

**Summary Report of Clinician Committee Meetings:
Development of a Heart Failure Outcome Measure for the Merit-
based Incentive Payment System**

July 2019

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Background

The Centers for Medicare & Medicaid Services (CMS) contracted with Yale New Haven Health Services Corporation – Center for Outcomes Research and Evaluation (CORE) to develop outpatient outcome measures that can be used to assess the quality of care provided by clinicians who are eligible to participate in the Merit-based Incentive Payment System (MIPS). As part of this project, CORE developed a measure to address ambulatory care for heart failure.

The MIPS heart failure measure assesses each clinician or clinician group's acute, cardiovascular-related admission rate, respectively, to that of other MIPS clinicians or clinician groups with similar patients. The measure adjusts for patient complexity as well as social risk. The quality measure's scores are calculated using patient characteristics and outcomes documented on routinely submitted Medicare claims; therefore, the clinicians whose performance will be assessed by the quality measure will not need to submit any additional data directly to CMS.

As is standard with all measure development processes, CORE obtained stakeholder input on the measure. CORE convened two stakeholder groups:

- 1) Technical Expert Panel (TEP): CORE assembled a national TEP of clinicians, patient advocates, and other stakeholders. The TEP provided input to help shape the measure concept and specifications.
- 2) Clinician Committee: In addition to the TEP, CORE assembled a Clinician Committee to provide more detailed input during the measure development process. Specifically, CORE convened a Clinician Committee of professional society representatives and front-line clinicians from rural and/or underserved communities. The Clinician Committee members collectively brought expertise in providing ambulatory care to people with heart failure nationally.

This report summarizes Clinician Committee's feedback and recommendations from a series of three meetings CORE hosted during the measure's development. A separate report summarizing the TEP's input was available on CMS's Technical Expert Panel [webpage](#) during development.

Measure Development Team

The CORE measure development team consisted of individuals with expertise in outcome measure development, health services research, clinical medicine, statistics, and measurement methodology. See [Table A1](#) in [Appendix A](#) for the full list of members of the CORE measure development team.

Erica Spatz, MD, MHS led the MIPS heart failure admission measure development team. Dr. Spatz is a general cardiologist at the Yale School of Medicine and a Clinical Investigator at CORE. Her research seeks to advance more patient-centered, outcomes-oriented models of care to prevent and manage cardiovascular disease.

Elizabeth Drye, MD, SM, Senior Director of Quality Measurement at CORE and a Research Scientist at the Yale School of Medicine, oversees the work. The remainder of the CORE measure development team provided a range of expertise in outcome measure development, health services research, clinical medicine, statistics, and measurement methodology.

Finally, Vinita Meyyur, PhD, the project’s Contracting Officer Representative, and additional CMS staff overseeing the MIPS program, including Susan Arday, MHS; Daniel Green, MD; Jennifer Harris, MS, BSN, RN; Julie Johnson; and Sophia Sugumar, MSHM, RHIA provided ongoing input.

Clinician Committee Composition

In September 2018, CORE released a public call for nominations to convene the Clinician Committee. Potential Clinician Committee members were recruited via emails to individuals, professional societies, and organizations recommended by the MIPS heart failure admission measure development team and stakeholder groups, email blasts sent to CMS email listservs, and through a posting on [CMS’s website](#).

The Clinician Committee was composed of 14 members, listed in [Table 1](#). The Clinician Committee is comprised of front-line clinicians who provide ambulatory care to people with heart failure (including clinicians who practice in rural and/or underserved areas) as well as professional society representatives. The role of the Clinician Committee was to provide input to CORE on key methodological and clinical decisions for the MIPS heart failure admission measure under development. The appointment term for the Clinician Committee was from October 2018 through July 2019.

Responsibilities of Clinician Committee members included:

- Reviewing background materials provided by CORE prior to each meeting;
- Participating in Clinician Committee meetings held by webinar/teleconference or in person; and,
- Providing input on key clinical and methodological decisions, including the measure cohort, outcome definition, risk adjustment, and attribution of outcomes to MIPS eligible clinicians.

Table 1. Clinician Committee roster -- member name, organization, society representation if applicable, and location

Name, credentials, and medical specialty	Title (Organization)	Society Clinician Committee is representing (if applicable)	Location
Scott Baute, MS, PA-C; <i>cardiology</i>	<ul style="list-style-type: none"> • Cardiology physician assistant (George Washington Hospital) 	Yes (American Academy of Physician Assistants)	Washington D.C.

Name, credentials, and medical specialty	Title (Organization)	Society Clinician Committee is representing (if applicable)	Location
Margaret Bowers , DNP, FNP-BC, AACCC, CHSE, FAANP; <i>cardiology</i>	<ul style="list-style-type: none"> • Nurse practitioner (Duke University School of Nursing) 	Yes (American Association of Nurse Practitioners)	Durham, NC
Sara Collins , MD, FACC; <i>interventional cardiology</i>	<ul style="list-style-type: none"> • Attending physician (Capital Cardiology Consultants, P.C.) • Medical Director, Cardiology – Heart Failure Rehabilitation Program (BridgePoint Hospital National Harbor) 	n/a	Washington D.C.
Patricia Davidson , MD, FACP; <i>internal medicine, cardiology</i>	<ul style="list-style-type: none"> • Physician (MedStar Health) 	n/a	Washington D.C.
Bhargavi Degapudi , MD; <i>nephrology, palliative care</i>	<ul style="list-style-type: none"> • Medical Director, Care Transitions and Palliative Care (AtlantiCare) 	n/a	Atlantic City, NJ
John Duane Heick , PT, PhD, DPT; <i>physical therapy, heart failure</i>	<ul style="list-style-type: none"> • Associate Professor (Northern Arizona University) • Physical Therapist (Select/Physiotherapy Associates) 	Yes (American Physical Therapy Association)	Flagstaff, AZ
L.E. Gomez , MD, MBA; <i>emergency medicine</i>	<ul style="list-style-type: none"> • Assistant Professor of Emergency Medicine (Howard University School of Medicine) • Physician Quality Improvement Advisor (HealthCare Dynamics International) 	n/a	Annapolis, MD
Paul A. Heidenreich , MD, MS; <i>cardiology</i>	<ul style="list-style-type: none"> • Professor of Medicine, Vice-Chair Clinical Quality and Analytics (Stanford University School of Medicine) • Physician, Director of Echocardiography (VA Palo Alto Health Care System) 	Yes (Heart Failure Society of America)	Palo Alto, CA
Barbara Hutchinson , MD, PhD, FACC; <i>cardiology</i>	<ul style="list-style-type: none"> • Physician and Managing Partner (Chesapeake Cardiac Care, PA) • Instructor in Medicine (University of Maryland Hospital) 	n/a	Annapolis, MD

Name, credentials, and medical specialty	Title (Organization)	Society Clinician Committee is representing (if applicable)	Location
Michelle Kittleson, MD, PhD; <i>cardiology</i>	<ul style="list-style-type: none"> • Director, Post Graduate Medical Education in Heart Failure and Transplantation; Associate Professor of Medicine; Director, Heart Failure Research (Cedars-Sinai Medical Center) 	Yes (American Heart Association)	Los Angeles, CA
Mary Krebs, MD; <i>family medicine</i>	<ul style="list-style-type: none"> • Family Medicine Physician (HealthSource of Ohio) • Family Medicine Faculty (Soin Medical Center) 	Yes (American Academy of Family Physicians)	Xenia, OH
Joel Rosen, MD, FAAFP, FHM; <i>primary care</i>	<ul style="list-style-type: none"> • Medical Director (Christus St. Vincent Regional Medical Center) 	n/a	Santa Fe, NM
Michael Steinman, MD; <i>geriatrics</i>	<ul style="list-style-type: none"> • Professor of Medicine (University of California at San Francisco School of Medicine) • Attending physician (San Francisco Veterans Affairs Medical Center) 	Yes (American Geriatrics Society)	San Francisco, CA
John Teeters, MD; <i>preventative cardiology</i>	<ul style="list-style-type: none"> • Chief of Cardiology (University of Rochester Medical Center) • Executive Medical Director (Accountable Health Partners) • Director (Heart Failure Center at Highland Hospital) 	Yes (American College of Cardiology)	Rochester, NY

Clinician Committee Meetings

CORE hosted three meetings with the Clinician Committee:

- 1) Clinician Committee Meeting 1 on January 11, 2019,
- 2) Clinician Committee Meeting 2 on February 27, 2019, and
- 3) Clinician Committee Meeting 3 on June 13, 2019.

This report contains a summary of CORE’s presentations to the Clinician Committee and the Clinician Committees feedback from during and after the meetings.

Clinician Committee meetings followed a structured format. CORE presented key issues identified during measure development and a proposed approach to addressing them, and Clinician Committee members reviewed, discussed, and advised on the issues.

The materials within this document do not represent final measure specifications.

Key Issues Discussed During Clinician Committee Meeting 1 and Post-Meeting Feedback

Prior to Clinician Committee Meeting 1, CORE provided the Clinician Committee members with materials for review.

In addition to providing input on the measure's cohort and outcome definitions, Clinician Committee members provided input on the measure's cohort exclusions, outcome definition, risk-adjustment variables, and shared thoughts on approaches to attribution for the measure.

Executive Summary of Clinician Committee Meeting 1 and Post-Meeting Feedback

Overview of Information Presented by CORE

CORE reviewed:

- Goals of the meeting.
- Introduction to quality measurement.
- The development of the MIPS heart failure admission measure.
 - Project overview and timeline.
 - Measure background.
 - Measure specifications: cohort, outcome, and risk adjustment.
 - Specifically, CORE articulated their rationale for proposing exclusion of admissions occurring within a short ten day “buffer period” of time after discharge from the following facilities:
 - a. Hospitals,
 - b. Skilled nursing facilities (SNFs), or
 - c. Acute rehabilitation facilities.
- Potential technical challenges in measure design.

Overview of Clinician Committee Feedback

The Clinician Committee provided feedback on the measure's cohort definition, outcome definition, and potential challenges for measure development.

Cohort

- Specifically, the group provided feedback on the cohort definition, including CORE's recommendation to exclude heart transplant patients. Of the nine Committee members who attended the meeting or provided input via email post-meeting:
 - All supported the inclusion criteria for the cohort.
 - All favored excluding heart transplant patients.

- One Committee member favored excluding patients on the heart transplant registry list.
- Three Committee members suggested also excluding patients on home inotropic therapy from the cohort.
- One Committee member suggested excluding patients with late-stage cancer, who are not necessarily in hospice, from the cohort.

Outcome

- Specifically, the group provided feedback on two main components of the outcome:
 - Whether a 10-day buffer period post-discharge from a hospital, skilled nursing facility (SNF), or acute rehabilitation facility is appropriate; and,
 - Whether a broad outcome inclusive of all-cause unplanned admissions is preferred to a narrow outcome of heart failure-specific admissions.
- Of the nine Committee members who attended the meeting or provided input via email post-meeting:
 - Three Committee members agreed with the proposed 10-day buffer period during which an admission would not be counted in the outcome, as it would hopefully incentivize ambulatory providers to see patients earlier post-hospital discharge.
 - Two Committee members expressed concern with the 10-day buffer period, stating that it is challenging for many clinicians to see their patients even after ten days following discharge from a hospital. They recommended that the buffer period be longer to allow clinicians more time to manage their patients' care post-hospital discharge.
 - One Committee member recommended applying a shorter buffer period (e.g. seven days) to clinicians in urban areas and a longer buffer period (e.g., ten days) to clinicians in rural areas.
 - All Committee members favored the broad outcome. However, some members did have concerns that too broad of an outcome could adversely affect clinicians or clinician groups who may not be able to impact their patients' all-cause admission rate.

Technical Challenges (Attribution and Risk Adjustment)

- Specifically, the group provided feedback about the proposed approach to attribution, risk adjustment, and measure calculation. Of the seven Committee members who attended the meeting or provided input via email post-meeting:
 - Two Committee members recommended the measure only apply to clinicians or clinician groups who meet a case minimum.

- One Committee member recommended attributing to multiple providers (e.g. PCP and cardiologist) versus a single provider (e.g., cardiologist only).
- One Committee member asked if the measure will be calculated at the National Provider Identifier (NPI) or Taxpayer Identification Number (TIN) level.
- One Committee member expressed concern about the feasibility of adequately adjusting for social risk factors. Another Committee member recommended risk adjusting for rurality and the density of relevant providers.
- Two Committee members recommended considering palliative care in risk adjustment.

Detailed Summary of Clinician Committee Meeting 1 and Post-Meeting Feedback

Welcoming Remarks

- The CORE team welcomed the Clinician Committee members to the meeting to discuss the development of an outpatient heart failure admission measure for MIPS. The CORE team reviewed the confidentiality agreement and the funding source for the project.
- CORE conducted roll-call of meeting participants; eight of 14 Clinician Committee members were in attendance. (Note: CORE also followed-up via email with members who were not in attendance and received additional input from two Committee members.)

Introduction to Quality Measurement

CORE Presentation to the Clinician Committee

- CORE reviewed the types of quality measures including structural, process, and outcome measures.
- CORE discussed outcome measures, noting that outcome measures reflect the impact of the health service or intervention on the health status of patients.
- CORE reviewed the components of outcome measures which include:
 - The cohort, or the group of patients included in the measure.
 - The outcome, which is the result of care or what happens to the patient.
 - Risk adjustment, which is the process that helps to account for differences in patient mix so that variation in performance reflects differences in care quality and not differences in patient mix.
- CORE provided an overview of the meeting's goals.

Project Overview

CORE Presentation to the Clinician Committee

- CORE is developing an outcome measure for MIPS which will focus on patients with heart failure, measure hospital admissions, be risk-adjusted, and evaluate quality of care

provided by clinicians or groups of clinicians. CORE anticipated completing development in July 2019.

- CORE noted the measure is still in the early stages of development and that CORE has been focused on defining the cohort and outcome, as well as the preliminary risk-adjustment model.
- CORE summarized approaches to soliciting stakeholder input during development, noting the input of the TEP as well as the Clinician Committee, and their feedback loop.

Measure Background and Overview of ACO Heart Failure Measure

CORE Presentation to the Clinician Committee

- CORE provided background information on the Accountable Care Organization (ACO) heart failure measure previously implemented in CMS's Medicare Shared Savings Program ([ACO measure title: ACO-37: "Risk-Standardized Acute Admission Rates for Patients with Heart Failure"](#)). CORE is adapting this ACO heart failure measure for the MIPS program.
- CORE noted that the ACO heart failure measure evaluated risk-standardized acute unplanned admission rates (RSAARs). CORE walked through the distribution of RSAARs for patients with heart failure in the ACO setting. The measure detected significant variance in RSAARs across ACOs.
- In addition, CORE presented its analyses of the most common admission types among ACO patients with heart failure. CORE conducted analyses to determine how ACO admission types vary based on ACO performance (broken down by quartile).
 - CORE noted that non-cardiovascular admissions constitute the majority of admissions for ACO patients with heart failure, which is consistent with the clinical observation that patients with heart failure are vulnerable and at risk for hospitalizations other than heart failure. These data support the use of a broad outcome of all-cause unplanned admissions, in order to reflect the experience of heart failure patients and to drive meaningful quality improvement.
- CORE is re-specifying the ACO heart failure measure for the MIPS.
 - CORE will conduct measure testing to determine the appropriate cohort, outcome, risk adjustment, and attribution approaches, given the MIPS heart failure admission measure is intended for use at the MIPS-eligible clinician and/or clinician group level.

Development of Heart Failure Admission Measure

CORE Presentation to the Clinician Committee

- CORE introduced the proposed measure cohort:
 - CORE noted the MIPS heart failure cohort will be similar to the ACO heart failure cohort. The cohort will include Medicare Fee-For-Service (FFS) patients who are 65 years or older, and who have full-time enrollment in Medicare Part A and B

during the year prior to measurement. Furthermore, these patients must have one principal discharge diagnosis of heart failure, or two or more heart failure encounters (in any position) in the inpatient and/or outpatient setting during the 24-month lookback period prior to the measurement year.

- CORE provided an overview of the [proposed list of ICD-10 cohort inclusion codes](#). This list includes codes for systolic and diastolic heart failure, hypertensive heart failure, rheumatic heart failure, right ventricular heart failure, and cardiomyopathy.
- CORE also provided an overview of the [proposed list of ICD-10 cohort exclusions codes](#). This list includes codes for heart transplants and internalized left ventricular assist devices (LVADs). CORE justified these exclusions, citing that although hospitalizations are important to capture in these two groups, CORE's prior ACO measure work illustrated these patients cluster in certain ACOs, making risk adjustment challenging and potentially inaccurate.
- CORE introduced the proposed broad outcome definition: acute unplanned admissions per 100-person years excluding:
 - Planned admissions.
 - Admissions that likely do not reflect the quality of heart failure management provided by ambulatory clinicians:
 - Complications of surgeries.
 - Accidents.
 - Injuries.
 - Admissions that occur within ten days of discharge from a hospital, skilled nursing facility, or acute rehabilitation facility ("10-day buffer period").
 - Admissions that occur while patients are enrolled in Medicare's hospice benefit.
 - Admissions that occur prior to the first visit with the assigned clinician.
- The broad outcome would be aligned with a similar measure under development by CORE, which focuses on ambulatory care management for persons with multiple chronic conditions (MCCs). An alternative to this broad outcome would be a narrow outcome of heart failure-specific admissions.
 - In CORE's preliminary analyses, early data showed patients with heart failure have multiple comorbidities and are vulnerable to a range of hospitalizations. Thus, an all-cause admission outcome with some exclusions is more patient-centered than disease-centered and resonates more with what the patient is experiencing. However, CORE acknowledged the reality that some clinicians and/or clinician groups may not have the capacity or resources to prevent a broad range of admissions.
- CORE asked the Clinician Committee the following questions:

- Do you agree with the cohort definition?
- Do you agree with excluding heart transplant patients?
- Do you agree with a 10-day buffer period for the outcome?
- Do you agree with keeping a broad outcome?

Cohort

- Nine Committee members provided input on the measure's cohort.
 - All nine Committee members agreed with the inclusion criteria for the cohort.
 - One Committee member noted that in the Medicare ACO programs, there has been a push to increase Hierarchical Condition Category (HCC) coding. As a result, clinicians are coding heart failure during outpatient visits more so than needed.
 - All nine Committee members agreed with the proposed cohort exclusions (heart transplant patients and patients with LVADs).
 - One member agreed with the exclusion of heart transplant patients based on their clinical care experiences.
 - Three Committee members suggested also excluding patients on ambulatory inotropic therapy, as they are more likely to require admission due to unforeseen complications from the inotrope.
 - One Committee member suggested also excluding patients with late-stage cancer, who are not necessarily in hospice, from the cohort.
 - If possible, one member recommended also excluding patients on the heart transplant registry list, as they are a sicker population.

Summary

- All Committee members supported the proposed cohort inclusion and exclusion criteria. Some suggested additional exclusion criteria.
 - CORE will consider also excluding patients on inotropic therapy and the transplant registry list from the cohort. One limitation would be whether we can accurately capture these populations in the Medicare administrative claims data used for the measure.

Outcome

- Nine Committee members provided input on the measure outcome.
 - Nine members commented on the proposed 10-day buffer period post-discharge from a hospital, skilled nursing facility, or acute rehabilitation facility. Specifically:
 - Two Committee members agreed with the 10-day buffer period.

Summary

- The Clinician Committee members had mixed opinions on the proposed 10-day buffer period. Some were ambivalent, while others felt that no buffer period or a short buffer period is more appropriate.
 - CORE acknowledged the challenge of defining a buffer period, stating that the goal of the proposed 10-day buffer period is to incentivize early discharge follow-up, while still promoting accountability for early readmissions among providers in hospital, acute rehab, and SNF settings. CORE will run analyses to determine if there is a natural buffer period that makes sense specifically for this measure and revisit with the group.
- Committee members generally agreed with the outcome of all-cause unplanned admissions and noted a few scenarios for consideration.
 - CORE acknowledged the example of hip fractures, which in many cases are difficult to prevent, though the risk can be mitigated through fall precautions, strength training and home modifications. CORE noted that although clinicians cannot prevent *all* falls, there is an expectation that providers can help lower the risk. Any variation in that rate would be attributable to the quality of care being delivered, after adjusting for patient factors that contribute to admission risk.

CORE Presentation to the Clinician Committee

- CORE provided an overview of measure risk adjustment, which will include selection of risk factors based on peer-reviewed literature, expert input, and empiric analyses. CORE clarified the goals of the risk-adjustment model:
 - to illuminate variation in performance that reflects differences in quality of care, not case mix; and,
 - to develop a model that accounts for case mix differences across MIPS eligible clinicians.
- CORE introduced the Clinician Committee to some of the potential targets for risk adjustment for the measure: age, comorbidities, functional status/frailty, and advanced heart failure (implantable cardiac defibrillator, cardiac resynchronization therapy, or pacemaker). CORE noted that these risk factors align with the ACO heart failure measure.
- CORE spoke about CMS's considerations for incorporating social risk factors (SRFs) into the measure's risk-adjustment model. In CORE's work on the related outpatient MIPS measure for patients with MCCs, they are developing options for CMS and stakeholders to consider how best to address the relationship between SRFs and the outcome of unplanned admissions for the MIPS admission measures. The SRFs that CORE is examining include both individual risk factors (e.g. dual eligibility) as well as community-level factors like rurality. CORE will engage the Clinician Committee on this issue specifically in future conversations.

- CORE provided a brief overview about the proposed attribution approach, stating they are considering a visit-based attribution approach, applied to a narrow group of clinicians that commonly manage heart failure patients (e.g., primary care clinicians and cardiologists).
- In the second discussion, CORE opened the discussion for Committee members to provide feedback and ask additional questions they may have about the cohort, outcome, risk adjustment, and/or attribution. Specifically, CORE asked the Clinician Committee the following questions:
 - Are there other technical challenges that you foresee?
 - Do you have any further considerations as we begin working on risk adjustment and attribution?

Attribution

- Six Committee members provided input and highlighted key considerations of the measure’s attribution approach.
 - One Committee member stated that a key consideration is the time period that the patient is attributable to a given provider. They also had three follow-up questions:
 - Will attribution be based on a calendar year?
 - Will the measure only use claims for evaluation and management (E&M) visits, rather than procedure visits too?
 - Will attribution be calculated at the individual provider level or group level (NPI versus TIN level)?
 - One Committee member noted that with a broad outcome, it seems straightforward to attribute heart failure patients to a primary care provider (PCP), as they are perhaps more willing to be accountable for all-cause unplanned admissions. On the other hand, cardiologists are not necessarily treating their heart failure patients for all of their comorbidities, so they may instead be more comfortable if they are held accountable for heart failure admissions only.
 - One Committee member expressed concern about the broad outcome being applied to individual clinicians. In their experience, many individual clinicians are part of multispecialty teams caring for heart failure patients. They emphasized that attribution to individual clinicians may not reflect the multidisciplinary team of providers caring for them (and thus accountability for their outcomes).
 - One Committee member recommended attributing some patients to more than one provider (e.g. PCP and cardiologist), in situations where they are seeing both providers regularly. The best patient outcomes seem to occur when care is well-coordinated with the PCP and cardiologist. In addition, the Committee member mentioned that CORE should consider adding nephrologists to the relevant

specialty list, given that they treat many heart failure patients who require dialysis.

- Two Committee members recommended CORE use a minimum case size requirement for attribution because it may create better specificity in attributing to providers that are truly managing heart failure care.

Summary

- The Clinician Committee highlighted several considerations for clinician attribution, including: testing multiple provider attribution; developing a minimum patient case size requirement; considering the time period that patients will be attributed to clinicians; considering which clinicians are most accountable for all-cause unplanned admissions; and, determining if attribution will occur at the individual provider or group level.
 - CORE thanked the Committee for their thoughtful input, stating that they will adapt an attribution approach based on another outpatient MIPS measure under development; however, the approach will be tailored for this measure with stakeholder input. The goal is to develop an approach that is transparent and accessible to the public, and that reflects what the measure should incentivize (e.g. single provider accountability versus multiple provider accountability).

Risk Adjustment

- Seven Committee members provided input or highlighted considerations for the measure's risk-adjustment model.
 - One Committee member mentioned that clinical practice guidelines vary based on New York Heart Association's heart failure classifications, which may be difficult to capture in administrative claims data.
 - One Committee member asked how emergency department (ED) visits are handled. He noted that it might be worth considering risk adjusting for ED visits, as they could be considered a marker of disease severity.
 - Two Committee members noted that in rural areas, cardiologists are hard to find; of the cardiologists in the area, the majority are general cardiologists or interventional cardiologists. The more specialized cardiologists like advanced heart failure specialists are uncommon in these areas so CORE should consider risk adjusting for rurality and the density of relevant providers across the country.
 - One Committee member expressed concern that there are SRFs that cannot be fully addressed by providing better medical care; existing risk-adjustment schemes do not adequately adjust for these factors, which may unfairly penalize doctors and health systems that care for larger proportions of disadvantaged populations. The Committee member did acknowledge that adequate risk adjustment is very challenging to do in practice.

- One Committee member noted controversy that hospitals with the greatest reduction in readmissions actually had the highest mortality, and whether heart failure patients were being transferred to palliative care appropriately at the end of life. She emphasized that it will be important to consider whether patients are being appropriately funneled to palliative care at the end of life, with heart failure being their terminal diagnosis.
 - Another Committee member agreed, stating that appropriate referrals to palliative care based on the right choices for the patient and their prognostication are essential. The Committee member acknowledged that identifying the right patients for palliative care is complex and that CORE should explore referral patterns to palliative care.

Summary

- The Clinician Committee highlighted several considerations for risk adjustment, including: considering the impact of appropriate referral to palliative care on measure outcomes; conducting analyses to explore the effects of provider density and rurality on the measure; considering risk-adjusting for ED visits; evaluating palliative care pattern referrals; and, acknowledging the challenges in capturing variation in clinical practice guidelines for patients with different stages of heart failure or significant comorbidities.
 - CORE thanked the Committee for their thoughtful input, stating that they will weave in these considerations when conducting risk-adjustment analyses. CORE will present the analytic results to the Committee for discussion in future meetings.

Wrap-Up

CORE Presentation to the Clinician Committee

- CORE thanked the Clinician Committee members for their valuable feedback and reviewed next steps:
 - Distribute a summary of the meeting;
 - Develop attribution approach and risk-adjustment model; and,
 - Hold the next Clinician Committee meeting (in-person) on Wednesday, February 27, 2019.
- CORE invited Clinician Committee members to reach out via email with any additional input.

Key Issues Discussed During Clinician Committee Meeting 2 and Post-Meeting Feedback

Prior to Clinician Committee Meeting 2, CORE provided the Clinician Committee members with materials for review.

In addition to providing input on the measure's cohort and outcome definitions, Clinician Committee members provided input on the measure's candidate risk variables, and shared thoughts on approaches to attribution and risk adjustment.

Executive Summary of Clinician Committee Meeting 2 and Post-Meeting Feedback

Overview of Information Presented by CORE

CORE reviewed:

- Goals of the meeting.
- Recap from the first Clinician Committee Meeting.
- The development of the MIPS heart failure admission measure:
 - Project overview and timeline.
 - Measure background.
- Draft measure specifications (cohort, outcome), attribution options, and approach to risk adjustment including a list of candidate demographic, clinical, functional status/frailty, and SRFs.
 - Proposed [cohort definition](#).
 - Proposed [outcome definition](#).
 - Three [options for attribution](#).
 - Conceptual framework for measure [risk adjustment](#) and proposed candidate risk-adjustment variables: demographic, clinical, functional status/frailty and social.

Overview of Clinician Committee Feedback

12 of 14 Clinician Committee members attended the meeting, and one who partially attended meeting provided additional input via email. All input is summarized below. The Clinician Committee provided feedback on the measure's cohort definition, outcome definition, attribution models, and risk-adjustment approach.

Cohort

- Committee members unanimously supported the measure cohort definition.
- One Committee member noted that the increased penetration of Medicare Advantage (MA) in some communities has resulted in the Medicare-Medicaid dual eligible

beneficiaries representing many beneficiaries in Medicare FFS. He encouraged CORE to understand how MA penetration may influence measure performance.

Outcome

- The Clinician Committee primarily provided feedback on whether a broad outcome inclusive of all-cause unplanned admissions makes sense (vs. a focused outcome of admissions for heart failure). The Clinician Committee generally agreed with the proposed broad outcome; however, a few members did state their preference for a narrow approach. Those in favor of the narrow outcome tended to be cardiologists. Of the 12 Committee members who attended the meeting or provided input via email post-meeting:
 - Six Committee members agreed with the broad outcome.
 - Two Committee members agreed with the narrow approach, since this could be attributed to cardiologists. They were concerned that the broad outcome would judge cardiologists on quality criteria that should only apply to PCPs.
 - CORE referred to the measure as the MIPS heart failure admission measure. Five Committee members commented that the labeling of the heart failure measure is not fully accurate if the measure will have a broad outcome.
 - One Committee member noted concern with the 10-day [buffer period](#). The Committee member stated about two-thirds of readmissions occur within 10-days of admission so many heart failure patients' admissions would not be captured in the measure.
 - One Committee member asked what happens when a patient is admitted for pneumonia or some comorbidity and then gets moved to the heart failure service, causing the patient's primary discharge diagnosis to change to heart failure because of improper care provided in the hospital.

Attribution

- The Committee provided feedback about the proposed approach to attribution and highlighted their concerns with the proposed attribution models, stating that they are too complex and seem to target specialists. The Committee emphasized that often clinicians/clinician groups don't have the capacity to prevent a broad range of admissions and noted that they should not be held accountable for the outcome. Of the 12 Committee members who attended the meeting or provided input via email post-meeting:
 - One Committee member suggested that some level of standardization in attribution across measure to reduce complexity. The Committee member favored alignment with the MIPS total cost of care measures.
 - Three Committee members shared feedback about the types of providers included in the measure. They noted that non-physician providers (e.g. nurse practitioners, physician assistants, certified clinical nurse specialists) should also be included in the measure.

- Two Committee members stated that the overall level of complexity in this measure will make it very unappealing for small provider groups.
- Two Committee members agreed with Option 3 (multiple provider attribution) when the number of visits to a cardiologist and PCP are equal. One of the three stated that a specialist can be considered dominant and therefore reasonably accountable if they see a patient more than the PCP.
- Three Committee members disagreed with all proposed attribution options.
 - Two Committee members stated that cardiologists and many PCPs should not be accountable in a total care measure (a measure that looks at broad care delivery, not just care for a specific condition) because physicians don't have enough control over their patients' care to be attributed in this measure either.
 - One Committee member disagreed with the attribution approaches, citing concern that it will cause specialists and PCPs to become obsessive about providing care that meets the measure's requirements.
- One Committee member expressed concerns about the robustness of attribution.

Risk Adjustment

- The group provided feedback about the proposed demographic, clinical, functional status/frailty, and SRFs and highlighted several considerations for risk adjustment, including: exploring and incorporating healthcare access into the model; pursuing comparative SRF analyses; and, reconsidering the argument for why race and sex are not being risk-adjusted for. Of the 12 Committee members who attended the meeting or provided input via email post-meeting:
 - Seven Committee members provided feedback on the proposed demographic and clinical risk factors. All agreed with the current list of clinical risk factors and cited additional clinical risk factors for consideration (listed below).
 - Two Committee members disagreed with the proposal to not risk adjust for race.
 - One Committee member disagreed with CORE's rationale for not risk adjusting for sex.
 - One Committee member noted that if feasible in the future, the New York Heart Association (NYHA) classifications would be important to include in the model because they are primary indicators of heart failure risk.
 - One Committee member noted the inclusion of psychiatric disorders and proposed it be further specified to ensure that it encompasses an array of relevant physiological disorders; e.g., markers of physiologic stress; allostatic load.

- One Committee member proposed including sleep disorders (such as sleep apnea) and hypertensive heart disease in the clinical model, if they are not already.
- One Committee member stated that stroke should be included, if it is not already.
- Ten Committee members discussed CORE’s conceptual framework for risk adjustment¹ and the benefits and drawbacks of adjusting for SRFs.
 - Two Committee members pointed to access of health care as a key factor for inclusion in the conceptual framework.
 - Three Committee members commented on the lack of reliability using 9-digit zip codes as a determinant of socioeconomic status and access to care.
 - One Committee member commented on the balance between considering social determinants and being careful not to over-simplify complex social issues when applying broad social determinates.
 - One Committee member noted concerns about risk adjusting for social risk because it can mask efforts by some providers to address social determinants.
 - Two Committee members agreed with risk-adjusting for SRFs, acknowledging that it is challenging to do so.
 - One Committee member recommended adjusting for dual eligibility status, race, and rurality if these factors are associated with admission.

Detailed Summary of Clinician Committee Meeting 2 and Post-Meeting Feedback

Welcoming Remarks

- The CORE team welcomed the Clinician Committee members to the meeting to discuss the development of an outpatient heart failure admission measure for MIPS. The CORE team reviewed the confidentiality agreement and the funding source for the project.
- CORE conducted roll-call of meeting participants; 12 of 14 Clinician Committee members were in attendance. (Note: CORE also followed-up via email with members who were not in attendance and received additional input from one Committee member who attended part of the meeting.)

¹ In the conceptual framework, potential risk adjusters include baseline demographic and clinical characteristics that are present at the start of the measurement period. In addition, CORE is considering a range of social risk factors, grouped into four categories based on a 2017 report by the National Academies of Sciences, Engineering, and Medicine (NASEM).¹ They are (1) socioeconomic position, (2) race, ethnicity, and cultural factors, (3) social relationships, and (4) residential and community context.

Review of Measure Concept

CORE Presentation to the Clinician Committee

- CORE recapped the development of an outpatient heart failure admission measure for MIPS, which they anticipate completing in July 2019.
- CORE reminded the Committee that the MIPS heart failure admission measure is a re-specification of the ACO heart failure measure, which CMS previously implemented in the Medicare Shared Savings Program. CORE noted that the MIPS heart failure admission measure will take into consideration differences between ACO provider capacity and MIPS provider capacity; moreover, the measure will specify the cohort, outcome, attribution approach, and risk-adjustment model to accommodate the unique context of MIPS.
- CORE reiterated that the goal of the MIPS measure under development is to better assess the quality of care for patients with heart failure. By measuring quality, it is possible to show variation in the outcome of acute unplanned hospitalizations across MIPS-eligible providers.
 - CORE noted that the quality benchmark is not zero admissions; rather, the measure will assess providers in comparison to a national average of all providers. An essential part of this measure is ensuring fair comparison among providers, which requires robust risk adjustment and a thoughtful attribution approach.

Review of Proposed Measure Cohort

CORE Presentation to the Clinician Committee

- In response to the Clinician Committee's feedback from the first meeting, CORE revised the cohort's inclusion and exclusion criteria.
- CORE presented the proposed cohort inclusion criteria.
 - The cohort will include Medicare FFS patients who are 65 years or older, and who have full-time enrollment in Medicare Part A and B during the year prior to measurement. Furthermore, these patients must have one principal discharge diagnosis of heart failure, or two or more heart failure encounters (in any position) in the inpatient and/or outpatient setting during the 24-month lookback period prior to the measurement year.
- CORE reviewed the ICD-10 diagnosis codes used to identify the cohort, noting the inclusion of cardiomyopathy. The rationale for including patients with cardiomyopathy in the measure not all patients who have cardiomyopathy have heart failure, cardiomyopathy patients are an important group to capture since providers could be responsible for preventing heart failure encounters by delivering high quality care.
- CORE recapped the proposed cohort exclusion criteria which encompasses patients with LVADs, patients with heart transplants, patients on home inotropic therapy, and patients on hospice for any reason.

- The rationale behind excluding these patients is that they are a very sick group that are likely higher risk than the average heart failure patient. For instance, providers who care for patients with heart transplants have a lower threshold for hospitalizing patients within the first year of the transplant, making hospitalization a signal for high quality care for these patients.
- CORE acknowledged that the population of FFS patients will differ across geographic regions. As a result, CORE will consider this when building and testing the risk-adjustment model.
- CORE presented preliminary cohort data, stating that the number of patients captured with the inclusion and exclusion criteria is ~2.6 million patients. They noted that these patients have not yet been assigned to MIPS providers, so this population will decline once attribution is applied to relevant MIPS providers.
 - CORE presented descriptive statistics of the cohort as well.
 - The mean age of the cohort is 80.
 - Approximately less than 10% of patients are coded as Black race. CORE noted that Medicare claims data doesn't distinguish race from ethnicity (e.g., non-Hispanic White) and it is not clear who/how race is defined; recognizing these limitations, CORE estimated the racial mix of the population by stratifying the cohort into Black vs non-Black.
 - About 18% of patients are dual eligible for Medicare and Medicaid, which is often used as a proxy for income.

Clinician Committee Feedback on Cohort

- All but one Committee member had no feedback on the cohort. One Committee member expressed concerns about only including Medicare FFS patients in the cohort. He stated that in many parts of the country, MA (Medicare Advantage) dominates, making the FFS population appear more like a Medicaid population. He noted that this may create challenges for attribution and risk adjustment, noting that the proportion of FFS and MA patients will vary based on geographic location.

Summary

- During the first and second Committee meetings, all Committee members supported the proposed cohort inclusion and exclusion criteria. One Committee member suggested considering how varying proportion of FFS and MA patients might affect the measure; otherwise, there was no additional Committee feedback on the cohort.

Review of Proposed Measure Outcome

CORE Presentation to the Clinician Committee

- CORE discussed the proposed outcome for the measure. CORE acknowledged that during the first Committee meeting, they proposed that the measure use a broad outcome of all-cause acute unplanned admissions; however, CORE noted that they

would like to also obtain the Committee’s thoughts on whether a narrow outcome is a better option.

- CORE presented the benefits and challenges of the measure when defined with a broad versus narrow outcome.
 - A broad outcome encourages more patient-centered care (rather than disease-centered care), allows measure to be more flexible by potentially attributing to PCPs and/or cardiologists, reduces the likelihood of gaming in coding practices, and will yield greater statistical reliability.
 - A narrow outcome reduces overlap with other MIPS measures specified with broad outcomes and may encourage cardiologists to select the MIPS heart failure admission measure and, thus, be held accountable for a proportion of total admissions; however, there is a risk for gaming in coding practices, and potentially less statistical reliability given that the outcome is less frequent.
- CORE clarified the meaning of “acute unplanned admissions,” stating that the measure will account for potentially elective or planned procedures, along with a non-acute medical diagnosis. If the admission is considered planned or elective, it is not counted as an outcome event because planned admissions do not reflect poor quality care; as such, the attributable provider will not be penalized.
- CORE discussed the proposed outcome exclusions for the measure, noting two additional exclusions since Committee Meeting 1:
 - Admissions at time of and following enrollment for any of the following will be censored: hospice, LVAD implantation, inotropic therapy or heart transplant. Admissions may be counted up until one of these criteria applies to them, after which they will be excluded.
 - Admissions before which patients have seen the provider they are attributed to.

Clinician Committee Feedback on Outcome

- Six Committee members agreed with the broad measure outcome.
 - One Committee member emphasized agreement with a broad measure, especially if the goal of the measure is to have greater patient inclusion and to reduce overall admissions.
 - One Committee member stated they are in favor of a broad outcome, even though it may not benefit their practice. They stated that the broad outcome would help cover the various settings that are apparent in the U.S.
- Two Committee members agreed with the narrow approach, since they were concerned that the broad outcome would judge on credentials that should only apply to PCPs.
 - One Committee member suggested that to get cardiologist participation, it would make the most sense if the measure used a narrow outcome. The Committee member stated that cardiologists would be weary of getting penalized for outcomes they do not feel they can influence.

- One Committee member noted that she represents a small, independent cardiology group, which would certainly be more in favor of a narrow approach.
- Five Committee members commented that the branding of the measure is not fully accurate if the measure will have a broad outcome.
 - One Committee member felt this measure converges more with the MIPS MCC measure and should therefore be renamed to reflect how broad it is.
 - Another Committee member felt that if the measure uses a broad outcome, it is more of a general preventative measure for patients with heart failure and that PCPs should be accountable.
 - Two Committee members noted that the measure seems like a total care measure, since it speaks to a more wrap-around approach in providing high quality care to patients. When looking at all-cause hospitalizations, most of the admissions taking place will not be due to heart failure directly, but rather a comorbidity aligned with heart failure. They stated that if this were to be a broad measure, it will be challenging to rationalize attributing patients to cardiologists.
 - One Committee member noted that there is a tremendous degree of plasticity when admitting patients. Often, emergency department providers are assigning diagnoses in situations where patients are dealing with many comorbidities; as a result, a primary discharge diagnosis could be inaccurate and unfairly penalize attributable providers.
- One Committee member noted concern with the 10-day buffer period, stating that about two-thirds of readmissions occur within 10-days of admission so many heart failure patients' admissions would not be captured in the measure. They also wondered whether facilities who receive sicker patients via transfers would be disincentivized to participate in MIPS.
- One Committee member asked what happens when a patient is admitted for pneumonia or some comorbidity and then gets moved to the heart failure service, causing their primary discharge diagnosis to change to heart failure because of improper care provided in the hospital.

Summary

- The Clinician Committee generally agreed with the proposed broad outcome; however, some members did state their preference for a narrow approach. Those in favor of the narrow outcome tended to be specialists.
 - CORE acknowledged the broad versus narrow outcome debate, emphasizing that there is some rationale for each option. They noted that the narrow approach would be more complex to measure, considering the lack of standardization in coding practices and the likelihood for gaming heart failure codes.
- Several Committee members suggested reconsidering the name of the measure, highlighting that the current title misconstrues the goal of the measure.

Review of Proposed Measure Attribution

CORE Presentation to the Clinician Committee

- CORE reviewed three attribution principles, derived from the National Quality Forum’s (NQF) Attribution Standing Committee Measurement Science Project, that provide guidance in considering options for attribution. Attribution is the process of assigning patients to providers accountable for their care.
 - The first principle for attribution is to create a model that attributes patients to providers fairly and accurately.
 1. Attribution must be inclusive, considering that the goal is to assign a vast majority of patients to providers.
 2. Attribution should not systematically disadvantage patients.
 - A substantial number of heart failure patients may never see a cardiologist, so it probably does not make sense to solely attribute to cardiologists because a considerable number of patients would be unassigned.
 - The second attribution principle is that the measure should:
 1. Attribute patients to providers who can influence the measure outcome.
 2. Incentivize high-quality, coordinated care.
 3. Minimizing unintended consequences.
 - An unintended consequence would be if a cardiologist were measured by a broad outcome and because of this, they don’t take patients with multiple chronic conditions because they don’t feel they can influence their outcome.
 - The third attribution principle is to create transparency.
 - CORE acknowledged that the MIPS program is complex and often not fully understood by patients and providers. To reduce the complicated nature of MIPS, CORE believes that attribution should reflect stakeholder input and be informed by discussion.
- CORE noted that during the design phase of the measure’s potential attribution options, several fundamental questions have been considered so far:
 - Which type of clinicians can influence the measured outcome (e.g. PCPs; cardiologists; non-physicians)?
 - What is the practice composition?
 - What are care patterns: number of visits per year, clinical diagnoses associated with these visits?
- CORE stated that MIPS-eligible clinicians include physicians and non-physicians. However, there is an option to propose the exclusion of non-physician groups (e.g. physician assistants, nurse practitioners, certified clinical nurse specialists). The challenge is that it is not always clear in the data which practices these non-physicians

are affiliated with and how they are functioning in their settings (practicing as a PCP versus a cardiologist).

- CORE recapped for the Committee the three ways that clinicians can choose to [participate in MIPS](#): individual reporting, group reporting, or virtual group reporting.
 - The individual reporting option is composed of an individual clinician with a TIN and NPI number where they reassign benefits.
 - The group reporting option is composed of two or more clinicians who have assigned their billing rights to a single TIN.
 - The virtual group is made up of solo practitioners and groups of ten or fewer eligible clinicians who come together virtually and pool together their patients.
- CORE proposed potentially limiting the measure’s applicability to cardiologists and PCPs, such as physicians, nurse practitioners, physician assistants, and certified clinical nurse specialists. CORE asked the Committee to provide input whether non-physician providers should be included in the measure’s attribution algorithm.
- CORE presented the distribution of patients with cardiologist visits only, PCP visits only, and both cardiologist and PCP visits (E&M visits only). Of the 2.4 million patients, during the 12-month period of October 2017 – September 2018:
 - 49% had at least one visit with a PCP and no visits with a cardiologist.
 - 5.6% had at least one visit with a cardiologist and no visits with a PCP.
 - About 5% were seen exclusively by a non-physician provider.
- CORE reminded the Committee that the goal of these analyses was to determine the frequency of patients with E&M visits to a cardiologist, or a PCP in general medicine, family practice, geriatric medicine, and internal medicine specialties.
 - About 2.3 million patients had E&M visits to a cardiologist or PCP (excluding non-physician providers) in the categories described above, not adjusting for MIPS providers.
 - The measure will attribute patients to providers before restricting to MIPS providers because we want to first attribute patients to providers who are delivering most of the care (not necessarily the MIPS provider supplying most of the care). After attribution, we would then measure the outcome among MIPS providers only.
- CORE presented three options for attribution:
 - Option 1 is a single attribution approach, where a patient with two or more cardiology visits is assigned to that cardiologist, regardless of PCP visits.
 - Option 2 is a single attribution approach, where a patient is assigned to the provider who they visited the most. CORE noted that a cardiologist would only be favored over a PCP if they had the majority of visits.
 - Option 3 is a multiple provider attribution approach, which would assign a patient to the cardiologist and PCP they visited the most. This approach may

incentivize the two attributable providers to work collaboratively; however, their measure scores may look different because of variation in their patient pool. Moreover, multiple provider attribution is extremely complex from an analytic standpoint.

- CORE provided two hypothetical patients for the Committee to consider:
 - Patient 1 is an older adult with heart failure, diabetes, chronic kidney disease (CKD), and is frail. The patient has a close relationship with their PCP and sees them five times a year; he also sees his cardiologist every six months and his endocrinologist occasionally. The patient takes aspirin, an ACE inhibitor, and beta blockers but is not on diuretics; he has no heart failure admissions and his primary concerns are falls and sugar control. In attribution option 1, the patient would be assigned to a cardiologist, since there are at least two visits with a cardiologist. In option 2, the patient would be assigned to the PCP, since the greatest number of visits were with the PCP. Option 3 assigns the patient to both the PCP and the cardiologist.
 - Patient 2 is an older adult with coronary artery disease, ischemic cardiomyopathy, peroxisomal atrial fibrillation, and her main clinical concern is her heart. She sees her cardiologist every three months and sees her PCP 2-3 times a year for things like her flu shot or a cold. In attribution option 1, the patient would be assigned to a cardiologist, since there are at least two visits with a cardiologist. In option 2, the patient would be assigned to the cardiologist, assuming they saw the cardiologist more than the PCP. Option 3 assigns the patient to both the PCP and the cardiologist.
 - CORE summarized by stating that both patients are vulnerable for admission but for distinct reasons; one patient has quiescent heart failure with a myriad of comorbidities, while the other has more active heart failure with other cardiovascular conditions. They posed questions for the Committee to ponder:
 1. For each patient, which provider should be held accountable?
 2. For each patient, who should be coordinating and owning the patient's care?
 3. How can a patient feel like their provider is supporting them and owning their health outcomes?
 4. Who has more opportunities to influence their patient's care?
- CORE discussed attribution more broadly, as it relates to other measures in the MIPS program. The goal is to align in some fashion the attribution approaches for the current cost measures and other measures for the MIPS program. CORE presented the MIPS MCC attribution algorithm at the CMS Quality Conference in January 2019, where the consensus was that there should be some level of standardization between measures.

Clinician Committee Feedback on Attribution

- Twelve Committee members shared feedback about the measure's attribution approaches.

- One Committee member suggested that CMS and providers would prefer some level of standardization in attribution to reduce complexity. The Committee member felt that if the attribution approach for this measure doesn't align with other MIPS cost measures, providers will be skeptical to participate in the program.
- Three Committee members shared feedback about the types of providers included in the measure.
 - One Committee member stated that it would be helpful to look at all physicians involved, not just PCPs and cardiologists. They additionally suggested that the number of visits to other providers (e.g. nephrologists, endocrinologists, etc.) should be accounted for in attribution.
 - One Committee member supported including non-physician providers (e.g. physician assistants, nurse practitioners, certified clinical nurse specialists) in the measure if they are practicing independently.
 - One Committee member spoke on the reality of scarce resources in rural settings where patients are admitted. They emphasized the need to consider the possible lack of cardiologists in a given region, since this would result in PCP's assuming the responsibility of cardiologist and ultimately becoming the attributing physician.
- Two Committee members stated that the level of complexity in this measure will make it very unappealing for small provider groups.
 - One Committee member stated that they foresee this measure only being applicable to larger, multi-specialty groups since individual providers would not be willing to take responsibility for such broad-spectrum care.
 - One Committee member noted that "this is a team sport" and affirmed that individual providers will not be interested in participating. They stated that the measure should try to incentivize care by being as inclusive as possible with other provider types, encouraging physicians to work collaboratively.
- Two Committee members agreed with Option 3 (multiple provider attribution), stating that both a cardiologist and PCP should assume responsibility if their number of visits with a patient is equal. If a PCP is taking charge of their patient's heart failure and accompanying comorbidities and billing for it, the PCP should be attributed, not the patients' cardiologist. PCPs are more likely to be managing the non-cardiac conditions which may result in admission.
 - Two members stated that a specialist can be considered dominant and therefore reasonably accountable if they see the patient more than the PCP.
- Three Committee members disagreed with all proposed attribution options.

- Two of the three discussed the percentage of care that they have control over. They stated that cardiologists and many PCPs should not be accountable in a total care measure because physicians don't have enough control over their care to be attributed in this measure either.
- One of the two Committee members spoke on the role of the patient in this measure. Often, there are patients who cannot be kept out of the hospital. The Committee member felt that these readmissions cannot be attributed fairly, since it is out of the provider's control.
- One Committee member disagreed with the attribution approaches, citing concern that it will cause specialists and PCPs to become obsessive about providing care that meets the measure's requirements. They felt as though it shouldn't be the individual physicians that are getting targeted for care but should be directed at the healthcare system who can apply the pressure to larger organizations.
- One Committee member expressed concerns about the robustness of attribution. They felt as though the measure would be more well-received by providers if patients were only attributed to providers if they had two or more visits and if there was a stipulation for "reasonable amount of provider relationship."

Summary

- The Clinician Committee highlighted their concerns with the proposed attribution models, stating that they are too complex and seem to target specialists. Some Committee members favored alignment with MIPS total cost measures. The Committee emphasized that providers often don't have the capacity to prevent a broad range of admissions and noted that they should not be at fault for this.
- CORE thanked the Committee for their thoughtful input, stating that they will rethink the attribution approach.
- CORE agreed with the Committee on the topic of provider capacity and will reconsider the current attribution models. They noted that providers' measure scores will be based on a national average benchmark, so the expectation is not that providers will be able to prevent all admissions.

Review of Proposed Measure Risk Adjustment Model

CORE Presentation to the Clinician Committee

- CORE stated that the goal of risk adjustment is to highlight variation in performance that reflects differences in quality of care, not patient case mix. CORE intends to develop a model that accounts for case mix differences across MIPS eligible clinicians. The selection of risk variables will be based on literature, expert suggestion, and empiric analyses. The model will assess baseline characteristics, present at the start of the measurement year, that confer risk of admission and are independent of quality of care.

- CORE introduced the conceptual framework for risk adjustment, which includes clinical and demographic risk factors; notably, the framework also addresses the reality of SRFs and the role they may play in risk adjustment. This conceptual framework aligns with the framework CORE constructed for another MIPS outpatient outcome measure under development. CORE stated that a goal during risk adjustment is to reveal disparities without creating unintended consequences.
 - CORE stated that a part of measure development is understanding why there are differences in quality outcomes. When thinking about risk adjustment, which attempts to remove the confounding variables responsible for an outcome, it is essential to also consider the consequence of masking variables responsible for disparities in case mix.
- CORE presented the proposed clinical risk factors, which were selected based on their association with hospitalization outcomes, frequency, and effect size.
 - CORE reviewed the clinical risk variables (aggregated for ease of review), their frequency and adjusted risk ratios, that is the risk of admission among those with over those without the risk factor. These numbers were taken from the ACO measure since data are not yet available for the MIPS measure.
 - CORE noted that sex and race were not adjusted for in the ACO measure, since differences in outcomes were felt to be due to disparities in health care, and that these disparities could be mitigated by high quality care. Moreover, prior research has not supported a strong biological reason why women or Black adults should have a higher risk of adverse outcomes related to heart failure, compared to men and non-Black adults. CORE clarified that in this context, the term biological referred to a genetic predisposition (which was not found) as opposed to an environmentally-related biological imprint such as stress.
- CORE discussed the approach to adjusting for SRFs, which includes considering 1) whether providers can mitigate SRF influence on the outcome, 2) understanding unintended consequences of adjusting or not adjusting for SRFs, and 3) quantitatively evaluating target SRFs.
 - CORE explained that there are some possible unintended consequences of adjusting for SRFs, including that the measure could be setting different standards and hiding quality differences that would otherwise be revealed. Conversely, a potential consequence of not adjusting for SRFs would be that providers may be discouraged from caring for patients with greater social risk.
- CORE stated that CMS policy is a dynamic environment and has currently implemented a mechanism to incentivize MIPS clinicians providing care to complex patients at a program level. CMS has also indicated it will consider additional ways to account for SRFs by adjusting performance category scores.
- CORE clarified the domains of SRFs, based on the 2017 National Academies of Science, Engineering and Medicine report:
 - Socioeconomic position.

- Race, ethnicity, and cultural factors.
- Social relationships.
- Residential and community context.
- Gender and sexual orientation.
- CORE proposed an approach to quantitatively assessing SRFs, which evaluates Medicare/Medicaid dual eligibility status, the Agency for Healthcare Research and Quality Socioeconomic Status (AHRQ SES) index, rural residence, density of PCPs, and density of specialists.
 - CORE explained that the AHRQ index is a variable which summarizes zip-code level factors such as median household income, percent living below the federal poverty level, educational attainment, and crowding.
 - CORE proposed focusing on the density variables to understand how the SRFs impact hospitalization rates.

Clinician Committee Feedback on Risk Adjustment

- Seven Committee members provided feedback on the proposed demographic and clinical risk factors. All agreed with the current list of clinical risk factors and cited additional clinical risk factors for consideration.
 - One Committee member proposed including sleep disorders (such as sleep apnea) and hypertensive heart disease in the clinical model, if not already included.
 - One Committee member stated that stroke should be included, if it is not already.
 - One Committee member noted the inclusion of psychiatric disorders and proposed it be further specified to ensure that it encompasses an array of relevant physiological disorders.
 - Another Committee member agreed, stating that neither patient in CORE's [example](#) had a mental health condition or a cognitive impairment and that those types of conditions are very important to consider when risk adjusting.
 - One Committee member acknowledged that it is not feasible to use NYHA Class data for risk adjustment; however, the member noted that in the case that this data is feasible to use in the future, the NYHA Class designations would be important to include in the model because they are primary indicators of heart failure risk.
 - Two Committee members disagreed with CORE's rationale for not risk-adjusting for race. They stated that within the last decade, there has been ample evidence supporting the hypothesis that race is correlated with illness, even after adjusting for other factors.
 - One Committee member disagreed with CORE's rationale for not risk-adjusting for sex. He stated that plenty of data are available to show the role sex plays in

the variation of admission rates. If CORE wants to not risk adjust for gender, the Committee member proposed CORE revise their rationale to acknowledge that sex does affect some admissions but is excluded to prevent risk-adjusting away disparities.

- Nine Committee members discussed the conceptual framework and the benefits and drawbacks of adjusting for SRFs.
 - Two Committee members pointed to access of health care as a key factor for inclusion in the conceptual framework. They felt that healthcare access is currently underrepresented in the framework, particularly transportation, density of pharmacies, and affordability of pharmaceuticals.
 - Three Committee members commented on the lack of reliability using 9-digit zip codes as a determinant of socioeconomic status and access to care.
 - Of the three, one Committee member stated that within the same 9-digit zip code, there can be drastic disparities in living standards, which may compromise the accuracy of the AHRQ SES index variable.
 - One Committee member commented on the balance between considering social determinates and being careful not to over-simplify complex social issues when applying broad social determinates.
 - Two Committee members agreed with risk-adjusting for SRFs, acknowledging that it is challenging to do so.
 - One Committee member felt that providers should really be compared to their peers and that analyses could be done to create stratified benchmarks for clinicians in determining what constitutes a better-quality practice vs. a worse quality practice.
 - One Committee member suggested running two separate risk-adjustment models to compare the effect of SRFs: one model that adjusts for both SRFs and dual eligibility, and one model that does not adjust. He recommended including any factor that impacts the model and excluding any factor that does not impact the model. He also suggested including community variables that are not related to socioeconomic status.
 - One Committee member recommended adjusting for dual eligibility status, race, and rurality if these factors are associated with admission. If a risk factor is statistically significant but the association cannot be explained clinically, the member stated that it seems reasonable to not adjust for that factor.

Summary

- The Clinician Committee highlighted several considerations for risk adjustment, including: exploring and incorporating healthcare access into the model; pursuing comparative SRF analyses; and, reconsidering the argument for why race and sex are not being risk-adjusted for.

- CORE thanked the Committee for their thoughtful input, stating that they will weave in these considerations when conducting risk-adjustment analyses. CORE will likely present the analytic results to the Committee in a future meeting.

Wrap-Up

CORE Presentation to the Clinician Committee

- CORE thanked the Clinician Committee members for their valuable feedback and reviewed next steps:
 - Distribute a summary of the meeting;
 - Share Committee feedback with the TEP;
 - Finalize draft specifications for the cohort, outcome, risk-adjustment model, and attribution approach;
 - Conduct measure testing;
 - Host call for public comment;
 - Share summary of public comments with the Committee and TEP; and
 - Finalize measure after public comment.
- Committee members were pleased with how the meeting was conducted, stating that they enjoyed participating and felt it was well-run. Members appreciated the diversity in conversation and valued how easy it was for their voices to be heard. More specifically:
 - One member liked that Committee members were not designated by title and degree. The Committee member felt that everyone in the room had an equal voice and that the discussion felt collegial.
 - Four members stated that they appreciated the diverse opinions of the Committee and felt that it led to a more meaningful discussion.
 - Two of the three emphasized that they felt heard and that CORE seems to be genuinely considering the Committee's feedback as they develop this measure.
 - Three members recommended adding webcam visuals for members attending the meeting via teleconference.
 - Two members recommended including a registered nurse on the next Committee because they bring a unique perspective that may not be captured otherwise.
- CORE invited Clinician Committee members to reach out via email with any additional input.

Key Issues Discussed During Clinician Committee Meeting 3 and Post-Meeting Feedback

Prior to Clinician Committee Meeting 3, CORE provided the Clinician Committee members with materials for review.

During the meeting, CORE solicited feedback from the Clinician Committee on revisions CORE made to the measure's cohort and outcome definitions, the measure's attribution algorithm, risk-adjustment model, and whether to adjust the measure for dual-eligibility status.

Following the meeting, some Clinician Committee members who were unable to attend the meeting provided feedback on the added cohort exclusion of patients with end-stage renal disease (ESRD) and the proposed inclusion of the Agency for Healthcare Research and Quality Socioeconomic Status (AHRQ SES) Index variable in the measure risk model.

Executive Summary of Clinician Committee Meeting 3 and Post-Meeting Feedback

Overview of Information Presented by CORE

CORE reviewed:

- Goals of the meeting.
- Recap from the second Clinician Committee Meeting.
- CORE's progress on developing the MIPS heart failure (HF) admission measure including:
 - Input from the TEP;
 - Measure specifications: cohort, outcome, attribution, risk model; and
 - Measure testing results.

8 of 14 Clinician Committee members attended the meeting or provided input via email. Below we have summarized all input.

Overview of Clinician Committee Feedback

Cohort

- All Committee members present during the meeting or who provided feedback via email agreed with the TEP's suggestion to revise the measure to exclude patients with end-stage renal disease (ESRD), defined as either chronic kidney disease (CKD) stage 5 or patients on dialysis.
 - One Committee member noted these patients are complex and once they reach this stage of illness, it is extremely difficult to care for their cardiovascular conditions.
 - A second Committee member noted that the exclusion of patients with ESRD is appropriate given the severity of the disease. The Committee member

acknowledged that it would also be difficult to fairly attribute ESRD patients to cardiologists or primary care physicians (PCPs).

Risk Adjustment

- Clinician Committee members provided input on social risk factor adjustment. The Committee members provided input on whether to adjust the measure for the AHRQ SES Index variable, an area deprivation measure, and/or Medicare-Medicaid dual-eligibility status (hereinafter, dual-eligibility status) in the measure risk model. The AHRQ SES Index variable is a validated and accepted measure of area deprivation at the 9-digit ZIP code level. It includes seven components: % under the poverty level; median household income; median value of owner-occupied homes; housing crowding; percent unemployment; and two education variables.
- Five Committee members favored adjusting the measure for the AHRQ SES Index only and not adjusting for dual-eligibility status.
 - Two members noted the AHRQ SES Index is important since it captures key community-level variables.
 - One member noted that the AHRQ SES Index appears to be the most robust social risk factor and is more reflective of socioeconomic status than dual-eligibility status.
- Three Committee members favored adjusting for the AHRQ SES Index and dual-eligibility status.

Detailed Summary of Clinician Committee Meeting 3 and Post-Meeting Feedback

Welcoming Remarks

- The CORE team welcomed the Clinician Committee members to the third and final meeting to discuss the development of an outpatient heart failure (HF) admission measure for MIPS. The CORE team reviewed the confidentiality agreement and the funding source for the project.
- CORE conducted roll-call of meeting participants; 6 of 14 Clinician Committee members were in attendance. (Note: CORE also followed-up via email with members who were not in attendance and received additional input from two Committee members who attended part of the meeting and two members who did not attend. We integrated their input into this section.)

Recap on Measure Progress

CORE Presentation to the Clinician Committee

- CORE updated the Clinician Committee on the status of measure development. CORE stated the cohort, outcome, attribution approach, and risk-adjustment have been fully specified and tested as well as reviewed by the TEP.
- CORE recapped its objective to build a measure relevant to not only PCPs but cardiologists as well. Additionally, it is imperative to have the MIPS HF measure align

with other measures in the MIPS program in order to increase interpretability and reduce provider burden. Concurrently, CORE developed another MIPS outcome measure for patients with multiple chronic conditions (hereafter MCC measure). To increase acceptability by clinicians and reduce user burden, CORE aligned methods with the MIPS MCC measure as appropriate – for example, when developing the risk model.

- CORE shared feedback received from the TEP in May 2019. The TEP provided input on the measure’s cohort (recommended additional exclusions, which CORE implemented) and adjusting the measure for SRFs.
 - CORE noted that in addition to liaising with the TEP, CORE has regularly communicated with and obtained input on the measure’s development from CMS.
- CORE reviewed the goals of the meeting:
 - Review the measure’s refined specifications and results since the last Committee meeting in February 2019:
 - Cohort: previously included only patients with heart failure; based on Clinician Committee and prior TEP input, also includes patients with cardiomyopathy and excludes patients with end-stage renal disease (ESRD), patients with left ventricular assist devices (LVADs), patients with heart transplants, patients on hospice, and patients on home inotropic therapy.
 - Outcome: previously focused on all-cause unplanned admission; based on Clinician Committee and guidance from CMS, narrowed to focus on acute cardiovascular (CV) related admissions.
 - Attribution approach: developed and evaluated algorithm that assigns the patient to a cardiologist or primary care providers based on number of E&M visits; patients are assigned to a cardiologist if they have ≥2 visits with a cardiologist, regardless of the number of visits with a PCP.
 - Risk-adjustment: developed and tested risk model; measure adjusts for age, clinical comorbidities, disability/frailty, and one social risk factor (Agency for Healthcare Research and Quality Socioeconomic Status [AHRQ SES] Index).
 - Introduced the face validity poll, which CORE would send the Committee after the meeting to complete, and its significance.

Measure Specifications and Results

CORE Presentation to the Clinician Committee

Cohort

- CORE reviewed the updated cohort definition, which incorporated prior Committee and TEP input. CORE noted the cohort excludes ESRD patients based on TEP input from May 2019. The inclusion and exclusions criteria are as follows:

- Inclusion criteria
 - Medicare Fee-for-Service (FFS) beneficiaries aged ≥ 65 years;
 - Primary discharge diagnosis of HF or cardiomyopathy, or two or more encounters (outpatient or inpatient) with a code for HF or cardiomyopathy in any coding position;
 - Enrolled full-time in Medicare Parts A/B during year prior to and during measurement period.
- Exclusion criteria
 - Patients with internalized left ventricular assist devices (LVADs);
 - Patients with heart transplants;
 - Patients on home inotropic therapy;
 - Patients on hospice for any reason;
 - Patients with end-stage renal disease (either CKD stage 5 or on dialysis).
- CORE noted the rationale for excluding ESRD patients: this group consists of complex, high-risk patients who receive most of their care from nephrologists, making it difficult for PCPs and cardiologists who are included in the measure to play an influential role in reducing hospitalizations and improving care.
- CORE reviewed the descriptive statistics for the cohort definition; the cohort includes about 2.6 million patients.

Outcome

- CORE noted that the proposed outcome definition at the last meeting was previously acute all-cause unplanned admissions; however, after discussing with CMS and receiving feedback from this Committee via email, CORE updated the outcome definition to acute unplanned cardiovascular-related admissions.
 - CORE provided rationale for this update, stating that:
 - 1) the revised outcome reduces overlap between the MIPS HF and MIPS MCC measures;
 - 2) clinicians (particularly cardiologists) may be more engaged and likely to select the measure because they feel they can influence the outcome; and,
 - 3) the revised outcome incorporates feedback from this Committee and CMS.
- The revised outcome definition is acute, cardiovascular related admissions per 100 person-years.
 - Like the MCC measure outcome, the following types of admissions are excluded:
 - Planned cardiovascular-related admissions;
 - Admissions from skilled nursing facility (SNF) or acute rehab facility;

- Admissions within 10 days of discharge from a hospital, SNF, or acute rehab;
 - Admissions after patient has entered hospice; and
 - Admissions before first visit to provider if no prior year visit.
 - In addition (unique to this measure), the measure censors the outcome at the time of LVAD implantation, home inotropic therapy, or heart transplant.
- CORE presented the unadjusted outcome rate results. When measuring all-cause admissions (the original outcome definition), the crude admission rate is 63.6 per 100 person-years. When measuring cardiovascular-related admissions only (the revised outcome definition), the admission rate falls to about 21.8 per 100 person-years. These results align with prior literature, which states that about one-third of admissions for patients with HF are cardiovascular.
- CORE noted that the 10-day buffer period was a topic of stakeholder interest for both the MIPS MCC and HF measures. Stakeholders generally agreed that hospitals, rather than ambulatory providers, are more responsible for readmissions which take place within the 10-day buffer period.

Attribution

- CORE reviewed the attribution algorithm. CORE implemented one of three approaches the Committee reviewed during Clinician Committee Meeting 2. The approach favors cardiologists over PCPs since they play an influential role in a range of cardiovascular-related outcomes.
 - Attribution is a two-step process. Patients are first assigned to clinicians at the TIN-NPI level. In a second step, patients “follow” their Tax Identification Number-National Provider Identifier (TIN-NPI) to the TIN-level, similar to the TIN roll-up approach that the MIPS MCC measure uses; under this approach, patients are aggregated at the TIN level for all clinicians in the TIN. Thus, patients unassigned to a TIN-NPI remain unassigned to a TIN.
 - The algorithm is visit-based (evaluation and management [E&M] services) and assigns patient outcomes to a single clinician as follows:
 - Assign to cardiologist if ≥ 2 visits, regardless of PCP visits, otherwise:
 - Assign to PCP if ≥ 2 visits and ≤ 1 visit with cardiologist;
 - Assign to PCP when ≥ 1 visit and no cardiologist visit;
 - Assign to cardiologist when ≥ 1 visit and no PCP visit; or
 - Assign to cardiologist if patient has 1 visit each with PCP and cardiologist.
- CORE reviewed attribution results:
 - 49.6% of patients were assigned to a PCP, 47.2% of patients were assigned to a cardiologist, and 3.3% were unassigned CORE displayed the following TIN-level attribution results:

- 10.2% of patients were assigned to TINs with cardiologists only; 59.4% were assigned to a TIN that includes at least one PCP and one cardiologist; and 30.4% assigned to TINs with PCPs only.

Risk-Adjustment

- CORE recapped the conceptual approach to risk adjustment (previously reviewed with Committee in Meeting 2). The measure adjusts for baseline characteristics present at the start of the measurement year which address risk of admission and are independent of care provided to HF patients. The measure adjusts for:
 - Demographics;
 - Clinical comorbidities;
 - Functional disability/frailty; and
 - Social risk factors (SRFs).
- CORE presented its approach to evaluating SRFs for inclusion in the risk model.
 - CORE evaluated five variables: 1) dual-eligibility status, 2) the AHRQ SES Index, 3) rural residence, 4) density of PCPs, and 5) density of cardiologists.
 - CORE noted that they first tested the community (#2-4 in bullets above) and individual level (dual-eligibility status) variables to understand their directional relationship relative to the measure's outcome. CORE then tested the marginal impact of each variable. If these variables were found to be statistically significant at $P < 0.05$, then they were considered for inclusion in the model.
 - CORE acknowledged one caveat in SRF selection, revealing that CMS already adjusts MIPS performance scores for clinicians based on their proportion of dual-eligible beneficiaries. As such, it may not make sense to adjust the measure for dual-eligibility status.
- CORE displayed the SRF rate ratio (RR) results.
 - CORE stated that the AHRQ SES Index variable was the most potent ($RR=1.10$), followed by dual-eligibility status ($RR=1.05$).
 - CORE noted that its original hypothesis for the rural residence variable was that patients in rural communities may have higher admission rates due to lack of healthcare access, relative to those in urban setting.
 - Contrary to the hypothesis stated, testing revealed the opposite relationship - those in urban settings were more likely to be admitted than those in rural settings.
 - CORE noted that its original hypotheses for the density of PCPs and density of cardiologist variables were that the more PCPs/cardiologists, the lower the admission rates.
 - Contrary to these hypotheses, testing revealed the opposite – those living in areas with a higher density of PCPs/cardiologists had higher admission rates.

- Based on these results and TEP feedback), CMS is proposing to adjust the measure for only one social risk factor – the AHRQ SES Index. The AHRQ SES index is a robust variable, which addresses community-level disparities that many clinicians have little control over.
- Several TEP members (who advised on both the MCC measure and this HF measures) supported adjusting this measure for the AHRQ SES index only. Members noted the AHRQ SES variable is preferable to dual-eligibility status because dual-eligibility status varies across states, making the variable less suitable for inclusion in a national quality measure. CORE opened discussion to the Clinician Committee and asked for feedback on SRF adjustment. CORE posed the following questions to the Clinician Committee:
 - What is your feedback about our approach to including these SRFs in the model?
 - Do you support including SRFs in the model?
 - Do you support the specific SRFs included in the model?
 - Do you support the methods used to select SRFs?
 - Is there any rationale for including patient dual-eligibility status in the model?
 - Are there any concerns with the additional cohort exclusion of patients with ESRD?

Clinician Committee Feedback

- Five Clinician Committee members stated they were in favor of adjusting the measure for the AHRQ SES Index. They also agreed with not adjusting for dual-eligibility status.
 - Two members noted that the AHRQ SES Index is important to include since it captures key community-level variables. They also noted that the research methods for evaluating SRFs were strong and had no further suggestions for modifying the approach.
 - One member noted that the AHRQ SES Index appears to be the most robust SRF and stated it is more reflective of socioeconomic status than dual-eligibility status.
- Three Committee members favored adjusting for both the AHRQ SES Index and dual-eligibility status. Of the two variables, these members stated that the AHRQ SES Index seemed to be a stronger variable but felt that including dual-eligibility status is important because it is an individual-level variable.
- Five Committee members agreed with excluding patients with ESRD, defined as either CKD stage 5 or patients on dialysis.
 - One Committee member noted that these patients are complex and once they reach this stage of illness, it is extremely difficult to care for their cardiovascular conditions.
 - One Committee member noted that the exclusion of patients with ESRD is appropriate, given the severity of the disease. The Committee member acknowledged that it would also be difficult to fairly attribute these patients to cardiologists or PCPs.

Summary

- All eight Clinician Committee members who provided feedback were unanimously in favor of adjusting for the AHRQ SES Index variable.
- Five Clinician Committee members did not favor adjusting for dual-eligibility status. Three Committee members favored adjusting for dual-eligibility in addition to the AHRQ SES Index.
- Clinician Committee members unanimously agreed with excluding patients with ESRD or CKD stage 5 from the cohort.

Wrap-Up

CORE Presentation to the Clinician Committee

- CORE thanked the Clinician Committee members for their valuable feedback and reviewed next steps:
 - CMS will host a public comment period for the measure (anticipated July 2019).
 - CORE will distribute a face validity poll to the Committee to fill out over email.
 - CMS will finalize the measure after public comment.
- CORE sincerely thanked the Committee for their engagement, commitment, and correspondence during the development of the MIPS HF measure. CORE assured the Committee that their input has been invaluable to the development of this measure and is highly regarded by CMS.

Appendix A. CORE Measure Development Team

Table A1. Center for Outcomes Research and Evaluation (CORE) Team Members for MIPS Heart Failure Admission Measure Development

Name	Team Role
Faseeha K. Altaf, MPH	Project Manager
Andrea Barbo, MS	Lead Statistical Analyst
Elizabeth E. Drye, MD, SM	Project Director
Alexander Ferrante, BS	Research Assistant
Alexandra Harris, MPH	Project Coordinator
Harlan M. Krumholz, MD, SM	Principal Investigator
Zhenqiu Lin, PhD	Analytic Director
Megan LoDolce, MA	Contract Manager
Julia McMahan, BS	Research Assistant
Craig S. Parzynski, MS	Supervising Statistical Analyst
Erica Spatz, MD, MHS	Project Lead
Shengfan Zhou, MS	Supporting Statistical Analyst

Appendix B. Clinician Committee Meeting Schedule

Clinician Committee feedback on CORE's approach to measure development informed the MIPS heart failure admission measure's specifications. CORE engaged and sought input from the Clinician Committee as they developed the measure through email communication and during three meetings:

1. **Clinician Committee Meeting 1:** Friday, January 11, 2019; 3:30-5:00PM EST (Location: teleconference/webinar),
2. **Clinician Committee Meeting 2:** Wednesday, February 27, 2019; 9:00-3:00PM EST (Location: in-person in Baltimore/Washington D.C. area), and
3. **Clinician Committee Meeting 3:** Thursday, June 13, 2019, 5:30-7:00PM EST (Location: teleconference/webinar).

Appendix C. Heart Failure Cohort Inclusion and Exclusion Codes

Table C1: List of MIPS Heart Failure Cohort Inclusion Codes

ICD-10-CM	Label
I09.81	Rheumatic heart failure
I11.0	Hypertensive heart disease with heart failure
I13.0	Hypertensive heart and chronic kidney disease with heart failure and stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease
I13.2	Hypertensive heart and chronic kidney disease with heart failure and with stage 5 chronic kidney disease, or end stage renal disease
I50.1	Left ventricular failure
I50.20	Unspecified systolic (congestive) heart failure
I50.21	Acute systolic (congestive) heart failure
I50.22	Chronic systolic (congestive) heart failure
I50.23	Acute on chronic systolic (congestive) heart failure
I50.30	Unspecified diastolic (congestive) heart failure
I50.31	Acute diastolic (congestive) heart failure
I50.32	Chronic diastolic (congestive) heart failure
I50.33	Acute on chronic diastolic (congestive) heart failure
I50.40	Unspecified combined systolic (congestive) and diastolic (congestive) heart failure
I50.41	Acute combined systolic (congestive) and diastolic (congestive) heart failure
I50.42	Chronic combined systolic (congestive) and diastolic (congestive) heart failure
I50.43	Acute on chronic combined systolic (congestive) and diastolic (congestive) heart failure
I50.810	Right heart failure, unspecified
I50.811	Acute right heart failure
I50.812	Chronic right heart failure
I50.813	Acute on chronic right heart failure
I50.814	Right heart failure due to left heart failure
I50.82	Biventricular heart failure
I50.83	High output heart failure
I50.84	End stage heart failure
I50.89	Other heart failure
I50.9	Heart failure, unspecified
I25.5	Ischemic cardiomyopathy
I420	Dilated cardiomyopathy
I421	Obstructive hypertrophic cardiomyopathy
I422	Other hypertrophic cardiomyopathy
I425	Other restrictive cardiomyopathy
I426	Alcoholic cardiomyopathy
I427	Cardiomyopathy due to drug and external agent

ICD-10-CM	Label
I428	Other cardiomyopathies
I429	Cardiomyopathy, unspecified
I43	Cardiomyopathy in diseases classified elsewhere
O903	Peripartum cardiomyopathy

Table C2: List of MIPS Heart Failure Cohort Exclusion Codes

ICD-10-PCS/CPT	Label
02HA0QZ	Insertion of Implantable Heart Assist System into Heart, Open Approach
02HA3QZ	Insertion of Implantable Heart Assist System into Heart, Percutaneous Approach
02HA4QZ	Insertion of Implantable Heart Assist System into Heart, Percutaneous Endoscopic Approach
02HA0RS	Insertion of Biventricular External Heart Assist System into Heart, Open Approach
02HA3RS	Insertion of Biventricular External Heart Assist System into Heart, Percutaneous Approach
02HA4RS	Insertion of Biventricular External Heart Assist System into Heart, Percutaneous Endoscopic Approach
02HA0RZ	Insertion of External Heart Assist System into Heart, Open Approach
02HA3RZ	Insertion of External Heart Assist System into Heart, Percutaneous Approach
02HA4RZ	Insertion of External Heart Assist System into Heart, Percutaneous Endoscopic Approach
Z95.811	Presence of Heart Assist Device
Z94.1	Heart Transplant Status
02YA0Z0	Transplantation of Heart, Allogeneic, Open Approach
02YA0Z1	Transplantation of Heart, Syngeneic, Open Approach
02YA0Z2	Transplantation of Heart, Zooplastic, Open Approach
J1250	Injection, Dobutamine HCl, per 250 mg
J1265	Injection, Dopamine HCl, 40 mg
J2260	Injection, Milrinone lactate, 5 mg
N185	Chronic Kidney Disease, Stage 5
N186	End stage renal disease
R880	Cloudy (hemodialysis) (peritoneal) dialysis effluent
Z4901	Encounter for fit/adjst of extracorporeal dialysis effluent
Z4902	Encounter for fit/adjst of peritoneal dialysis catheter
Z4931	Encounter for adequacy testing for hemodialysis
Z4932	Encounter for adequacy testing for peritoneal dialysis
Z9115	Patient's noncompliance with renal dialysis
Z992	Dependence on renal dialysis
I120	Hyp chr kidney disease w stage 5 chr kidney disease or ESRD
I1311	Hyp hrt and chr kdny dis w/o hrt fail, w stg 5 chr kdny/ESRD
I132	Hyp hrt & chr kdny dis w hrt fail and w stg 5 chr kdny/ESRD