SDS Trial Evaluation Plan

Consensus Standards Approval Committee

July 11-12, 2017

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Background and Context

- In 2014, NQF convened an expert panel to review the NQF policy prohibiting the inclusion of social risk factors.
- The Panel recommended allowing the inclusion of social risk factors when there was a conceptual and empirical basis for doing so
- NQF Board approved a two-year trial period when social risk factors could be included

Expert Panel Guidance

- Each measure must be assessed individually to determine if SDS adjustment is appropriate.
- Not all measures should be adjusted for SDS factors (e.g., central line infection would not be adjusted)
  - *Need conceptual basis (logical rationale, theory) and empirical evidence*
- The recommendations apply to any level of analysis including health plans, facilities, and individual clinicians
- During the trial period, if adjustment was determined to be appropriate for a given measure, NQF will endorse one measure with specifications to compute:
  - *SDS-adjusted measure*
  - *Non-SDS version of the measure (clinically adjusted only) to allow for stratification of the measure*

Consideration of SDS Adjustment

- NQF's Standing Committees were charged with reviewing the measures as submitted
- Questions for Standing Committees to consider when reviewing SDS-adjusted measures:
  - Is there a conceptual relationship between the SDS factor and the measure focus?
  - Is the SDS factor present at the start of care?
  - Is there variation in prevalence of the SDS factor across measured entities?
  - Does empirical analysis (as provided by the measure developer) show that the SDS factor has a significant and unique effect on the outcome in question?
  - Is information on the SDS factor available and generally accessible for the measured patient population?

Implementation of the Trial Period

- From April 2015-April 2017, any measure submitted for endorsement was included in the trial period
- The trial period focused on risk-adjusted outcome measures
- Measure developers were required to provide information on the ***conceptual relationship*** between social risk factors and the outcome of interest
- If a conceptual relationship existed, developers were also required to conduct ***empirical analyses*** to evaluate the strength of the relationship between social risk factors and the outcome of interest
- Risk adjustment models were evaluated by the relevant Standing Committees under the validity criterion

Trial Period Evaluation Plan

- To evaluate the trial period NQF staff tracked:
  - *Which measures had a conceptual rationale for inclusion of SDS factors?*
  - *What approach was used to establish a conceptual basis (e.g., literature vs. data driven)?*
  - *What variables and social risk data were available and analyzed?*
  - *What was the final disposition for measures submitted with conceptual basis?*
  - *If social risk factors were included in the risk model, were specifications for stratification also included?*
- NQF staff also solicited qualitative feedback from committee members and measure developers and reviewed public comments

Overview of Measures in the Trial

Measures Reviewed

- 303 measures reviewed in the trial
- 126 were outcome or intermediate outcome measures

Risk-Adjusted Measures

- 93 utilized some form of risk adjustment
- 65 had a conceptual basis for adjusting for social risk factors

Measures with Conceptual Relationship

- 43 small effect, social risk factors not included
- 21 submitted with adjustment for social risk factors
- 17 endorsed with adjustment for social risk

Measures Adjusted for Social Risk

- 21 out of the 65 measures (32.3%) with a conceptual basis for adjustment of social risk were submitted for review with a social risk factor in the risk adjustment model
  - *17 endorsed or recommended for endorsement*
  - *4 measures failed before validity on other must pass criteria*
- CSAC did not overturn any Standing Committee recommendations due to the inclusion of social risk factors
- Concerns about including a social risk factor were not a significant theme in the public comments on these measures

Measures with a Conceptual Relationship - No Adjustment for Social Risk

- Of the 93 risk-adjusted measures, 65 (69.9%) had a conceptual relationship between social risk factors and the outcome of interest
- For 27 out of the 93 (29.0%), there was no conceptual relationship or the conceptual relationship did not support adjusting for social risk factors.
  - *Addressed topics such as safety events where outcome was generally in control of the healthcare entity*
- For 43 of the 65 measures with a conceptual relationship, the developer noted:
  - *Effect of the social risk variables was significant*
  - *Addition of social risk factors did not meaningfully change results or improve the performance of the risk model.*

Consistency with Expert Panel Guidance: Conceptual and Empirical Basis

- Expert Panel recommendation:
  - Social risk factors should be included when there is a conceptual and empirical basis for doing so
  - The same guidelines for selecting clinical risk factors should be applied to social risk factors

Selection of Risk Factors

- Measure developers were tasked with following the Expert Panel's recommendation for selecting risk factors.
- Recommendation 5: The same guidelines for selecting clinical and health status risk factors for adjustment of performance measures may be applied to sociodemographic factors, and include the following:
  - Clinical/conceptual relationship with the outcome of interest
  - Empirical association with the outcome of interest
  - Variation in prevalence of the factor across the measured entities
  - Present at the start of care
  - Is not an indicator or characteristic of the care provided (e.g., treatments, expertise of staff)
  - Resistant to manipulation or gaming
  - Accurate data that can be reliably and feasibly captured
  - Contribution of unique variation in the outcome (i.e., not redundant)
  - Potentially, improvement of the risk model (e.g., risk model metrics of discrimination, calibration)
  - Potentially, face validity and acceptability

Consistency with Expert Panel Guidance: Conceptual Basis

- Developers used variable approaches to develop their conceptual models
  - » 65 used literature review to support
  - » 19 used prior data
  - Commenters frequently identified issues with conceptual model development
  - Identified as a potential area for greater specificity going forward

Consistency with Expert Panel Guidance: Empirical Analyses

- Analyses followed NQF guidelines for variable selection
- Developers varied on approach to inclusion of social risk factors:
  - Statistical significance
  - Effect size
  - Performance of the model (i.e. calibration and discrimination statistics)
  - Relative contribution of patient-level and hospital-level social risk factors (e.g., decomposition analysis)

Limited Data on Social Risk Factors

- NQF was not prescriptive about data sources to be used or explored
- Data serving as a proxy for individual level factors should be as granular as possible
- Focus to date on patient-level factors
- Limited community-level factors have been explored
- Race, ethnicity, and payer (including Medicaid status) were the most commonly examined variables.
  - *Disparities Standing Committee recommended that race not be used as a proxy for social risk*

Relationship between Conceptual Basis and Empirical Analyses

- A larger number of measures were submitted with a strong conceptual basis for adjustment then demonstrated an empirical relationship.
- Conceptual basis was typically much broader than what could be tested empirically
- Developers differed in their interpretation of an empirical relationship
- Disagreement on endorsing measures primarily occurred when a measure was analyzed for potential adjustment for social risk factors but these factors were not ultimately included

Measure Developer Feedback

- Challenges:
  - Developing the conceptual model
  - Appropriately identifying variables that could affect outcomes without potentially masking disparities
- Developers had mixed opinions on the burden of getting data on social risk factors, but highlighted better data are need to support future analyses
- Majority of developers agreed that examining the potential need for social risk adjustment was important

Committee Member Feedback

- Committee members highlighted the need for greater consistency in methods across developers
- Greater standardization of variables tested and data source explored would support their review
- Committee members noted significant challenges evaluate measures adjusted with social risk factors
- Information tended to focus on statistical significance, not real world impact
- Suggestions for improvements included external methodology reviews, better data on social risk factors, and closer ties between the conceptual models and empirical analyses

Public Comment Feedback

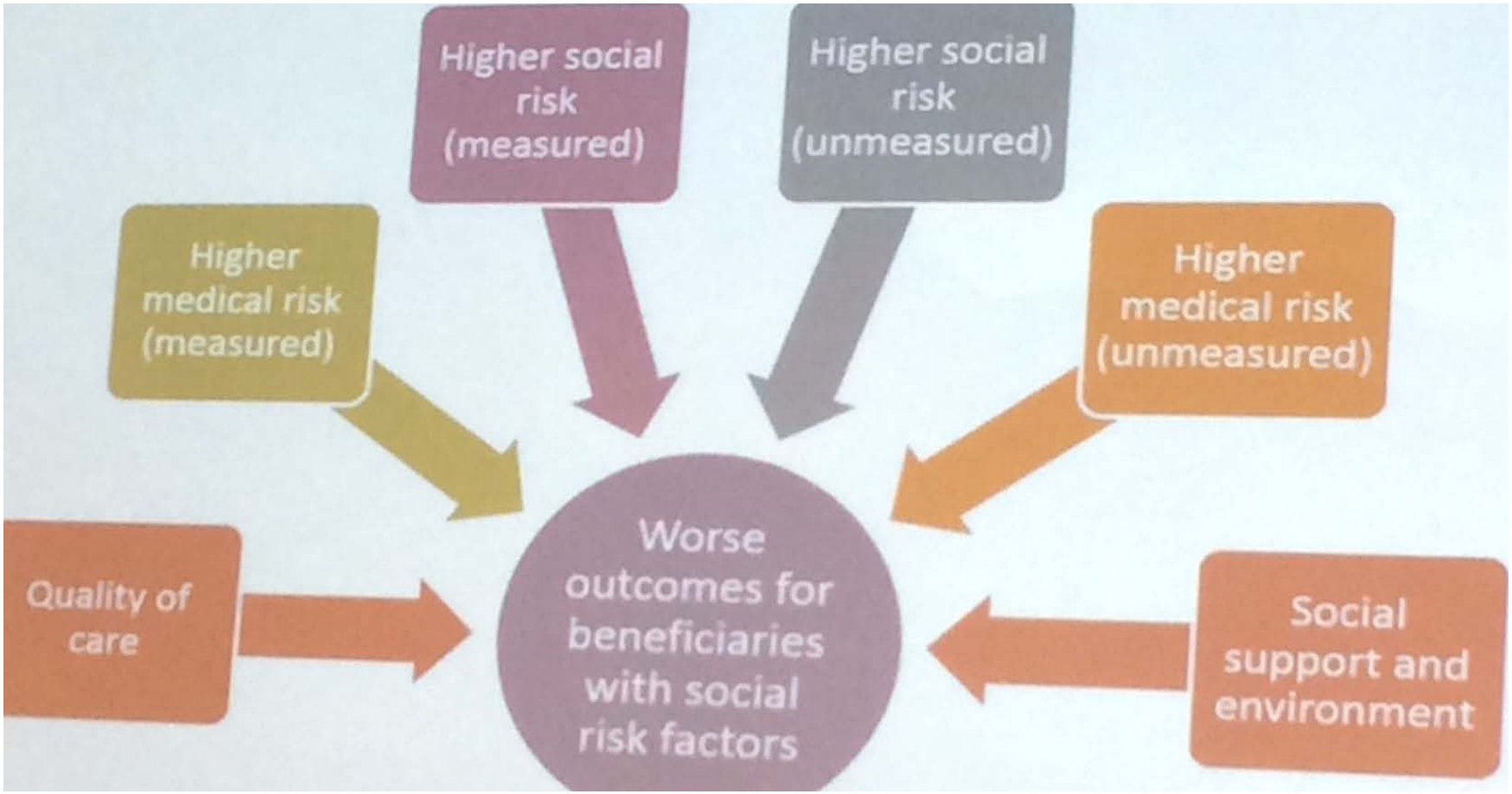
- Adjusting for social risk was a recurring theme in public comments for some projects; notably for readmissions and cost and resource use.
- Public comments highlighted concerns that measures did not include adequate adjustment for social risk.
- Public commenters raised concerns that social risk factors were frequently statistically significant but developers did not include them in the risk adjustment models.
- Commenters also expressed concerns that the social risk factors empirically tested by the developers did not align with the conceptual models presented.

Key Challenges

- Data Availability
  - *Limited availability of patient-level data*
  - *Variables examined empirically did not align with factors in the conceptual models*
  - *Potential need to examine the impact of community-level factors*

- Consideration of Race
  - *Concerns arose that race may have been used as a proxy for SES*
  - *Guidance from the Disparities Standing Committee stressed that race should not be used as a proxy for SES; however there may be certain biological reasons when race could be an appropriate clinical factor to include in a risk adjustment model*

ASPE/NAM Social Risk Factors



US HHS

Key Challenges

- Role of Stratification
  - *NQF required developers to provide instructions for calculating strata for social risk factors to ensure transparency around potential disparities in care.*
  - *Developers were inconsistent in including instructions for creating clinically-adjusted scores*

- Limited Implementation of Adjusted Measures
  - *Difficult to assess impact of adjustment without implementation*
  - *Stakeholders have raised concerns that measures use in federal programs are not adjusted for social risk factors*

Committee Discussion

- Which issues have been resolved through the trial period?
- Which issues need further consideration?
  - *Examples: consistent approach to conceptual model, adjustment v stratification, statistical significance v effect size for inclusion*
- What data sources/factors should be used or explored further?
  - *Examples: community factors, unmeasured clinical and social complexity*

NATIONAL QUALITY FORUM

Evaluation of NQF's Trial Period for Risk Adjustment for Social Risk Factors

Draft Report

June 8, 2017

*No public comment on draft report. This staff report is intended for the NQF Disparities Committee June 15, 2017 meeting discussion only.

Executive Summary

NQF-endorsed performance measures are frequently used for accountability purposes such as value-based purchasing. There is increasing evidence that a person's social risk factors can influence their health and health outcomes leading to the question of whether performance measures should account for social risk factors to ensure fair and accurate comparisons of provider performance. However, some stakeholders have raised concerns that adjusting for social risk could mask disparities in care.

To study this question, NQF convened a panel of experts in healthcare performance measurement and disparities to examine NQF policy prohibiting the inclusion of social risk factors in the risk adjustment models of NQF-endorsed measures. The Expert Panel recommended that NQF allow inclusion of social risk factors in risk-adjusted performance measure scores when conceptual reasons and empirical evidence demonstrate that it is appropriate. Given persistent concerns regarding the impact on disparities, the NQF Board of Directors approved a two-year trial period when the policy would be temporarily changed and social risk factors could be considered.

Since April 2015, any measure submitted for possible endorsement was included in the trial period. During this time, the NQF Consensus Development Process (CDP) standing committees reviewing measures for endorsement were allowed to consider if the measure appropriately accounted for social risk. During this time, 303 performance measures were submitted for review. Approximately one-third of those measures were outcome or intermediate outcome measures. Of the outcome or intermediate outcome measures, 93 utilized some form of risk adjustment. Ultimately, 65 of those measures were determined to have a conceptual basis for adjustment for social risk factors and 21 were submitted with a social risk factor included in the risk adjustment model.

The trial period has illuminated a number of important considerations for and challenges to risk adjusting performance measures for social risk. Overall, NQF committees and measure developers noted the importance of addressing all factors (both clinical and social) that can influence the result of a performance measure. During the trial period, measure developers used varying data and methodologies to test the impact of social risk. Developers highlighted the challenge of obtaining patient-level data on relevant social risk factors and committee members reiterated the need for the most granular information possible to ensure an accurate reflection of a person's social risk.

One of the most striking findings of the trial was that measures with a conceptual basis for adjustment generally did not demonstrate an empirical relationship of the social risk factors to the outcome measured. In some instances, the effects were significant with small effect size, did not improve model performance or meaningfully change hospital results. Other reasons for this discrepancy could include the methods used for adjustment and the limited availability of robust data on social risk factors.

Adjusting for social risk factors remains a controversial issue in measurement science. All stakeholders want to see the quality of care for the most vulnerable improve and ensure that access is not

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compromised by value-based purchasing programs that disproportionately penalize safety-net providers. The potential use of risk adjustment, as well as stratification have been noted as potential fixes for this issue. The trial period has elucidated important issues, such as availability of data on social risk that should be pursued as we collectively drive toward elimination of healthcare disparities.

Background and Context

Risk adjustment is a statistical approach that allows patient-related factors (e.g., comorbidity and illness severity) to be taken into account when computing performance measure scores. Because patient-related factors can influence patient outcomes, risk adjustment can improve the ability to make accurate and fair comparisons about the quality of care patients receive. Risk adjustment for clinical factors such as comorbidities is an accepted practice in healthcare performance measurement. However, growing evidence suggests that a person's outcomes can also be affected by their social risk factors such as socioeconomic status, race, ethnicity, and cultural context, gender, social relationships, and residential and community context.[1]

NQF-endorsed measures are frequently used for accountability purposes such as value-based purchasing.[2] Recent legislation such as the Patient Protection and Affordable Care Act, the Improving Medicare Post-Acute Care Transformation Act of 2014 (the IMPACT Act), and the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) has mandated the increased use of value-based purchasing. The Department of Health and Human Services (HHS) has set a goal of tying 90% of Medicare fee-for-service payments to value-based purchasing by 2018.[3] The use of NQF-endorsed performance measures for payment purposes and increasing evidence of the impact of social risk led some stakeholders to question the validity and fairness of measures that do not account for social risk.[4]

In 2014, NQF convened a multistakeholder panel of experts in healthcare performance measurement and disparities to review NQF policy prohibiting the inclusion of social risk factors (formerly noted as socioeconomic status or sociodemographic factors) in risk-adjustment models. This policy was in place out of concern that adjustment could conceal inequalities in care and result in lower standards of provider performance. After its deliberations, the Expert Panel recommended that NQF allow inclusion of social risk factors in risk-adjusted performance measure scores when conceptual reasons and empirical evidence demonstrate it is appropriate. However, questions remained about whether adjusting measures for social risk factors could worsen healthcare disparities. To address this issue, NQF requested measure specifications for the adjusted measures, as well as stratification by significant social factors. The NQF Board of Directors approved the Expert Panel's recommendations to allow inclusion of social risk factors in risk-adjusted performance measures when there is a conceptual and empirical rationale and evaluate its impact during the course of a two-year trial period.

Implementation of the Trial Period

Starting in April 2015, any new measure submitted for possible endorsement or any previously endorsed measure undergoing maintenance evaluation was included in the trial period. Given the focus on potential inclusion of social risk factors into existing risk models, the trial period concentrated on risk-adjusted outcome measures. Measure developers were required to provide information on the

conceptual relationship between social risk factors and the outcome of interest. If a conceptual relationship existed, developers were required to conduct empirical analyses to evaluate the strength of the relationship between social risk factors and the outcome of interest. As part of their submission materials, developers were asked to provide information on:

- Patient-level sociodemographic (SDS) variables that were available and analyzed in the data or sample used
- The conceptual/clinical and statistical methods and criteria used to select patient factors (clinical factors or sociodemographic factors) used
- The statistical results of the analyses used to select risk factors
- The analyses and interpretation resulting in the decision to select SDS factors
- Discrimination and calibration statistics of the risk model

NQF convenes multistakeholder Standing Committees across a wide variety of topics to consider measures for endorsement. As part of its evaluation of the validity of a measure, these standing committees examined the risk-adjustment approach of each measure submitted by a measure developer to their project. Where there was a potential conceptual basis for adjustment for social risk, the Standing Committee evaluated whether the developer assessed the social risk factors according to the NQF's guidelines for selecting risk factors. The Standing Committee considered how closely the available data reflected the conceptual relationship identified, the developer's analyses and interpretation regarding the importance of social risk factors in their risk adjustment model, and comparison of performance scores with and without social risk adjustment. If social risk factors were included in the final risk-adjustment approach for the measure, the developer was required to provide specifications for stratification. Stratification based on the social risk factors helps to ensure transparency for potential disparities in care and target improvement for those at greatest risk.

The NQF Disparities Standing Committee is charged with providing a cross-cutting emphasis on disparities and the development of a roadmap for how performance measurement and its associated policy levers can reduce healthcare disparities. Given their overarching role, NQF tasked the Disparities Standing Committee with oversight and evaluation of the trial period as well as providing methodological support and guidance.

Trial Period Evaluation Plan

The Disparities Standing Committee and the Consensus Standards Approval Committee (CSAC) provided significant input into the proposed evaluation of the trial period. In order to evaluate the trial period, a number of quantitative and qualitative indicators were assessed. As part of the evaluation, NQF staff tracked the following:

- Which measures had a conceptual rationale for inclusion of SDS factors?

- What approach was used to establish a conceptual basis (e.g., literature vs. data driven)?
- What variables and social risk data were available and analyzed?
- What was the final disposition for measures submitted with conceptual basis?
- If social risk factors were included in the risk model, were specifications for stratification also included?

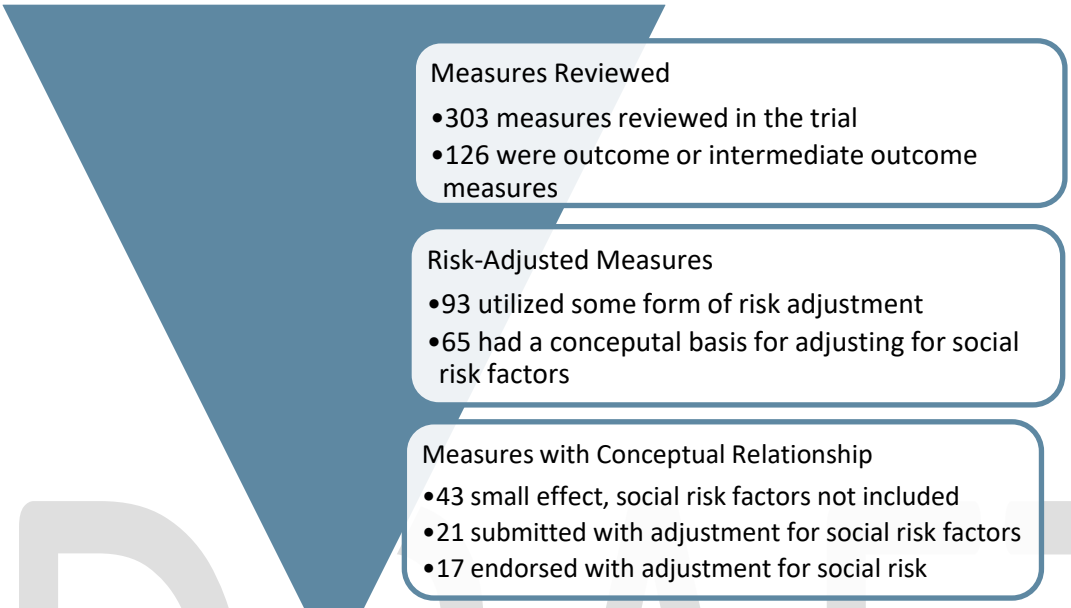
NQF also solicited qualitative feedback on the trial from measure developers and committee members who participated in the trial. A description of the survey questions can be found in Appendix C. NQF also analyzed qualitative feedback from public comments submitted on measures in the trial period.

Some longer terms issues related to the adjustment or lack of adjustment of measures also warrant future consideration. NQF will work with stakeholders and the Disparities Standing Committee to explore recommendations on a path forward for the availability and quality of robust data on social risk factors, the use of adjusted measures and stratified data for improvement, and the impact of adjustment and stratification on disparities.

Overview of Performance Measures Included in the Trial

The trial period included all measures submitted for endorsement review from April 2015 through April 2017, as well as 20 measures newly endorsed in 2014 with the condition they enter the trial period. The trial period examined performance measures across 16 topic areas. Overall, 303 measures were examined in the trial period. Of those, 126 (41.5%) were outcome or intermediate outcome measures. Out of the 126 outcome or intermediate outcome measures, 93 (75.8%) utilized some form of risk adjustment. Figure 1 provides a breakdown of the results of the measure reviews. Appendix B provides a summary of the conceptual and empiric relationship for the 93 risk-adjusted measures.

Figure 1: Analysis of Measures Submitted for the Trial Period



Measures Adjusted for Social Risk

Overall, 21 out of the 65 measures (32.3%) with a conceptual basis for adjustment of social risk were submitted for review with a social risk factor in the risk adjustment model. Ultimately 17 out of the 65 (26.2%) were determined to have both a conceptual basis and empirical evidence to support adjustment and were endorsed or have been recommended for endorsement. Appendix A includes a list of measures endorsed or recommended for endorsement with a social risk factor included in the risk model.

It is important to note, the inclusion of a social risk factor was not the reason that risk adjusted measures were not ultimately recommended for endorsement. The majority of measures that were not endorsed failed other NQF's "must pass" evaluation criteria, before the validity of the risk adjustment model was discussed. For example, a measure must be determined to be important to measure and report and reliable before the Standing Committees can discuss its potential validity.

CSAC did not overturn any Standing Committee recommendations due to the inclusion of social risk factors. Concerns about including a social risk factor were not a significant theme in the public comments on these measures.

*No public comment on draft report. This staff report is intended for the NQF Disparities Committee June 15, 2017 meeting discussion only.

Measures with a Conceptual Relationship but No Adjustment for Social Risk

Of the 93 evaluated risk-adjusted measures, 65 (69.9%) had a conceptual relationship between social risk factors and the outcome of interest.

A number of measures were examined for a potential conceptual relationship between social risk factors and the outcome of interest but this relationship could not be demonstrated. For 27 out of the 93 (29.0%) risk-adjusted measures the developer found there was no conceptual relationship or the conceptual relationship did not support adjusting for social risk factors. These measures addressed topics such as safety events where the outcome is generally within the control of the healthcare entity assessed by the measure. For example, the developer of NQF #478 Neonatal Blood Stream Infection Rate (NQI 03) examined the literature and found no relationship between social risk factors and health-care associated bloodstream infections in newborns that was not related to concerns about care quality.

Ultimately, 65 measures were determined to have a conceptual basis for adjusting for social risk factors. Of these 65 measures, 44 (67.7%) ultimately did not include a social risk factor in their risk adjustment model. For one measure, the developer did not find a statistically significant relationship with any available social risk factor. For 43 of the measures, the developer noted the effect of the social risk variables was significant, however the addition of social risk factors did not meaningfully change hospital results or improve the performance of the risk model. For several measures of hospital readmissions, the developer found that when compared to clinical factors, a greater proportion of the risk of readmission could be attributed to the hospital-level factors compared to patient-level factors.

Measure developers were tasked with following the Expert Panel's recommendation for selecting risk factors. Specifically the Panel noted:

> *Recommendation 5: The same guidelines for selecting clinical and health status risk factors for adjustment of performance measures may be applied to sociodemographic factors, and include the following:*
> • *Clinical/conceptual relationship with the outcome of interest*
> • *Empirical association with the outcome of interest*
> • *Variation in prevalence of the factor across the measured entities*
> • *Present at the start of care*
> • *Is not an indicator or characteristic of the care provided (e.g., treatments, expertise of staff)*
> • *Resistant to manipulation or gaming*
> • *Accurate data that can be reliably and feasibly captured*
> • *Contribution of unique variation in the outcome (i.e., not redundant)*
> • *Potentially, improvement of the risk model (e.g., risk model metrics of discrimination, calibration)*
> • *Potentially, face validity and acceptability*

The endorsement of measures with a conceptual basis for adjustment but no social risk factor included in the risk model was a source of disagreement during the trial period. Additional details on the relationship between the conceptual and empirical analysis are included in the key findings and issues section below.

Measures not Submitted with a Conceptual Relationship But Raised During Evaluation

Committee members raised concerns about two measures that did not initially include any discussion of social risk factors. During the review of NQF #0209: Comfortable Dying: Pain Brought to a Comfortable Level Within 48 Hours of Initial Assessment, the Standing Committee asked for additional details why risk adjustment was not necessary for this measure as social factors may impact access to medication. The developer completed an extensive analysis examining why risk adjustment was not needed. Ultimately the Committee recommended the measure as specified. During the review of #3205: Medication Continuation Following Inpatient Psychiatric Discharge, Standing Committee members noted that socioeconomic status could affect the results of the measure and recommended the developers explore the impact in the future. The measure was recommended for endorsement without adjustment.

Measures Endorsed with the Condition to Enter the Trial Period

NQF examined the impact of social risk factors on 3 cost and resource use measures and 17 admissions and readmissions measures that were endorsed with the condition they enter the trial period. Because the review of these measures ended just prior to the start of the trial period and because social risk factors could not be considered during their initial endorsement review, the NQF Board of Directors required consideration for adjustment for social risk factors.

- The Cost and Resource Use Standing Committee met through a series of webinars to review the potential need to include social risk factors in the risk models of: #2431: Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for Acute Myocardial Infarction (AMI) (CMS/Yale)
- #2436: Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for Heart Failure (HF) (CMS/Yale)
- #2579: Hospital-level, risk-standardized payment associated with a 30-day episode-of-care pneumonia (CMS/Yale)

The measure developer and Standing Committee agreed there was a conceptual relationship between the results of these measure and social risk factors. The developer empirically tested three variables: race, dual eligibility and AHRQ SES Index, linked to 9-digit ZIP code. The developer noted that dual eligibility and AHRQ Index could be potential proxies for income and access to follow-up care and

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support. The developer found that the while statistically significant, inclusion of social risk factors had limited impact on the distribution of hospital performance scores or the performance of the risk-adjustment model. Ultimately, the Committee voted to continue endorsement of the measures without inclusion of social risk factors in the risk-adjustment approach. This decision was upheld by the CSAC and ratified by the NQF Executive Committee of the Board of Directors. Two appeals of this decision were received but the CSAC and the NQF Board chose to uphold endorsement of the measures.

The Admissions and Readmissions Standing Committee followed a similar process to review 17 measures that were endorsed with the condition they enter the trial period. The Committee determined that 16 out of the 17 measures had a conceptual basis for adjusting for social risk. The Standing Committee also reviewed the SDS factors that developers planned to test in their empirical analyses. The Standing Committee strongly encouraged developers to consider age and gender, along with some measure of poverty, such as dual eligibility status, as variables for sociodemographic adjustment.

The Standing Committee reviewed the empirical analyses provided by the developer and voted to continue endorsement of the measures without inclusion of social risk factors in the risk-adjustment approach. The CSAC voted to recommend the 17 measures for endorsement without conditions. The CSAC voted to include a statement with the recommendations that described the CSAC's concerns with endorsing the readmissions measures without social risk adjustment.

The CSAC included the following statement regarding the recommendations:

- At this time, the CSAC supports continued endorsement of the hospital readmission measures without SDS adjustment based on available measures and risk adjustors. The CSAC recognizes the complexity of the issue and that it is not resolved.
- CSAC recommends the following:
    - SDS adjustor availability should be considered as part of the annual update process;
    - NQF should focus efforts on the next generation of risk adjustment, including social risk as well as consideration of unmeasured clinical complexity;
    - Given potential unintended effects of the readmission penalty program on patients, especially in safety net hospitals, the CSAC encourages MAP and the NQF Board to consider other approaches; and
    - Directs the Disparities Standing Committee to address unresolved issues and concerns regarding risk adjustment approaches, including potential for adjustment at the hospital and community levels.

The Executive Committee did not recommend measure #2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery (CMS). This measure was resubmitted in the Readmissions 2017 project and is currently undergoing evaluation.

NQF received one appeal of the decision to endorse #2502 All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Inpatient Rehabilitation Facilities (IRFs) without conditions based on the limited information provided to IRFs by CMS; however, the CSAC and the Executive Committee ultimately decided to maintain endorsement.

Key Findings and Issues

The trial period demonstrated a number of key findings and issues. The trial period has shown that adjusting measures for social risk factors is feasible but challenging. The trial period also underscored the importance of the Risk Adjustment Expert Panel's guidance.

Consistency with the Expert Panel's Guidance

The Risk Adjustment Expert Panel made two recommendations highlighting the conditions for adjusting or not adjusting a measure for social risk factors:

> *Recommendation 1: When there is a conceptual relationship (i.e., logical rationale or theory) between sociodemographic factors and outcomes or processes of care and empirical evidence (e.g., statistical analysis) that sociodemographic factors affect an outcome or process of care reflected in a performance measure:*
> *• those sociodemographic factors should be included in risk adjustment of the performance score (using accepted guidelines for selecting risk factors) unless there are conceptual reasons or empirical evidence indicating that adjustment is unnecessary or inappropriate.*
>
> *Recommendation 5: The same guidelines for selecting clinical and health status risk factors for adjustment of performance measures may be applied to sociodemographic factors, and include the following:*
> *• Clinical/conceptual relationship with the outcome of interest*
> *• Empirical association with the outcome of interest*
> *• Variation in prevalence of the factor across the measured entities*
> *• Present at the start of care*
> *• Is not an indicator or characteristic of the care provided (e.g., treatments, expertise of staff)*
> *• Resistant to manipulation or gaming*
> *• Accurate data that can be reliably and feasibly captured*
> *• Contribution of unique variation in the outcome (i.e., not redundant)*
> *• Potentially, improvement of the risk model (e.g., risk model metrics of discrimination, calibration)*
> *• Potentially, face validity and acceptability*

Overall, measures considered during the trial period followed these recommendations. Developers presented both a conceptual basis and empirical analysis to support their decision regarding inclusion of social risk factors in their measure's risk adjustment model.

Conceptual Basis

The conceptual basis for the measures was highly variables across measures and developers. NQF did not prescribe an approach to identifying the conceptual basis. The Disparities Standing Committee asked that NQF collect data on the various approaches used in the trial period. Across the risk-adjusted measures, 65 utilized a literature review to determine a potential conceptual relationship and 19 relied on prior data to establish the relationship. Details were not provided on the methodology used for the remaining measure. The conceptual model has been identified as a potential area for greater specificity going forward.

Empiric Basis

The empiric analyses followed the expert panel's guidelines for selection of variables. Selected variables were present at the start of care, not related to the quality of care provided, and used reliable and feasible data. The social risk variables demonstrated a unique contribution to variation in the outcome and improved performance of the risk model. There was variation among developers about the decision to include a social risk factor in a model. Some included any variable that demonstrated a statistically significant relationship. Other developers only included a variable if it had a large effect size or improved the performance of the risk model (i.e. improvement in calibration and discrimination statistics). One developer used a decomposition analysis to show the relative contribution of patient-level and hospital-level social risk factors. The developer found that when compared to clinical factors, a greater proportion of the risk of readmission could be attributed to the hospital-level factors compared to patient-level factors. Based on these findings, the developer recommended against adding SDS factors to the risk adjustment model for their measures.

Variable Impact of Social Risk Factors

The impact of social risk factors on healthcare outcomes and processes remains a challenging issue. A recent report from the Office of the Assistant Secretary for Planning and Evaluation (ASPE) found that Medicare beneficiaries with social risk factors had worse outcomes on some measures regardless of the provider.[5] However, ASPE also found that providers who disproportionately cared for beneficiaries with social risk factors performed worse than those who did not and that some of these differences persisted even after adjusting the measures. These findings reinforce the guidance of NQF's Expert Panel that each measure must be considered individually and should demonstrate a conceptual and empirical basis for adjustment.

During the trial period measure, developers were instructed to determine if there was a conceptual and empirical basis for adjusting for social risk factors, and to determine what factors to include in the risk adjustment model of their measure. NQF did not prescribe an approach to establishing a conceptual basis, specific variables to be tested, methods to be used for testing, or thresholds for significance. The Standing Committees were charged with reviewing the measures as submitted by the developer and making a decision about endorsement. Under the validity criterion, the Standing Committee deliberated

about whether social risk adjustment was appropriate. The SDS Expert Panel stressed the need to assess each measure individually to determine if SDS adjustment is appropriate and emphasized that there must be a conceptual basis and empirical evidence to support the inclusion of SDS factors. As noted above, the Expert Panel recommended the same guidelines be followed for clinical and social variables.

The variation of impact by social risk factor by measure reaffirms the Expert Panel's guidance to examine each measure individually to confirm a conceptual relationship and empirical analysis to support adjustment.

Limited Data on Social Risk Factors

NQF's trial period has shown the challenges in attaining data on social risk factors. Consistent with NQF policy, NQF was not been prescriptive about what data sources measure developers should use or explore during the trial period. Measure developers have used a number of data sources to identify potential social risk variables including the three categories identified by NAM: (1) new and existing data collected by the Centers for Medicare & Medicaid Services (CMS), (2) data from health care providers and health plans, and (3) alternative government data sources, i.e., national surveys that non-CMS federal agencies and state agencies oversee and maintain.[6]

NQF's trial period has shown that data serving as a proxy for individual level factors should be as granular as possible to accurately reflect a person's social risk. NQF recognizes the current limitations of data availability but encourages developers to continue efforts to explore alternative data sources. To date, the focus has been on the impact of patient-level factors. While community-level factors were frequently suggested by committees as a patient-level information, limited variables were considered (e.g., AHRQ SES Index).

Commonly Examined Variables

Developers examined a number of social risk factors during the trial period. The exact factors examined varied by the data source for the measure and the conceptual basis for adjustment. Social risk factors examined in the empirical analyses include:

- Race
- Ethnicity
- Medicaid status
- AHRQ SES Index
- Insurance type
- Distance from clinic
- Language
- Country of origin
- Education level (patient and caregiver)
- Percent of households under the federal poverty level

- Marital status
- Living alone

Race, ethnicity, and payer (including Medicaid status) were the most commonly examined variables. In accordance with the Risk Adjustment Expert Panel's recommendations, the Disparities Standing Committee recommended that race not be used as a proxy for social risk.

Relationship between Conceptual Basis and Empirical Analyses

The lack of an empiric relationship for outcomes with a clear conceptual basis is one of the most striking findings of the trial period. A far larger number of measures were submitted with a strong conceptual basis for adjustment then demonstrated an empirical relationship between those variables and performance. Empirical risk adjustment analyses to date demonstrate a very limited effect of social risk factors.

The conceptual basis for adjustment was typically much broader than the factors developers were able to test empirically. Limited data are available on social risk factors making it challenging for developers to test all the variables that theoretically could impact a measure's result.

Developers also differed in their interpretation of an empirical relationship. Some developers chose to include a social risk factor if it was statistically significant, even if the effect size was small. Others noted that including social risk variables did not improve the performance of the risk adjustment model. Some developers did not include social risk factors with small effect sizes. Some developers performed additional analyses to assess the relative contribution of patient-level and facility-level social risk factors to determine if adjusting for social risk factors could potentially mask signals of quality.

Disagreement on endorsing measures primarily occurred when a measure was analyzed for potential adjustment for social risk factors but these factors were not ultimately included. Through the public comment and member vote processes, providers raised concerns about a number of measures that had a strong conceptual basis for adjustment but did not include social risk factors in their final risk adjustment models. This was a particular concern for measures of hospital readmissions and cost and resource use. Providers expressed concerns that some social risk factors were statistically significant but were not included in the final model. Developers cited a number of reasons for not including these factors including not improving the performance of the risk model and concerns about masking quality problems.

Stakeholder Feedback

NQF surveyed measure developers who submitted measures to the trial, as well as committee members who reviewed measures during the trial period. The surveys can be found in Appendix C. Staff also analyzed public comments on measures considered for adjustment for social risk factors to identify consistent themes and concerns.

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Measure Developer Feedback

NQF surveyed measure developers to get feedback on their experiences with the trial. Overall, seven developers responded to the survey. The respondents represented a varied sample of developers. Some were contractors to CMS while others worked with provider organizations. Respondents also varied in their familiarity with NQF processes and the required analyses to support the decision to adjust or not adjust a measure for social risk factors. All respondents had at least one measure successfully endorsed during the trial period.

Developers noted a number of challenges to completing the necessary analyses for the trial. Most developers responded that developing the conceptual model for adjustment was somewhat burdensome. Developers noted that this was one of the more difficult parts of the trial requirements citing concerns about appropriately identifying variables that could affect the outcome of the measure without potentially masking disparities.

Input was mixed on the burden of completing the required empirical analyses. Developers were split on the burden of acquiring data on social risk factors. Three reported it was somewhat burdensome; four reporting it was not burdensome. Opinions were similarly mixed on the burden of the initial empirical analyses of social risk data (e.g., uploading data, getting familiar with data, and linking to other datasets), the burden of the analyses leading to the decision to include or not include SDS factors, and the comparisons between the version of the measure adjusted for social risk and the version not adjusted for social risk. Developers frequently noted the lack of available data on social risk factors as a particular challenge to completing the empirical analyses.

Developers noted that the guidance from NQF staff was helpful, particularly one on one conversations with staff. However, developers recommended that additional guidance on how to develop the conceptual model and examples of well-done analyses on social risk adjustment would be helpful for future work.

The majority of developers agreed that examining the potential need for social risk adjustment was important and it was valuable to examine the possible impact of these factors. However, developers did note that social risk factors often had a limited impact and that better data are needed to support future analyses of the role of social risk.

Committee Member Feedback

NQF also surveyed members of the CDP (Consensus Development Process) standing committees that reviewed measures for social risk to receive input on their experience with the trial period. A total of 69 standing committee members completed the survey. Respondents represented a range of Standing Committees and stakeholder groups.

Overall, Standing Committee members believed the information resources for the trial period were helpful. The NQF staff preliminary analysis was the highest rated resource provided by NQF, followed by sessions at conferences, and one-on-one discussions with staff.

The majority of respondents reported that they had the necessary information to evaluate the conceptual rationale for or against adjustment for social risk factors. However, Committee members highlighted the need for greater consistency in the conceptual and empirical analyses across developers. Committee members also noted that greater standardization of variables tested and data sources explored would help to support their reviews of the conceptual analyses.

Committee members reported significant challenges effectively evaluating measures that were adjusted with social risk factors. Respondents noted a need for greater consistency in the methods used. Committee members noted that the information provided by developers focused on statistical significance but did not often explore the real world impact of these factors. Committee members found that developers used a limited set of social risk factors in their analyses and that it was often difficult to distinguish "science from opinion" concerning appropriate adjustment. Committee members suggested that greater standardization in the methods used and variables tested could improve their review.

Committee members suggested a number of ways the review of adjustment for social risk factors could be strengthened. Suggestions included external methodology reviews, better data on social risk factors, and closer ties between the conceptual models and empirical analyses. The use of external methodologists was highlighted in a recent improvement event for the NQF Consensus Development Process.

Public Comment Feedback

Adjustment for social risk was a recurring theme for public comments in some projects; notably for admissions and readmissions and cost and resource use measures. Public comments most commonly highlighted concerns that measures did not include adequate adjustment for social risk factors. Public commenters raised concerns that social risk factors were frequently statistically significant but developers did not include them in the risk adjustment models. Commenters also expressed concerns that the social risk factors empirically tested by the developers did not align with the conceptual models presented.

Key Challenges to the Trial

The trial period has helped to illuminate the challenges to adjusting performance measures for social factors. Although the standing committees arrived at decisions for the measures, the recurring theme across all measure evaluation committees was a desire for more information about social risk factors.

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Committee members wanted greater clarity and consistency in both the conceptual relationships and the empirical analyses. Committee members noted that their endorsement recommendations relate to the analyses put forward by the developer given the data currently available. However, standing committee members recognized that risk adjustment for social risk factors is a rapidly progressing area and that ongoing work is needed. Committee members recognized the need to identify the most relevant patient-and community-level risk factors, collect data on these risk factors, and test the conceptual and empirical relationship of the risk factors and the outcomes of interest.

Data Availability

One of the main challenges to the trial period was the limited availability of patient-level data. Based on the data source of their measure, developers had varying access to patient-level data on social risk and examined different variables. Standing committee members and members of the public have highlighted concerns that the variables examined in the empirical analyses did not align with the factors presented in the conceptual models. Developers noted that data were often not yet available on social risk factors that have been shown an impact in the literature.

The Disparities Standing Committee has highlighted the ongoing challenges to risk adjustment for social risk factors. The Committee reviewed the National Academy of Medicine report, "Accounting for Social Risk Factors in Medicare Payment: Data" that examined the availability of data on social risk factors. The report found that there are a few factors currently available for use (e.g., dual eligibility, nativity, urbanicity/rurality) while other factors need additional research for improved use or are not sufficiently available now (Table 1). The availability of social risk factor data will continue to evolve and warrants ongoing monitoring. To address these concerns, developers of measures with a strong conceptual basis for adjustment but limited empirical data, such as hospital readmissions, will have to provide an update on the availability of social risk data as part of NQF's required annual update for the measure.

Table 1: Summary of Data Availability for Social Risk Factor Indicators

SOCIAL RISK FACTOR	DATA AVAILABILITY			
Indicator	1	2	3	4
SEP				
Income		■		
Education		■		
Dual Eligibility	■			
Wealth			■	
Race, Ethnicity, and Cultural Context				
Race and Ethnicity		■		
Language		■		
Nativity	■			
Acculturation				■
Gender				
Gender identity				■
Sexual orientation				■
Social Relationships				
Marital/partnership status		■		
Living alone			■	
Social Support			■	
Residential and Community context				
Neighborhood deprivation		■		
Urbanicity/Rurality	■			
Housing		■		
Other environmental measures				■

1. Available for use now
2. Available for use now for some outcomes, but research needed for improved, future use
3. Not sufficiently available now; research needed for improved, future use
4. Research needed to better understand relationship with health care outcomes and on how to best collect data

Source: National Academies of Sciences, Engineering, and Medicine. 2016. *Accounting for social risk factors in Medicare payment: Data.* Washington, DC: The National Academies Press.

As noted above, the trial period primarily focused on the effect of patient-level factors. However, the literature has demonstrated that where a person lives can influence their health and health outcomes suggesting a potential need to examine the impact of community-level factors. In the trial, community-level factors were explored mostly as a proxy for patient-level information. Some stakeholders have also suggested further exploration of provider-level factors, such as percent uninsured at a hospital. The potential use of provider-level factors has been largely driven by concerns for the financial viability of safety net providers that may be adversely effected by payment programs with threshold penalties. While some developers were able to provide analyses of performance by level of social risk, persistent concerns have been raised for safety net providers that may be penalized for small differences in performance. The Disparities Standing Committee encouraged greater testing of community-level factors as well as risk adjustment methodologies (e.g., multi-level models) that could demonstrate differences across populations. However, the Disparities Standing Committee urged caution with the use of provider-level factors that could mask quality signals.

Consideration of Race in Risk Models

One concern that arose during the trial period was the inclusion of race as a variable in risk models. The Risk Adjustment Expert Panel stated that race and ethnicity are not, and should not be used as proxies for socioeconomic status.[7] The Expert Panel noted that factors like education, income, language, and insurance status contribute to racial and ethnic disparities in healthcare. The Expert Panel highlighted that potential mediators of the effect of race on health outcomes include source of care, discrimination,

and potential differences in biology (including those that are environmentally- or stress-induced). The Panel cautioned that because of concerns of bias or racism, careful thought and consideration and a clear rationale are necessary when adjusting measures for race and ethnicity.

Committee members and members of the public raised concerns that some measures may have used race as proxy for socioeconomic status. Guidance from the Disparities Standing Committee stressed that race should not be used as a proxy for SES; however there may be certain biological reasons when race could be an appropriate clinical factor to include in a risk adjustment model (i.e. potential tumor characteristics in African-American women with breast cancer). One measure was endorsed with race and ethnicity as factors in the risk model, NQF #369 Standardized Mortality Ratio for Dialysis Facilities. The developer cited literature suggesting a potential protective factor of black race and Hispanic ethnicity that could mask a disparity in quality of care.

Role of Stratification

Stratification refers to computing performance scores separately for different strata or groupings of patients based on some characteristics(s) — i.e., each healthcare unit has multiple performance scores (one for each stratum) rather than one overall performance score.[8] As part of the trial, NQF required developers to provide instructions for calculating strata for social risk factors to ensure transparency around potential disparities in care.

NQF has incorporated risk adjustment into measure specifications, but has not introduced a standardized format in which stratification specifications should be submitted. A review by NQF staff found that developers were inconsistent in including instructions for creating clinically-adjusted scores. Some developers included instructions for creating stratification groups based on the social risk variable used (e.g. poverty by decile, education by level of completion, by racial groups). Others provided an alternate risk adjustment model that did not include social risk factors. The issue of stratification of performance results by social risk as an approach needs further consideration.

Limited Implementation of Measures Adjusted for Social Risk

NQF requires that endorsed measures be suitable for accountability purposes and expects that they will be implemented in public reporting and value-based purchasing programs. NQF expects measures to be used as they are endorsed. If a measure is endorsed with social risk factors included in its risk adjustment model, NQF would expect the measure to be reported in its adjusted form.

To date there has been limited implementation of measures adjusted for social risk. This limited implementation makes it impossible to know the full impact of measures adjusted for social risk. The majority of measures endorsed with social risk factors were brought forward by private sector developers. Stakeholders have raised concerns that measures used by CMS in federal public reporting and value-based purchasing programs are not adjusted for social risk factors.

Conclusions and Next Steps

Findings from NAM and ASPE continue to show the impact of social risk factors on the outcomes of healthcare performance measures. At the same time, stakeholders want to avoid penalties that hurt safety net providers as the system continues to shift to value-based purchasing. However, patients with social risk factors may disproportionately seek care from lower quality providers and value-based purchasing represents an important opportunity to drive improvements in quality.[9] The need to balance these factors reinforces NQF's guidance that each measure must be assessed individually and demonstrate a conceptual basis and empirical evidence to support adjusting for social risk factors.

Risk adjustment for sociodemographic factors remains a controversial issue that must balance concerns that adjustment could mask healthcare disparities with the need to ensure that entities serving vulnerable populations are not penalized unfairly. Those in favor of risk adjustment for these factors argue that it is necessary to ensure fair, unbiased, and accurate measurement. Those opposed to adjusting for these factors are concerned that doing so will create different performance standards for different patients. These underlying beliefs may influence a developer's decision about whether or not social risk factors influence the outcome or process being measured and whether or not it was appropriate to adjust for them.

The trial period illuminated a number of important findings. First, despite compelling conceptual models, empirical risk adjustment analyses to date demonstrate a very limited effect of social risk factors. Possible reasons for this discrepancy include the methods used for adjustment and limited availability of robust data on social risk factors. The Disparities Standing Committee highlighted a number of potential pathways to explain the limited empirical findings including model construct. For example, social risk factors were frequently added into the risk model after clinical factors limiting the amount of variation related to social risk factors. The Disparities Committee suggested that in the future developers pursue various adjustment strategies that may be more likely to demonstrate empirical basis (e.g., social risk factors loaded before clinical factors) and that adjustment techniques such as multi-level models may provide greater transparency for differences across populations.

The challenges related the availability of data on social risk factors were another important conclusion of the trial. Developers noted the challenges to getting patient-level data on social risk factors. The trial period demonstrated that data on social risk factors should be as granular as possible to ensure sensitivity and accuracy. The potential inclusion of community factors was frequently cited as an important future direction. All stakeholders want to see the quality of care for the most vulnerable improve while ensuring a level playing field for providers in value-based purchasing programs. The increased use of NQF-endorsed measures for payment purposes underscores the importance of ensuring accurate comparisons so that rewards or penalties are fairly distributed and based on true differences in performance. NQF is carefully reviewing the results of this important trial with input from key experts and stakeholders as it considers options for measure evaluation and endorsement going

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forward. The trial period has elucidated important issues, such as availability of data on social risk that should be pursued as we collectively drive toward elimination of healthcare disparities.

Appendix A: NQF Endorsed Measures Adjusted for Social Risk

NQF #	Title	Variable Included	Association
0076	Optimal Vascular Care	Insurance product	Significant
275	Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate (PQI 05)	Percent of households under the federal poverty level	Significant
283	Asthma in Younger Adults Admission Rate (PQI 15)	Percent of households under the federal poverty level	Significant
369	Standardized Mortality Ratio for Dialysis Facilities	Race, ethnicity	Significant
2651	CAHPS® Hospice Survey (experience with care)	• Payer • Respondent education • Variable indicating survey language and respondent's home language	Significant
2827	PointRight® Pro Long Stay(TM) Hospitalization Measure	Medicaid beneficiary status	Significant
2842	Family Experiences with Coordination of Care (FECC)-1 Has Care Coordinator	Respondent education	Significant
2843	Family Experiences with Coordination of Care (FECC) -3: Care coordinator helped to obtain community services	Respondent education	Significant
2844	Family Experiences with Coordination of Care (FECC) -5: Care coordinator asked about concerns and health	Respondent education	Significant
2845	Family Experiences with Coordination of Care (FECC) -7: Care coordinator assisted with specialist service referrals	Respondent education	Significant
2846	Family Experiences with Coordination of Care (FECC)-8: Care coordinator was knowledgeable, supportive and advocated for child's needs	Respondent education	Significant
2847	Family Experiences with Coordination of Care (FECC) -9: Appropriate written visit summary content	Respondent education	Significant
2849	Family Experiences with Coordination of Care (FECC)-15: Caregiver has access to medical interpreter when needed	Respondent education	Significant
2850	Family Experiences with Coordination of Care (FECC)-16: Child has shared care plan	Respondent education	Significant
2858	Discharge to Community	Marital status	Significant
2967	CAHPS® Home- and Community-Based Services Measures	Whether respondent lives alone	Significant
3188	30-Day Unplanned Readmissions for Cancer Patients (Phase 3)	Dual Eligible status	Significant

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Appendix B: Summary of Analysis of Risk-Adjusted Measures Review in the Trial Period

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
76	Optimal Vascular Care	Yes (data)	–Social risk factor included in model(Insurance product)	Insurance product (commercial, Medicare, MHCP-state public program, and uninsured), age, gender, depression, distance from clinic and Race, Ethnicity, Language and Country of Origin (RELO)	Insurance product significant
171	Acute Care Hospitalization During the First 60 Days of Home Health	Yes (literature)	Social risk factor significant, not included in model (small effect size)	race/ethnicity, disability status, rural location, and Medicaid dual status	Significant
173	Emergency Department Use without Hospitalization During the First 60 Days of Home Health	Yes (literature)	Social risk factor significant, not included in model (small effect size)	race/ethnicity, disability status, and rural location	Significant
229	Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following heart failure (HF) hospitalizatio	Conceptual relationship did not support adjustment (literature)	N/A	N/A	N/A

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
	n for patients 18 and older				
230	Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalizatio n for patients 18 and older	Conceptual relationship did not support adjustment (literature)	N/A	N/A	N/A
275	Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate (PQI 05)	Yes (literature)	Social risk factor included in model (Percent of households under the federal poverty level)	Percent of households under the federal poverty level	Significant
283	Asthma in Younger Adults Admission Rate (PQI 15)	Yes (literature)	Social risk factor included in model (Percent of households under the federal poverty level) Social risk factor included in model	Percent of households under the federal poverty level	Significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
304	Late sepsis or meningitis in Very Low Birth Weight (VLBW) neonates (risk-adjusted)	No conceptual relationship found (data)	N/A	Race, ethnicity	Prior model included race and ethnicity. Goodness of fit improved when those factors were removed.
330	Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following heart failure (HF) hospitalization	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, dual eligibility, AHRQ SES Index	Significant
459	Risk-Adjusted Length of Stay >14 Days after Elective Lobectomy for Lung Cancer	Conceptual relationship did not support adjustment (literature)	N/A	N/A	N/A
460	Risk-Adjusted Morbidity and Mortality for Esophagectomy for Cancer	Conceptual relationship did not support adjustment (literature)	N/A	N/A	N/A
478	Neonatal Blood Stream Infection Rate (NQI 03)	Conceptual relationship did not support adjustment (literature)	N/A	N/A	N/A

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NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
505	Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, dual eligibility, AHRQ SES Index	Significant
506	Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following pneumonia hospitalization	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, dual eligibility, AHRQ SES Index	Significant
694	Hospital Risk-Standardized Complication Rate following Implantation of Implantable Cardioverter-Defibrillator (ICD)	Conceptual relationship did not support adjustment (literature)	N/A	N/A	N/A

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
695	Hospital 30-Day Risk-Standardized Readmission Rates following Percutaneous Coronary Intervention (PCI)	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, Dual eligibility	Significant
697	Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure	No conceptual relationship found (data)	Empiric but no conceptual basis	Median income, Hispanic ethnicity, race	Not significant
706	Risk Adjusted Colon Surgery Outcome Measure	No conceptual relationship found (data)	Empiric but no conceptual basis	Median income, Hispanic ethnicity, race	Not significant
713	Ventriculoperitoneal (VP) shunt malfunction rate in children	No conceptual relationship found (no details provided)	N/A	N/A	N/A
730	Acute Myocardial Infarction (AMI) Mortality Rate	Conceptual relationship did not support adjustment (literature)	N/A	N/A	N/A

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
1550	Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, dual eligibility, AHRQ SES Index	Significant
1551	Hospital-level 30-day, all-cause risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, dual eligibility, AHRQ SES Index	Significant
1598	Total Resource Use Population-based PMPM Index	Yes (data)	Social risk factor significant, not included in model (small effect size)	Income at census tract and household level	Not significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
1604	Total Cost of Care Population-based PMPM Index	Yes (data)	Social risk factor significant, not included in model (small effect size)	Income at census tract and household level	Not significant
1731	PC-04 Health Care-Associated Bloodstream Infections in Newborns	Conceptual relationship did not support adjustment (data)	Empiric but no conceptual basis	Race, ethnicity	Significant
1789	Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, dual eligibility, AHRQ SES Index	Significant
1891	Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following chronic obstructive pulmonary disease (COPD)	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, dual eligibility, AHRQ SES Index	Significant
2158	Medicare Spending Per Beneficiary - Hospital	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, income to poverty ratio	Significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
2375	PointRight OnPoint-30 SNF Rehospitalizations	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Marital status (married or single) Race (black or non-black)Medicaid enrollment (via the patient having a non-missing Medicaid identifier)	Significant
2380	Rehospitalization During the First 30 Days of Home Health	Yes	Social risk factor significant, not included in model (small effect size)	Medicaid status, rural location, SES Index score	Significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
2393	Pediatric All-Condition Readmission Measure	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Patient insurance (primary payer): Medicaid, Medicare, Private Insurance, Self-pay, Other • Median income within patient's zip code • Distribution of education level within patient's zip code: Less than High School, High School Graduate, Some College/Associate Degree, and Bachelor's Degree or Above	Insurance significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
2414	Pediatric Lower Respiratory Infection Readmission Measure	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Patient insurance (primary payer): Medicaid, Medicare, Private Insurance, Self-pay, Other • Median income within patient's zip code • Distribution of education level within patient's zip code: Less than High School, High School Graduate, Some College/Associate Degree, and Bachelor's Degree or Above	Not significant
2431	Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for Acute	Yes	Social risk factor significant, not included in model (small effect size)	Race, Dual Eligibility, AHRQ SES Index	Significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
	Myocardial Infarction (AMI)				
2436	Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for Heart Failure (HF)	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, Dual Eligibility, AHRQ SES Index	Significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
2496	Standardized Readmission Ratio (SRR) for dialysis facilities	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Patient level (Data obtained from Medicare claims and administrative data) o Employment status 6 months prior to ESRD onset o Race o Ethnicity o Medicare coverage at index hospital discharge ZIP code level Area Deprivation Index (ADI) derived from Census data	Significant
2502	All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Inpatient Rehabilitation Facilities (IRFs)	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Dual Eligibility County-level Factors	Dual eligibility significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
2503	Hospitalizations per 1000 Medicare fee-for-service (FFS) Beneficiaries	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Area deprivation index proposed but developer did not have access	ADI not tested
2504	30-day Rehospitalizations per 1000 Medicare fee-for-service (FFS) Beneficiaries	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Area deprivation index proposed but developer did not have access	ADI not tested
2505	Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Medicaid status, rural location, SES Index score	Significant
2510	Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Dual Eligibility Race County Level Factors	Dual eligibility significant
2512	All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Long-	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Dual Eligibility Race County Level Factors	Dual eligibility significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
	Term Care Hospitals (LTCHs)				
2514	Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, ethnicity, payer	Payer significant
2515	Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, Dual Eligibility, AHRQ SES Index	Significant
2579	Hospital-level, risk-standardized payment associated with a 30-day episode of care pneumonia	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, Dual Eligibility, AHRQ SES Index	Significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
2651	CAHPS® Hospice Survey (experience with care)	Yes (literature)	Social risk factor included in model (Payer, respondent education, language)	• Payer • Respondent education • Variable indicating survey language and respondent's home language	Significant
2740	Proportion of Patients with coronary artery disease (CAD) that have a Potentially Avoidable Complication (during the episode time window)	No conceptual relationship found (data)	N/A	N/A	N/A
2747	Proportion of Patients with Heart Failure (HF) that have a Potentially Avoidable Complication (during the episode time window)	No conceptual relationship found (data)	N/A	N/A	N/A

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
2748	Proportion of Patients with Hypertension (HTN) that have a Potentially Avoidable Complication (during the episode time window)	No conceptual relationship found (data)	N/A	N/A	N/A
2749	Proportion of Patients with Arrhythmias (ARR) that have a Potentially Avoidable Complication (during the episode time window)	No conceptual relationship found (data)	N/A	N/A	N/A
2751	Proportion of Patients undergoing an Angioplasty Procedure (Percutaneous Coronary Intervention - PCI) that have a Potentially Avoidable Complication (during the episode time window)	No conceptual relationship found (data)	N/A	N/A	N/A

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NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
2752	Proportion of Patients undergoing Pacemaker / Defibrillator Implantation (PCMDFR) that have a Potentially Avoidable Complication (during the episode time window)	No conceptual relationship found (data)	N/A	N/A	N/A
2769	Functional Change: Change in Self Care Score for Skilled Nursing Facilities	No conceptual relationship found (details not provided)	N/A	N/A	N/A
2774	Functional Change: Change in Mobility Score for Skilled Nursing Facilities	No conceptual relationship found (details not provided)	N/A	N/A	N/A
2775	Functional Change: Change in Motor Score for Skilled Nursing Facilities	No conceptual relationship found (details not provided)	N/A	N/A	N/A
2776	Functional Change: Change in	No conceptual relationship found (details not provided)	N/A	N/A	N/A

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
	Motor Score in Long Term Acute Care Facilities				
2777	Functional Change: Change in Self Care Score for Long Term Acute Care Facilities	No conceptual relationship found (details not provided)	N/A	N/A	N/A
2778	Functional Change: Change in Mobility Score for Long Term Acute Care Facilities	No conceptual relationship found (details not provided)	N/A	N/A	N/A
2789	Adolescent Assessment of Preparation for Transition (ADAPT) to Adult-Focused Health Care	Yes (data)	Conceptual basis without empiric evidence	Education	Not significant
2827	PointRight® Pro Long Stay(TM) Hospitalizatio n Measure	Yes (literature)	Social risk factor included in mode (Medicaid beneficiary) l	Medicaid Beneficiary	Significant
2842	Family Experiences with Coordination of Care	Yes (literature)	Social risk factor included in model (respondent education)	Respondent education	Significant

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NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
	(FECC)-1 Has Care Coordinator				
2843	Family Experiences with Coordination of Care (FECC) -3: Care coordinator helped to obtain community services	Yes (literature)	Social risk factor included in model (respondent education)	Respondent education	Significant
2844	Family Experiences with Coordination of Care (FECC) -5: Care coordinator asked about concerns and health	Yes (literature)	Social risk factor included in model (respondent education)	Respondent education	Significant
2845	Family Experiences with Coordination of Care (FECC) -7: Care coordinator assisted with specialist service referrals	Yes (literature)	Social risk factor included in model (respondent education)	Respondent education	Significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
2846	Family Experiences with Coordination of Care (FECC)-8: Care coordinator was knowledgeable, supportive and advocated for child's needs	Yes (literature)	Social risk factor included in model (respondent education)	Respondent education	Significant
2847	Family Experiences with Coordination of Care (FECC) -9: Appropriate written visit summary content	Yes (literature)	Social risk factor included in model (respondent education)	Respondent education	Significant
2848	Family Experiences with Coordination of Care (FECC) -14: Health care provider communicated with school staff about child's condition	Yes (literature)	Social risk factor included in model (respondent education)	Respondent education	Significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
2849	Family Experiences with Coordination of Care (FECC)-15: Caregiver has access to medical interpreter when needed	Yes (literature)	Social risk factor included in model (respondent education)	Respondent education	Significant
2850	Family Experiences with Coordination of Care (FECC)-16: Child has shared care plan	Yes (literature)	Social risk factor included in model (respondent education)	Respondent education	Significant
2851	Family Experiences with Coordination of Care (FECC) -17: Child has emergency care plan	Yes (literature)	Social risk factor included in model (respondent education)	Respondent education	Significant
2852	Optimal Asthma Control	Yes (literature)	(insurance) Social risk factor included in model	Insurance	Significant
2858	Discharge to Community	Yes (data)	Social risk factor included in model	Marital status	Significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
2860	Thirty-day all-cause unplanned readmission following psychiatric hospitalization in an inpatient psychiatric facility (IPF)	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Medicaid status (dual status), original enrollment in Medicare for disability, unemployment, median household income of census tract, low educational attainment in census tract, race/ethnicity, limited English speaking households, and rural-urban community area (RUCA).	Medicaid enrollment, percent below poverty, percent of crowded households, percent of people with less than high school diploma, and log of percent of limited English households in the census tract were significant
2876	Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute ischemic stroke hospitalization with claims-based	Yes (literature)	Social risk factor significant, not included in model (small effect size)	African American race, Dual eligible status, AHRQ SES index score	Not significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
	risk adjustment for stroke severity				
2877	Hybrid hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute ischemic stroke with risk adjustment for stroke severity	Yes (literature)	Social risk factor significant, not included in model (small effect size)	African American race, Dual eligible status, AHRQ SES index score	Not significant
2879	Hybrid Hospital-Wide Readmission Measure with Claims and Electronic Health Record Data	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, Dual Eligibility, AHRQ SES Index	Significant
2880	Excess days in acute care (EDAC) after hospitalization for heart failure	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, Dual Eligibility, AHRQ SES Index	Significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
2881	Excess days in acute care (EDAC) after hospitalization for acute myocardial infarction (AMI)	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, Dual Eligibility, AHRQ SES Index	Significant
2882	Excess days in acute care (EDAC) after hospitalization for pneumonia	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, Dual Eligibility, AHRQ SES Index	Significant
2886	Risk-Standardized Acute Admission Rates for Patients with Heart Failure	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, Dual Eligibility, AHRQ SES Index	Significant
2887	Risk-Standardized Acute Admission Rates for Patients with Diabetes	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, Dual Eligibility, AHRQ SES Index	Significant
2888	Risk-Standardized Acute Admission Rates for Patients with Multiple Chronic Conditions	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, Dual Eligibility, AHRQ SES Index	Significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
2892	Birthrisk Cesarean Birth Measure	No conceptual relationship found (details not provided)	N/A	N/A	N/A
2893	Neonatal Intensive Care All-Condition Readmissions	Yes (literature)	Social risk factor included in model (Maternal race/ethnicity and source of payment)	Race, maternal age, maternal education, payer	Significant
2936	Admissions and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy	Yes (literature)	Social risk factor significant, not included in model (small effect size)	Race, Dual Eligibility, AHRQ SES Index	Significant
2967	CAHPS® Home- and Community-Based Services Measures	Yes (data)	Social risk factor included in model (whether respondent lives alone)	Whether respondent lives alone	Significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
2977	Hemodialysis Vascular Access: Standardized Fistula Rate	Yes (data)	Social risk factor significant, not included in model (small effect size)	Patient level: • Employment status 6 months prior to ESRD • Race • Ethnicity • Medicare coverage ZIP code level – Area Deprivation Index (ADI) elements from Census data: • Unemployment rate (%) • Median family income • Income disparity • Families below the poverty level (%) • Single-parent households with children <18 years old (%) • Home ownership rate (%) • Median home value • Median monthly mortgage • Median gross rent • Population (aged 25+) with <9 years of education (%) • Population (aged 25+) without high school diploma (%)	Not significant

NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
2979	Standardized Transfusion Ratio for Dialysis Facilities	Yes (data)	Social risk factor significant, not included in model (small effect size)	Patient level: • Employment status 6 months prior to ESRD • Race • Ethnicity • Medicare coverage ZIP code level – Area Deprivation Index (ADI) elements from Census data: • Unemployment rate (%) • Median family income • Income disparity • Families below the poverty level (%) • Single-parent households with children <18 years old (%) • Home ownership rate (%) • Median home value • Median monthly mortgage • Median gross rent • Population (aged 25+) with <9 years of education (%) • Population (aged 25+) without high school diploma (%)	Employment, Medicare coverage significant
3136	GAPPS - Rate of preventable adverse events per 1,000 patient-days	Conceptual relationship did not support adjustment (literature)	N/A	N/A	N/A

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NQF Number	Title	Conceptual Relationship & Basis for Conceptual Relationship	Empiric Analysis	Variables Tested	Association
	among pediatric inpatients				
3188	30-Day Unplanned Readmissions for Cancer Patients (Phase 3)	Yes (literature)	Social risk factor included in model (dual eligible status)	Dual eligible status	Significant
3189	Rate of Emergency Department Visit Use for Children Managed for Identifiable Asthma - Visits per 100 Child-years	Conceptual relationship did not support adjustment (literature)	N/A	Race, ethnicity	Significant
3215	Adult Inpatient Risk Adjusted Sepsis Mortality	Yes (data)	Social risk factor significant, not included in model (small effect size)	Payer, race and ethnicity	Age, payer, race, and ethnicity were significant
0369	Standardized Mortality Ratio for Dialysis Facilities	Yes (literature)	Social risk factor included in model (race, ethnicity)	Patient level SDS/SES: race, ethnicity, employment status, and Medicare/Medicaid. A rea level SES: Area of deprivation index	Race andethnicity significant

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Appendix C: Stakeholder Feedback Surveys

Survey to Developers:

Introduction:

In 2014, an NQF-convened Expert Panel recommended that NQF allow inclusion of socio-demographic status (SDS) factors in risk adjustment of performance measures when supported by both conceptual reasons and empirical evidence. Subsequently, the NQF Board of Directors approved, for a 2-year trial period, a change in NQF's policy that prohibited the use of sociodemographic factors in statistical risk models. This change was effective for measures submitted into projects after April 15, 2015.

NQF is requesting feedback on the experiences of developers who submitted measure during the trial period. We will use this feedback to inform the evaluation of the SDS Trial Period.

If you have any questions about the SDS Trial or this survey please contact: disparities@qualityforum.org

Question 1: Please insert your name

Question 2: Please insert the name of your organization

Question 3: Since April 15, 2017, have you submitted any outcomes measures that were adjusted for clinical or social risk factors?

- Yes or No

Question 4: We would like to understand the burden and cost associated with your participation in the SDS Trial. Please rate the burden of the following:

- Very burdensome, Somewhat Burdensome, Not Burdensome
    - Research for/development of conceptual rationale for (or against) use of SDS factors
    - Acquiring SDS data
    - Initial empirical analyses of SDS data (e.g., uploading, getting familiar with data, linking to other datasets, etc.)
    - Analysis leading to decision to include (or not include) SDS factors
    - Comparison of measure results with/without SDS factors included
    - Updating reliability and/or validity testing if now including SDS factors

Question 5: If you rated any of the steps in Question as very or somewhat burdensome, please elaborate. For example, when developing the conceptual rationale, did you have to recruit external experts to help you? How extensive and expensive (in person-time, etc.] to develop it? Etc.

Question 6: If you submitted several outcome measures, did you achieve economies of scale in terms of the work involved in participating in the trial? (e.g. newly acquired data used for multiple measures; geocoding software/expertise acquired and used for multiple measures; etc.)

Question 7: What did you consider the primary challenges when considering inclusion of SDS factors in a risk-adjustment approach?

Question 8: Regardless of whether you ultimately did or did not include SDS factors in your risk-adjustment approach, do you feel the exercise was beneficial? Please explain (in what ways; why not; etc.).

Question 9: Do you receive any of the resources provided by NQF to assist you with the trial period? If so, please select:

- Webinars
- Sessions at conferences
- FAQs
- One-on-one conversations with staff
- Written guidance document
- Other
    - Please list:

Question 10: In general, how helpful were these resources in understanding the requirements of the pilot?

- Helpful, Somewhat Helpful, Not Helpful

Question 11: Which resources were the most helpful to you?

Question 12: What kinds of resources would you like to have had? OR What could we have done to better support your participation in the trial?

Question 13: Please let us know if you have other comments or suggestions:

Survey to Committee Members

Introduction:

In 2014, an NQF-convened Expert Panel recommended that NQF allow inclusion of socio-demographic status (SDS) factors in risk adjustment of performance measures when supported by both conceptual reasons and empirical evidence. Subsequently, the NQF Board of Directors approved, for a 2-year trial period, a change in NQF's policy that prohibited the use of sociodemographic factors in statistical risk models. . This change was effective for measures submitted into projects after April 15, 2015.

NQF is requesting feedback on the experiences of committee members who evaluated risk-adjusted outcome measures during the trial period. We will use this feedback to inform the evaluation of the SDS Trial Period.

If you have any questions about the SDS Trial or this survey please contact:
disparities@qualityforum.org

Question 1: Please insert your name

Question 2: Please insert the name of your Committee

Question 3: How helpful were the resources provided to you to understand the trial period and what was required for the evaluation of outcome measures risk adjusted for SDS factors?

- Helpful, Somewhat Helpful, Not Helpful
  - Orientation calls
  - Sessions at conferences
  - FAQs
  - One-on-one conversations with staff
  - Comments/questions in the staff preliminary analysis of measures
  - No resources were provided
  - Other
    - Please list:

Question 4: Did you feel you had the information you needed (from developers or from NQF) to effectively evaluate the conceptual rationale for or against risk adjustment for SDS factors?

Question 5: Did you feel you had the information you needed (from developers or from NQF) to effectively evaluate measures that were risk adjusted with SDS factors?

Question 6: What additional information would have been valuable?

Question 7: When evaluating risk-adjusted measures, do you feel that the right amount of emphasis was given to inclusion of SDS factors? Would you like to have had more or less? Please explain.

Question 8: Please let us know if you have other comments or suggestions

References

[1] National Academies of Sciences, Engineering, and Medicine. 2016. *Accounting for social risk factors in Medicare payment: Identifying social risk factors.* Washington, DC: The National Academies Press.

[2] NQF (National Quality Forum). 2014. *Risk adjustment for socioeconomic status or other sociodemographic factors*. Washington, DC: National Quality Forum.

[3] https://www.cms.gov/newsroom/mediareleasedatabase/fact-sheets/2015-fact-sheets-items/2015-01-26-3.html

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[5] United States Department of Health and Human Services. Office of the Assistant Secretary for Planning and Evaluation. 2016. Social Risk Factors and Performance Under Medicare's Value Based Purchasing Programs. Washington, DC.

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[9] United States Department of Health and Human Services. Office of the Assistant Secretary for Planning and Evaluation. 2016. Social Risk Factors and Performance Under Medicare's Value Based Purchasing Programs. Washington, DC.