Quality Payment
PROGRAM

# 2020 Episode-Based Cost Measures Field Testing

# Wave 3 Measure Development Process

Summer 2020 Field Testing

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# 1.0 Introduction

This document provides the project background and details of the process for developing the 5 Wave 3 episode-based cost measures being field tested from August 17 to September 18, 2020.

This document has been publicly posted as part of field testing. Field testing is part of the measure development process and is an opportunity for clinicians and other stakeholders to learn about episode-based cost measures and provide input on the draft specifications. During field testing, we will:

- distribute Field Test Reports on the Quality Payment Program website[1] for group practices and solo practitioners who meet the minimum number of cases for each measure;
- post draft measure specifications (i.e., measure methodology and codes list) and supplemental documentation, such as testing results, on the MACRA Feedback page;[2] and
- collect stakeholder feedback on the draft specifications for each measure through an online survey.

We are collecting stakeholder feedback from **August 17 to September 18, 2020.** To provide feedback on the draft measures specifications please navigate to this feedback survey: https://www.surveymonkey.com/r/2020-cost-measures-field-testing

As background, the Centers for Medicare and Medicaid Services (CMS) and its measure development contractor, Acumen, LLC (hereafter referred to as "Acumen") field tested 11 episode-based cost measures in the fall of 2018. We appreciate the input that stakeholders shared with us during that period and have made updates to both the measure development process and field testing as a result of your feedback.

**We Heard Your Feedback from Field Testing in October-November 2018**

- You can now access Field Test Reports on the Quality Payment Program website using the same account information you use to submit data and view performance feedback.
- We extended the length of field testing to a 5-week period to give you more time to review and provide input on the draft specifications.
- We updated the structure and format of the Field Test Report to portable document format (PDF) to streamline the information and make it accessible on both phone and computer platforms.
    - An accompanying comma-separated values (CSV) file provides episode-level details for attributed clinicians and groups interested in more granular data. The report also contains a summary of the measure specifications for quick reference.
- We updated the supplemental materials to be more accessible and provide clearer information regarding field testing.
    - The Fact Sheet was updated to serve as a quick reference for field testing details.
    - A new Questions for Field Testing Measure Specifications document that includes specific questions on the draft specifications for each measure is publicly posted for stakeholders to reference while reviewing field testing materials.

[1] CMS, "Quality Payment Program Account," Quality Payment Program, https://qpp.cms.gov/login.
[2] CMS, "Cost Measure Field Testing", MACRA Feedback Page, https://www.cms.gov/Medicare/Quality-Payment-Program/Quality-Payment-Program/Give-Feedback

This process document contains 2 sections:

- Section 1 provides an overview of the project and the overall approach for development.
- Section 2 describes the process used to develop each component of the episode-based cost measures.

## 1.1 Project Background

The Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) established the Quality Payment Program. Under the Quality Payment Program, clinicians are incentivized to provide high-quality and high-value care through Advanced Alternative Payment Models or the Merit-based Incentive Payment System (MIPS). MIPS eligible clinicians will receive a performance-based adjustment to their Medicare payments. This payment adjustment is based on a MIPS final score that assesses evidence-based and practice-specific data in 4 performance categories: (i) Quality, (ii) Cost, (iii) Improvement Activities, and (iv) Promoting Interoperability.

CMS has contracted with Acumen to develop new episode-based cost measures for potential use in the Cost performance category of MIPS. Acumen has implemented a measure development process that relies on input from a large number of stakeholders, including multiple groups of clinicians affiliated with a broad range of professional societies, to develop clinically appropriate and transparent measures that provide actionable information to clinicians.

## 1.2 Overview of Episode-Based Cost Measures

Episode-based cost measures represent the cost to Medicare for the items and services provided to a patient during an episode of care ("episode"). An episode-based cost measure is designed to inform clinicians on the cost of their patient's care for which they are responsible during the timeframe specified by the episode. In the Field Test Reports and their supplemental documentation, the term "cost" generally means the Medicare allowed amount, which includes both Medicare and trust fund payments and any applicable patient deductible and coinsurance amounts on traditional, fee-for-service claims. **Payment standardization** adjusts the allowed amount for a Medicare service to facilitate cost comparisons and limit observed differences in costs to those that may result from health care delivery choices. Payment standardized costs remove the effect of differences in Medicare payment among health care providers that are the result of differences in regional health care provider expenses measured by hospital wage indexes and geographic price cost indexes (GPCIs) or other payment adjustments such as those for teaching hospitals.[3]

Episode-based cost measures are based on episode groups. An episode group is a unit of comparison that represents a clinically coherent set of medical services rendered to treat a given medical condition. Episode groups aggregate these items and services involved in care for a defined patient cohort to assess the total cost of the care. Services assigned to the episode group might include diagnostic services, treatment services, and ancillary items and services directly related to treatment (such as anesthesia for a surgical procedure), as well as services following the initial treatment period that may be rendered to patients as routine follow-up care or to treat consequences of care. An episode is a specific instance of an episode group for a given patient and clinician. For example, in a given year, a clinician might be attributed 20 episodes (instances of the episode group) from the episode group for Melanoma Resection.

[3] For more information, please refer to the "CMS Price (Payment) Standardization – Basics (04/26/19)" and "CMS Price (Payment) Standardization - Detailed Methods (04/26/19)" documents posted on QualityNet: https://www.qualitynet.org/inpatient/measures/payment-standardization.

Currently, there are 3 types of episode groups that serve as the basis for cost measures:

- **Procedural episode groups** focus on procedures of a defined purpose or type, such as surgeries. Two Wave 3 measures are based on procedural episode groups:
    - Colon and Rectal Resection [colrec_rsct]
    - Melanoma Resection [mel_rsct]
- **Acute inpatient medical condition episode groups** represent treatment for self-limited acute illness or treatment for flares or an exacerbation of a condition that requires a hospital stay. One Wave 3 measure is based on an acute inpatient medical condition episode group:
    - Sepsis [sepsis]
- **Chronic condition episode groups** account for the ongoing management of a disease or condition. Wave 3 is the first wave to include development of chronic condition episode groups. Two Wave 3 measures are based on chronic episode groups:
    - Diabetes [diabetes]
    - Asthma/Chronic Obstructive Pulmonary Disease [chron_copd]

The short form name of each measure (provided in brackets above) is used in the file names of the Draft Cost Measure Methodology and Draft Cost Measure Codes List files, which will be available on the MACRA Feedback Page at the start of field testing.

Episode-based cost measures are intended to measure clinician resource use based on only those costs that occur as part of an attributed clinician's management of a defined condition or procedure. In other words, only services occurring during the episode that are clinically related to the treatment provided by the attributed clinician are assigned to the episode and included in episode-based cost measure calculations. For example, an episode group for Melanoma Resection includes services furnished for and complications related to this procedure. As a result, the Melanoma Resection episode group allows for comparisons of clinicians providing this procedure across an episode of care.

Figures 1 and 2, below, present constructed episode examples for procedural and acute condition episode groups and chronic condition episode groups, respectively.

**Figure 1. Diagram Showing a Constructed Episode for Procedural and Acute Inpatient Medical Condition Episodes**

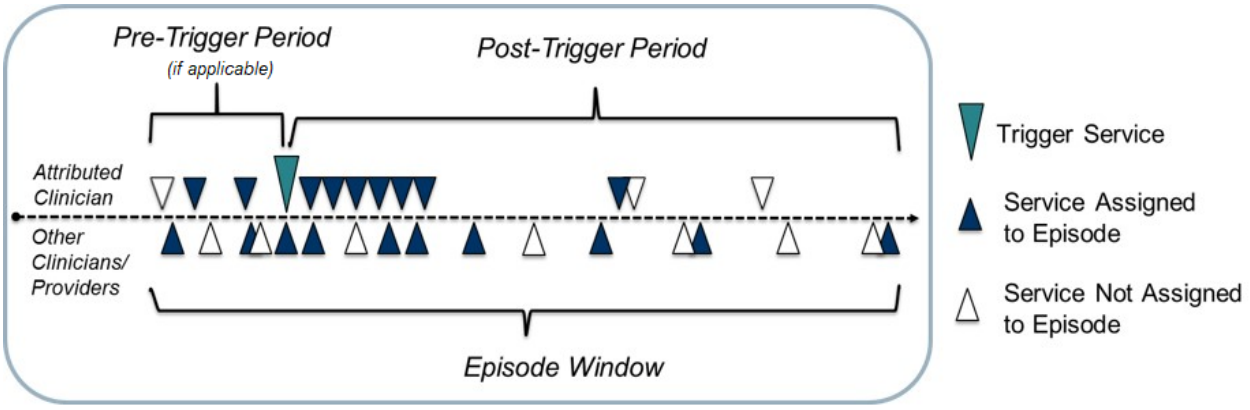
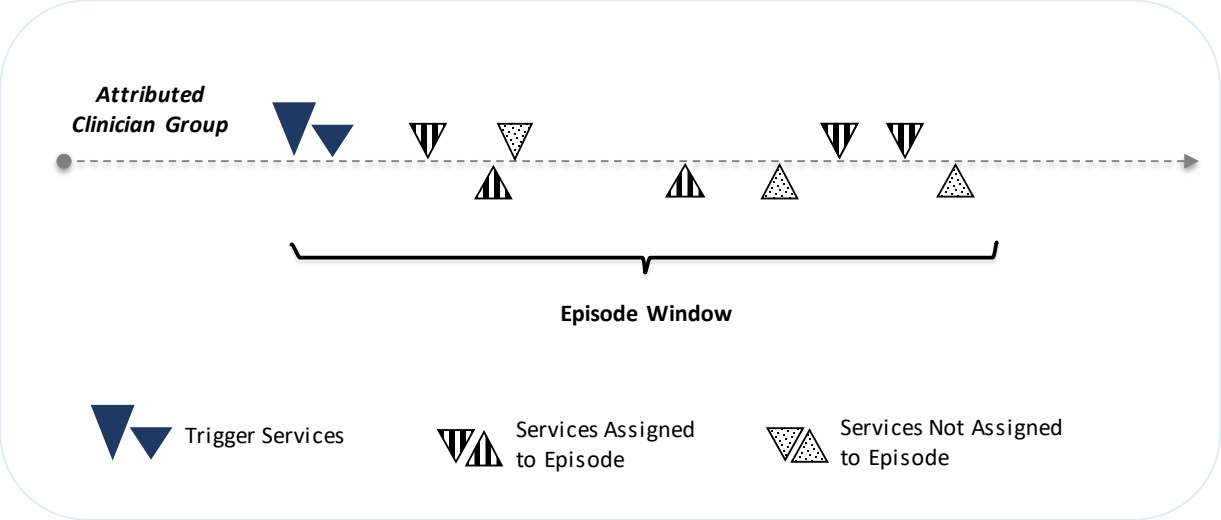


**Figure 2. Diagram Showing a Constructed Episode for Chronic Condition Episodes**




Furthermore, to ensure accurate comparison of cost across clinicians, risk adjustment is applied to account for characteristics of patients that can influence spending and are outside of the clinician's reasonable influence. For instance, for the Colon and Rectal Resection cost measure, the risk adjustment model accounts for inflammatory bowel disease.

## 1.3 Process for Developing the Cost Measures

Stakeholder input is critical to the development of robust, meaningful, and actionable episode-based cost measures. Throughout the measure development process, Acumen seeks input from clinicians and other stakeholders to inform the development of the cost measures. Acumen incorporates input from the following stakeholder input activities:

(i) Clinical Subcommittees (CS) and Clinician Expert Workgroups
(ii) Technical Expert Panel (TEP)
(iii) Person and Family Engagement
(iv) Stakeholder Feedback and Field Testing

The Clinical Subcommittees, including the measure-specific Clinician Expert Workgroups, make recommendations about clinical specifications for episode-based cost measures while the TEP serves a high-level advisory role and provides guidance on the overall direction of measure development. Through person and family engagement, patients and caregivers provide feedback that informs key components of cost measure development. The field testing period offers all stakeholders an opportunity to provide input on the cost measurement approach. The remaining sub-sections of this section describe each stakeholder input activity and its role in the development of episode-based cost measures for this project.

This document focuses on the Wave 3 measure development process. More information regarding the previous Waves 1 and 2 of development is available in the 2018 Measure Development Process document on the MACRA Feedback Page.

### 1.3.1 Clinical Subcommittees

Acumen uses a "wave" approach wherein sets of Clinical Subcommittees, each focused on a particular clinical area, convene to select episode groups to develop into cost measures and to

provide input on the measures' specifications. Members of Clinical Subcommittees are nominated through a Call for Clinical Subcommittees Nominations. Future Clinical Subcommittees under this project will be convened through separate nomination periods.

The work of the Clinical Subcommittees builds off of the previous work of the August to September 2016 Clinical Committee that was also convened as a part of this project. This Committee included more than 70 clinicians from over 50 professional societies who provided expert input on identifying a draft list of episode groups for cost measure development and determining the billing codes that trigger each episode group. The clinical review and recommendations obtained from the Clinical Committee were used to inform CMS's posting in December 2016 of a Draft List of MACRA Episode Groups and Trigger Codes and an accompanying document on episode-based cost measure development for the Quality Payment Program (together, the "December 2016 posting").[4] This draft list of episode groups and episode trigger codes served as a starting point for measure development.

Wave 3 of measure development began in May 2019. Members were nominated through a Call for Clinical Subcommittee Nominations which was posted on March 11 and closed on April 12, 2019. Wave 3 includes 4 Clinical Subcommittees with a total of 166 members affiliated with 110 professional societies, as listed in Table 1 below, along with the 5 episode-based cost measures that they selected for development in 2019.

**Table 1. Information on the 4 Wave 3 Clinical Subcommittees**

| Clinical Subcommittee | Episode-Based Cost Measure(s) | # CS Members | # Affiliated Specialty Societies |
|---|---|---|---|
| Chronic Condition and Disease Management | • Asthma/Chronic Obstructive Pulmonary Disease (COPD)<br>• Diabetes | 74 | 71 |
| Dermatologic Disease Management | • Melanoma Resection | 24 | 16 |
| General and Colorectal Surgery | • Colon and Rectal Resection | 33 | 28 |
| Hospital Medicine | • Sepsis | 54 | 49 |

Wave 3 is the first wave to include chronic condition measures. The Wave 3 Clinical Subcommittee members met in May/June 2019 to select an episode group for development.[5] In addition to selecting the episode group for development, the Subcommittees also defined the intended scope of the episode group and provided input on the necessary composition of the smaller, measure-specific Clinician Expert Workgroups that would be convened to provide detailed input on each component of the measures. For the Chronic Condition and Disease Management Clinical Subcommittee, members also discussed the approach for triggering a chronic condition episode.

[4] CMS, "Draft List of MACRA Episode Groups and Trigger Codes", MACRA Feedback Page (December 2016), https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/draft-list-of-care-episode-and-patient-condition-groups-and-codes.zip

[5] The summaries for the Wave 3 Clinical Subcommittee meetings are available on the MACRA Feedback Page: https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/2019-wave3-cs-meeting-summaries.zip.

To continually improve the development process, Acumen refines the Clinical Subcommittee process based on feedback from the previous Waves.

**Key Updates to Clinical Subcommittee Process for Wave 3 in 2019**

- Shared welcome packets that included an introduction to the measure development process, as well as supplementary materials for episode group prioritization that members could review upon acceptance to the Wave 3 Clinical Subcommittees
- Reduced the number of in-person meetings to better accommodate the busy schedules of clinicians.
    - For Clinical Subcommittees, in-person meetings were only held for newly convened Clinical Subcommittees. Meetings for previously convened Clinical Subcommittees were held via webinar.
    - For Clinician Expert Workgroups, the first meeting was in-person. All subsequent meetings were via webinar.
- Opened all meetings to the public via a listen-only public dial-in option and posted meeting summaries on the MACRA Feedback Page to keep the public aware of the project developments.

### 1.3.2 Clinician Expert Workgroups

The Clinician Expert Workgroups are smaller groups meant to facilitate focused discussions that provide detailed input on each component of the episode-based cost measures. They were created based on feedback from the Wave 1 Clinical Subcommittees and have been convened for each subsequent Wave of measure development. These Clinician Expert Workgroups comprise clinicians with expertise directly relevant to the selected episode groups. Acumen works with CMS to compose balanced workgroups reflecting the Clinical Subcommittees' suggestions of the specialties and types of expertise and experience that would be most relevant to the selected episode group and the clinicians who would be attributed the measure. Workgroup membership draws from Clinical Subcommittee membership supplemented with additional clinicians from stakeholder outreach and the standing pool of nominees.

The Wave 3 Clinician Expert Workgroups met in person in August 2019 to discuss measure specifications for all components of the measure,[6] followed by a webinar in January 2020 for follow-up discussions on service assignment, risk adjustment,[7] and other refinements. After field testing, the workgroups will revisit and refine the draft measure specifications based on the stakeholder feedback received in webinars. The workgroups will also evaluate the final measures by reviewing the final specifications and testing results of the measures.

Each Clinician Expert Workgroup made detailed recommendations on the following: (i) the codes for trigger events, (ii) the length of the episode window for acute condition and procedural episode groups, (iii) the attribution window for chronic condition episode groups, (iv) the sub-groups to compare like patients, (v) the services for which costs are included in the measure, (vi) the variables to include in the risk adjustment model, and (vii) the measure exclusion criteria.

[6] The summaries for the Wave 3 Clinician Expert Workgroup August 2019 in-person meetings are available on the MACRA Feedback Page: https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/Summary-of-wave-3-workgroup-meetings.zip

[7] The summaries for the Wave 3 Clinician Expert Workgroup January 2020 webinars are available on the MACRA Feedback Page: https://www.cms.gov/files/zip/summary-wave-3-sar-workgroup-meetings.zip

Wave 3 includes 5 workgroups with a total of 85 members affiliated with 73 professional societies, as listed in Table 2 below, along with the 5 episode-based cost measures chosen by the Clinical Subcommittees for development.

**Table 2. Information on the 5 Clinician Expert Workgroups in Wave 3**

| Measure-Specific Clinician Expert Workgroup | # Workgroup Members | # Affiliated Specialty Societies |
|---|---|---|
| Colon and Rectal Resection | 18 | 21 |
| Melanoma Resection | 13 | 9 |
| Sepsis | 20 | 21 |
| Asthma/Chronic Obstructive Pulmonary Disease (COPD) | 16 | 21 |
| Diabetes | 19 | 22 |

### 1.3.3 Technical Expert Panel

Acumen hosts TEP meetings to gather high-level guidance on the measure development process from expert stakeholders representing specialty societies, academia, health care and hospital administration, and patient and family member organizations. TEP members are selected following a public call for nominations.[8]

From August 2016 to September 2019, Acumen convened a standing TEP that consisted of 19 expert stakeholders. Beginning with the February 2020 TEP meeting, Acumen convened a new standing TEP consisting of 20 expert stakeholders.

Each TEP meeting centers on topics related to various project activities in cost measure development. Table 3 below summarizes a subset of TEP meetings to date that have convened to discuss concepts related to episode-based cost measure development. Future TEP meetings are planned to gather essential expert input on additional measure development and maintenance topics.

**Table 3. Episode-Based Cost Measure Development Project TEP Meetings (August 2016 – February 2020)**

| Meeting Information | Meeting Topics |
|---|---|
| August 2016 TEP (In-Person Meeting) | • Concepts of episode-based cost measure development<br>• Alignment of cost measures and quality measures<br>• Prioritization of cost measures for development |
| December 2016 TEP (In-Person Meeting) | • Methodological approaches to cost measure development and service assignment for procedural and acute inpatient medical condition episode groups |
| March 2017 TEP (Webinar) | • Clinical area prioritization into waves for future episode-based cost measure development (led by Acumen)<br>• Alignment of cost measures and quality measures (led by Yale-New Haven Health Services Corporation, Center for Outcomes Research and Evaluation (CORE)) |
| August 2017 TEP (In-Person Meeting) | • Risk adjustment for episode-based cost measures |

[8] CMS, "Technical Expert Panels," CMS Measures Management System, https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/MMS/Technical-Expert-Panels.html

| Meeting Information | Meeting Topics |
|---|---|
| May 2018 TEP (In-Person Meeting) | • Reviewing the Field Test Report template for episode-based cost measures<br>• Incorporating person and family perspectives into the measure development process |
| December 2018 TEP (In-Person Meeting) | • Approaches to the development of chronic condition episode groups<br>• Prioritization of chronic condition episode groups for development |
| February 2020 TEP (In-Person Meeting) | • Outstanding methodological questions for chronic condition measure framework<br>• Evaluation and testing of Patient Relationship Categories and Codes (PRCs)<br>• Maintenance and re-evaluation of MIPS cost measures<br>• Measure prioritization for future cost measure development waves<br>• Alignment of cost and quality |

### 1.3.4 Person and Family Engagement

Acumen has worked to gather actionable input from patients and caregivers for the cost measure development process. One mechanism to incorporate the patient perspective has been to convene a Person and Family Committee (PFC), which Acumen and its subcontractor have convened since spring 2017. The PFC comprises Medicare patients and caregiver/family members of a Medicare patient who have experience with health care and/or patient advocacy, health care delivery, concepts of value, and outcomes that are important to patients across care delivery and trajectory and disease management.

Throughout the measure development process, the PFC has provided varying levels of input. Initial conversations with the PFC during previous waves focused on the broad concepts of health care quality and value, with subsequent discussions focused on patient and caregiver perspectives on the types of episodes that should be prioritized for development. In Wave 2, this feedback was summarized into a guiding principles document and provided to the Clinical Subcommittees for consideration when selecting episode groups to develop.[9] Furthermore, the PFC has provided detailed input on pre- and post-trigger periods and types of assigned services, which is shared with the Clinician Expert Workgroups, and had the opportunity to respond to questions regarding patient experience.

Wave 3 builds on the PFC interactions from the previous waves. Acumen shared the PFC guiding principles that were developed during Wave 2 with the Clinical Subcommittees for their consideration when selecting the episode groups to develop in Wave 3. During the most recent round of discussions, PFC members were interviewed and provided input on the following: (i) the attributable clinician(s) and other clinicians involved in the episode, (ii) healthcare services provided by various clinicians and costs incurred therein, and (iii) patient-related factors (e.g., adherence to treatment plan, co-pays) that may influence the healthcare services included in the episode. This feedback was specific to each measure and was shared with the Clinician Expert Workgroups for their consideration as they developed the episode group.

In future waves of cost measure development, person and family perspectives will be incorporated through more integrated methods as Acumen and CMS look to further engage patients and caregivers.

### 1.3.5 Stakeholder Feedback and Field Testing

[9] CMS, "Summary of Person and Family Committee Input for Wave 2 Episode-Based Cost Measure Development," https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/2019-pfc-findings-all-measures.pdf

CMS and Acumen seek and incorporate feedback from multiple public feedback periods over the course of the episode group and cost measure development process. If CMS proposes the Wave 3 measures for use in MIPS, there are also additional opportunities for public comment through the notice-and-comment rulemaking process.

### Public Comments

To directly incorporate public feedback in the measure development process, Acumen created episode group-specific public comment summaries, which were shared with Wave 3 Clinical Subcommittees as part of the welcome packet materials in advance of the May/June 2019 meetings. These summarized feedback about specific episode groups from the following postings for public comment:

- CMS Episode Groups Posting in October 2015[10]
- Supplemental CMS Episode Groups Posting in April 2016[11]
- Posting of draft list of episode groups and trigger codes in December 2016[12]

A public comment summary report for the December 2016 Posting, which served as a starting point for potential measures to develop in Wave 3, is available.[13]

### Field Testing

CMS conducts field testing to provide clinicians an opportunity to learn about episode-based cost measures and provide input on the draft cost measure specifications. During the field testing period, clinicians and clinician groups meeting the minimum number of episodes for each cost measure receives a Field Test Report. These reports aim to illustrate the clinician's performance on a cost measure and provide more detailed information to help clinicians understand their score, including the types of services that comprise a large or small share of episode costs.

As part of field testing, Acumen posts draft measure specifications and supplemental documentation on the MACRA Feedback Page. Stakeholders are encouraged to share their feedback on the draft measure specifications through an online survey. Acumen analyzes the measure-specific field testing feedback received and provides summary reports to the Clinician Expert Workgroups to inform measure refinements after field testing. CMS and Acumen also host field testing webinars to engage and inform stakeholders about the field test activities and provide stakeholders an opportunity to ask questions about field testing and the cost measures.

Field testing for the measures developed in Wave 3 is taking place from August 17 to September 18, 2020. Clinicians and clinician groups who meet the minimum number of episodes during the measurement period are encouraged to review their Field Test Report on

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[10] CMS, "Episode Groups Summary and Details," MACRA Feedback page (October 2015), https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/Episode-groups-summary-and-details.zip

[11] CMS, "Supplemental CMS Episode Groups Posting," MACRA Feedback Page (April 2016), https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/Supplemental-CMS-Episode-Groups-Posting.pdf

[12] CMS, "Draft List of MACRA Episode Groups and Trigger Codes", MACRA Feedback Page (December 2016), https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/Draft-list-of-episode-groups-and-trigger-codes-December-2016.zip

[13] CMS, "Draft List of MACRA Episode Groups and Trigger Codes", MACRA Feedback Page (December 2016), https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/Draft-list-of-episode-groups-and-trigger-codes-December-2016.zip

the Quality Payment Program website. All stakeholders, including those who did not receive a Field Test Report, are encouraged to review the draft measure specifications and submit their feedback through an online field testing feedback survey.[14] A document containing specific questions about the measures for stakeholders to reference while reviewing the specifications, as well as additional field testing materials, are available on the MACRA Feedback Page. More information about field testing is available on the Fact Sheet and Frequently Asked Questions (FAQ) document.

The field testing feedback summary reports for Waves 1 and 2 field testing, which took place in October to November 2017 and October to November 2018, respectively, are available on the MACRA Feedback Page.[15,16,17]

[14] Stakeholders can submit feedback through this online field testing feedback survey: https://www.surveymonkey.com/r/2020-cost-measures-field-testing

[15] Field Testing Feedback Summary Report for Eight MACRA Episode-Based Cost Measures," Quality Payment Program (June 2018), https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/2018-field-testing-feedback-summary-report.pdf

[16] "October-November 2018 Field Testing Feedback Summary Report for MACRA Episode-Based Cost Measures," Quality Payment Program (May 2019), https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/2019-ft-feedback-summary-report.pdf

[17] In addition to the episode-based cost measures developed in Wave 2, the October to November 2018 field testing period included field testing of the re-evaluated Medicare Spending Per Beneficiary (MSPB) clinician and Total Per Capita Cost (TPCC) measures.

# 2.0 Components of Episode-Based Cost Measures

The measure development approach incorporates extensive stakeholder input on each component of the episode-based cost measures.

**Episode-based cost measures have 5 essential components:**

- Defining the episode group
- Attributing the episode group to clinician(s)
- Assigning costs to the episode group
- Risk adjusting
- Aligning cost with quality

The following sub-sections describe each component and summarize the process used for developing that component in Wave 3. Further details regarding the construction of each episode-based cost measure are available on the Draft Cost Measure Methodology documents on the MACRA Feedback Page.

## 2.1 Definition of the Episode Group

This sub-section describes the first component of episode-based cost measures: the definition of the episode group.

### 2.1.1 Description of this Component

Episodes are defined by the codes that trigger (or open) the episode, as these codes determine the patient cohort that is included in the episode group. These episode trigger codes are identifiable on Medicare claims in a patient's history and indicate the occurrence of the episode. To enable meaningful clinical comparisons, episode groups may also be divided into more granular, mutually exclusive episode sub-groups based on clinical criteria (e.g., information available on the patient's trigger claim), wherever appropriate. Episode sub-groups are useful in ensuring clinical comparability so that the corresponding cost measure fairly compares clinicians with a similar patient case-mix. Sub-groups must be balanced against the need to have an adequate number of cases that can be attributed to a clinician.

### 2.1.2 Process for Developing this Component

During the August in-person meetings, the Clinician Expert Workgroups provided detailed input on the scope and the trigger codes of the episode group selected by the Clinical Subcommittee for development. Using the episode trigger codes originally listed in the December 2016 posting as a starting point, Acumen ran initial analyses on starting trigger codes for discussion on recommended refinements to the trigger codes and a vote at the August in-person meetings. Since Wave 3 represents the first time a chronic condition episode group is being developed, the workgroups developing the chronic condition episode groups also discussed potential algorithms for triggering chronic condition episodes.

Workgroup members also held detailed discussions on how to account for various sub-populations of the patient cohort that they believed the episode group should take into consideration to ensure clinical comparability, informed by statistics provided by Acumen on the frequency and costs associated with these different sub-populations. Workgroup members

considered the appropriate method of accounting for these sub-populations of patients: creating episode group sub-groups, risk adjusting or excluding the sub-population (described further in Section 2.4), or monitoring the sub-population for testing and future consideration. Members also identified other sub-populations of interest for further investigation. Members provided their input via a poll, which Acumen's clinicians used as guidance on how to implement these sub-populations into the measure specifications. These were brought back to the workgroups for discussion with further analyses and confirmation of how the measure would account for each sub-population.

## 2.2 Attribution of Episodes to Clinicians

The second component of a cost measure is attribution: the assignment of responsibility for episode costs.

### 2.2.1 Description of this Component

Episodes are attributed to a clinician based on the trigger event, and the attributed clinician is held responsible for the assigned costs of care during the episode. The episode defines the period during which a clinician or clinician group can be held responsible for associated patient costs. Information from claims (i.e., services billed on the claim) are used to identify the clinician being considered for attribution.

Future attribution rules may also benefit from the implementation of patient relationship categories and codes. In April 2016, CMS posted a draft list of patient relationship categories for public comment, followed by the posting of a modified list for comment in December 2016 and an operational list in May 2017.[18] An FAQ document on patient relationship categories and codes is also publicly available.[19] Beginning January 1, 2018, clinicians may voluntarily report their patient relationships on claims. As required by section 101(f) of MACRA, CMS will consider how to incorporate the patient relationship categories into episode-based cost measurement methodology as clinicians and billing experts gain experience with them. During the voluntary reporting period, CMS will collect data on the use and submission of the patient relationship codes for validity and reliability testing before considering their potential future use in the attribution methodology for MIPS cost measures. Patient relationship categories and codes were not used during the development of these measures but may be used in conjunction with other claims-based attribution rules in the future.

As part of the current field testing period, data on the patient relationship codes that were reported on the trigger claim are available in the CSV file accompanying the Field Test Report. The goal of this data is to provide clinicians with an idea of how the patient relationship codes can align with the attribution methodology of the episode-based cost measures.

### 2.2.2 Process for Developing for this Component

As a part of defining the episode group (Section 2.1 above), the Clinical Subcommittee considered the scope of the episode group and provided input on the types of clinicians who should be on the Clinician Expert Workgroup to reflect those who would be attributed the selected episode group. Workgroup members were also encouraged to consider which clinician(s) would likely be responsible for the costs and care during the episode when

[18] CMS, "Patient Relationship Categories and Codes," MACRA Feedback Page, https://www.cms.gov/Medicare/Quality-Payment-Program/Quality-Payment-Program/Give-Feedback

[19] CMS, "MACRA Patient Relationship Categories and Codes: Frequently Asked Questions (FAQ)," MACRA Feedback Page, https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/CMS-Patient-Relationship-Categories-and-Codes.pdf

considering which episode trigger codes to select, given the types of clinicians who bill those codes.

The method of attribution is as follows:

- For procedural episode groups, the attributed clinician is the clinician billing the Part B Physician/Supplier claims for the service(s) provided during the trigger event.
- For acute inpatient medical condition episode groups, an episode is attributed (i) to a clinician group (identified by Taxpayer Identification Number, or TIN) if the TIN billed at least 30% of the inpatient evaluation and management (E&M) codes on identified Part B Physician/Supplier claim lines during the trigger inpatient stay, and (ii) to a clinician (identified by a unique TIN and National Provider Identifier pair, or TIN-NPI) within an attributed TIN if the TIN-NPI billed at least one of the inpatient E&M codes on identified Part B Physician/Supplier claim lines during the trigger inpatient stay.
- For chronic condition episode groups, an episode is attributed to the clinician group(s) who bills the trigger services as identified by a primary care E&M code[20] with a chronic diagnosis,[21] followed by either a second primary care E&M code with a chronic diagnosis code or a chronic Current Procedural Terminology/Healthcare Common Procedure Coding System (CPT/HCPCS code) with a chronic diagnosis. [22] An episode is then attributed to any clinician within the attributed clinician group who bills at least 30% of the primary care E&M with a chronic diagnosis and/or chronic CPT/HCPCS codes with a chronic diagnosis on the Part B Physician/Supplier claim lines during the episode.

For a detailed discussion of the attribution method for each measure, please see the Draft Cost Measure Methodology documents available on the MACRA Feedback Page at the start of field testing.

## 2.3 Assignment of Costs to the Episode Group

This section describes the third component of episode-based cost measures: the assignment of costs (i.e., assignment of services) to the episode group.

### 2.3.1 Description of this Component

Services, and their respective Medicare costs, are assigned to an episode only when clinically related to the attributed clinician's role in managing patient care during an episode. Assigned services might include diagnostic services, treatment services, ancillary items, and services directly related to treatment, and services following the initial treatment period that may be rendered to patients as follow-up care. Services furnished as a consequence of care, such as complications, readmissions, unplanned care, and emergency department visits may also be included. Unrelated services are not assigned to the episode, such as the cost of care for a chronic condition that occurs in the episode window for a procedure or acute inpatient medical condition but that is not related to the clinical management of the patient relative to the procedure or acute condition.

### 2.3.2 Process for Developing this Component

To inform the specifications for the assignment of costs of services, workgroup members reviewed an analysis on the use and timing of the most frequently provided services for the

[20] A primary care E&M is a specific subset of E&M codes for physician visits in the outpatient, physician office, nursing facility, or assisted living intended to identify primary care.
[21] A chronic diagnosis is an ICD-10 diagnosis code that indicates the presence of the chronic disease in either the primary diagnosis field or full diagnosis array.
[22] A chronic CPT/HCPCS code is a CPT/HCPCS procedure code related to the treatment of a chronic condition.

episode group and completed an online survey providing preliminary input on the types of services to assign to the measure. This was used as a starting point for the detailed discussion on the categories of assigned services and the timeframe for assigning services at the August in-person meeting. Acumen clinicians used input from the meeting and a follow-up survey to produce an initial draft of service assignment rules using the Clinical Input Tool (CIT), a web-based tool developed by Acumen. At a subsequent webinar, Acumen clinicians asked targeted follow-up questions to members on service assignment topics where further discussion was needed, and workgroup members provided additional recommendations via a post-webinar poll. Acumen clinicians then used the input from this webinar to create the draft service assignment rules for the episode group.

The draft service assignment rules were used to determine episode costs for the Field Test Reports. After field testing, workgroups will have the opportunity to refine their decisions on service assignment rules and provide updated input after considering stakeholder feedback. Acumen clinicians will use this refined input to finalize the service assignment rules for the episode group. As a part of measure maintenance, service assignment rules will be revisited in the future to ensure the codes for assigned services are up-to-date and remain clinically relevant.

## 2.4 Risk Adjustment

This section describes the fourth component of episode-based cost measures: risk adjustment.

### 2.4.1 Description of this Component

Risk adjustment aims to facilitate a more accurate comparison of cost across clinicians by adjusting for clinical factors that can influence spending, such as a patient's age and comorbidities. Risk adjustment aims to isolate the variation in clinicians' costs to Medicare to those costs that clinicians can reasonably influence. Accounting for these factors is one way to ensure the validity of cost measures and mitigate potential unintended consequences.

Similarly, certain patients or episodes with particular clinical characteristics may be excluded from episode-based cost measure calculation altogether. Exclusions remove unique groups of patients from cost measure calculation in cases where it may be impractical and unfair to compare the costs of caring for these patients to the costs of caring for the cohort at large. Exclusions, like risk adjustment, help improve the validity of the cost measure by removing sources of variation outside of clinician influence and prevent unintended consequences of measuring clinician cost performance when treating unique patient populations.

### 2.4.2 Process for Developing this Component

Acumen received broad feedback on risk adjustment used in episode-based cost measure calculation during the August 2017 TEP meeting. Acumen solicited TEP feedback on the proposed approach and materials used to gather workgroup input on risk adjustment and incorporated that feedback into the materials provided to the workgroup. Other recommendations gathered during the risk adjustment TEP will be evaluated by CMS and considered in future waves of episode-based cost measure development.

During the in-person meeting in August 2019, workgroup members discussed and provided input on how to account for patient sub-populations to create clinically homogenous groups of patients to allow for accurate comparisons of clinician performance (see Section 2.1.2). Acumen clinicians used the input gathered through polls during the in-person meeting to create an initial set of risk adjustment variables. At a subsequent webinar, members were provided an analysis

of Medicare claims specific to the measure to help identify which services and diagnoses occurring in the 120 days before an episode may predict high episode costs. Workgroup members also considered whether any of the sub-populations needed further consideration or information; these were designated to be monitored and potentially revisited after field testing. Based on their review of analyses, as well as their clinical experience and expertise, workgroup members shared their recommendations on the risk adjustment, sub-group, and exclusion specifications through polls distributed after the webinar. The workgroup will also have the opportunity to further refine the specifications after considering stakeholder feedback collected during field testing.

## 2.5 Alignment of Cost with Quality

This section describes the fifth and final component of episode-based cost measures: the alignment of cost with quality.

### 2.5.1 Description of this Component

This component involves the consideration of how to align cost measure performance with quality measures. Such quality measures include outcomes, processes of care, and patient engagement and experience. These quality measures need to be considered along with cost measures to ensure that clinicians throughout a patient's care trajectory are incentivized to provide high-value, patient-centered care, with the goal of mitigating potential unintended consequences. For instance, pairing cost measure performance with quality measures that share similar characteristics would allow for patient outcomes such as functional status and mortality to be interpreted alongside with cost.

### 2.5.2 Process for Developing this Component

To assist with the approach for aligning cost and quality, Acumen provided Clinical Subcommittee members with Episode Group Prioritization Workbooks, which highlighted areas for quality alignment, at the beginning of the Wave 3 measure development activities in May 2019. These workbooks listed the episode groups within each Clinical Subcommittee's clinical area that had potential to align with existing quality measures in the Quality Payment Program.

Members were able to refer to these workbooks to inform their input throughout the measure development process. For instance, the Clinical Subcommittees could use the alignment reports to consider the potential of episode groups to align with quality measures as a factor when selecting which episode group to develop. Members could also reference the detailed information about the specifications of a quality measure's patient cohort while making their recommendations on episode trigger codes for the episode-based cost measures. During the January 2020 webinars, members also provided input on quality alignment and opportunities for improvement.

# Appendix A: Clinical Subcommittee Members

Tables A-1 through A-4 list the members of each Clinical Subcommittee along with their specialty, city, and state. Clinical Subcommittee co-chairs are denoted with an asterisks (*).[23] The composition list of each Clinician Expert Workgroup will be included in each Draft Cost Measure Methodology document.

### Table A-1. Composition of the Chronic Condition Disease Management Clinical Subcommittee

| Name and Credentials | Specialty | City, State |
|---|---|---|
| Adolph Yates, MD | Orthopedic Surgery | Pittsburgh, PA |
| Alec Koo, MD | Urology | Torrance, CA |
| Amanda Chaney, DNP, APRN | Nurse Practitioner | Ponte Vedra Beach, FL |
| Amandeep Sahota, MD, MSc | Internal Medicine | Los Angeles, CA |
| Amisha Wallia, MD, MS, | Endocrinology | Chicago, IL |
| Barbara Spivak, MD | Internal Medicine | Brighton, MA |
| Caitlin Hicks, MD, MS | Vascular Surgery | Baltimore, MD |
| Caroll Koscheski, MD, FACG | Gastroenterology | Hickory, NC |
| Carolyn Fruci, MD, PhD | Pulmonary Disease | Westport, MA |
| Christopher Yost, MD | Internal Medicine | Lexington, KY |
| Colleen Schmitt, MD, MHS | Gastroenterology | Chattanooga, TN |
| Connie Lewis, MSN, ACNP-BC, NP-C, CCRN, CHFN, FHFSA | Cardiology | Nashville, TN |
| Cynthia Cox, RN, MS, MBA, NP-C, ACNS-BC | Certified Clinical Nurse Specialist | Atlanta, GA |
| David Seidenwurm, MD* | Diagnostic Radiology | Sacramento, CA |
| Debra Anoff, MD, FACP, FSHM | Internal Medicine | Aurora, CO |
| Dheeraj Mahajan, MD, MBA, MPH* | Internal Medicine | Oak Park, IL |
| Dirk Steinert, MD | Internal Medicine | Milwaukee, WI |
| Don Bukstein, MD | Allergy | Madison, WI |
| Donna Kucharski, MD | Anesthesiology | Pittsburgh, PA |
| Edward Mariano, MD, MAS | Anesthesiology | Palo Alto, CA |
| Eileen Brewer, MD | Pediatric Nephrology | Houston, TX |
| Emran Rouf, MD, MBA, FACP | Internal Medicine | Belton, TX |
| Geoff Teehan, MD, MS, FACP | Nephrology | Philadelphia, PA |
| Harlivleen Gill, MBA RD | Registered Dietitian or Nutrition Professional | Bethesda, MD |
| Heather Smith, PT, MPH | Physical Therapist | Alexandria, VA |
| James Gajewski, MD | Hematology-Oncology | Portland, OR |
| James Parker, MD, CMIO | Internal Medicine | Fort Worth, TX |
| James Richter, MD, MA | Gastroenterology | Boston, MA |
| Jay Nathan, MD | Neurosurgery | Ann Arbor, MI |
| Jennifer Bracey, MD | Internal Medicine | Charleston, SC |
| Joanne Wisely, MA, CCC/SLP, FNAP | Speech Language Pathologist | Wayne, PA |
| Joel Brill, MD | Gastroenterology | Paradise Valley, AZ |
| Kristina Newport, MD | Internal Medicine | Lancaster, PA |
| Laura Hart, PA-C | Physician Assistant | Salem, VA |

[23] Co-chairs facilitated discussions and assisted in reaching consensus on cost measure development recommendations during Clinical Subcommittee meetings, webinars, and activities.

| Name and Credentials | Specialty | City, State |
|---|---|---|
| Louann Bailey, DNP, APRN, ACNP-BC, FAANP | Cardiology | Richfield, OH |
| Luis Rodriguez, MD | Internal Medicine | Miami, FL |
| Marc DeHart, MD | Orthopedic Surgery | San Antonio, TX |
| Marc Gruner, DO, MBA, RMSK, Physician | Physical Medicine and Rehabilitation | Washington, DC |
| Mario Motta, MD, FACC | Cardiology | Salem, MA |
| Mark Levine, MD | Geriatric Medicine | Denver, CO |
| Marvin Konstam, MD | Cardiology | Boston, MA |
| Matthew Smith, MD, EMHL | Physical Medicine and Rehabilitation | East Greenwich, RI |
| Melinda Mackey, RN, MSN, CPHQ, CCM, CPhT | Nurse Practitioner | Indianapolis, IN |
| Michael Wasserman, MD, CMD | Geriatric Medicine | Woodland Hills, CA |
| Miroslav Djokic, MD | Pathology | Pittsburgh, PA |
| Paul Heidenreich, MD | Cardiology | Palo Alto, CA |
| Paula Shireman, MD, MS, MBA | Vascular Surgery | San Antonio, TX |
| Phillip Ward, DPM | Podiatry | Southern Pines, NC |
| Raymond Cross, MD, MS | Gastroenterology | Baltimore, MD |
| Robert Kenney, MD | Nephrology | Baton Rouge, LA |
| Sabrena McCarley, MBA-SL, OTR/L, CLIPP, RAC-CT, QCP | Occupational Therapist | Napa, CA |
| Sarah Streett, MD | Gastroenterology | Redwood City, CA |
| Shraddha Jatwani, MD, FACP, FACR, RhMSUS | Rheumatology | Newburgh, IN |
| Stephanie Baranko, DNP, RN, NEA-BC, CLSSGB | Critical Care | Whiting, IN |
| Suma Thomas, MD, MBA | Cardiology | Cleveland, OH |
| Terry Lee Mills, MD, MMM, CPE, FAAFP | Family Medicine | Tulsa, OK |
| Tracy Murphy, AuD | Audiologist | Vernon Hills, IL |
| William Van Decker, MD | Cardiology | Philadelphia, PA |

### Table A-2. Composition of the Dermatologic Disease Management Clinical Subcommittee

| Name and Credentials | Specialty | City, State |
|---|---|---|
| Aamir Siddiqui, MD* | Plastic and Reconstructive Surgery | Detroit, MI |
| Anna Likhacheva, MD, MPH | Radiation Oncology | Sacramento, CA |
| Avery LaChance, MD, MPH | Dermatology | Boston, MA |
| Clifford Lober, MD, JD | Dermatology | Kissimmee, FL |
| Farhaad Riyaz, MD, FAAD | Dermatology | Washington, DC |
| Hazle Konerding, MD | Dermatology | Richmond, VA |
| Hon Pak, MD | Dermatology | Silver Spring, MD |
| Howard Rogers, MD, PhD* | Dermatology | Norwich, CT |
| Iris Hamilton, RN, MPA | Geriatric Medicine | Snellville, GA |
| Join Luh, MD | Radiation Oncology | Eureka, CA |
| Manjil Chatterji, MD | Diagnostic Radiology | New York, NY |
| Mark Kaufmann, MD | Dermatology | New York, NY |
| Melissa Piliang, MD | Dermatology | Euclid, OH |
| Michele Manahan, MD, MBA, FACS | Plastic and Reconstructive Surgery | Baltimore, MD |

| Name and Credentials | Specialty | City, State |
|---|---|---|
| Nita Kohli, MD, MPH | Dermatology | St. Louis, MO |
| Oliver Wisco, DO | Dermatology | , Bend, OR |
| Paul Wallner, DO | Radiation Oncology | Moorestown, NJ |
| Phillip Devlin, MD, FACR, FASTRO, FFRRCSI, FABS | Radiation Oncology | Boston, MA |
| Sarah Eakin, MD | Pathology | Erie, PA |
| Scott Collins, MD | Dermatology | Portland, OR |
| Shani Francis, MD, MBA | Dermatology | Evanston, IL |
| Victoria Lazareth, MA, MSN, NP-C, DCNP | Dermatology | Mashpee, MA |

### Table A-3. Composition of the General and Colorectal Surgery Clinical Subcommittee

| Name and Credentials | Specialty | City, State |
|---|---|---|
| Alice Coombs, MD* | Anesthesiology | Richmond, VA |
| Brett Bernstein, MD, MBA | Gastroenterology | New York, NY |
| Carol Parrish, MS, RDN | Registered Dietitian or Nutrition Professional | Charlottesville, VA |
| Colleen Schmitt, MD, MHS | Gastroenterology | Chattanooga, TN |
| Cynthia Jovanov, MSN, MBA, CNS, ACNP-BC, FNP-BC | General Surgery | Murrieta, CA |
| David Flum, MD, MPH, FACS | General Surgery | Seattle, WA |
| Ezequiel Silva III, MD, FACR | Diagnostic Radiology | San Antonio, TX |
| Guy Orangio, MD* | Colorectal Surgery | New Orleans, LA |
| Hop Tran Cao, MD, FACS | Surgical Oncology | Houston, TX |
| Jayme Lieberman, MD, MBA | General Surgery | Emmaus, PA |
| Jonathan Gal, MD, FASA | Anesthesiology | New York, NY |
| Lee Morisy, MD | General Surgery | Memphis, TN |
| Lukejohn Day, MD | Gastroenterology | San Francisco, CA |
| Manjil Chatterji, MD | Diagnostic Radiology | New York, NY |
| Mary Cathleen Shellnutt, DNP, APRN, AGCNS-BC, CGRN | Surgical Oncology | Plano, TX |
| Melinda Maggard-Gibbons, MD, MSHS | General Surgery | Los Angeles, CA |
| Michael Sutherland, MD, FACS | General Surgery | Columbus, OH |
| Nina Paonessa, DO, FACOS | General Surgery | Wall, NJ |
| Ofor Ewelukwa, MD, MSc | Gastroenterology | Houston, TX |
| Paul Packard, DNAP, CRNA, NEA-BC, CPPS | Certified Registered Nurse Anesthetist | Hickory, NC |
| Paul Penar, MD, FACS, FAANS | Neurosurgery | Burlington, VT |
| Paul Wallner, DO | Radiation Oncology | Moorestown, NJ |
| Sarah Eakin, MD | Pathology | Erie, PA |
| Sarah Gebauer, MD | Anesthesiology | Steamboat Springs, CO |
| Scott Regenbogen, MD, MPH | Colorectal Surgery | Ann Arbor, MI |
| Steven Mund, DNP, CRNA, FACHE, CENP | Certified Registered Nurse Anesthetist | Mount Pleasant, SC |
| Steven Nurkin, MS, MD, FACS | Surgical Oncology | Buffalo, NY |
| Therese Marie Mulvey, MD | Hematology-Oncology | Charlestown, MA |
| Tracy Young, MSNA, MBA, CRNA | Certified Registered Nurse Anesthetist | Youngsville, LA |
| Walter Peters, MD, MBA | Colorectal Surgery | Dallas, TX |
| Wayne Johnson, DMSc, PA-C | Colorectal Surgery | Triangle, VA |

### Table A-4. Composition of the Hospital Medicine Clinical Subcommittee

| Name and Credentials | Specialty | City, State |
|---|---|---|
| Ajay Mathur, MD | Infectious Disease | Monroe, NJ |
| Alexandra Flamm, MD | Dermatology | Hershey, PA |
| Alina Bridges, DO | Dermatology | Rochester, NY |
| Amit Gupta, MD, FSIR | Interventional Radiology | Stony Brook, NY |
| Arturo Dominguez, MD | Dermatology | Dallas, TX |
| Bela Pandit, DPM | Podiatry | Chicago, IL |
| Benjamin Djulbegovic, MD, PhD | Hematology | Duarte, CA |
| Carolyn Duenas, RN | Obstetrics & Gynecology | Los Angeles, CA |
| Carolyn Fruci, MD, PhD* | Pulmonary Disease | Westport, MA |
| Christina Dunn, MSN, RN | Critical Care | Indianapolis, IN |
| Clemens Schirmer, MD, PhD | Neurosurgery | Wilkes-Barre, PA |
| David Seidenwurm, MD | Diagnostic Radiology | Sacramento, CA |
| Debra Anoff, MD, FACP, FSHM | Internal Medicine | Aurora, CO |
| Dheeraj Mahajan, MD, MBA, MPH, FACP | Internal Medicine | Oak Park, IL |
| Diane Smith, DNP, RN, CCRN-K, ACNS-BC, CNML, PCCN-K | Cardiology | Indianapolis, IN |
| Erica Bisson, MD, MPH | Neurosurgery | Salt Lake City, UT |
| Gene Lambert, MD, MBA | Internal Medicine | Boston, MA |
| Iris Hamilton, RN, MPA | Geriatric Medicine | Snellville, GA |
| James Gajewski, MD | Hematology-Oncology | Portland, OR |
| Jayesh Shah, MD | Internal Medicine | San Antonio, TX |
| Jennifer Bracey, MD | Internal Medicine | Charleston, SC |
| Jennifer Cowart, MD | Internal Medicine | Jacksonville, FL |
| John Lam, MD, MBA | Urology | Los Angeles, CA |
| Joshua Hirsch, MD, FACR | Interventional Radiology | Boston, MA |
| Kristina Newport, MD | Internal Medicine | Lancaster, PA |
| Louann Bailey, DNP, APRN, ACNP-BC, FAANP | Cardiology | Richfield, OH |
| Manjil Chatterji, MD | Diagnostic Radiology | New York, NY |
| Maria Rosa Costanzo, MD, FAHA, FACC, FESC | Cardiology | Naperville, IL |
| Marlin Schul, MD, RVT, DABVLM | Emergency Medicine | Lafayette, IN |
| Michael Malone, MD | Internal Medicine | Brookfield, WI |
| Miroslav Djokic, MD | Pathology | Pittsburgh, PA |
| Molade Sarumi, MD, FACP, FIDSA | Infectious Disease | Washington, DC |
| Namirah Jamshed, MD | Geriatric Medicine | Dallas, TX |
| Nilesh Hingarh, MD | Infectious Disease | Santa Clarita, CA |
| Nita Kohli, MD, MPH | Dermatology | St. Louis, MO |
| Patricia Bartzak, DNP, RN, TNCC, CMSRN | Critical Care | Natick, MA |
| Patricia Lane, MBA, BSN, SCRN, FAAN | Neurology | Midlothian, VA |
| Paul Heidenreich, MD | Cardiology | Palo Alto, CA |
| Purushottam Dixit, MD, FSIR | Interventional Radiology | Royal Oak, MI |
| Rajeev Suri, MD | Diagnostic Radiology | San Antonio, TX |
| Richard Elias, MD, MPH | Internal Medicine | Rochester, MN |
| Robert Zipper, MD, MMM* | Internal Medicine | Bend, OR |

| Name and Credentials | Specialty | City, State |
|---|---|---|
| Ronald Devine, MD | Infectious Disease | Atlanta, GA |
| Sarah Eakin, MD | Pathology | Erie, PA |
| Seger Morris, DO, MBA | Internal Medicine | Corinth, MS |
| Sharyl Magnuson Boyle, MD | Family Medicine | Hillsboro, OR |
| Stanley Freeman, MS, PharmD | Hematology-Oncology | Fort Myers, FL |
| Tanaz Ferzandi, MD, MBA | Urogynecology | Boston, MA |
| Tomas Villanueva, DO, MBA | Internal Medicine | Miami, FL |

# Appendix B: Technical Expert Panel Members

***Technical Expert Panel Members (2016-2018)***
Adolph Yates, American Academy of Orthopaedic Surgeons
Alan Lazaroff, American Geriatrics Society
Allison Madson, American Society of Cataract and Refractive Surgery
Alvia Siddiqi, American Academy of Family Physicians
Anupam Jena, Harvard Medical School
Caroll Koscheski, American College of Gastroenterology
Chandy Ellimoottil, American Urological Association
Diane Padden, American Association of Nurse Practitioners
Dyane Tower, American Podiatric Medical Association
Edison A. Machado, Jr., The American Health Quality Association
Jackson Williams, Dialysis Patient Citizens
James Naessens, Mayo Clinic
John Bulger, American Osteopathic Association
Juan Quintana, American Association of Nurse Anesthetists
Kata Kertesz, Center for Medicare Advocacy
Kathleen Blake, American Medical Association
Mary Fran Tracy, National Association of Clinical Nurse Specialists
Parag Parekh, American Society of Cataract and Refractive Surgery
Patrick Coll, University of Connecticut Health Center
Shelly Nash, Adventist Health System
Sophie Shen, Johnson and Johnson Health Care Systems, Inc.

***Technical Expert Panel Members (2020- )***
Adolph Yates, American Association of Hip and Knee Surgeons
Akinluwa Demehin, American Hospital Association
Alan Lazaroff, American Geriatrics Society
Anita Bemis-Dougherty, American Physical Therapy Association
Caroll Koscheski, American College of Gastroenterology
Danny van Leeuwen, Society for Participatory Medicine
David Seidenwurm, American College of Radiology
Diane Padden, American Association of Nurse Practitioners
Edison Machado, Jr., The American Health Quality Association
James Naessens, Mayo Clinic
Janice Tufte, Society for Participatory Medicine
Kathleen Blake, American Medical Association
Kurtis Hoppe, American Academy of Physical Medicine and Rehabilitation
Mary Fran Tracy, National Association of Clinical Nurse Specialists
Michael Wasserman, California Association of Long Term Care Medicine
Parag Parekh, American Society of Cataract and Refractive Surgery
Robert Leviton, American Medical Informatics Association
Shelly Nash, Adventist Health System
Shirley Levenson, American Academy of Nurse Practitioners
Ugochukwu Uwaoma, American College of Physicians