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Template for Risk Adjustment Information Transfer (TRAIT)

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EXECUTIVE SUMMARY

Purpose of TRAIT. TRAIT was developed to contribute to closing the knowledge gap between developers of quality measures and developers of models to risk adjust quality measure results. TRAIT is a template that guides measure developers in the identification of patient factors potentially useful for risk adjustment of an individual quality measure. Drawing on their expert knowledge of clinical care and research literature, TRAIT can be completed by individuals and committees that develop quality measures and specifications, such as initiatives sponsored by accreditors, professional associations and government agencies. If measure-development organizations disseminate the completed template along with the proposed measures and specifications, then information on risk factors will be available for use by facilities, state mental health authorities, health plans and other organizations that implement quality measures and analyze their results

Context. Risk adjustment is a statistical process of controlling for health outcomes based on patient characteristics. Risk adjustment has become increasingly relevant to mental healthcare as efforts to assess quality have expanded. Comparing healthcare organizations based on the quality of care they provide often requires adjustment for differences in the patient populations they treat.

Relatively few mental health quality measures have established methods of risk adjustment, and these models have typically been developed long after measure development and dissemination. This lag is due in part to the differing expertise of measure developers and those who analyze measurement results. Developers have extensive knowledge about the processes and outcomes selected for measurement, but often lack the statistical skills needed for risk adjustment. On the other hand, program evaluators and researchers analyzing quality measurement results may lack detailed knowledge of clinical and organizational issues specific to individual measures.

Related Initiatives. TRAIT is focused on guiding measure developers in the identification of risk factors for individual quality measures. As such it is complementary to a number of reviews and initiatives that describe methods for risk adjustment of mental health care.

TRAIT Development Process. We developed TRAIT on the basis of a framework for risk adjustment described by Iezzoni and used broadly in health care. To select the most commonly used risk factors for mental health outcomes, we reviewed quality assessment initiatives and research studies of risk adjustment in mental healthcare published between 1980 and 2002. We categorized risk factors by type and developed a draft template for developer use. We applied the template to test measures and revised it based on the results. We then disseminated a report with TRAIT and sample completed templates to members of the Forum, other measure developers, and experts in risk adjustment for review and feedback.

Guide for Completing TRAIT. A step-by-step guide provides instructions for completing each section of TRAIT. The first section collects descriptive information about the measure and the developing organization. Subsequent sections provide checklists of potential risk factors grouped by the following categories: diagnostic, sociodemographic, clinical, and other information. Respondents are asked to check off patient characteristics that may influence measure performance for reasons outside of the control of providers or plans. In the associated columns, respondents are asked to document the source of these judgments (i.e., published research evidence, clinical experience, or other experience or evidence), references to research studies, and comments. If multiple risk factors are selected within a category, respondents are asked to identify the two most important.

Appendix: Includes a copy of TRAIT and results from application to two quality measures.

1. INTRODUCTION

Risk Adjustment. Risk adjustment is a statistical process of controlling for patient characteristics when assessing quality, costs, and clinical outcomes of healthcare. The importance of risk adjustment has grown over the past two decades as efforts to assess quality, allocate resources, and align incentives have expanded. Many groups have developed report cards to compare the performance of plans and providers on the basis of clinical outcomes or quality of care. For such comparisons to be fair, statistical adjustment of differences among patient populations, such as the complexity or severity of illness may be needed. Similarly, risk adjustment is needed for reimbursement systems to reward efficiency without penalizing providers who treat patients with greater treatment needs. This report focuses on the use of risk adjustment in quality assessment.

Role for TRAIT in Risk-Adjustment Development. Hundreds of quality measures have been proposed for mental health and substance-related care in recent years and dozens have implemented;.[1] however, few have established methods for risk adjusting results.[2] Even when available, methods for risk adjustment typically emerge long after measures have been developed.

Why is there a chasm between the development of a quality measure and development of a risk adjustment model for its results? Groups that develop quality measures have competing objectives amid limited time and resources. The importance of risk adjustment is often not recognized until later, after measures are implemented and results must be analyzed. In addition, measure developers and program evaluators have different areas of expertise. Workgroups that develop measures are typically composed of representatives from diverse stakeholder organizations, and led by clinicians, administrators, and clinical researchers.[1] Participants have extensive knowledge about the processes and outcomes selected for measurement, but often lack the advanced statistical skills needed for risk adjustment. On the other hand, program evaluators and researchers charged with analyzing measure results may have sophisticated statistical skills but often lack detailed knowledge of clinical issues specific to a measure. Ideally, individuals who develop a risk adjustment model would have access to the clinical expertise of the group developing the measure.

Accordingly, the Working Group has developed <u>TRAIT, a Template for Risk Adjustment Information Transfer</u>, to enable measure developers to briefly document patient factors specific to a quality measure in a format useful to downstream development of risk adjustment. Completion of TRAIT does not assume or require knowledge of modeling issues. Instead, TRAIT asks measure developers to draw on their clinical experience and knowledge of clinical research literature to identify patient characteristics that influence measure performance for reasons outside the control of providers or plans.

2. RELATED INITIATIVES

A review of major quality measurement initiatives in mental health and substance-related care, summarized in Table 1, found that few included risk adjustment. It should be noted that risk adjustment is not always necessary or appropriate in assessing quality of care. Some measures are intended strictly for individual use and not for comparative purposes. Others may be used to compare performance to an absolute standard of care. For example, a measure under review by the National Quality Forum counts the number of suicides on an inpatient psychiatric unit. Because the measure establishes an absolute standard (no suicides), risk adjustment for patient characteristics would not be necessary. Other measures that do not require adjustment are those assessing clinical processes that are fully under the control of the provider or those that focus on a well-defined, homogeneous denominator population.

Table 1. Risk Adjustment in Mental Health & Substance-Related Quality Measurement Initiatives

Measure Type	Risk Adjustment
Technical Process	
American College of Mental Health Administration (ACMHA): *Indicators for Behavioral Health*	None
American Managed Behavioral Healthcare Association (AMBHA): *Performance Measures for Managed Behavioral Healthcare Programs (PERMS)*	None
American Medical Association (AMA) Physician Consortium for Performance Improvement: *Depression Measures*	None
American Psychiatric Association (APA) Task Force on Quality Indicators: *Workbook of Quality Indicators*	None
Joint Commission on Accreditation of Healthcare Organizations (JCAHO): *National Library of Healthcare Indicators*	None
University of Michigan M-CARE: *CDR Quality Improvement Performance Measures*	None
Maryland Hospital Association: *Quality Indicator Project*	None
Massachusetts Medicaid: *Performance Standards*	None
National Association of Social Workers (NASW): *Clinical Indicators for Psychosocial Services in the Acute Psychiatric Hospital*	None
Washington Circle Group: *Core Performance Measures*	None
TennCare: *Partners Program Performance Measures*	None
ValueOptions: *Corporate Quality Indicators*	None
Foundation for Accountability (FACCT): *Quality Measures*	None
National Center for Quality Assurance (NCQA): *Health Plan Employer Data and Information Set (HEDIS)*	Stratification
Department of Veterans Affairs (VA), Northeast Program Evaluation Center: *National Mental Health Program Performance Monitoring System*	Multivariate Analysis
National Association of State Mental Health Program Directors Research Institute: *Performance Measurement System*	Multivariate Analysis
Veterans Health Administration/Department of Defense: *Performance Measures for the Management of Major Depressive Disorder in Adults*	Multivariate Analysis
Interpersonal Process/Patient Perceptions of Care	
Mental Health Statistics Improvement Program (MHSIP) *Consumer-Oriented Mental Health Report Card*	None
Harvard Medical School: *Experience of Care and Health Outcomes Survey (ECHO)*	Under Development
Outcomes	
McLean Hospital: *Behavior and Symptom Identification Scale (BASIS-32)*	None
University of Arkansas Center for Outcomes Research and Effectiveness (CORE): *Outcome Modules*	Multivariate Analysis

TRAIT has a narrow focus and is intended to complement exiting publications and initiatives on risk adjustment for mental health and substance-related care. Ettner[3] and Hendryx[4] have authored valuable introductions to risk adjustment methodology for mental health care. A chapter in the new edition of Iezzoni's *Risk Adjustment for Measuring Healthcare Outcomes* reviews risk adjustment issues unique to mental health.[2] Another forthcoming article provides a comprehensive review of studies of the adequacy of risk adjustment models for mental health outcomes.[5] Hendryx has developed a toolkit, to be published by the Evaluation Center@HSRI, providing program evaluators with a comprehensive approach to risk adjustment (http://www.tecathsri.org/toolkits.asp). The toolkit addresses issues applicable to a wide range of quality measures and outcomes, while TRAIT captures patient risk factors specific to individual measures. Another valuable resource is a paper by Phillips et al., reviewing studies of the course of psychiatric disorders among children and adolescents and documenting patient factors significantly associated with outcome.[6] The paper provides an excellent starting point for risk adjusting outcomes in child and adolescent population.

3. TRAIT DEVELOPMENT PROCESS

Overview. We developed TRAIT on the basis of the framework for risk adjustment described by Iezzoni[7] and applied to mental health care by Ettner, Hendryx and others.[2, 4, 5, 8] To categorize risk factors and select the most common significant factors for inclusion in the template, we reviewed research studies of risk adjustment in mental healthcare as well as major quality assessment initiatives. A draft template was developed on the basis of pilot testing and revised following review by Forum members, other measure developers, and experts in risk adjustment methods.

Literature Review. To identify risk factors commonly used in risk adjustment models in mental healthcare, we reviewed all studies of risk adjustment in mental health and substance-related care published between 1980 and 2002 as well as unpublished reports of major quality assessment initiatives. Table 2 summarizes the results of the review. Models are grouped by outcome: costs, utilization, and clinical quality/outcomes. For each model, we describe the source (reference), clinical population (age group, setting, conditions, and utilization status), dependent variable (process or outcome), and categories of risk factors included (clinical, sociodemographic or other).

Table 3 provides information on significant risk factors from studies included in Table 2. We excluded risk factors related to current treatment, which are rarely included in contemporary adjustment models due to concerns about the influence of unintended incentives on clinical practice. Arguments for and against the use of treatment factors are well described elsewhere.[5, 9, 10]

Drafting. Based on the framework and review described above, we developed risk-factor categories and selected the most common significant risk factors in each category for inclusion in the template. The template also included opportunities for respondents to identify the basis for their risk factor selection (i.e., published research evidence, clinical experience, other evidence), related citations, and their assessment of the most important risk factors in each category. To guide respondents through the completion of TRAIT, we developed a User's Guide (below).

Review and Pilot Testing. The draft template was reviewed by the Methods Working Group of the Forum of Behavioral Health Performance Measures, members of other Forum Working Groups, and SAMHSA staff as well as external reviewers, including members of national organizations developing quality measures and experts in risk adjustment methods. TRAIT was pilot tested on several quality measures, including process measures (HEDIS Acute Phase Antidepressant Management) and outcome measures (BASIS-32). In response to review and pilot testing the template and user's guide were subsequently revised.

Table. 2 Review of Risk Adjustment Models for Mental Health and Substance Use Disorders

Source	Population	Outcome(s)	Clinical	Sociodemographic	Other
COSTS					
Ettner[11]	Adults and children w/health care utilization	Costs	X	X	
Ettner[3]	Adult and child health plan enrollees	Costs	X	X	
Ettner[12]	Health care utilizers	Costs	X	X	
Leslie[13]	Adults w/MH/SUD	Costs	X		X
Chisholm[14]	Residential-care adults w/ MH/SUD	Costs	X	X	X
Knapp[15]	Long-stay inpatient adults w/ MH	Costs	X	X	X
DeLiberty[16]	Adults w/SPMI or chronic addiction or children w/SED	Costs	X	X	X[16]
Kapur[17]	Adults w/MH/SUD	Costs	X	X	X
Fries[18]	Long-stay adult inpatients w/ MH/SUD	Inpatient Costs	X		X
Hirdes[19]	Adult inpatients w/ MH/SUD	Inpatient Costs	X	X	X
UTILIZATION					
Horn[20]	Acute inpatients w/MH	LOS	X		
Wellock[21]	Inpatients w/MH/SUD	LOS	X		
McCrone[22]	Inpatients w/ MH/SUD or neurological disorders	LOS	X		
Gordon[23]	Inpatients w/ MH/SUD	LOS	X	X	
Durbin[24]	Adult inpatients w/psychotic or depressive disorders	LOS	X	X	
Lyons[25]	Inpatients w/MH/SUD	LOS	X		X
Stoskopf[9]	Inpatients w/schizophrenia or affective disorder	LOS	X	X	X
English[26]	Inpatients w/MH/SUD	LOS	X	X	X
Ashcraft[27]	Inpatients w/MH/SUD	LOS	X	X	X
Schumacher[28]	Inpatients w/MH/SUD	LOS	X	X	X
Cyr[29]	Inpatients w/MH/SUD	LOS	X	X	X
Stoskopf[10]	Inpatients w/schizophrenia or affective disorder	LOS	X	X	X[10]
Taube[30]	Inpatients w/MH/SUD	LOS	X	X	X
Taube[31]	Inpatients w/ MH/SUD	LOS	X	X	X
Kiesler[32]	Inpatients w/MH/SUD	LOS	X	X	X
Choca[33]	Inpatients w/MH/SUD	LOS	X	X	X
Wood[34]	Adult outpatients w/MH/SUD	Outpatient Visits	X	X	X
Peterson[35]	Inpatients w/SUD	Readmission	X	X	X
Phibbs[36]	Inpatients w/SUD	Readmission	X	X	X
Essock-Vitale[37]	Inpatients w/MH/SUD	LOS, Inpatient Nursing Hours	X	X	X
Gruber[38]	Inpatients w/ MH/SUD	LOS, Readmission	X	X	X
Creed[39]	Inpatients w/ MH/SUD	LOS, Annual Inpatient Days	X	X	X
Mitchell[40]	Inpatients w/MH/SUD	Inpatient Costs, LOS	X	X	
Rosen[41]	Adults w/SUD	Outpatient Visits, Costs	X	X	
CLINICAL QUALITY / OUTCOMES					
Hendryx[42]	Adult outpatients w/MH/SUD	Functioning	X	X	
Banks[43]	Adults in community-based programs w/ criminal justice involvement	Post –treatment rates of criminal justice involvement	X	X	X
Banks[44]	Adults in community-based programs w/SPMI	Post-treatment hospitalization rates			X
Kramer[45]	Outpatients w/depression	Functioning, Symptom Severity	X	X	
Hendryx[46]	Adult outpatients w/MH/SUD	Functioning, Satisfaction, Quality of Life	X	X	
Dow[47]	Inpatient disabled or in-crisis adults w/ MH/SUD	Functioning, Satisfaction	X	X	X
VA Northeast Program Evaluation Center	Adult veterans with MH/SUD	Timeliness, Continuity, Intensity of Treatment	X	X	X
NASMHPD Research Institute	Adult and child inpatients	Readmission, Restraint, Seclusion	X	X	X

Table 3: Risk Factors Used in Risk Adjustment Models

Diagnostic & Clinical Data

Primary Psychiatric Disorder
- DSM-IV Axis I or II primary diagnosis
- Diagnostic category (e.g., affective disorders, substance-use disorders, severe mental illnesses)
- Other diagnosis classification systems (e.g., Diagnosis Related Groups (DRG), Hierarchical Coexisting Conditions)

Comorbid Disorders
- Additional mental disorders (Axis I)
- Concurrent substance-use disorders (Axis I)
- No. of Axis I disorders
- Concurrent personality disorder (Axis II)
- Concurrent mental retardation (Axis II)
- DSM-IV Axis III medical disorders
- Comorbidity indices from diagnosis or pharmacy claims

Symptom Severity
- Disorder specific symptom scales (e.g., Hamilton Depression Scale)
- Fifth digit DSM codes indicating severity or chronicity
- Across-disorder symptom scales (e.g., Symptom Checklist-90 (SCL-90))
- Global Assessment of Functioning (Axis V)
- General health status measures (e.g., SF-36)
- Symptoms and associated behaviors reflecting safety (e.g., homicidal or suicidal ideation, aggressiveness, assaults, suicide attempts)
- Personality assessment scales (e.g., Millon Clinical Multiaxial Inventory)

Functional Impairment
- Global Assessment of Functioning (Axis V)
- Score on other functioning scales (e.g., Life Skills Profile)
- Measures of specific domains of functioning (self-care, in-community, Activities of Daily Living, Mini-Mental Status Exam)
- Measures of days worked or absent from work
- Measures of criminal justice involvement
- Level of clinical care

Other
- General health status measures (e.g., SF-36)
- Composite measures of mental health symptoms and functioning (e.g., basis-32)
- Indicators of chronicity/recurrence (e.g., no. prior episodes, time since onset of illness)
- Status on discharge from inpatient admission (e.g., discharge to home vs. other; discharge against medical advice; elopement)

Sociodemographic Data

Basic
- Age
- Gender
- Race/ethnicity
- Marital status
- Education
- Income (including proxies for low income, e.g., Medicaid eligibility)
- Socioeconomic status
- Geographic region

Employment
- Employment status (e.g., unemployed, part-time, full-time)
- Occupation

Housing
- Independent residence
- Residence with family
- Group homes with or without staff
- Shelter
- Homeless
- Family or other caregivers providing support

Table 3: Risk Factors Used in Risk Adjustment Models

Other Data
<u>**Prior utilization**</u> • No. hospitalizations • No. outpatient visits • Time in hospital • Days in community <u>**Legal**</u> • Legal status (e.g., current legal system involvement) • Prior arrests <u>**Other**</u> • Disability status (e.g., service related, public benefit eligibility) • Measures of available social support (e.g., case manager ratings, PSI score) • Axis-IV information

4. GUIDE FOR COMPLETING TRAIT

Risk adjustment is not a "one size fits all" procedure. Results on each quality or outcome measure may be influenced by a unique configuration of risk factors. Accordingly, TRAIT evaluates the risk-adjustment needs of an *individual* measure. Different types of measures can be assessed with TRAIT, including measures of structure, process, and outcome. It can be used for measures of technical processes as well as measures of interpersonal processes. It can be applied to measures that draw on data from administrative databases, medical records or patient surveys. Considerations in applying TRAIT to a measure include:

1) An intended use of the measure is to compare plans, facilities, or providers on an aspect of quality of care

2) A process assessed by the measure is at least partially influenced by the patient, i.e., not fully under the provider's control

3) Variation in measure results is associated with one or more patient characteristics

4) The prevalence of these characteristics vary across patient samples or populations to which the measure is applied

TRAIT is intended for use by workgroups or committees that develop quality measures. Participants typically have expertise in clinical research, clinical care, and measurement methodology. Participants should fill out the template based on their knowledge and expertise.

Four types of data are collected in TRAIT. The first section collects descriptive information about the measure and the developing organization. Subsequent sections list potential risk factors, grouped by the following categories: diagnostic, sociodemographic, clinical, and other information. Respondents should document risk factors associated with measure results by checking the box to the left of the risk factor. They should then indicate the basis of their selection by identifying the source of their judgment as follows:

R = published research evidence

C = clinical experience

O = other experience or evidence

If published research evidence is cited as the source of a risk factor, provide a reference to research studies. Space is also provided for other comments regarding the risk factor or source. Because for some measures many potential risk factors could be identified, respondents are asked identify the two most important in each category. This informs organizations that implement measures and must make decisions regarding how much additional data to collect.

The paragraphs below address issues specific to the completion of individual sections of the template. Illustrative examples are provided from completed copies of TRAIT (provided in full in the Appendix).

Measure Summary. Fill out the name of the measure and developing organization in the designated spaces. Under specifications, provide an operational description of the measure with as much precision as space permits. For example, for a process measure assessing the conformance rate to a clinical guideline, provide a summary of the measure numerator and denominator. For a more complex instrument (e.g., a multi-item outcome assessment) an overview of the instrument can suffice. See examples below.

Example: HEDIS Antidepressant Measure

1. Measure Summary
Organization Name
National Committee for Quality Assurance (NCQA)
Measure Name
Antidepressant Medication Management- Effective Acute Phase Treatment
Measure Specifications
Denominator: Members age 18 years and older as of the 120th day of the measurement year who were diagnosed with a new episode of depression and treated with antidepressant medication.
Numerator: Those members from the denominator with acute phase (12-week) treatment with antidepressant medication.

Example: BASIS-32

1. Measure Summary
Organization Name
McLean Hospital
Measure Name
The Behavior and Symptom Identification Scale (BASIS-32) [48]
Measure Specifications
32 items yield scores in 5 domains: depression and anxiety, psychosis, impulsive and addictive behavior, relation
to self and others, and daily living and role functioning

Primary Psychiatric Disorder. Risk adjustment by primary diagnosis may be needed when comparing measurement results from diagnostically heterogeneous patient samples. For example, research has found that clinical outcomes on the BASIS-32 differ significantly by primary diagnosis for both inpatients and outpatients.[49, 50] Comparisons of outcomes across facilities have employed stratification [51] and or multivariate risk adjustment.[45]

In completing this section of TRAIT, questions to consider include:

- Would results on the quality measure differ by clinical diagnosis for reasons outside of clinicians' control?

- Are there specific diagnoses that should be included in a risk adjustment model? Should these be specified at the level of the individual diagnosis or are broader categories sufficient, such as affective, psychotic, anxiety, and substance-use disorders?

- Are there any research studies that have examined the association between diagnosis and performance on the measure?

- Note that some measures obviate the need for risk adjustment by primary diagnosis by focusing on a single diagnostic group. An example is the HEDIS measure of acute phase treatment of acute depression.

Example: BASIS-32

2. Diagnosis	Source	Comments / References	Rating
☑ Primary Psychiatric or Substance-Use Disorder	R	Domain-specific scores were significantly associated with inpatient diagnoses of depression and anxiety, substance use, and psychotic disorders (Eisen et al., Hosp & Comm Psych, 1994). Domain-specific scores were significantly associated with outpatient diagnoses of depression and anxiety disorders (Eisen et al., The Evaluation Center@HSRI, 1997). The overall score was significantly associated with depressive, bipolar, and psychotic disorders (Hawthorne, Psych Serv, 1999).	

Comorbid Disorders. Comorbid conditions (i.e., concurrent with the primary psychiatric or substance-use disorder) may also influence measure results. Such comorbidities include additional psychiatric disorders (Axis I), substance use disorders (Axis I), personality disorders (Axis II), and medical conditions (Axis III). Substance abuse among individuals with schizophrenia provides an illustrative example. 30-50% of individuals with schizophrenia have comorbid substance-related problems. The presence of substance abuse in this population is associated with worse treatment compliance and outcomes.[52] A number of strategies have been developed to quantify the severity of comorbid conditions, for example, using the number of distinct disorders, or for medical comorbidities counting the number of organ systems with active disorders. Rating scales drawing on diagnostic data from administrative or pharmacy claims have been developed to characterize severity of medical comorbidity as well.[53]

In addition to the questions raised in the previous section, issues to consider when filling out this section include:

- Is the comorbid condition relatively common in the population measured? Rare comorbidities may be better addressed in ways other than risk adjustment.

- Should comorbidities be addressed via individual diagnoses, via categories relevant to specific populations (e.g., cognitive disorders in the elderly or learning disorders in children), or through aggregate metrics as described above?

Example: HEDIS Measure of Acute Depression Treatment

Comorbid Disorders			
☐ Comorbid Psychiatric Disorders		No significant relationships existed between comorbid Axis I psychiatric disorders and completion of acute phase (8-week) treatment (Tedlow, Biol Psychiatry, 1996).	
☑ Comorbid Substance Use Disorders	C	Clinical experience suggests a high rate of comorbid substance abuse in depression and poor outcomes of depression treatment resulting from poor compliance associated with substance use.	
☑ Comorbid Personality Disorders	R	Significant relationships existed between (i) histrionic and narcissistic personality disorders and (ii) completion of acute phase (8-week) treatment (Tedlow, Biol Psychiatry, 1996).	

Example: BASIS-32

Comorbid Disorders			
☑ Comorbid Substance Use Disorders	R	Adjustment for substance abuse was applied to the overall score and domain subscales but statistical significance was not reported (Eisen, Psych Serv, 2000). Adjustment was applied to the overall score but statistical significance was not reported (Dickey, Arch Gen Psych, 2003).	

Sociodemographic Risk Factors. Sociodemographic characteristics—including age, gender, socioeconomic status, education—may influence results on quality measures. Effects may be measure-specific, for example, age is directly associated with patient satisfaction but inversely associated with general health status.[2, 54] Marital status may reflect the availability of social support, a factor that can influence measures of treatment adherence or community tenure. A patient's residential status—e.g., homelessness, residential treatment programs, living with family, or living independently—can similarly influence these processes of care.

Not all sociodemographic characteristics may be appropriate for risk adjustment. For example, minority racial or ethnic status is negatively associated with results on a number of quality measures.[55] However, the objectives of a QA/QI initiative may include identifying and eliminating racial/ethnic disparities in care. Risk adjusting for racial/ethnic status would remove this factor from comparative analyses and would be inconsistent with the goal of eliminating disparities. Accordingly, in addition to questions raised in the previous sections, issues to consider here include:

- Is controlling for a sociodemographic risk factor consistent with the measure's purpose? Or would risk adjustment for this attribute obscure disparities that are intended to be addressed by QI activities?

In the example presented previously of the HEDIS depression measure, age, gender, and education have been shown to be significantly related to medication adherence.[56, 57] For the BASIS-32, age, gender, marital status, education, and geographic region have all been controlled for in various studies, but the statistical significance of these adjustments have not been reported.[51, 58]

Example: HEDIS Measure of Acute Depression Treatment

3. Sociodemographic	Source	Comments/References	Rating
☑ Age	R	18-29 year olds were less likely than 30-39 years to complete a 5-month treatment period (Kerr, J Qual Improv, 2000).	1
☑ Gender	R	Males were more likely than females to complete a 5-month treatment period (Kerr et al., J Quality Improvement, 2000). No significant relationship existed between gender and filling 3 months antidepressant prescriptions at adequate dosage (Katon, Med Care, 1992).	
☐ Marital Status		No significant relationship existed between marital status and filling 3 months antidepressant prescriptions at adequate dosage (Katon, Med Care, 1992).	
☑ Education	R	Better-educated patients were more likely to complete a 12-week acute phase of antidepressants and psychosocial treatment (Last, J Clin Psychiatry, 1985). No significant relationship existed between having a high school education or less and filling 3 months antidepressant prescriptions at adequate dosage (Katon, Med Care, 1992).	2
☐ Socioeconomic Status		No significant relationship existed between having a household income below $15,000 and filling 3 months antidepressant prescriptions at adequate dosage (Katon, Med Care, 1992).	
☐ Employment Status		No significant relationship existed between employment status and filling 3 months antidepressant prescriptions at adequate dosage (Katon, Med Care, 1992).	

Example: BASIS-32

3. Sociodemographic	Source	Comments/References	Rating
☑ Age	R	Adjustment was applied to the overall score and domain subscales but statistical significance was not reported (Eisen, Psychotherapy, 1996). Adjustment was applied to the overall score but statistical significance was not reported (Dickey, Arch Gen Psych, 2003).	1
☑ Gender	R	Adjustment was applied to the overall score and domain subscales but statistical significance was not reported (Eisen, Psychotherapy, 1996). Adjustment was applied to the overall score but statistical significance was not reported (Dickey, Arch Gen Psych, 2003).	2
☑ Marital Status	R	Adjustment was applied to the overall score but statistical significance was not reported (Dickey, Arch Gen Psych, 2003).	
☑ Education	R	Adjustment was applied to the overall score but statistical significance was not reported (Dickey, Arch Gen Psych, 2003).	
☑ Geographic Region	R	Adjustment was applied to the overall score and domain subscales but statistical significance was not reported (Dickey et al., Arch Gen Psych, 2003). (Eisen, Psychotherapy, 1996).	

Clinical Risk Factors. One of most potentially important patient factors in risk adjustment of quality or outcomes of care is the severity of the patient's illness. Patients with severe and persistent forms of a condition are likely to show less improvement on outcome measures than patients with acute, episodic variants. More severely ill patient may be less likely to adhere to treatment or demonstrate continuity of care, regardless of the quality of care provided.

Several different dimensions of illness severity are commonly assessed including mental health symptoms, functional impairment, general health status, and chronicity of illness. As described above, diagnosis is the most commonly used clinical risk factor because it is meaningful and commonly available, but diagnosis codes reveal little about the severity of illness. Even when fifth digit codes classify subtypes by severity, such as for depression, they are frequently incomplete.[2] Some risk adjustment initiatives have attempted to use other administrative data to represent severity, such level of care prior to inpatient admission or planned discharge (vs. against medical advice vs. elopement), but have obtained mixed results.[5]

There are an abundance of well designed and tested instruments that assess the varied domains of illness severity.[59, 60] These instruments are typically either administered by clinicians or directly by patients. In the absence of constraints on resources for data collection, such rating scales would usefully contribute to risk adjustment for routine quality assessment. The BASIS-32 and the University of Arkansas Outcome Modules have been used to compare clinical outcomes among health plans and facilities, adjusting for initial illness severity on the measure.[45, 58] General health status is often measured using the SF-36, with outcomes on the measure adjusted for initial severity.[45] Data collected from medical records or directly from patients can inform adjustment by the chronicity or recurrence of illness.

Severity of depression has been shown to influence results on the HEDIS depression measure, illustrated below.[57] Adjustment of the severity of depression, aggression, and functional impairment have been used in applications of the BASIS-32, though the statistical significance of these risk factors was not presented.[58]

Example: HEDIS Measure of Acute Depression Treatment

4. Clinical	Source	Comments / Instruments / References	Rating
☑ Symptom Severity	R	Patients who were more severely depressed based on the Hamilton Depression Scale were more likely to complete a 12-week acute phase antidepressant treatment period (Last, J Clin Psychiatry, 1985). Patients with melancholic (vs. non-melancholic) depression were more likely to complete a 12-week acute phase antidepressant treatment period (Last, J Clin Psychiatry, 1985). No significant relationship existed between having high depression based on SCL-90 scores (.75+) and filling 3 months antidepressant prescriptions at adequate dosage (Katon, Med Care, 1992). No significant relationship existed between having high somatization based on SCL-90 scores (.75+) and filling 3 months antidepressant prescriptions at adequate dosage (Katon, Med Care, 1992).	

Example: BASIS-32

4. Clinical	Source	Comments / Instruments / References	Rating
☑ Symptom Severity	R	Adjustments for depression and aggression were applied to the overall score but statistical significance was not reported (Dickey, Arch Gen Psych, 2003).	
☑ Functional Impairment	R	Adjustment for functional impairment was applied to the overall score but statistical significance was not reported (Dickey, Arch Gen Psych, 2003).	

4.5 Other Risk Factors. Prior utilization can be obtained from administrative databases and has been used to represent chronicity or recurrence of illness. Pre-treatment legal status (e.g., number of prior arrests) has been used for risk adjustment in studies that assess criminal justice outcomes among individuals with mental illness.[43] Medicaid or Medicare eligibility on the basis of psychiatric disability has been used for risk adjustment purposes, as has service-related disability in analyses of war veterans.[8, 13] Social support has been included in risk adjustment models through sociodemographic indicators such as marital status or through direct measurement using instruments such as the Psychiatric Severity Index (PSI).[20] Risk factors related to current treatment are rarely included in contemporary adjustment models due to concerns about the influence of unintended incentives on clinical practice.

Relevant to the HEDIS depression measure, as illustrated below, previous utilization of antidepressants has been shown to predict treatment adherence. Case manager ratings of social support have been shown to predict patient outcomes on the BASIS-32 and prior utilization and level of care have both been applied to outcome studies.

Example: HEDIS Measure of Acute Depression Treatment

5. Other	Source	Comments/References	Rating
☑ Prior Utilization	R	Previous use of antidepressants was associated with completion of the acute phase treatment period (Robinson P, J Fam Pract, 1995). No significant relationship existed between being admitted to a hospital before or after treatment and filling 3 months antidepressant prescriptions at adequate dosage (Katon, Med Care, 1992).	

Example: BASIS-32

5. Other	Source	Comments/References	Rating
☑ Prior Utilization	R	Adjustment for prior psychiatric hospital admissions was applied to the overall score but statistical significance was not reported (Dickey, Arch Gen Psych, 2003).	1
☑ Social Support	R	Case manager ratings of client's social support network were significantly associated with relation to self/others subscale (Klinkenberg, Psych Serv, 1998).	
☑ Level of Care	R	Adjustment was applied to the overall score and domain subscales but statistical significance was not reported (Eisen, Psychotherapy, 1996; Eisen, The Evaluation Center@HSRI, 1997).	2

5. CONCLUSION

Risk adjustment has gained importance in mental healthcare as efforts to measure quality of care have expanded. TRAIT is a template that guides measure developers in the identification of patient factors potentially useful for risk adjustment of an individual quality measure. Drawing on their expert knowledge of clinical care and research literature, TRAIT can be completed by individuals and committees that develop quality measures and specifications, such as initiatives sponsored by accreditors, professional associations and government agencies. If measure-development organizations disseminate the completed template along with the proposed measures and specifications, then information on risk factors will be available for use by facilities, state mental health authorities, health plans and other organizations that implement quality measures and analyze their results.

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APPENDIX

    A. TRAIT

    B. Sample Completed TRAIT (HEDIS Antidepressant Measure)

    C. Sample Completed TRAIT (BASIS-32)

_____

Template for Risk Adjustment Information Transfer (TRAIT)

_____

The goal of TRAIT is identify patient factors that influence performance on a quality measure that should be adjusted for statistically when comparing healthcare providers or plans. These are characteristics of patients outside of the control of providers or plans. The accompanying guide provides additional information for completing this form.

1. Measure Summary

Organization Name	
Measure Name	
Measure Specifications	

In the following sections, please document patient factors that may influence performance on the measure described above. Check the box adjacent to each appropriate risk factor. In the Source column, identify the source of this judgment as follows: R = published research evidence; C = clinical experience; O = other experience or evidence. In the next column, if published research evidence is cited as the source, provide a reference to research studies. In cases where multiple risk factors are selected within a single category, identify under Rating the two most important factors in that category by 1 and 2.

2. Diagnosis	Source	Comments / References	Rating
☐ Primary Psychiatric or Substance-Use Disorder			
Comorbid Disorders			
☐ Comorbid Psychiatric Disorders			
☐ Comorbid Substance Use Disorders			
☐ Comorbid Personality Disorders			
☐ Comorbid Medical Disorders			
Other			

3. Sociodemographic	Source	Comments/References	Rating
☐ Age			
☐ Gender			

	Source	Comments / Instruments / References	Rating
☐ Marital Status			
☐ Education			
☐ Socioeconomic Status			
☐ Geographic Region			
☐ Employment Status			
☐ Housing Status			
Other			

4. Clinical	Source	Comments / Instruments / References	Rating
☐ Symptom Severity			
☐ Functional Impairment			
☐ General Health Status			
☐ Chronicity / Recurrence			
Other			

5. Other	Source	Comments/References	Rating
☐ Prior Utilization			
☐ Legal Status			
☐ Disability Status			
☐ Social Support			

Template for Risk Adjustment Information Transfer (TRAIT)

The goal of TRAIT is identify patient factors that influence performance on a quality measure that should be adjusted for statistically when comparing healthcare providers or plans. These are characteristics of patients outside of the control of providers or plans. The accompanying guide provides additional information for completing this form.

1. Measure Summary
Organization Name
National Committee for Quality Assurance (NCQA)
Measure Name
Antidepressant Medication Management- Effective Acute Phase Treatment
Measure Specifications
Denominator: Members age 18 years and older as of the 120th day of the measurement year who were diagnosed with a new episode of depression and treated with antidepressant medication.
Numerator: Those members from the denominator with acute phase (12-week) treatment with antidepressant medication.

In the following sections, please document patient factors that may influence performance on the measure described above. Check the box adjacent to each appropriate risk factor. In the Source column, identify the source of this judgment as follows:
R = published research evidence; C = clinical experience; O = other experience or evidence. In the next column, if published research evidence is cited as the source, provide a reference to research studies. In cases where multiple risk factors are selected within a single category, identify in the column, Rating, the two most important factors in that category (1 or 2).

2. Diagnosis	Source	Comments / References	Rating
☐ Primary Psychiatric or Substance-Use Disorder			
Comorbid Disorders			
☐ Comorbid Psychiatric Disorders		No significant relationships existed between comorbid Axis I psychiatric disorders and completion of acute phase (8-week) treatment (Tedlow, Biol Psychiatry, 1996).	
☑ Comorbid Substance Use Disorders	C	Clinical experience suggests a high rate of comorbid substance abuse in depression and poor outcomes of depression treatment resulting from poor compliance associated with substance use.	
☑ Comorbid Personality Disorders	R	Significant relationships existed between (i) histrionic and narcissistic personality disorders and (ii) completion of acute phase (8-week) treatment (Tedlow, Biol Psychiatry, 1996).	
☐ Comorbid Medical Disorders			
Other			

3. Sociodemographic	Source	Comments/References	Rating
☑ Age	R	18-29 year olds were less likely than 30-39 years to complete a 5-month treatment period (Kerr, J Qual Improv, 2000).	1
☑ Gender	R	Males were more likely than females to complete a 5-month treatment period (Kerr et al., J Quality Improvement, 2000). No significant relationship existed between gender and filling 3 months antidepressant prescriptions at adequate dosage (Katon, Med Care, 1992).	
☐ Marital Status		No significant relationship existed between marital status and filling 3 months antidepressant prescriptions at adequate dosage (Katon, Med Care, 1992).	
☑ Education	R	Better-educated patients were more likely to complete a 12-week acute phase of antidepressants and psychosocial treatment (Last, J Clin Psychiatry, 1985). No significant relationship existed between having a high school education or less and filling 3 months antidepressant prescriptions at adequate dosage (Katon, Med Care, 1992).	2
☐ Socioeconomic Status		No significant relationship existed between having a household income below $15,000 and filling 3 months antidepressant prescriptions at adequate dosage (Katon, Med Care, 1992).	
☐ Geographic Region			
☐ Employment Status		No significant relationship existed between employment status and filling 3 months antidepressant prescriptions at adequate dosage (Katon, Med Care, 1992).	
☐ Housing Status			
Other			

4. Clinical	Source	Comments / Instruments / References	Rating
☑ Symptom Severity	R	Patients who were more severely depressed based on the Hamilton Depression Scale were more likely to complete a 12-week acute phase antidepressant treatment period (Last, J Clin Psychiatry, 1985). Patients with melancholic (vs. non-melancholic) depression were more likely to complete a 12-week acute phase antidepressant treatment period (Last, J Clin Psychiatry, 1985). No significant relationship existed between having high depression based on SCL-90 scores (.75+) and filling 3 months antidepressant prescriptions at adequate dosage (Katon, Med Care, 1992). No significant relationship existed between having high somatization based on SCL-90 scores (.75+) and filling 3 months antidepressant prescriptions at adequate dosage (Katon, Med Care, 1992).	
☐ Functional Impairment			
☐ General Health Status			

☐ Chronicity / Recurrence			
Other			

5. Other	Source	Comments/References	Rating
☑ Prior Utilization	R	Previous use of antidepressants was associated with completion of the acute phase treatment period (Robinson P, J Fam Pract, 1995). No significant relationship existed between being admitted to a hospital before or after treatment and filling 3 months antidepressant prescriptions at adequate dosage (Katon, Med Care, 1992).	
☐ Legal Status			
☐ Disability Status			
☐ Social Support			

Template for Risk Adjustment Information Transfer (TRAIT)

_____

The goal of TRAIT is identify patient factors that influence performance on a quality measure that should be adjusted for statistically when comparing healthcare providers or plans. These are characteristics of patients outside of the control of providers or plans. The accompanying guide provides additional information for completing this form.

1. Measure Summary

Organization Name
McLean Hospital
Measure Name
The Behavior and Symptom Identification Scale (BASIS-32)
Measure Specifications
32 items yield scores in 5 domains: depression and anxiety, psychosis, impulsive and addictive behavior, relation
to self and others, and daily living and role functioning

In the following sections, please document patient factors that may influence performance on the measure described above. Check the box adjacent to each appropriate risk factor.   In the Source column, identify the source of this judgment as follows:
R = published research evidence; C = clinical experience; O = other experience or evidence. In the next column, if published research evidence is cited as the source, provide a reference to research studies. In cases where multiple risk factors are selected within a single category, identify in the column, Rating, the two most important factors in that category (1 or 2).

2. Diagnosis	Source	Comments / References	Rating
☑ Primary Psychiatric or Substance-Use Disorder	R	Domain-specific scores were significantly associated with inpatient diagnoses of depression and anxiety, substance use, and psychotic disorders (Eisen et al., Hosp & Comm Psych, 1994). Domain-specific scores were significantly associated with outpatient diagnoses of depression and anxiety disorders (Eisen et al., The Evaluation Center@HSRI, 1997). The overall score was significantly associated with depressive, bipolar, and psychotic disorders (Hawthorne, Psych Serv, 1999).	
Comorbid Disorders			
☐ Comorbid Psychiatric Disorders			
☑ Comorbid Substance Use Disorders	R	Adjustment for substance abuse was applied to the overall score and domain subscales but statistical significance was not reported (Eisen, Psych Serv, 2000). Adjustment was applied to the overall score but statistical significance was not reported (Dickey, Arch Gen Psych, 2003).	
☐ Comorbid Personality Disorders			
☐ Comorbid Medical Disorders			
Other			

3. Sociodemographic	Source	Comments/References	Rating
☑ Age	R	Adjustment was applied to the overall score and domain subscales but statistical significance was not reported (Eisen, Psychotherapy, 1996). Adjustment was applied to the overall score but statistical significance was not reported (Dickey, Arch Gen Psych, 2003).	1
☑ Gender	R	Adjustment was applied to the overall score and domain subscales but statistical significance was not reported (Eisen, Psychotherapy, 1996). Adjustment was applied to the overall score but statistical significance was not reported (Dickey, Arch Gen Psych, 2003).	2
☑ Marital Status	R	Adjustment was applied to the overall score but statistical significance was not reported (Dickey, Arch Gen Psych, 2003).	
☑ Education	R	Adjustment was applied to the overall score but statistical significance was not reported (Dickey, Arch Gen Psych, 2003).	
☐ Socioeconomic Status			
☑ Geographic Region	R	Adjustment was applied to the overall score and domain subscales but statistical significance was not reported (Dickey et al., Arch Gen Psych, 2003). (Eisen, Psychotherapy, 1996).	
☐ Employment Status			
☐ Housing Status			
Other			

4. Clinical	Source	Comments / Instruments / References	Rating
☑ Symptom Severity	R	Adjustments for depression and aggression were applied to the overall score but statistical significance was not reported (Dickey, Arch Gen Psych, 2003).	
☑ Functional Impairment	R	Adjustment for functional impairment was applied to the overall score but statistical significance was not reported (Dickey, Arch Gen Psych, 2003).	
☐ General Health Status			
☐ Chronicity / Recurrence			
Other			

5. Other	Source	Comments/References	Rating
☑ Prior Utilization	R	Adjustment for prior psychiatric hospital admissions was applied to the overall score but statistical significance was not reported (Dickey, Arch Gen Psych, 2003).	1

☐ Legal Status			
☐ Disability Status			
☑ Social Support	R	Case manager ratings of client's social support network were significantly associated with relation to self/others subscale (Klinkenberg, Psych Serv, 1998).	
☑ Level of Care	R	Adjustment was applied to the overall score and domain subscales but statistical significance was not reported (Eisen, Psychotherapy, 1996; Eisen, The Evaluation Center@HSRI, 1997).	2