MATHEMATICA
Policy Research

FROM: Mathematica Policy Research **DATE:** 9/5/2016

SUBJECT: Quality Measure Development and Maintenance for CMS Programs Serving Medicare-Medicaid Enrollees and Medicaid-Only Enrollees:
Questions for Public Comment on Measure for Medicaid Beneficiaries with Complex Needs (BCN)

Project Overview:
The Centers for Medicare & Medicaid Services (CMS) has contracted with Mathematica Policy Research and its partners, the American Medical Association, Brandeis University, the National Committee for Quality Assurance, and Truven Health Analytics, to develop measures for the following groups of Medicaid beneficiaries: (1) those eligible for both Medicare and Medicaid, or "dual enrollees"; (2) those receiving long-term services and supports (LTSS) through managed care organizations or through fee-for-service delivery arrangements; and, (3) people with complex needs and high costs (BCN), substance use disorders (SUD), and physical and mental health integration needs (PMH). The contract number is HHSM-500-2013-13011I, Task Order #HHSM-500-T0004.

Documents and Measures for Comment:
As part of its measure development process, CMS requests interested parties to submit comments on the candidate or concept measures that may be suitable for this project.

This call for public comment concerns the measure specifications, and justification, for the following measure:

- BCN-1 – All-cause emergency department utilization rate for Medicaid beneficiaries with complex needs and high costs

The Measure Information Form (MIF) and Measure Justification Form (MJF) for this measure are available in separate files here: <BCN SUD PMH measures MIFs and MJFs.zip>

The project team seeks public comment on the following questions:

General Questions

1. Is the candidate measure useful for measuring important domains of quality for the specified Medicaid population?
2. Are you aware of any new or additional measures (beyond those listed in the MJF) that address this quality domain and have already been validated and widely used, are now under development, or will be submitted for consensus-based entity (NQF) endorsement?
3. Are the measure specifications in the MIFs clear, for example, the numerator, denominator, and any potential exclusions? What should be more clearly defined?
4. Are any revisions to the specifications needed either to make measure reporting more feasible, or to include or exclude certain individuals or events?

5. Are the proposed reporting levels, such as state or region, hospital referral region, or specific Medicaid program for the measures appropriate?
6. Are you aware of any new or additional studies that should be included in the MJF that support (or weaken) the justification for developing the measure? If so, please describe the findings and provide a full citation.

Questions specific to BCN-1 (*All-cause emergency department utilization rate*)

1. We propose to define the BCN-eligible denominator population based on prior inpatient utilization and, potentially, a threshold (or index) of multiple chronic conditions. Adding a chronic condition requirement to the BCN population definition could improve classification accuracy, but it may increase the time and effort required to construct the measure. Is it worthwhile to add multiple chronic conditions to the denominator specifications?
2. If the measure denominator includes chronic conditions, what is the best way to capture this criterion? For example, should we use the eligibility threshold of two or more chronic conditions, as established by the Medicaid Health Homes benefit option (section 2703 of the Affordable Care Act of 2010)? Are alternative indices, such as the Charlson Comorbidity Index or the Elixhauser Index, preferable?
3. What threshold should the definition use when considering inpatient admissions? For example, should it be based on one or more inpatient admission in the past 12 months, 2 or more inpatient admissions in the past 12 months, or 3 or more inpatient admissions in the past 12 months? Should it use a 6 month look back window instead of 12 months?
4. When using prior inpatient utilization to define the BCN population, should any types of inpatient stays be excluded (i.e. pregnancy and birth)?

Public Comment Instructions:

- If you are providing comments on behalf of an organization, include the organization's name and contact information.
- If you are commenting as an individual, submit identifying or contact information.
- Please do not include personal health information in your comments.
- In the subject line of the email message, put **Public Comments BCN-SUD-PMH**
- Send your comments by **close of business September 29, 2016** to: MedicaidQualMeasures@mathematica-mpr.com

Measure Information Form

Project title
Quality Measure Development and Maintenance for CMS Programs Serving Medicare–Medicaid Enrollees and Medicaid-Only Enrollees

Project overview
The Centers for Medicare and Medicaid Services (CMS) has contracted with Mathematica Policy Research and its partners, the American Medical Association, Brandeis University, the National Committee for Quality Assurance, and Truven Health Analytics, to develop measures for the following populations of Medicaid beneficiaries:

- People eligible for both Medicare and Medicaid (dual enrollees)
- People receiving long-term services and supports (LTSS) through managed care organizations
- People with substance use disorders, beneficiaries with complex needs and physical and mental health conditions, or who receive LTSS in the community, corresponding to the priority areas of the Medicaid Innovation Accelerator Program

The contract name is Quality Measure Development and Maintenance for CMS Programs Serving Medicare–Medicaid Enrollees and Medicaid-Only Enrollees. The contract number is HHSM-500-2013-13011, Task Order # HHSM-500-T0004.

Date
Information included is current on June 29, 2016.

Measure Name
All-Cause Emergency Department Utilization Rate for Medicaid Beneficiaries with Complex Needs (BCNs)

Descriptive information

Measure name (Measure title De.2.)
All-Cause Emergency Department Utilization Rate for Medicaid Beneficiaries with Complex Needs (BCNs)

Measure type De.1.
Outcome (access)

Brief description of Measure De.3.
All-cause emergency department (ED) utilization rate for Medicaid beneficiaries age 18 and older who meet BCN population eligibility criteria (which will be defined during the testing period). Number of ED visits per 1,000 beneficiary months. We may redefine the level of measurement, based on feedback from clinical and technical experts.

If paired or grouped De.4.
The measure will be developed as a stand-alone measure (not paired). However, we recommend that it be examined in tandem with an inpatient hospitalization utilization measure, as the examination of ED utilization in isolation could yield inaccurate inferences about an accountable entity performance on reducing overall hospital-based care. For example, if an accountable entity decreases ED utilization among BCNs by keeping patients in the hospital overnight—shifting the utilization type to an inpatient visit—the ED measure in isolation would *overstate* the entity's performance on reducing overall hospital-based care. Conversely, a successful BCN intervention may *decrease* inpatient utilization but *increase* ED utilization, which would *understate* the entity's performance on reducing overall hospital-based care.

Subject/topic area De.5.
This measure is for a new topic area not specific to one condition: Medicaid beneficiaries with complex needs.

The Center for Medicaid and CHIP Services (CMCS) put forth an example of a potential definition of BCNs as Medicaid beneficiaries who because of their health and/or social conditions are likely to have high levels of costly, but preventable, service utilization.[1] This definition covers a heterogeneous population of beneficiaries with varying medical, behavioral, and psychosocial care needs that can be broken down further into subpopulations, each facing unique health care challenges. Consistent across BCN subpopulations, however, is a care pattern characterized by disproportionately high use of emergency department services and inpatient care, often coupled with underutilization of preventive and/or other types of outpatient care.

Crosscutting areas De.6.
Access, overuse, care coordination

Measure specifications

Measure-specific web page S.1.
Not applicable. This measure is still under development.

If this is an eMeasure S.2a.
Not applicable. This is not an eMeasure.

Data dictionary, code table, or value sets S.2b.
Not applicable. This measure is still under development.

For endorsement maintenance S.3.
Not applicable. This measure is still under development.

[1] Mann, Cindy. "Targeting Medicaid Super-Utilizers to Decrease Costs and Improve Quality." Center for Medicaid and CHIP Services Informational Bulletin. Baltimore, MD: Center for Medicaid and CHIP Services, July 24, 2013.

Numerator statement S.4.

Number of ED visits that do not end in a hospital admission for Medicaid beneficiaries age 18 and older who meet BCN population eligibility criteria (which will be defined during the testing period). Numerator statement may change, as this measure is still under development.

Time period for data S.5.

The proposed data period is 12 months. However, the optimal data period will be determined during the measure testing phase.

Numerator details S.6.

ED visits are identified using inpatient and outpatient claims, a combination of revenue codes, CPT codes, and place of service. Numerator details may change, as this measure is still under development.

Example codes we may use to identify ED visits include:

Revenue codes

0450 Emergency Room: non-surgical
0451 Emergency Medical Treatment and Labor Act (EMTALA) emergency medical screening services
0452 ER beyond EMTALA screening
0456 Urgent care
0459 Other emergency room
0981 Professional fees: emergency room

CPT codes for ED visits

99281 Emergency department visit with problem-focused history, problem-focused examination, and straightforward medical decision making
99282 Emergency department visit, low complexity
99283 Emergency department visit, moderate complexity
99284 Emergency department visit, moderate complexity
99285 Emergency department visit, high complexity

Place of service using OT file

23 Emergency room—hospital

Exclusions

ED visits resulting in an inpatient admission

Denominator statement S.7.

Number of months for Medicaid beneficiaries age 18 and older who meet BCN population eligibility criteria (which will be defined during the testing period). Denominator statement may change, as this measure is still under development.

Target population category S.8.
Populations at risk: individuals with multiple chronic conditions
Populations at risk: populations at risk

Denominator details S.9.
Number of months for Medicaid beneficiaries age 18 and older who meet BCN population eligibility criteria (which will be defined during the testing period). Population eligibility criteria may include thresholds for utilization and chronic conditions (or a chronic condition index such as the Elixhauser Comorbidity Index). Denominator details may change, as this measure is still under development.

Denominator exclusions (NQF includes "exceptions" in the "exclusion" field) S.10.
We may exclude patients who are not continuously enrolled in Medicaid for a minimum number of months, to be determined in testing. We will also exclude beneficiaries enrolled in managed care. Denominator exclusions may change, as this measure is still under development.

Denominator exclusion details (NQF includes "exceptions" in the "exclusion" field) S.11.
Denominator exclusion details may change, as this measure is still under development.

Stratification details/variables S.12.
Stratification details/variables may change, as this measure is still under development.

Risk-adjustment type S.13.
The need and methods for risk adjustment will be evaluated during the measure testing phase.

Statistical risk model and variables S.14.
The need and methods for risk adjustment will be evaluated during the measure testing phase.

Detailed risk model specifications S.15.
The need and methods for risk adjustment will be evaluated during the measure testing phase.

Type of score S.16.
Rate/proportion

Interpretation of score S.17.
A lower number of all-cause ED visits equals better quality care. A higher rate of all-cause ED utilization among Medicaid BCNs is associated with lower quality of care, less access to appropriate care, and/or less care coordination.

Calculation algorithm/measure logic S.18.
Step 1: Determine eligible denominator BCN population and number of eligible beneficiary months. Note: Eligibility criteria will be determined during testing. See "**Denominator details**" and "**Denominator exclusion**."

Step 2: Determine the number of ED visits for the eligible population. Outpatient ED visits are defined as ED visits that do not end in a hospital admission. We will identify ED visits using ED procedure codes with ED place-of-service codes.

Step 3: Calculate the ED visit rate by dividing the number of ED visits by the number of enrollee months, multiplied by 1,000, as follows:

ED visit rate = (Number of ED visits/Number of enrollee months) x 1,000.

Calculation algorithm/measure logic diagram URL or attachment S.19.
Calculation algorithm/measure logic diagram may change, as this measure is still under development.

Sampling S.20.
Not applicable

Survey/patient-reported data S.21.
Not applicable

Missing data S.22.
The approach for addressing missing data will be determined during the measure testing phase.

Data source S.23.
Administrative claims

Data source or collection instrument S.24.
Administrative claims

Data source or collection instrument (reference) S.25.
Both the numerator and denominator for this measure are based on administrative claims data.

Level of analysis S.26.
Managed care organization, accountable care organization, provider group, program, state

Care setting S.27.
Hospital/acute-care facility

Composite performance measure S.28.
Not applicable

Measure Justification Form

Project Title

Quality Measure Development and Maintenance for CMS Programs Serving Medicare-Medicaid Enrollees and Medicaid-Only Enrollees

Project Overview

The Centers for Medicare & Medicaid Services (CMS) has contracted with Mathematica Policy Research and its partners, the American Medical Association, Brandeis University, the National Committee for Quality Assurance, and Truven Health Analytics, to develop measures for the following populations of Medicaid beneficiaries:

- People eligible for both Medicare and Medicaid, or "Dual enrollees"
- People receiving long-term services and supports (LTSS) through managed care organizations
- People with substance use disorders, beneficiaries with complex needs, physical and mental health conditions, or who receive LTSS in the community, corresponding to the priority areas of the Medicaid Innovation Accelerator Program

The contract name is Quality Measure Development and Maintenance for CMS Programs Serving Medicare-Medicaid Enrollees and Medicaid-Only Enrollees. The contract number is HHSM-500-2013-13011I, Task Order # HHSM-500-T0004.

Date

Information included is current on September 2, 2016.

Measure Name

All-cause emergency department utilization rate for Medicaid beneficiaries with complex care needs and high costs (BCNs)

Type of Measure

Outcome (Access)

Importance

1a—Opportunity for Improvement

Vulnerable populations covered by Medicaid are overrepresented among high-need, high-cost patients. Medicaid beneficiaries use the Emergency Department (ED) at a rate that is almost double that of those privately insured (Garcia et al 2010). This usage is often concentrated among a small subset of Medicaid beneficiaries. For example, in Oregon, 50 percent of ED expenditures can be attributed to 3 percent of the Medicaid population (Mann 2014).

Reducing frequent ED visits among high utilizers has become an urgent priority across public and private payers; a recent preliminary scan found that over half of states have active high-utilizer initiatives (Center for Health Care Strategies 2015). Targeting high ED utilization could improve quality and result in cost savings by increasing continuity and coordination of care.

1a.1.

This is a measure of health outcomes: all-cause emergency department utilization rate for Medicaid beneficiaries with complex needs (BCNs).

1a.2.—Linkage

1a.2.1 Rationale

Decreasing all-cause ED utilization for Medicaid BCNs could indicate an increase in access to lower cost and higher quality health services, as well as the provision of effective care coordination. In turn, these processes could result in improved health-related quality of life outcomes.

1a.3.—Linkage

This is a new measure and an emerging field of focus (specifically, health care for the BCN population).

1a.3.1. Source of Systematic Review

- Clinical Practice Guideline recommendation – ***complete sections 1a.4, and 1a.7***
- US Preventive Services Task Force Recommendation – ***complete sections 1a.5 and 1a.7***
- Other systematic review and grading of the body of evidence (*e.g., Cochrane Collaboration, AHRQ Evidence Practice Center*) – ***complete sections 1a.6 and 1a.7***
- ✓ **Other – complete section 1a.8**

1a.4.—Clinical Practice Guideline Recommendation

1a.4.1. Guideline Citation

Not Applicable.

1a.4.2. Specific Guideline

Not Applicable.

1a.4.3. Grade

Not Applicable.

1a.4.4. Grades and Associated Definitions

Not Applicable.

1a.4.5. Methodology Citation

Not Applicable.

1a.4.6. Quantity, Quality, and Consistency

Not Applicable.

1a.5.—United States Preventative Services Task Force Recommendation

1a.5.1. Recommendation Citation

Not Applicable.

1a.5.2. Specific Recommendation

Not Applicable.

1a.5.3. Grade

Not Applicable.

1a.5.4. Grades and Associated Definitions

Not Applicable.

1a.5.5. Methodology Citation

Not Applicable.

1a.6.—Other Systematic Review of the Body of Evidence

1a.6.1. Review Citation

Not Applicable.

1a.6.2. Methodology Citation

Not Applicable.

1a.7.—Findings from Systematic Review of Body of the Evidence Supporting the Measure

1a.7.1. Specifics Addressed in Evidence Review

Not Applicable.

1a.7.2. Grade

Not Applicable.

1a.7.3. Grades and Associated Definitions

Not Applicable.

1a.7.4. Time Period

Not Applicable.

1a.7.5. Number and Type of Study Designs

Not Applicable.

1a.7.6. Overall Quality of Evidence

Not Applicable.

1a.7.7. Estimates of Benefit

Not Applicable.

1a.7.8. Benefits Over Harms

Not Applicable.

1a.7.9. Provide for Each New Study

Not Applicable.

1a.8.—Other Source of Evidence

1a.8.1. Process Used

The Project Team performed a targeted literature review to identify existing measures that could be adapted for the BCN population and measure gap areas. The literature review methodology included evaluation of the following resources:

- Two key CMS sources pertaining to the BCN population: "Targeting Medicaid Super-Utilizers to Decrease Costs and Improve Quality" (Mann 2013), and "Improving Care for Medicaid Beneficiaries with Complex Needs and High Costs" (Medicaid.gov)."
- Widely cited technical reports, including work by Billings et al. (2000) on preventable/avoidable ED visits, and AHRQ's Prevention Quality indicator documentation (AHRQ).
- Existing NQF-endorsed measures as well as measures currently undergoing NQF review, with priority given to measures involving dual-eligibles and/or other high-need, high-cost patients.
- Quality measures used under different CMS initiatives, including Center for Medicare & Medicaid Innovation evaluation measures and Medicaid's Core Set of Health Care Quality Measures for Adults (Medicaid.gov 2015).
- Materials that were either part of or stemmed from the Medicaid Super-Utilizer Summit convened in 2013 by the Center for Health Care Strategies and the National Governors Association, an initiative that brought together leaders from provider groups, CMS, health plans, and state agencies (Center for Health Care Strategies 2013). These materials—spanning technical reports, summaries, and slide decks—comprise a uniquely comprehensive review of lessons learned from BCN initiatives through 2013.
- Reports and publications documenting quality measures currently in use by prominent Medicaid-serving BCN programs, such as the documentation for the randomized controlled trial being conducted by the Camden Coalition of Healthcare Providers (ClinicalTrials.gov 2016).
- Reports and publications documenting data challenges pertaining to quality measurement for Medicaid BCN populations (e.g., DuBard et al. 2015; Johnson et al. 2015).

Inappropriate emergency department utilization was recently identified as a high priority measure gap in the Medicaid Adult Core Set of Quality Measures (National Quality Forum 2015). We also conducted nine expert interviews to solicit recommendations regarding promising BCN quality measures and associated measurement challenges. The experts included state and federal agency representatives, health plan representatives, researchers, and health care providers. We also established a Technical Expert Panel (TEP) and convened a meeting to advise the project team in the selection of meaningful quality measures. The TEP is comprised of federal and state agency representatives, health plan representatives, researchers, health care providers.

1a.8.2. Citation

See reference section.

1b.—Evidence to Support Measure Focus

1b.1. Rationale

There are reasons to be optimistic that ED utilization presents an opportunity for improvement among the BCN population. For example, in a simple pre-post comparison, the Camden Coalition found that the number of monthly visits to hospitals and emergency departments for high cost/high utilization patients declined by roughly 40 percent per month after beneficiaries were enrolled in their intervention and received care coordination (Green 2010). The Camden Coalition is now conducting a randomized control trial to determine if these early impression hold true under an empirically rigorous evaluation.

Okin et al. (2000) report positive results in their study of a case management intervention on 53 patients who used the ED five times or more in 12 months in the San Francisco area. Among this group of super users, active case management led to a 40 percent reduction in ED visits, median ED costs were reduced roughly 47 percent.

Lastly, the California Initiative reported that after one year of program intervention for frequent users of health services, ED visits declined by 30 percent, ED charges decreased by 17 percent, and hospital inpatient admissions fell by 14 percent (Frequent Users of Health Services Initiative 2008).

Again, these results are early impressions based on small sample sizes and simple pre-post comparisons. However, they highlight ED utilization as potentially a very important opportunity for improvement among the BCN population.

1b.2. Performance Scores

Not applicable.

1b.3. Summary of Data Indicating Opportunity

Not applicable.

1b.4. and 1b.5. Disparities

Not applicable.

1c.—High Priority

1c.1. Demonstrated High-Priority Aspect of Health Care

High resource use, patient/social consequences of poor quality, other (care coordination)

1c.3. Epidemiologic or Resource Use Data

A disproportionate share of health care spending in the United States is attributed to providing care to a small group of patients. In Medicaid, the top 1 percent of patients accounts for 25 percent of total Medicaid spending (Mann 2013). Among this top 1%, 83% have at least three chronic conditions, and over 60 percent have five or more chronic conditions (Kronick et al 2013).

1c.4. Citations

See reference section.

1c.5. Patient-Reported Outcome Performance Measure (PRO-PM)

Not applicable.

Scientific Acceptability

1.—Data Sample Description

1.1. What Type of Data was Used for Testing?

Not applicable. Scientific acceptability will be determined during the measure testing phase.

1.2. Identify the Specific Dataset

Not applicable. Scientific acceptability will be determined during the measure testing phase.

1.3. What are the Dates of the Data Used in Testing?

Not applicable. Scientific acceptability will be determined during the measure testing phase.

1.4. What Levels of Analysis Were Tested?

Not applicable. Scientific acceptability will be determined during the measure testing phase.

1.5. How Many and Which Measured Entities Were Included in the Testing and Analysis?

Not applicable. Scientific acceptability will be determined during the measure testing phase.

1.6. How Many and Which Patients Were Included in the Testing and Analysis?

Not applicable. Scientific acceptability will be determined during the measure testing phase.

1.7. Sample Differences, if Applicable

Not applicable. Scientific acceptability will be determined during the measure testing phase.

2a.2—Reliability Testing

2a2.1. Level of Reliability Testing

Not applicable. Reliability will be determined during the measure testing phase.

2a2.2. Method of Reliability Testing

Not applicable. Reliability will be determined during the measure testing phase.

2a2.3. Statistical Results from Reliability Testing

Not applicable. Reliability will be determined during the measure testing phase.

2a2.4. Interpretation

Not applicable. Reliability will be determined during the measure testing phase.

2b2—Validity Testing

2b2.1. Level of Validity Testing

Not applicable. Validity will be determined during the measure testing phase.

2b2.2. Method of Validity Testing

Not applicable. Validity will be determined during the measure testing phase.

2b2.3. Statistical Results from Validity Testing

Not applicable. Validity will be determined during the measure testing phase.

2b2.4. Interpretation

Not applicable. Validity will be determined during the measure testing phase.

2b3—Exclusions Analysis

2b3.1. Method of Testing Exclusions

Not applicable. Exclusions will be determined during the measure testing phase.

2b3.2. Statistical Results From Testing Exclusions

Not applicable. Exclusions will be determined during the measure testing phase.

2b3.3. Interpretation

Not applicable. Exclusions will be determined during the measure testing phase.

2b4—Risk Adjustment or Stratification

2b4.1. Method of controlling for differences

Not applicable.

2b4.2. Rationale why Risk Adjustment is not needed

Not applicable.

2b4.3. Conceptual, Clinical, and Statistical Methods

Not applicable.

2b4.4. Statistical Results

Not applicable.

2b4.5. Method Used to Develop the Statistical Model or Stratification Approach

Not applicable.

2b4.6. Statistical Risk Model Discrimination Statistics (e.g., c-statistic, R2)

Not applicable.

2b4.7. Statistical Risk Model Calibration Statistics (e.g., Hosmer-Lemeshow statistic)

Not applicable.

2b4.8. Statistical Risk Model Calibration—Risk decile plots or calibration curves

Not applicable.

2b4.9. Results of Risk stratification Analysis

Not applicable.

2b4.10. Interpretation

Not applicable.

2b4.11. Optional Additional Testing for Risk Adjustment

Not applicable.

2b5—Identification of statistically significant and clinically meaningful differences

2b5.1. Method

Not applicable. Differences will be determined during the measure testing phase.

2b5.2. Statistical Results

Not applicable. Results will be determined during the measure testing phase.

2b5.3. Interpretation

Not applicable. This will be determined during the measure testing phase.

2b6—Comparability of performance scores

2b6.1. Method of testing conducted to demonstrate comparability

Not applicable. Comparability will be determined during the measure testing phase.

2b6.2. Statistical Results

Not applicable. Comparability will be determined during the measure testing phase.

2b6.3. Interpretation

Not applicable

Feasibility

3a.1. How are the data elements needed to compute measure scores generated

Not applicable. Feasibility will be determined during the measure testing phase.

3b.1. Are the data elements needed for the measure as specified available electronically

Not applicable. Feasibility will be determined during the measure testing phase.

3b.3. If this is an eMeasure, provide a summary of the feasibility assessment

Not applicable. This is not an eMeasure.

3c.1. Describe what you have learned or modified as a result of testing

Not applicable. Feasibility will be determined during the measure testing phase.

3c.2. Describe any fees, licensing, or other requirements

Not applicable. No fees, licensing, or other requirements at this phase.

Usability and Use

4.1—Current and Planned Use

4a.1. Program, sponsor, purpose, geographic area, accountable entities, patients

Planned use: Public reporting, Regulatory and Accreditation Programs, Quality Improvement with Benchmarking (external benchmarking to multiple organizations), and Quality Improvement (Internal to the specific organization).

4a.2. If not publicly reported or used for accountability, reasons

Not applicable. This is a new measure.

4a.3. If not, provide a credible plan for implementation

This measure is intended for use by states, health plans, provider groups, and other interested parties to monitor and improve the quality of healthcare. Stakeholder and expert input supported this measure for public reporting and quality improvement.

4b.1. Progress on improvement

Not applicable. This is a new measure.

4b.2. If no improvement was demonstrated, what are the reasons

Not applicable. This is a new measure.

Related and Competing Measures

5—Relation to Other NQF-Endorsed Measures

5.1a. The measure titles and NQF numbers are listed here

There are no formally endorsed ED measures among BCN populations. However, the proposed ED measure is an adaptation of a NQF-endorsed measure #0173 Emergency Department Use without Hospitalization for patients in home health stays.

5.1b. If the measures are not NQF-endorsed, indicate the measure title

See above.

5a—Harmonization

5a.1. Are the measure specifications completely harmonized

This ED visit measure aligns with existing measures and quality initiatives. In particular, this measure is an adaptation of NQF-endorsed measure #0173, Emergency Department Use without Hospitalization, which is used to evaluate the quality of home health care. This ED visit measure is also similar to a measure included in the Medicaid Child Core Set (Measure AMB-CH: Ambulatory Care - Emergency Department Visits. In addition, the ED visit measure is similar to one of the four core measures requested by CMMI—Hospital ED Visit Rate that Did Not Result in Hospital Admission, by Condition—for evaluation and monitoring of Health

Care Innovation Award recipients. Finally, evaluations of BCN initiatives have used all-cause ED utilization as an outcome measure to monitor the effectiveness of interventions for high-risk populations (Bodenheimer 2015).

5a.2. If not completely harmonized, identify the differences rationale, and impact

Not applicable.

5b—Competing measures

5b.1 Describe why this measure is superior to competing measures

Unlike competing measures, this measure uses a broader, non-condition specific definition of adult Medicaid BCNs in the denominator.

Additional Information

Co.1.—Measure Steward Point of Contact

Centers for Medicare & Medicaid Services, Centers for Medicaid & CHIP Services, Roxanne Dupert-Frank, Mail Stop: S3-02-01, 7500 Security Boulevard ,Baltimore, MD, Roxanne.Dupert-Frank@cms.hhs.gov. (410) 786-9667

Co.2.—Developer Point of Contact (indicate if same as Measure Steward Point of Contact

Mathematica Policy Research, Debra Lipson, DLipson@Mathematica-Mpr.com, (202) 484-9220

Ad.1. Workgroup/Expert Panel Involved in Measure Development

A technical expert panel will be convened to discuss the development of this measure.

Ad.2. Year the Measure Was First Released

Not applicable. This measure is still under development.

Ad.3. Month and Year of Most Recent Revision

Not applicable. This measure is still under development.

Ad.4. What is your frequency for review/update of this measure?

Not applicable. This measure is still under development.

Ad.5. When is your next scheduled review/update for this measure?

Not applicable. This measure is still under development.

Ad.6. Copyright Statement

Not applicable. This measure is still under development.

Ad.7. Disclaimers

Not applicable. This measure is still under development.

Ad.8. Additional Information/Comments

Two analytic challenges inherent in BCN quality measurement pose important and potentially worrisome threats to the internal validity of this measure.

1. Regression to the mean

Regression to the mean is the most prominent analytic concern discussed across the reviewed literature. Regression to the mean is the phenomenon whereby members of a population with extreme values on a given measure at a given point in time will, for purely statistical reasons, likely exhibit less extreme measurements when they are observed in the future. For example, many programs use elevated inpatient and/or ED thresholds to identify BCNs (Bodenheimer 2013; Hong et al. 2014), but since disease severity waxes and wanes, patients with high utilization in one year may have far lower utilization and associated costs the next year. Patients with high rates of utilization are likely to have lower rates in the following years even without an intervention. For programs that fail to take this phenomenon into consideration, a simple pre-post difference will overstate the actual impact of the program. Bias arising from the regression to the mean is unfortunately prevalent among existing evaluation studies of BCN programs (Newton and Lefebvre 2015). Notably, a recent survey of 14 programs for Medicaid BCNs found that although many had dramatic pre-post utilization and cost reductions, it was impossible to parse out true program impacts from regression-to-the-mean effects (Bodenheimer 2013).

There are several potential solutions to the regression-to-the-mean problem that arises when utilization measures are used to assess progress and program effects. The ideal solution is to conduct an RCT, which is considered the gold standard for ensuring that effects are due to the program intervention and not to spurious factors or general time trends. First-generation BCN programs have not adopted RCT evaluations, with the notable exception of the Camden Coalition of Healthcare Providers. That other programs have not launched RCTs underscores how difficult it can be to fund and implement studies with this design.

The next best approach is to employ a closely matched comparison group using observational data. The related methodological literature (Smith and Todd 2005) suggests that for this design strategy to provide unbiased estimates, it is not enough for the comparison group to resemble the treatment group along observable characteristics; the

two groups must also be well-matched along lagged measures of the outcome variable/s, be drawn from the same geographic area, and have measures collected in the same manner. Meeting these conditions when evaluating BCN initiatives, however, is often impossible.

Lacking a credible comparison group strategy, stakeholders should, at minimum, use pre-period data to calculate a regression-to-the-mean benchmark. One expert stated that his state Medicaid BCN population typically shows a 30–40 percent decline in utilization over the course of a year due to regression to the mean. Similarly, Denver Health found that patients in its program showed reductions in utilization of 44 percent the year after they were identified as high utilizers (Johnson et al. 2015). Given the heterogeneity of BCN populations, the extent of the issue may differ depending on geography, patients' sociodemographic characteristics, and the medical complexity of patients' conditions. Programs should therefore aim to use *program-specific* longitudinal data to provide a reasonable regression-to-the-mean benchmark.

A final option is to define the target populations around risk models based solely on complex condition classifications/presence of chronic physical and behavioral health conditions (i.e., not based on utilization). However, this restrictive definition comes at a cost: excluding prior utilization from the BCN population definition provides worse prospective predictive ability with respect to likely future utilization (Wherry et al. 2014). Moreover, because disease severity is fluid over time, using claims-based diagnosis codes may capture acute episodes of disease flare-up, and will therefore also be affected by regression to the mean.

2. Lagged selection bias

Lagged selection bias is another important threat to the internal validity of this measure. One form of this bias arises when intervention-induced impacts influence the treatment group's composition over time. Under this scenario, pre-post outcome measurements conflate true program impacts with changes resulting from population composition shifts.

To overcome the effects of lagged selection bias, or at minimum estimate its likely magnitude, several potential solutions are available. For the ED utilization measure, validated risk-adjustment methods can be used to make the denominator population as comparable as possible over time. Medicaid agencies and program managers should also perform exploratory analyses to determine if denominator populations appear consistent over time along observable dimensions (e.g., sociodemographic, risk scores). It may be best to avoid using a measure for which differences in these observables are large. This caution applies to both pooled cross-sectional surveillance purposes and longitudinal tracking of a specific cohort.

References

Agency for Healthcare Research and Quality (AHRQ). "Prevention Quality Indicators Overview," http://www.qualityindicators.ahrq.gov/modules/pqi_resources.aspx.

Billings, J., N. Parikh, and T. Mijanovich. "Emergency Department Use: The New York Story." New York, NY: The Commonwealth Fund, November 2000.

Bodenheimer, T. "Strategies to Reduce Costs and Improve Care for High-Utilizing Medicaid Patients: Reflections on Pioneering Programs." Princeton, NJ: Center for Health Care Strategies, October 2013. Available at http://www.chcs.org/media/HighUtilizerReport_102413_Final3.pdf. Accessed December 15, 2015.

Center for Health Care Strategies (CHCS). "Programs Focusing on High-Need, High-Cost Populations." Fact Sheet. March 2015. Available at http://www.chcs.org/media/SU-Fact-Sheet_41715_Final.pdf. Accessed December 14, 2015.

Center for Health Care Strategies, Inc., "The Super-Utilizer Summit: Resources to Support Emerging Programs," February 2013, http://www.chcs.org/resource/1278/.

ClinicalTrials.gov, "Health Care Hotspotting: A Randomized Controlled Trial," Last Updated: July 11, 2016, https://clinicaltrials.gov/ct2/show/NCT02090426.

DuBard, A.C., J.J. Vann, and C.T. Jackson. "Conflicting Readmission Rate Trends in a High-Risk Population: Implications for Performance Measurement." Population Health Management, 18(5), October 2015, pp. 351–357.

Frequent Users of Health Services Initiative. "Summary Report of Evaluation Findings: A Dollars and Sense Strategy to Reducing Frequent Use of Hospital Services." Oakland, CA: California Endowment and California Healthcare Foundation, 2008.

Garcia et al. "Emergency Department Visitors and Visits: Who Used the Emergency Room in 2007?" CDC, NCHS Data Brief No 38. 2010.

Green, Steven R.; Singh, Veena; O'Byrne, William. "Hope for New Jersey's City Hospitals: the Camden Initiative." Perspectives in Health Information Management, Spring 2010.

Hong, C.S., A. Siegel, and T. Ferris. "Caring for High-Need, High-Cost Patients: What Makes for a Successful Care Management Program?" New York, NY: The Commonwealth Fund, August 2014.

Johnson, T.L., D.J. Rinehart, J. Durfee, D. Brewer, H. Batal, J. Blum, C.I. Oronce, P. Melinkovish, and P. Gabow. "For Many Patients Who Use Large Amounts of Health Care

Services, the Need Is Intense Yet Temporary." Health Affairs, vol. 34, no. 8, August 2015, pp. 1312–1319.

Kronick R, Bella M, Gilmer T, and Somers S. The Faces of Medicaid II: Recognizing the Care Needs of People with Multiple Chronic Conditions. Center for Health Care Strategies, Inc. October 2007. As referenced by the Center for Medicaid & CHIP Services (CMCS). "CMCS Informational Bulletin: Targeting Medicaid Super-Utilizers to Decrease Costs and Improve Quality." 2013.

Mann, Cindy. "CMCS Informational Bulletin: Reducing Non Urgent Use of Emergency Departments and Improving Appropriate Care in Appropriate Settings." Baltimore: Center for Medicaid & CHIP Services, January 16, 2014.

Mann, Cindy. "Targeting Medicaid Super-Utilizers to Decrease Costs and Improve Quality." Center for Medicaid and CHIP Services Informational Bulletin. Baltimore, MD: Center for Medicaid and CHIP Services, July 24, 2013.

Mann C. Medicaid and CHIP: On the Road to Reform. Presentation to the Alliance for Health Reform/Kaiser Family Foundation. March 2011. Based on FY 2008 MSIS claims data. As referenced by the Center for Medicaid & CHIP Services (CMCS). "CMCS Informational Bulletin: Targeting Medicaid Super-Utilizers to Decrease Costs and Improve Quality." 2013.

Medicaid.gov, "Improving Care for Medicaid Beneficiaries with Complex Needs and High Costs," https://www.medicaid.gov/medicaid-chip-program-information/by-topics/quality-of-care/adult-health-care-quality-measures.html

Medicaid.gov, "2015 Core Set of Adult Health Care Quality Measures for Medicaid (Adult Core Set)," https://www.medicaid.gov/medicaid-chip-program-information/by-topics/quality-of-care/adult-health-care-quality-measures.html

National Quality Forum. "Strengthening the Core Set of Healthcare Quality Measures for Adults Enrolled in Medicaid, 2015." Final Report. Measures Application Partnership. August 31, 2015.
http://www.qualityforum.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=80328

Newton, W.P., and A. Lefebvre. "Is a Strategy Focused on Super-Utilizers Equal to the Task of Health Care System Transformation? No." Annals of Family Medicine, vol. 13, no. 1, January/February 2015, pp. 8–9.

Okin, R. L., A. Boccellari, F. Azocar, M. Shumway, K. O'Brien, A. Gelb, M. Kohn, P. Harding, and C. Wachsmuth. "The Effects of Clinical Case Management on Hospital Service Use among ED Frequent Users."American Journal of Emergency Medicine 18, no. 5 (2000): 603–8.

Smith, J.A., and P.E. Todd. "Does matching overcome LaLonde's critique of nonexperimental estimators?" Journal of Econometrics, vol. 125, Issues 1-2, March-April 2005, pp. 305-353.

Wherry, L.R., M.E. Burns, and L.J. Leininger. "Using Self-Reported Health Measures to Predict High-Need Cases Among Medicaid-Eligible Adults." *Health Services Research*, vol. 49, no. 6.1, December 2014, pp. 2147–2172