectors.

- **Care settings include:** Ambulatory Care, Ambulatory Surgery Center, Clinician Office, Clinic/Urgent Care, Behavioral Health/Psychiatric, Dialysis Facility, Emergency Medical Services - Ambulance, Home Health, Hospice, Hospital- Acute Care Facility, Imaging Facility, Laboratory, Pharmacy, Post-Acute/Long Term Care, Facility, Nursing Home/Skilled Nursing Facility, Rehabilitation.
- **Level of analysis includes:** Clinicians/Individual, Group/Practice, Team, Facility, Health Plan, Integrated Delivery System.
- **Populations include:** Community, County/City, National, Regional, or States. Population includes: Adult/Elderly Care, Children's Health, Disparities Sensitive, Maternal Care, and Special Healthcare Needs.

FOR CRITERION 5 – PROGRAM MEASURE SET INCLUDES AN APPROPRIATE MIX OF MEASURE TYPES:

The program measure set should be evaluated for an appropriate mix of measure types. The definition of "appropriate" rests on the expert judgment of the Coordinating Committee or workgroup member using the selection criteria. The evaluated measure types include:

1. **Outcome measures** – Clinical outcome measures reflect the actual results of care.[1] Patient reported measures assess outcomes and effectiveness of care as experienced by patients and their families. Patient reported measures include measures of patients' understanding of treatment options and care plans, and their feedback on whether care made a difference.[2]
2. **Process measures** – Process denotes what is actually done in giving and receiving care. [3] NQF-endorsement seeks to ensure that process measures have a systematic assessment of the quantity, quality, and consistency of the body of evidence that the measure focus leads to the desired health outcome.[4]
3. **Experience of care measures** – Defined as patients' perspective on their care.[5]
4. **Cost/resource use/appropriateness measures** –

   a. Cost measures – Total cost of care.

   b. Resource use measures – Resource use measures are defined as broadly applicable and comparable measures of health services counts (in terms of units or dollars) that are applied to a population or event (broadly defined to include diagnoses, procedures, or encounters).[6]

   c. Appropriateness measures – Measures that examine the significant clinical, systems, and care coordination aspects involved in the efficient delivery of high-quality services and thereby effectively improve the care of patients and reduce excessive healthcare costs.[7]
5. **Structure measures** – Reflect the conditions in which providers care for patients.[8] This includes the attributes of material resources (such as facilities, equipment, and money), of human resources (such as the number and qualifications of personnel), and of organizational structure

1 National Quality Forum. (2011). The right tools for the job. Retrieved from http://www.qualityforum.org/Measuring_Performance/ABCs/The_Right_Tools_for_the_Job.aspx

2 Consumer-Purchases Disclosure Project. (2011). Ten Criteria for Meaningful and Usable Measures of Performance

3 Donabedian, A. (1988) The quality of care. *JAMA*, 260, 1743-1748.

4 National Quality Forum. (2011). Consensus development process. Retrieved from http://www.qualityforum.org/Measuring_Performance/Consensus_Development_Process.aspx

5 National Quality Forum. (2011). The right tools for the job. Retrieved from http://www.qualityforum.org/Measuring_Performance/ABCs/The_Right_Tools_for_the_Job.aspx

6 National Quality Forum (2009). National voluntary consensus standards for outpatient imaging efficiency. Retrieved from http://www.qualityforum.org/Publications/2009/08/National_Voluntary_Consensus_Standards_for_Outpatient_Imaging_Efficiency__A_Consensus_Report.aspx

7 National Quality Forum. (2011). The right tools for the job. Retrieved from http://www.qualityforum.org/Measuring_Performance/ABCs/The_Right_Tools_for_the_Job.aspx

8 National Quality Forum. (2011). The right tools for the job. Retrieved from http://www.qualityforum.org/Measuring_Performance/ABCs/The_Right_Tools_for_the_Job.aspx

(such as medical staff organizations, methods of peer review, and methods of reimbursement).[9] In this case, structural measures should be used only when appropriate for the program attributes and the intended population.

FOR CRITERION 6 – PROGRAM MEASURE SET ENABLES MEASUREMENT ACROSS THE PERSON-CENTERED EPISODE OF CARE:

The optimal option is for the program measure set to approach measurement in such a way as to capture a person's natural trajectory through the health and healthcare system over a period of time. Additionally, driving to longitudinal measures that address patients throughout their lifespan, from health, to chronic conditions, and when acutely ill should be emphasized. Evaluating performance in this way can provide insight into how effectively services are coordinated across multiple settings and during critical transition points.

When evaluating subcriteria 6.1-6.3, it is important to note whether the program measure set captures this trajectory (across providers, settings or time). This can be done through the inclusion of individual measures (e.g., 30-day readmission post-hospitalization measure) or multiple measures in concert (e.g., aspirin at arrival for AMI, statins at discharge, AMI 30-day mortality, referral for cardiac rehabilitation).

FOR CRITERION 7 – PROGRAM MEASURE SET INCLUDES CONSIDERATIONS FOR HEALTHCARE DISPARITIES:

Measures sets should be able to detect differences in quality among populations or social groupings. Measures should be stratified by demographic information (e.g., race, ethnicity, language, gender, disability, and socioeconomic status, rural vs. urban), which will provide important information to help identify and address disparities.[10]

Subcriterion 7.1 seeks to include measures that are known to assess healthcare disparities (e.g., use of interpreter services to prevent disparities for non-English speaking patients).

Subcriterion 7.2 seeks to include disparities-sensitive measures; these are measures that serve to detect not only differences in quality across institutions or in relation to certain benchmarks, but also differences in quality among populations or social groupings (e.g., race/ethnicity, language).

FOR CRITERION 8 – PROGRAM MEASURE SET PROMOTES PARSIMONY:

The optimal option is for the program measure set to support an efficient use of resources in regard to data collection and reporting for accountable entitles, while also measuring the patient's health and healthcare comprehensively.

Subcriterion 8.1 can be evaluated by examining whether the program measure set includes the least number of measures required to capture the program's objectives and data submission that requires the least burden on the part of the accountable entitles.

Subcriterion 8.2 can be evaluated by examining whether the program measure set includes measures that are used across multiple programs (e.g., PQRS, MU, CHIPRA, etc.) and applications (e.g., payment, public reporting, and quality improvement).

9 Donabedian, A. (1988) The quality of care. *JAMA*, 260, 1743-1748.

10 Consumer-Purchases Disclosure Project. (2011). Ten Criteria for Meaningful and Usable Measures of Performance.