Summary Report of Technical Expert Panel Meeting:

Method to Assess Accountable Care Organization Improvement on Admission Measures

July 2015

Prepared by:

Yale New Haven Health Services Corporation – Center for Outcomes Research and Evaluation (CORE)

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Table of Contents

Background 3
Methodology Development Team, Consultants, and Experts 3
The TEP 3
Specific Responsibilities of the TEP Members 4
TEP Members 5
TEP Meetings 6
Public Comment 6
Conclusion 6
Key Issues Discussed During First TEP Meeting 7
Appendix A. CORE Measure Development Team 18
Appendix B. TEP Call Schedule 19

Background

The Centers for Medicare & Medicaid Services (CMS) is developing a novel methodology to assess year-to-year improvement in three risk-adjusted outcome measures in CMS's Accountable Care Organization (ACO) quality measure set. As part of the development process, CMS and its contractor, Yale New Haven Health Services Corporation – Center for Outcomes Research and Evaluation (CORE), are inviting the public to comment on this methodology.

CORE is obtaining expert and stakeholder input on the proposed improvement methodology. CORE convened a technical expert panel (TEP) composed of clinicians, patients, purchasers, and experts in quality improvement to provide input on key conceptual goals and methodological decisions relating to the methodology.

This report summarizes the feedback and recommendations provided by the TEP during the first TEP meeting.

Methodology Development Team, Consultants, and Experts

The CORE measure development team is led by Dr. Elizabeth Drye. Dr. Drye is Director of Quality Measurement at CORE and a Research Scientist in Pediatrics at Yale School of Medicine. See Appendix A for the full list of members of the CORE development team.

In addition, on an ad hoc basis, CORE has met individuals with expertise relevant to quality measurement.

Finally, Dr. Vinitha Meyyur the project's Contracting Officer's Representative (COR) and additional CMS staff, including Dr. Lein Han, attended the TEP meeting and have provided ongoing input.

The TEP

In alignment with the CMS Measures Management System (MMS), CORE released a 30-day public call for nominations to convene the TEP. CORE solicited potential TEP members via direct email, CMS email distribution lists, and through a public posting on CMS's website.

The TEP's role in development is to provide feedback on key conceptual and methodological issues. The TEP's input will inform CORE's recommended approach to the methodology. The TEP is comprised of individuals with expertise in ACO development and management, quality improvement and measurement, and quantitative methodology. The appointment term for this TEP is from May 2015 through September 2015.

Specific Responsibilities of the TEP Members

- Complete and submit all nomination materials, including the TEP Nomination/Disclosure/Agreement Form, statement of interest, and curriculum vitae
- Review background materials provided by CORE prior to each TEP meeting
- Participate in TEP conference calls
- Provide input on key conceptual and methodological issues
- Provide feedback on key policy or other non-technical issues

TEP Members

Table 1. TEP members

Name	Organization (Title)	Location
Michael Barrett, BS	Universal American/Collaborative Health System (Senior Vice President ACO Southeast Region and National Development)	Reunion, FL
Larry Becker, BS	Xerox (Director, Strategic Partnerships, Alliances, and Analytics for Xerox Corporation)	Rochester, NY
Scott Berkowitz, MD, MBA	Johns Hopkins Medicine Alliance For Patients, LLC. (Executive Director); Office of Johns Hopkins Physicians (Senior Medical Director, Accountable Care Office); Johns Hopkins Medicine (Assistant Professor)	Baltimore, MD
Alex Blum, MD, MPH	Evergreen Health Co-op (Chief Medical Officer)	Baltimore, MD
Erin Deloreto, MPAP	QualCare Alliance Network, Inc. (Assistant Vice President, Operations)	Piscataway, NJ
Aparna Higgins, MA	America's Health Insurance Plans ([AHIP] Senior Vice President, Private Market Innovations)	Washington DC
Mimi Huizinga, MD, MPH	Premier, Inc. (Vice President, Chief Clinical Officer of PACT Collaborative)	Nashville, TN
David Introcaso, PhD	National Association of ACOs ([NAACOS] Vice President, Policy and Operations)	Alexandria, VA
John Michael McWilliams, MD, PhD	Harvard Medical School (Associate Professor of Health Care Policy and Medicine)	Boston, MA
David Muhlestein, JD, PhD, MHA, MS	Leavitt Partners (Senior Director of Research and Development)	Salt Lake City, UT
Ami Parekh, MD, JD	University of California, San Francisco (Assistant Clinical Professor)	San Francisco, CA
Denise Prince, MBA, MPH	Geisinger Health System (System Vice President, Value Based Care) Keystone Accountable Care Organization, LLC (Chief Administrative Officer)	Danville, PA
Jeff Stensland, PhD	Medicare Payment Advisory Commission ([MedPAC] Principal Policy Analyst)	Washington DC

TEP Meetings

CORE held one TEP meeting on June 23, 2015 and may hold one additional meeting by September, 2015 (see Appendix B for the TEP meeting schedule). This summary report contains a summary of the June 2015 meeting.

During the TEP meeting, CORE staff presented potential methods approaches and key issues, followed by an open discussion of these issues with the TEP members. CORE reviewed: background information, including CMS's policy framework for measuring and rewarding ACO improvement; four methodological options under consideration; and CORE's qualitative and quantitative evaluation of options. TEP members provided valuable input on the four methodological options that has informed CORE's further consideration and analysis of the options.

The TEP:

- Emphasized that patients joining or leaving ACOs (or dying) between years are higher utilizers than those staying in ACOs.
- Suggested several methodological approaches for consideration:
    - Using a single baseline for all three years (that is, deriving each year's expected rate for years one to three from the year zero performance); and
    - Using a method that facilitates ACOs' efforts to monitor interim progress (for example, Option 1) and a second for adjudication (for example, Option 2).
- Encouraged CORE to fully consider Options 3 and 4.
- Prioritized actionability of the method for ACOs.

Public Comment

CMS will take public comment on the improvement methodology in August 2015. After the close of the public comment period, CORE will obtain TEP member input on the comments and CORE's responses.

Conclusion

The TEP's input has been instrumental in refining CORE's approach to development of the improvement methodology. Key Issues Discussed During First TEP Meeting

Table 2 describes the key issues CORE presented to the TEP during the first meeting and the TEP's responses.

Key Issues Discussed During First TEP Meeting

Table 2. Overview of key issues discussed during the first TEP meeting and TEP feedback

Topic	Key Issues Discussed	TEP Feedback/Discussion
Meeting 1: Project Overview	CORE provided an overview of the project to develop a novel methodology to assess year-to-year improvement in three risk-adjusted outcome measures in CMS's Accountable Care Organization (ACO) quality measure set. CMS/CORE previously developed three ACO-level, risk-standardized measures of acute admission rates for patients with diabetes, heart failure, and multiple chronic conditions (ACO admission measures). CMS added the three measures to the Medicare Shared Savings Program (Shared Savings Program) quality measure set in the Care Coordination/Patient Safety quality measure domain: 1. ACO-36: All-Cause Unplanned Admissions for Patients with Diabetes; 2. ACO-37: All-Cause Unplanned Admissions for Patients with Heart Failure; and 3. ACO-38: All-Cause Unplanned Admissions for Patients with Multiple Chronic Conditions. CMS will first report these measures for the 2015 performance year.	One TEP member asked if the focus is to develop a single, non-disease-specific improvement measure or an improvement metric for each of the three disease-specific ACO admission measures. CORE responded that we are developing a method to measure improvement in risk-adjusted quality measures. The improvement methodology results, which reflects an ACO's performance compared to its performance in the prior year, may be reported alongside the regular measure score, which is a score reflecting performance relative to other ACOs in a given year. CORE further clarified that we are focusing on developing the methodology for the heart failure ACO admission measure but that we expect to test the method across all three ACO admission measures. **Summary: TEP members were supportive of the project overall.**
Meeting 1: Background and Policy Framework	CORE described the development of the three ACO admission measures. The measures count the number of admissions per 100 person-years at risk of hospitalization and risk adjust for age and a number of comorbidities. The measure score assesses each ACO's performance	Two TEP members commented on the importance of risk adjustment for the three ACO admission measures. • One TEP member asked how CORE selected risk variables for the three ACO admission

Topic	Key Issues Discussed	TEP Feedback/Discussion
	relative to other ACOs with similar patients in the measurement year. The improvement methodology under development will use the same measure cohorts, outcomes, data, and most of the same risk variables. CORE explained that the rationale for developing the methodology for measuring improvement in the three ACO admission measures is that CMS has revised its quality scoring strategy to reward ACOs that significantly improve their performance on quality measures from one year to the next (79 FR 67930). The policy is designed to reward ACOs for improving on quality measures, independent of their relative performance on each quality measure and has created an immediate need for a method to assess year-to-year improvement on the three ACO admission measures. CORE will focus on the heart failure ACO admission measure (ACO-37) for development.	measures. The TEP member further questioned why the measures do not risk adjust for classic risk variables such as disability or Hierarchical Condition Categories (HCC) score. The TEP member also emphasized adjustment for factors present prior to the index admission and the ability of risk adjustment to isolate between-hospital differences related to quality. • In response, one TEP member agreed with the importance of adjusting for factors present before the index admission, noting that ACOs need to identify beneficiaries with increasing risk versus those who already have high risk and intervene prior to an identifiable event. CORE thanked the TEP members for their feedback. CORE explained the process of risk variable selection during development of the ACO admission measures. First, we thoroughly reviewed literature on variables related to admission risk and looked empirically at the relationships between each risk factor and the measure outcome. We used HCCs (without the hierarchy component because it is a cost-driven hierarchy) to classify variables by similar conditions. We also convened clinical experts and a TEP to provide input on a list of candidate variables before empirically testing and finalizing the model. CORE also clarified that the ACO admission measures look for patient risk factors in the year prior to the measurement year. CORE explained that the measures to not adjust for prior

Topic	Key Issues Discussed	TEP Feedback/Discussion
		utilization, such as admissions, because that would favor ACOs that have high admission rates to begin with by predicting a higher expected rate for their patients then would be expected at others ACOs with similar patients. Several TEP members commented on the conceptual goals of the improvement methodology. • One TEP member questioned how the improvement methodology will address secular trends unrelated to an ACO's quality of care. • One TEP member suggested measuring improvement relative to a control. • Two TEP members supported measuring improvement relative to a three-year benchmark (aligned with the spending benchmark). One of the two TEP members noted that the year-to-year construct is particularly constraining for smaller ACOs. This is because year-to-year variability is particularly salient for smaller ACOs and out of their control. • In response, one TEP member inquired about the possibility of using a confidence interval to address smaller ACOs. • Another TEP member noted that using a three-year baseline could put an ACO at a disadvantage, particularly if an ACO has a poor year of performance.

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		• One TEP member suggested using a weighted benchmark, similar to what CMS uses for ACO financial benchmarking, to help improve the accuracy of the benchmark. Two TEP members commented on the importance of usability. • One TEP member emphasized that most of the high-risk patients are those who are turning over each year, and that these will be the patients who most affect admission rates. She inquired how an ACO can be held accountable for improvement when the patients they wish to target are "churning" (turning over). • One TEP member emphasized that it is important to give ACOs useful data, which they can control. CORE thanked the TEP member for this feedback and suggestions. CORE clarified that our focus is on developing a methodology that fits within CMS's existing policy to reward ACOs for year-to-year improvement on quality measures. **Summary: The TEP members raised several alternatives to consider for development, given the Shared Savings Program construct. For example, TEP members suggested using a three-year benchmark (for example, a weighted benchmark) to align with the financial side of the program and to improve measurement accuracy.**

Topic	Key Issues Discussed	TEP Feedback/Discussion
Meeting 1: Methodological Options under Consideration	CORE provided an overview of the conceptual framework for the improvement methodology. CORE's goals are: 1. To measure statistically significant, bidirectional changes in an individual ACO's admission rates; and 2. To convey an improvement score that is understood and usable by ACOs. CORE provided an overview of four methodological options under consideration: 1. Option 1: We estimate an expected rate of admissions in Year 2 (Y2) based on the relationship between patient risk factors and the outcome from an ACO's patients in Year 1 (Y1). Specifically, we fit the model for the heart failure ACO admission measure, ACO-37, to the Y1 data, then use the model coefficients and Y2 patients to estimate the Y2 expected rate. To assess improvement, we compare the observed number of admissions in Y2 to the Y2 expected number of admissions. 2. Option 2: We estimate a rate ratio for improvement by setting the expected rate of admissions based on the relationship between patient risk factors and the outcome from an ACO's patients in both Y1 and Y2. Specifically, we fit the heart failure ACO admission measure, ACO-37, model to a	CORE requested the TEP's feedback on the four methodological options under consideration. CORE also suggested that we could use preliminary beneficiary assignments for Y2 to provide ACOs with information during the measurement year on the admission rate that would likely be needed to achieve statistically significant improvement and asked for feedback on whether preliminary patient assignments were reliable and useful for ACOs to monitor interim progress. Several TEP members commented on providing a way for ACOs to monitor interim progress (using Options 1 and 4). • The TEP member asked at what point in Y2 (that is, the measurement year) CMS would be able to provide a mechanism for ACOs to monitor their interim progress using Option 1 – that is, at what point would we be able to calculate the expected number of admissions? She also questioned whether the methodology would assume new patients in Y2. • A second TEP member noted that ACO beneficiary assignment is retrospective for Track 1 and Track 2 ACOs only (not Track 3). The proposed target-setting, therefore, would be based on preliminary prospective patient assignment. • The same TEP member suggested the possibility of using multiple methodological options under consideration. He suggested using Option 1 to provide ACOs with information to monitor interim

Topic	Key Issues Discussed	TEP Feedback/Discussion
	combined Y1 and Y2 dataset and estimate the model with an added time variable. To assess improvement, we test the direction and statistical significance of the time variable. 3. Option 3: We control for change in patient risk from Y1 to Y2 by developing a matched cohort of ACO patients in Y1 and Y2 with like admission risk using the risk factors from the heart failure ACO admission measure, ACO-37. To assess improvement, we compare admission rates in Y1 and Y2. One issue to consider for Option 3 is how matched and unmatched patients might differ. 4. Option 4: We estimate an expected rate of admissions based on the relationship between patient risk factors and the outcome from all ACOs in Y1. Specifically, we fit a model to all ACOs, then apply it to each individual ACO's data to estimate the ACO's Y2 admission rate. To assess improvement, we compare the observed number of admissions in Y2 to the expected number of admissions in Y2. CORE outlined the challenges to measuring improvement: • An ACO's patients change from Y1 to Y2 (for example, due to death, ACO assignment, enrollment or disenrollment in Fee-for-Service Medicare).	progress and then using Option 2 for adjudication. • One TEP member discussed the methodologies behind retrospective and prospective beneficiary assignment and noted that most ACOs will continue to fall under Tracks 1 and 2 (and have retrospective assignment). He noted that in January 2016, these ACOs will start getting claims of all preliminarily assigned beneficiaries, which will be helpful for ACOs. He also suggested weighting readmissions because they are indicative of ACOs' efforts to improve care. • Another TEP member noted that individual patients may change within an ACO, but if the overall risk profile of an ACO stays similar, providing information to ACOs for monitoring interim progress may prove to be difficult. • In response, one TEP member posited that risk scores are variable over time. • One TEP member emphasized the importance of understanding how the methodology will work within the context of the Shared Savings Program, identifying beneficiary assignment as a key factor for decision-making. He emphasized the challenge of patients turning over. CORE thanked the TEP members for this feedback and responded that all approaches are still under consideration.

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	• Admission risk of persistent enrollees changes (likely increases) from year to year. • Admission rate may be affected by natural events (for example, flu pandemic) and policy shifts. • Regression to the mean, or the tendency of an extreme measurement to be less extreme by chance when measured a second time, could contribute to year-over-year change.	• Regarding the methodology of Option 1, CORE further clarified that the risk factors would be derived from the baseline year (Y1), and that the Y2 patients could be used to estimate a target rate with which ACOs could monitor progress. The actual observed minus expected value, however, would not be calculated until the end of Y2. • CORE clarified that since Option 2 would use both Y1 and Y2 data to calculate each ACO's model, Option 2 does not provide a way to estimate a target admission rate early in Y2. Two TEP members sought clarification about Option 3. • One TEP member asked what information CORE would use to match patients. • A second TEP member asked if the goal of Option 3 was to avoid an average risk adjustment over two years of data, but to still adjust for risk using two years of data. Two TEP members commented on Option 4. • One TEP member suggested CORE consider Option 4 to alleviate the concern of options that use only the ACO's population for risk adjustment, which causes uncertainty (that is, Options 1, 2, and 3). • One TEP member suggested setting a benchmark with Option 4

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		as a means to provide ACOs with interim information. CORE thanked the TEP members for the feedback. CORE responded that we have thought about population estimates versus ACO-specific estimates and will further consider this during development. CORE explained that for Option 3, we would use risk factors from the heart failure ACO admission measure to estimate the probability of being in Y1 or Y2. Propensity score matching would summarize each Y1 and Y2 patient's risk profile into one aggregate number and then match Y1 and Y2 patients on that number. Further, CORE agreed with the TEP member's understanding of Option 3's goals for risk adjustment and noted that Option 3 is appealing. We are currently considering the feasibility of implementing Option 3. Two TEP members commented on adjustment for socioeconomic status (SES). • One TEP member noted national research and policy discussions regarding adjustment for SES. The TEP member noted this as less of an issue for the improvement methodology because of the natural risk adjustment within an ACO from one year to the next given that most patients stay in the ACO. • Another TEP member asked if the risk-adjustment models exclude SES. CORE noted that ACO admission measures do not adjust for SES status or

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		health behaviors, even though these may relate to the outcome, as ACOs voluntarily accept responsibility and are incentivized to address not just health care but also the health of their populations. For the improvement methodology, we are comparing each ACO to itself; therefore, it is unlikely that we would need to adjust for SES even if SES is related to the outcome since the patients in both years are likely to be similar with respect to SES. **Summary: The TEP members made several suggestions and raised several challenges to consider, including adequate risk adjustment, patient churn rate, and the importance of providing a way for ACOs to monitor interim progress. TEP members generally supported the goal of measuring improvement for individual ACOs.**
Meeting 1: Evaluation of Options	The CORE team reviewed the empirical analyses the team conducted to examine patient shifts within ACOs, which were distributed prior to the meeting. CORE noted the following: • About 65% of heart failure patients stayed assigned to the same ACO from one year to the next • The frequencies of patient risk factors in Y1 and Y2 were fairly similar over time. • While the actual patients in ACOs can change substantially, the risk of admission for ACO populations looked similar between Y1 and Y2 Additionally, those who stayed in the same ACOs had similar	One TEP member suggested that the performance category distribution for ACOs is not similar across each volume tertile. He posited that bigger ACOs do have more frequent significant changes, whereas the smaller ACOs, because of multiple comparisons and smaller populations, may be having more spurious changes. Further, the TEP member suggested that uncertainty is not represented similarly in Options 1 and 2, which could also explain the differences in ACOs able to achieve statistically significant results. CORE acknowledged that more ACOs showed statistically significant results in Option 1 than in Option 2. We appreciated the comment and will further consider and assess the effect of ACO

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	frequencies of comorbidities. Leavers tended to be sicker than those who remain in an ACO; however, leavers were similar to joiners. Overall, the Y1 and Y2 risk factor frequencies were very similar – both overall and within each ACO. Our findings therefore suggested that we will be able to risk adjust for case-mix change using any of the four options. • Smaller-volume ACOs could still reached statistically significance for improvement.	volume on achieving statistically significant change. **Summary: The TEP supported the analysis and recommended considering the effect of ACO volume on achieving statistically significant change.**
Meeting 1: Closing Remarks and Next Steps	CORE thanked the TEP members for their feedback and welcomed any additional feedback.	One TEP member asked how the methodology will account for patient mortality. CORE explained that patients who die do not contribute to the denominator for the complementary ACO admission measures, which is the amount of time eligible for admission (that is, not in the hospital and enrolled in Medicare). Several TEP members emphasized the importance of usability by ACOs: • Two TEP members emphasized the importance of actionability for ACOs – for example, by impacting ACO behavior in real time. • Two TEP members suggested aligning the methodology with other programs and/or metrics. Of these, one TEP member suggested alignment with metrics used for Medicare Advantage plans. The second TEP member emphasized long-term alignment with

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		Healthcare Effectiveness Data and Information Set (HEDIS). CORE thanked the TEP members for their participation and feedback, and agreed that it is important to consider how the methodology will improve quality for patients and incentivize ACOs.

Appendix A. CORE Measure Development Team

Table A1. CORE Team Members

Name	Role
Faseeha Altaf, MPH	Project Coordinator
Haikun Bao, PhD	Co-Analytic Lead
Mayur Desai, PhD, MPH	Consultant
Elizabeth Drye, MD, SM	Project Director
Hayley Dykhoff, BA	Research Assistant
Jeph Herrin, PhD	Statistical Consultant
Zhenqiu Lin, PhD	Analytics Director
Craig Parzynski, MS	Co-Analytic Lead
Lori Schroeder, LLM, JD	Project Manager
Harlan Krumholz, MD, SM	Director, CORE

Appendix B. TEP Call Schedule

TEP Meeting #1

Tuesday, June 23, 2015; 4:00-6:00 pm ET (Location: Webinar)