SUMMARY MINUTES

TEP MEMBER ATTENDANCE (*alphabetical by affiliation*)

- ☒ Finly Zachariah, MD, City of Hope
- ☐ Vincent Chung, MD, City of Hope *(Alternate)*
- ☒ Bryce Reeve, PhD, Duke School of Medicine
- ☒ Kevin Weinfurt, PhD, Duke School of Medicine
- ☒ Dawn Severson, MD, Henry Ford Cancer Institute-Macomb
- ☒ Susan White, PhD, RHIA, CHDA, James Cancer Hospital
- ☒ Victoria Blinder, MD, MSc, Memorial Sloan Kettering Cancer Center
- ☒ Robert Daly, MD, MBA, Memorial Sloan Kettering Cancer Center *(Alternate)*
- ☒ Ishwaria M. Subbiah, MD, MS, MD Anderson
- ☒ Louise Bedard, MSN, MBA, Michigan Oncology Quality Consortium (MOQC)
- ☒ Jennifer Griggs, MD, MPH, FACP, FASCO, MOQC
- ☒ Emily Mackler, PharmD, MOQC
- ☒ Karen K. Fields, MD, Moffitt Cancer Center
- ☒ Stephen B. Edge, MD, Roswell Park Cancer Institute
- ☒ Sally Okun, Patients Like Me
- ☒ Tracy Wong, MBA, Seattle Cancer Care Alliance
- ☒ Angela Stover, PhD, University of North Carolina at Chapel Hill Gilling School of Global Public Health
- ☒ Afsaneh Barzi, MD, PhD, USC Norris Comprehensive Cancer Center

PROJECT TEAM ATTENDANCE

- ☒ Rachel Brodie, Project Director, Pacific Business Group on Health
- ☒ Emma Hoo, Director, PBGH
- ☒ Valerie Kong, Senior Manager, PBGH
- ☒ Kate Eresian Chenok, MBA, Consultant
- ☒ Kristen McNiff, MPH, Consultant
- ☒ RAND: Feifei Ye, PhD

TEP PURPOSE AND OBJECTIVES

The purpose of the TEP is to provide input on measure development; provide expertise in survey tool selection, data definitions, analytic plans, measure implementation, risk adjustment, and other methodologic issues. The TEP will meet monthly, or as needed, to advise PROMOnc project staff.

MEETING OBJECTIVES

TEP meetings follow a structured format focused on the measure development process. Summaries of each issue are presented along with key questions, followed by an open discussion of the issues by TEP members. TEP members receive a detailed pre-reading packet prior to each meeting. PROMOnc held its fifth TEP meeting on April 16, 2019. The objectives of the meeting were the following:

- Review project timeline and check for conflicts of interest
  - Review project timeline and progress to date
  - Check for any new conflicts of interest
- Introduce RAND (analytic partner)
- Discuss the timing of survey administration
- Review and discuss options for the numerator
  - Review possible analytic approaches
- Brainstorm about risk adjustment
  - Get feedback from TEP members about co-variates

During the April 16 TEP meeting, no conflicts of interest were reported. The RAND team was introduced to the TEP, the aims of the project were recapped, and it was announced that a subgroup of clinicians on the TEP would meet to confirm the timepoints for survey administration and risk adjustment factors that would be appropriate for all three cancer types include in this project. The Project Team then presented a proposal for the survey administration timepoints, and four numerator concepts for consideration: 1) meaningful change, 2) post-chemotherapy PRO score, 3) change in score, and 4) observed vs. expected change score. Finally, the Project Team presented an initial proposal for stratification and risk adjustment, with domain-specific adjustors.

TIMING OF SURVEY ADMINISTRATION

As a follow-up to the previous meeting, Kristen McNiff introduced a proposal to add an interim time point for the survey administration. This would create three time points for survey administration rather than two time points. Feifei Ye explained that the statistical advantage of collecting three time points is greater precision. With only two timepoints, it is harder to separate true change from response shift, regression to the mean and measurement error. Three timepoints increases the chance of detecting when a change in outcomes happens.

Two TEP members liked the proposal of three time points but raised concerns about adding burden and the possibility for missing data. Another TEP member suggested that it would be better for workflow purposes to do the survey either at each cycle, or at beginning or end (i.e., not mid-treatment). Another TEP member asked if we are trying to determine the least amount of patient detriment in this performance measure, and if adding a third time point would make this more accurate. Another TEP member responded that adding a third timepoint would mean catching the patient at their worst, and the TEP needs to make a conceptual choice if we want to capture the least amount of decline – if the project is looking at improvement, adding an intermediate point would be beneficial. Five TEP members agreed that adding a third timepoint would be beneficial as it captures the survey at a time when symptom burden is high. One TEP member added they expect to see the highest symptom burden at the beginning of Cycle 2. It was suggested that the Project Team ask the new Clinician Workgroup when patients are at their lowest point, i.e., highest symptom burden. Another TEP member suggested defining the end of treatment as the beginning of Cycle 2, when patients come in for a toxicity check. Other TEP members agreed with this suggestion. Kris McNiff summarized that the Project Team will look at meaningful change from Timepoint 2 (e.g., at the end of Cycle 2) compared to 3 months after the completion of the chemotherapy regimen (Timepoint 3), and will think about Timepoint 1 as providing an analytic baseline for adjustment. The clinician workgroup will work on this issue.

Recommendation: Collect three points of survey administration instead of two so that we survey patients at a time when symptoms are high. The first survey would be up to 3 weeks prior to start of chemo, the second might be at the end of Cycle 2, and the third would be 3 months after the last dose of chemo. The clinician workgroup will further refine timepoint 2 and bring the recommendation back to the TEP in May.

REVIEW OPTIONS FOR THE NUMERATOR

Kristen McNiff and Feifei Ye reviewed four options for calculating change: 1) Meaningful change, 2) Post-chemotherapy PROM score, 3) Change in score, and 4) Observed vs. expected change score.

1) Meaningful Change: The presenters presented the option of looking at meaningful change following the administration of chemotherapy. This would involve using validated minimally important differences (MIDs) for the PROMIS measures. Because MIDs do not exist for the HRQOL measures (Global Physical Health Score and Global Mental Health Score), the number of patients achieving change equal to or greater than Cohen's small or moderate effect size could be calculated. The PRO-PM calculation would be the number of patients achieving clinically meaningful change following chemotherapy divided by all patients meeting denominator criteria (minus exclusions), with a risk adjustment methodology applied. The TEP discussed the pros and cons of this approach.

Two TEP members mentioned that some patients will not have symptoms, and we should make sure to not penalize doctors for those patients. Two TEP members asked how the three timepoints would be handled, since for certain time intervals we would want to minimize the amount of change, while for others you would expect improvement. Project Staff replied the details would be finalized once the exact timepoints are confirmed. In response, one of the TEP members recommended that the TEP create a few use cases and discuss what we'd want to see across the 4 different numerators. In response, several TEP members discussed that what you'd expect between Timepoints 1 and 2 is more unpredictable, but by Timepoint 2 there will be symptoms that the doctor should be responding, intervening, and managing.

2) Post-Chemotherapy PROM Score: The presenters presented another option of using the number of patients who cross a threshold, instead of a change score. This would include determining a clinical threshold for each PROM and computing the percentage of patients with post-chemotherapy scores below or above a cut-off. The PRO-PM calculation would be the number of patients achieving a clinically-relevant cut-off score following chemotherapy divided by all patients meeting denominator criteria (minus exclusions), with a risk adjustment methodology applied. The TEP discussed the pros and cons of this approach.

One TEP member liked this approach because it would allow for tracking how many clinicians were keeping their patients in the mild range of symptoms. Another TEP member said that this seemed very clinically meaningful and would also be easy to explain to patients and physicians. Ms. McNiff asked the TEP which timepoints would be most relevant for measurement (e.g., Timepoints 1, 2, or 3). Three TEP members replied Timepoint 2 would be most clinically relevant while they are receiving treatment. One TEP member noted the importance of risk adjustment to capture patient comorbidities, and thinks patients will be able to understand the concept. Another TEP member agreed.

3) Change in Score: The presenters explained another option of using a raw or absolute change score following administration of chemotherapy. This would include a raw change score when the direction of score change is not clear, and an absolute change is used when the direction of score change is consistent across patients and providers. The pros and cons of this approach were discussed.

One TEP member noted that a raw measure might be helpful to indicate what to do for a patient but would be less meaningful for an accountability measure. Another TEP member agreed with the pros that this would be easy to calculate if we define what meaningful change is, but she also agreed with the negative aspects mentioned (a. raw change score does not have good inter-unit reliability when both directions of change are probable, as between-provider variance in the change score is expected to be

small compared to within-provider variance, b. absolute change is meaningful only if change generally occurs in one direction; and c. does not account for baseline standing).

4) Observed vs. Expected Change Score: The presenters discussed the option of using a residualized change score following administration of chemotherapy. This would include predicting the PROM score using baseline scores and patient characteristics and calculating the difference in actual and predicted scores. It was noted that this is the most conceptually difficult numerator and completely analytically driven. The positive and negative aspects of this approach were discussed.

One TEP member asked how we would get the expected score change. The Project Team replied that a mixed effects model would be used to do a regression and the regression model would then predict the score. Another TEP member stated that this model would be easily understood by hospitals and providers because it is used for benchmarking. This same TEP member also agreed the model might be difficult for patients to understand. Another TEP member wondered whether we'd have enough data to be able to run this model, depending on how many risk factors are used. Another TEP member mentioned that this approach is commonly used and would be easy for patients to understand.

Recommendation: Continue to work through the four numerator options. One TEP member suggested the criteria, expectations, and use cases for each numerator should be drafted. The Project Team will work on this with assistance from the TEP.

BRAINSTORMING STRATIFICATION AND RISK ADJUSTMENT

Ms. McNiff moved on to an active brainstorming session around stratification and risk adjustment.

Stratification: Dr. Ye reviewed the definition of stratification as dividing patients into two or more groups according to risk/characteristics. She noted that we will need to provide reliability and validity for the stratified data in order to seek NQF approval. She cautioned that reporting stratified data typically requires larger sample sizes than reporting aggregated data, which may be a challenge given the 3 diagnoses. She proposed to stratify the data by cancer diagnosis for breast cancer, colon cancer, and non-small cell lung cancer. She noted that additional stratification categories will be considered, such as neoadjuvant vs. adjuvant.

One non-clinician TEP member suggested to first get input from clinicians about clinical relevance, then look at the numbers to determine feasibility. A clinical TEP member noted that neoadjuvant vs adjuvant is key.

Risk Adjustment: Dr. Ye defined risk adjustment as statistical methods to adjust for variables that impact the outcome but are outside of the control of the measured providers. She presented the methodology that would be used: 1) conduct bivariate analysis, include further modeling, and evaluate case-mix factor variables, 2) include predictors, use random effects model, assess similarity of patients by provider, 3) explore stepwise regression procedures.

One TEP member suggested consideration of a lasso technique or a technique suited for factors that might have multicollinearity and offered to advise. Another TEP member suggested using BMI instead of weight and height. They noted that insurance status will reflect socioeconomic status, and suggested removing education, zip code and income. Another TEP member stated that histologic grade should be

removed from the list. They thought 30 variables might be too many; this member also stated that we need to adjust for surgery and suggested that we consider short vs longer stay surgery. In response, another TEP member suggested we could calculate surgery duration with just start and stop dates. This TEP member agreed that there is a lot of variability about surgery type, so they suggested looking into alternative types of classification. A TEP member noted that dose density is a good way to measure toxicity, but it might be a challenging variable to collect as there is a lot of abstraction. It was suggested that a Yes/No question for dose reduction could be used to determine toxicity level. Ms. McNiff responded we could collect the regimen given, rather than toxicities. Another TEP member noted that geographic region might not be needed, since we will have the institution name. They also noted that billing data isn't always accurate for comorbidities and that smoking status at diagnosis is not usually discretely coded. In response, another TEP member said that a lot of the case-mix adjustment factors aren't coded except if practices do QOPI extraction because some of this is required for other reasons. Another TEP member suggested the Project Team use the Charleston comorbidities index.

NEXT STEPS

- Refine the timing of survey administration.
  - Obtain input from Clinician Workgroup on May 3rd; determine timepoint when patients are highly or maximally symptomatic and bring recommendation back to the May 21st TEP.
  - Consider defining the end of treatment as the end of Cycle 2, when patients come in for a toxicity check, or the last cycle.
- Analytic Plan needs to address how to not penalize doctors who have asymptomatic patients.
- Continue to work through each of the four numerator options
- Risk adjustment and stratification: Survey TEP members about clinical importance and also burden associated with each potential risk adjustment variable.