



Measure Information

This document contains the information submitted by measure developers/stewards, but is organized according to NQF's measure evaluation criteria and process. The item numbers refer to those in the submission form but may be in a slightly different order here. In general, the item numbers also reference the related criteria (e.g., item 1b.1 relates to sub criterion 1b).

Brief Measure Information

NQF #: 0710e

Corresponding Measures:

Measure Title: Depression Remission at Twelve Months

Measure Steward: MN Community Measurement

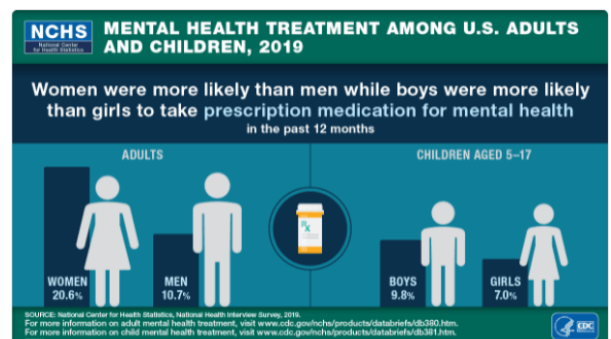
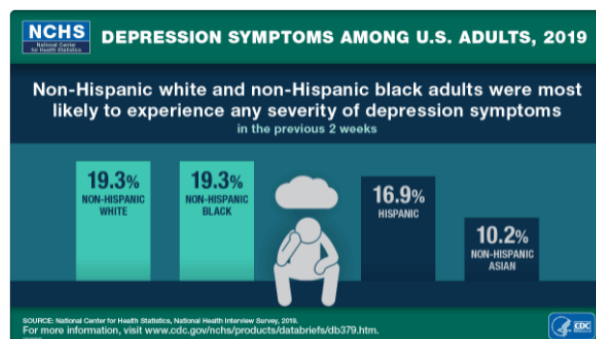
sp.02. Brief Description of Measure: The percentage of adolescent patients (12 to 17 years of age) and adult patients (18 years of age or older) with major depression or dysthymia who reach remission twelve months (+/- 60 days) after an index visit.

1b.01. Developer Rationale:

Adults:

Depression is a common and treatable mental disorder. The Centers for Disease Control and Prevention states that in 2019 (1)

- 2.8% of adults experienced severe symptoms of depression, 4.2% experienced moderate symptoms, and 11.5% experienced mild symptoms in the past 2 weeks.
- The percentage of adults who experienced any symptoms of depression was highest among those aged 18–29 (21.0%), followed by those aged 45–64 (18.4%) and 65 and over (18.4%), and lastly, by those aged 30–44 (16.8%).
- Women were more likely than men to experience mild, moderate, or severe symptoms of depression.
- Non-Hispanic Asian adults were least likely to experience mild, moderate, or severe symptoms of depression compared with Hispanic, non-Hispanic white, and non-Hispanic black adults.



Prevalence of Depression in Adults and Children; Centers for Disease Control 2019

Persons with a current diagnosis of depression and a lifetime diagnosis of depression or anxiety were significantly more likely than persons without these conditions to have cardiovascular disease, diabetes, asthma and obesity and to be a current smoker, to be physically inactive and to drink heavily.(2) People who suffer from depression have lower incomes, lower educational attainment and fewer days working days each year, leading to seven fewer weeks of work per year, a loss of 20% in potential income and a lifetime loss for each family who has a depressed family member of \$300,000.(3) The cost of depression (lost productivity and increased medical expense) in the United States is \$83 billion each year.(4)

Adolescents:

- In 2019, 16% of the population ages 12–17 had at least one MDE during the past year, a higher prevalence than that reported in each year between 2004 (9%) and 2014 (11%).
- Among youth ages 12–17 in each year between 2004 and 2019, the prevalence of MDE was more than twice as high among females (ranging from 12% to 23%) as among males (ranging from 4% to 9%).
- The prevalence of MDE in 2019 was lowest among youth ages 12–13 (11%) compared with youth ages 14–15 (16%) and ages 16–17 (20%).
- Between 2004 and 2019, the prevalence of MDE increased for both genders among all three age groups (12–13, 14–15, and 16–17).
- The percentage of youth with MDE in the past year receiving treatment for depression increased between 2004 (40%) and 2019 (43%), but this increase was not statistically significant. Treatment was higher among females (46%) than among males (37%) in 2019. (5)

In 2015, 9.7% of adolescents in MN who were screened for depression or other mental health conditions, screened positively.

References

1. CDC. Symptoms of Depression Among Adults: United States, 2019
<https://www.cdc.gov/nchs/data/databriefs/db379-H.pdf>
2. Strine TW, Mokdad AH, Balluz LS, et al. Depression and anxiety in the United States: findings from the 2006 Behavioral Risk Factor Surveillance System. *Psychiatr Serv* 2008;59:1383--90.
3. Smith, J. P., & Smith, G. C. (2010). Long-term economic costs of psychological problems during childhood. *Social Science & Medicine*, 71, 110-115.
4. Greenberg, P. E., Kessler, R. C., Birnbaum, H. G., Leong, S. A., Lowe, S. W., Berglund, P. A., et al. (2003). *The economic burden of depression in the United States: How did it change between 1990 and 2000?* *Journal of Clinical Psychiatry*, 64, 1465-1475.
5. CDC Children's National Indicators of Well-Being, 2021- Adolescent Depression
<https://www.childstats.gov/americaschildren/health4.asp>

sp.12. Numerator Statement: The number of patients in the denominator who reached remission, with a PHQ-9 or PHQ-9M result less than five, twelve months (+/- 60 days) after an index visit.

sp.14. Denominator Statement: Adolescent patients (12 to 17 years of age) and adult patients (18 years of age or older) with major depression or dysthymia and an initial (index) PHQ-9 or PHQ-9M score greater than nine.

sp.16. Denominator Exclusions: Patients who die, are a permanent resident of a nursing home or are enrolled in hospice are excluded from this measure. Additionally, patients who have a diagnosis of bipolar or personality disorder, schizophrenia or psychotic disorder, or pervasive developmental disorder are excluded.

Measure Type: Outcome: PRO-PM

sp.28. Data Source:

Electronic Health Records

sp.07. Level of Analysis:

Clinician: Group/Practice

IF Endorsement Maintenance – Original Endorsement Date: 2011-01-17 12:00 AM

Most Recent Endorsement Date: 12/12/2022 5:00:00 AM

IF this measure is included in a composite, NQF Composite#/title:

IF this measure is paired/grouped, NQF#/title:

sp.03. IF PAIRED/GROUPED, what is the reason this measure must be reported with other measures to appropriately interpret results?:

1. Importance to Measure and Report

Extent to which the specific measure focus is evidence-based, important to making significant gains in healthcare quality, and improving health outcomes for a specific high-priority (high-impact) aspect of healthcare where there is variation in or overall less-than-optimal performance. Measures must be judged to meet all sub criteria to pass this criterion and be evaluated against the remaining criteria

1ma.01. Indicate whether there is new evidence about the measure since the most recent maintenance evaluation. If yes, please briefly summarize the new evidence, and ensure you have updated entries in the Evidence section as needed.

[Response Begins]

Yes

[Yes Please Explain]

Incorporation of adolescents into this measure results in additional guideline support and the addition of an patient reported outcome tool modified for adolescents (PHQ-9M)

[Response Ends]

Please separate added or updated information from the most recent measure evaluation within each question response in the Importance to Measure and Report: Evidence section. For example:

2021 Submission:

Updated evidence information here.

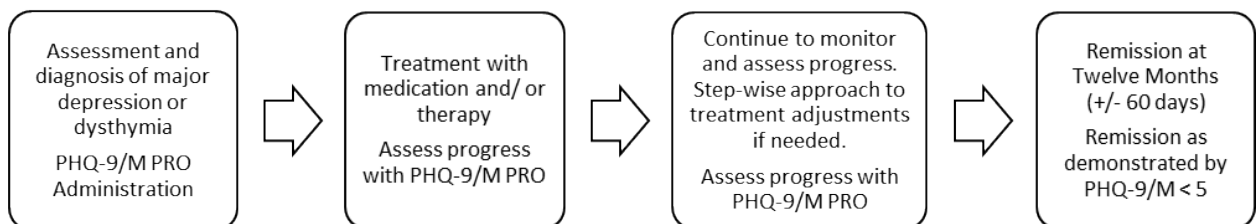
2018 Submission:

Evidence from the previous submission here.

1a.01. Provide a logic model.

Briefly describe the steps between the healthcare structures and processes (e.g., interventions, or services) and the patient's health outcome(s). The relationships in the diagram should be easily understood by general, non-technical audiences. Indicate the structure, process or outcome being measured.

[Response Begins]



Health Care Actions to Assess, Treat and Improve Depression Symptoms

[Response Ends]**1a.02. Provide evidence that the target population values the measured outcome, process, or structure and finds it meaningful.**

Describe how and from whom input was obtained.

[Response Begins]

Qualitative Study: Patients' perspectives on relevant treatment outcomes in depression treatment

Social functioning and interpersonal relationships The majority of patients mentioned goals related to social functioning (defined as an individual's ability to perform and fulfil normal social roles and interpersonal relationships as important goals of depression treatment. Normalization of social functioning was considered important (Table 2, quote 1). It included getting out of bed, continuing normal daily activities and functioning as before the depression. One patient stated that it was acceptable to use antidepressant medication, if necessary, for obtaining normalization of social functioning (Table 2, quote 2). Patients saw undertaking activities again with friends and family as a good indicator of social functioning. However, patients who had experienced multiple depressive episodes or patients who were diagnosed with chronic depression had a different view on functioning. They stressed that they needed to find new ways of functioning they would consider as satisfactory given circumstances, even though it would not quite be in the same way as before.

Themes	Quotations for illustration
Social functioning and interpersonal relationships	<p>Quote 1: 'So the client's own picture of themselves [how the client themselves feels that they function], but also how those around them feel that they function. Because I think that's what's most important, if you can function more or less normally, like you used to.' (Participant 12, man, age 52)</p> <p>Quote 2: 'I was finally functioning without medication, and I thought that was fine. It is fine until another bump comes along and then you start all over again. If I ask myself now; I just want to be able to function again and, if necessary, with medication, like I did a few years ago. For me, that's my recovery.' (Participant 3, man, age 52)</p>
Prevention of future recurrences	<p>Quote 3: 'If you've been given um, enough things to hold on to to pull yourself up at times when you are sinking. Learning to recognize and know what you have to do about it. Identifying and tackling it.' (Participant 17, woman, age 25).</p> <p>Quote 4: 'Another way of dealing with it ..., is to be able to relate success to your ability to deal with a setback yourself. Without having to go straight back into treatment or taking more pills, that when there are setbacks, a hard day, which in the past would have sent you straight into the abyss, now you have learned, first I have to do this and then I have to do that and watch out for this and so on...' (Participant 1, man, age 60)</p>
Acceptance of illness and managing the depression	<p>Quote 5: 'During my first depressive episode, I really wanted things to be just like they were before. Although I did think that that would never happen, it was in fact my one sole wish. And, um, well, it's turned out be very different now from before, but better actually. But it was, it's been quite a process to accept things and to make adjustments.' (Participant 13, woman, age 41)</p> <p>Quote 6: 'I see recovery as learning to deal with your situation and to keep going. Because it will never make me better. And that has determined, and still determines, how I live my life and how I deal with my disabilities, what I do and what I don't do. Those are two aspects that the... um, come back every day. What do I do and what do I forget about? That's what, that's what it actually boils down to.' (Participant 16, woman, age 69)</p>

Themes	Quotations for illustration
Personal goals and societal expectations	<p>Quote 7: 'That you go shopping, go to work and have a social life, and that this can be too much for people, or whether your goals is in fact that you can at least have a social life again, or just go to work, that can differ from one client to the next. But the outside world says, you're not really part of things again unless you're working, and that's what I'd really like to do.' (Participant 3, man, age 52)</p> <p>Quote 8: 'There is, for example, another goal that I have: in my contact with others I want to be less troubled by certain things, but that's not the same as not having any symptoms any more. And in my view, a practitioner often tends to look from that perspective, if things are x and y, then z is automatically the case, whereas it isn't always like that. Sometimes I can feel really good.' (Participant 2, woman, age 22)</p> <p>Quote 9: 'For almost everyone I can think of an example, with all the questionnaires [routine outcome monitoring questionnaires/symptom rating scales] that you have to fill in, that at some time they say, oh, you're doing a lot better, and that you definitely don't feel that yourself. So um, that's not the whole story.' (Participant 1, man, age 60)</p>

Table 2 Quotes for each theme from the patient's perspective

Patients' and clinicians' perspectives on relevant treatment outcomes in depression: qualitative study Kaying Kan, Frederike Jörg, Erik Buskens, Robert A. Schoevers and Manna A. Alma. BJPsych Open (2020) 6, e44, 1–7. doi: 10.1192/bjo.2020.27

[Response Ends]

1a.03. Provide empirical data demonstrating the relationship between the outcome (or PRO) and at least one healthcare structure, process, intervention, or service.

[Response Begins]

Institute for Clinical Systems Improvement (ICSI) Clinical Practice Guideline

Summary Table of Recommendations for Major Depressive Disorder and Persistent Depressive Disorder

Severity	PHQ-9 Scores	Possible Diagnoses	Treatment Recommendations
Undefined	Initial Score: 5-9	Does not meet criteria for major depressive disorder	Consider for persistent depressive disorder Stay in touch: a) If no improvement after one or more months, consider treating or referral to behavioral health. b) If symptoms deteriorate, start treatment or make a referral.
	Follow-up Score: 5-9	Partial remission	Continue stepped therapies approach.

Severity	PHQ-9 Scores	Possible Diagnoses	Treatment Recommendations
Per DSM-5: Few, if any, symptoms in excess of those required to make the diagnosis are present, the intensity of the symptoms is distressing but manageable, and the symptoms result in minor impairment in social or occupational functioning.	10-14	Mild major depression	Combined psychotherapy and pharmacotherapy treatment. When unable to do combined therapy due to patient preferences, availability and affordability of the treatments, start with psychotherapy. Initially consider weekly contacts to ensure adequate engagement, then at least monthly.
Per DSM-5: The number of symptoms, intensity of symptoms, and/or functional impairment are between those specified for “mild” and “severe.”	15-19	Moderate major depression	Combined psychotherapy and pharmacotherapy treatment. When unable to do combined therapy due to patient preferences, availability and affordability of the treatments, start with psychotherapy. Initially consider weekly contacts to ensure adequate engagement, then at least every 2-4 weeks.
Per DSM-5: The number of symptoms is substantially in excess of that required to make the diagnosis, the intensity of the symptoms is seriously distressing and unmanageable, and the symptoms markedly interfere with social and occupational functioning.	≥20	Severe major depression	Combined psychotherapy and pharmacotherapy treatment. When unable to do combined therapy due to patient preferences, availability and affordability of the treatments, start with pharmacotherapy. Weekly contacts until less severe.
Meets DSM-5 criteria for persistent depressive disorder	-	Pure dysthymia	Consider starting with medication. Consider stepped care, which includes augmenting medications and adding psychotherapy for patients who don't improve.
Meets DSM-5 criteria for persistent depressive disorder	-	Chronic major depression	Combined psychotherapy and pharmacotherapy treatment.

Institute for Clinical Systems Improvement Clinical Practice Treatment Guidelines

Establish Follow-Up Plan

7a. Establish Follow-Up Plan

Recommendation: Clinicians should establish and maintain follow-up with patients.

Quality of Evidence and Strength of Recommendation: Quality of Evidence: Low Strength of Recommendation: Strong

Benefit: Appropriate, reliable follow-up is highly correlated with improved response and remission scores. It is also correlated with the improved safety and efficacy of medications and helps prevent relapse.

Harm: Potential harms may include added expense and unnecessary visits.

Benefit-Harms Assessment: Benefits appear to outweigh potential harms by a wide margin

Relevant Resources: Trivedi, 2006b; Unützer, 2002; Hunkeler, 2000; Simon, 2000

Proactive follow-up contacts (in person, telephone) based on the collaborative care model have been shown to significantly lower depression severity (Unützer, 2002). In the available clinical effectiveness trials conducted in real clinical practice settings, even the addition of a care manager leads to modest remission rates (Trivedi, 2006b; Unützer, 2002). Interventions are critical to educating the patient regarding the importance of preventing relapse,

safety and efficacy of medications, and management of potential side effects. Establish and maintain initial follow-up contact intervals (office, phone, other) (Hunkeler, 2000; Simon, 2000).

PHQ-9 as monitor and management tool. The PHQ-9 is an effective management tool, as well, and should be used routinely for subsequent visits to monitor treatment outcomes and severity. It can also help the clinician decide if/how to modify the treatment plan (Duffy, 2008; Löwe, 2004). Using a measurement-based approach to depression care, PHQ-9 results and side effect evaluation should be combined with treatment algorithms to drive patients toward remission. A five-point drop in PHQ-9 score is considered the minimal clinically significant difference (Trivedi, 2009). Every time that the PHQ-9 is assessed, suicidality is assessed, as well. If the suicidality was indeed of high risk, urgent referral to crisis specialty health care is advised. In case of low suicide risk, the patient can proceed with treatment in the primary care practice (Huijbregts, 2013).

Collaboration with Mental Health Consider collaborating with a behavioral health care clinician for the following:

- Patient request for psychotherapy
- Presence of severe symptoms and impairment in patient, or high suicide risk
- Presence of other psychiatric condition (e.g., personality disorder or history of mania)
- Suspicion or history of substance abuse
- Clinician discomfort with the case
- Medication advice (psychiatrist or other mental health prescriber)
- Patient request for more specialized treatment

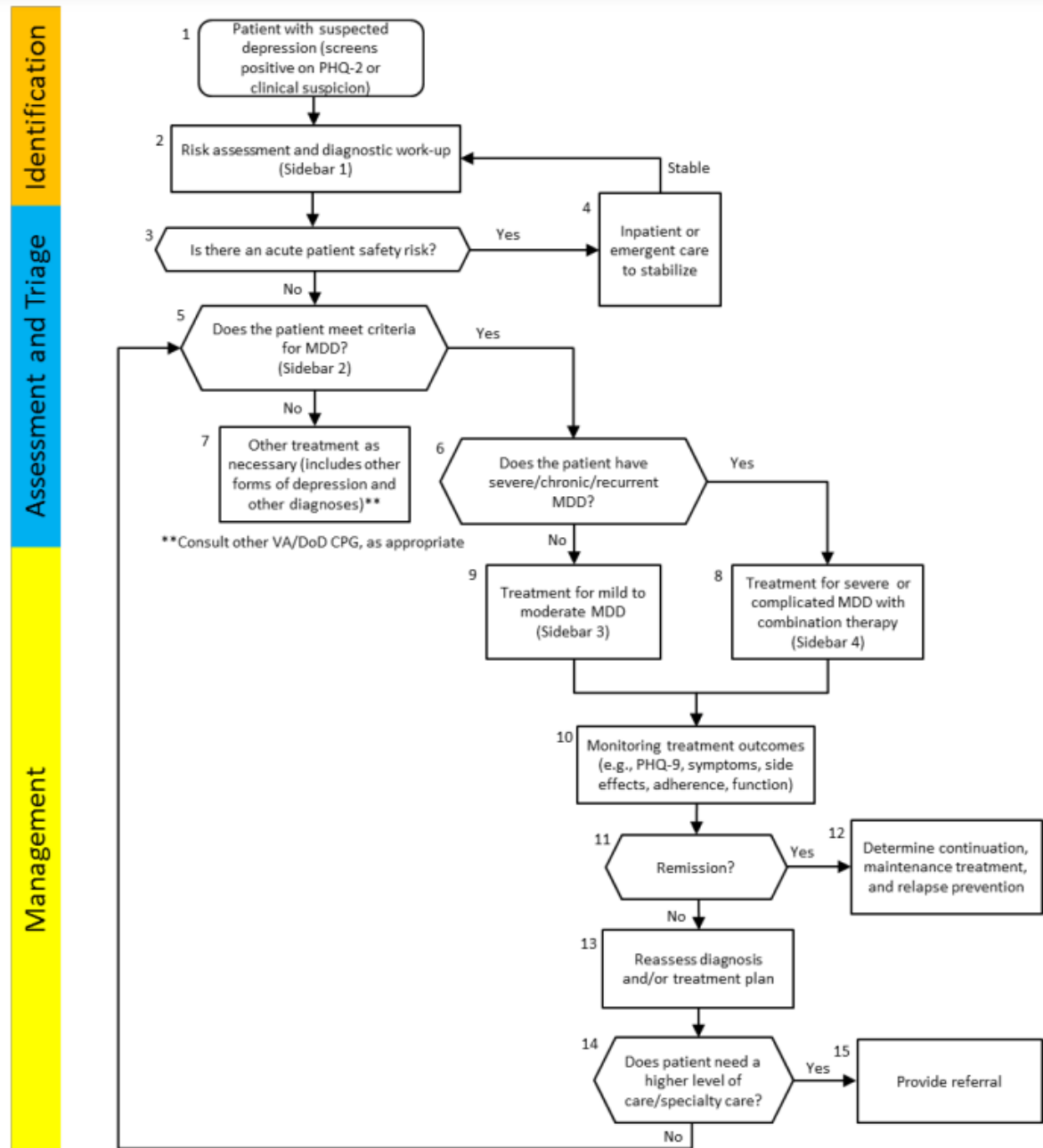
Low Quality Evidence: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change. The estimate or any estimate of effect is very uncertain.

Strong Recommendation: The work group feels that the evidence consistently indicates the benefit of this action outweighs the harms. This recommendation might change when higher quality evidence becomes available.

ICSI Institute for Clinical Systems Improvement Health Care Guideline Depression in Primary Care. Trangle M, Gursky J, Haight R, Hardwig J, Hinnenkamp T, Kessler D, Mack N, Myszkowski M. Institute for Clinical Systems Improvement. Adult Depression in Primary Care. Updated March 2016.

<https://www.icsi.org/wp-content/uploads/2021/11/Depr.pdf>

VA/DoD Major Depressive Disorder Clinical Practice Guideline



VA Department of Defense Clinical Practice Guidelines for Depression

Sidebar 3 – Considerations in Treatment of Mild/Moderate MDD For example: <ul style="list-style-type: none">a. Select monotherapy or combination therapy: pharmacotherapy/psychotherapyb. Treatment for special populations (e.g., treatment of co-occurring conditions, pregnant patients, geriatric patients)c. Patient preferences (treatment refusers)d. Consider referral	Sidebar 4 – Considerations in Treatment of Severe MDD For example: <ul style="list-style-type: none">a. Recommend referral to specialty level careb. Select combination therapy: pharmacotherapy/psychotherapyc. Treatment for special populations (e.g., treatment of co-occurring conditions, pregnant patients, geriatric patients)d. Patient preferences (treatment refusers)
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The image above depicts the treatment algorithm for depression from the Veteran's Administration Department of Defense which outlines the important components of screening, assessment, and recommended treatment based on severity of depression symptoms. Additionally, treatment recommendations are included for mild/ moderate depression and severe depression.

<https://www.healthquality.va.gov/guidelines/MH/mdd/MDDCPGClinicianSummaryFINAL1.pdf>

[Response Ends]

1b.01. Briefly explain the rationale for this measure.

Explain how the measure will improve the quality of care, and list the benefits or improvements in quality envisioned by use of this measure.

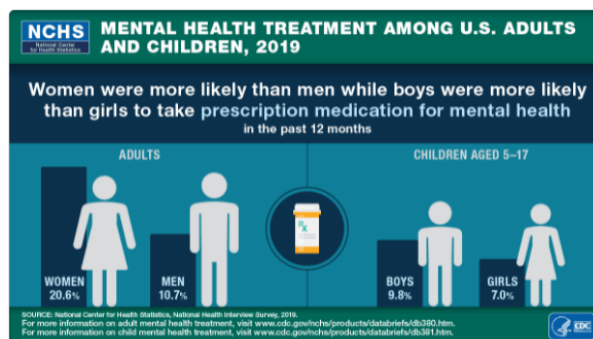
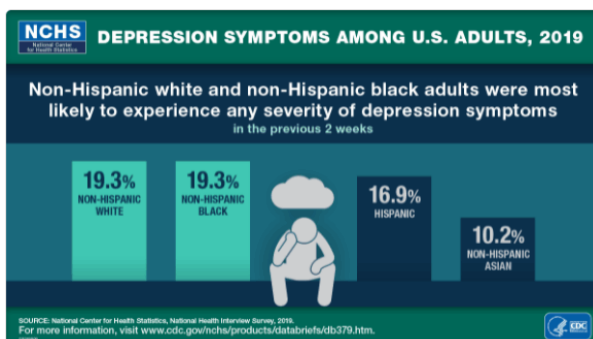
[Response Begins]

Adults:

Depression is a common and treatable mental disorder. The Centers for Disease Control and Prevention states that in 2019 (1)

- 2.8% of adults experienced severe symptoms of depression, 4.2% experienced moderate symptoms, and 11.5% experienced mild symptoms in the past 2 weeks.
- The percentage of adults who experienced any symptoms of depression was highest among those aged 18–29 (21.0%), followed by those aged 45–64 (18.4%) and 65 and over (18.4%), and lastly, by those aged 30–44 (16.8%).

- Women were more likely than men to experience mild, moderate, or severe symptoms of depression.
- Non-Hispanic Asian adults were least likely to experience mild, moderate, or severe symptoms of depression compared with Hispanic, non-Hispanic white, and non-Hispanic black adults.



Prevalence of Depression in Adults and Children; Centers for Disease Control 2019

Persons with a current diagnosis of depression and a lifetime diagnosis of depression or anxiety were significantly more likely than persons without these conditions to have cardiovascular disease, diabetes, asthma and obesity and to be a current smoker, to be physically inactive and to drink heavily.(2) People who suffer from depression have lower incomes, lower educational attainment and fewer days working days each year, leading to seven fewer weeks of work per year, a loss of 20% in potential income and a lifetime loss for each family who has a depressed family member of \$300,000.(3) The cost of depression (lost productivity and increased medical expense) in the United States is \$83 billion each year.(4)

Adolescents:

- In 2019, 16% of the population ages 12–17 had at least one MDE during the past year, a higher prevalence than that reported in each year between 2004 (9%) and 2014 (11%).
- Among youth ages 12–17 in each year between 2004 and 2019, the prevalence of MDE was more than twice as high among females (ranging from 12% to 23%) as among males (ranging from 4% to 9%).
- The prevalence of MDE in 2019 was lowest among youth ages 12–13 (11%) compared with youth ages 14–15 (16%) and ages 16–17 (20%).
- Between 2004 and 2019, the prevalence of MDE increased for both genders among all three age groups (12–13, 14–15, and 16–17).
- The percentage of youth with MDE in the past year receiving treatment for depression increased between 2004 (40%) and 2019 (43%), but this increase was not statistically significant. Treatment was higher among females (46%) than among males (37%) in 2019. (5)

In 2015, 9.7% of adolescents in MN who were screened for depression or other mental health conditions, screened positively.

References

1. CDC. Symptoms of Depression Among Adults: United States, 2019 <https://www.cdc.gov/nchs/data/databriefs/db379-H.pdf>
2. Strine TW, Mokdad AH, Balluz LS, et al. Depression and anxiety in the United States: findings from the 2006 Behavioral Risk Factor Surveillance System. *Psychiatr Serv* 2008;59:1383--90.
3. Smith, J. P., & Smith, G. C. (2010). Long-term economic costs of psychological problems during childhood. *Social Science & Medicine*, 71, 110-115.
4. Greenberg, P. E., Kessler, R. C., Birnbaum, H. G., Leong, S. A., Lowe, S. W., Berglund, P. A., et al. (2003). *The economic burden of depression in the United States: How did it change between 1990 and 2000?* *Journal of Clinical Psychiatry*, 64, 1465-1475.

5. CDC Children's National Indicators of Well-Being, 2021- Adolescent Depression

<https://www.childstats.gov/americaschildren/health4.asp>

[Response Ends]**1b.02. Provide performance scores on the measure as specified (current and over time) at the specified level of analysis.**

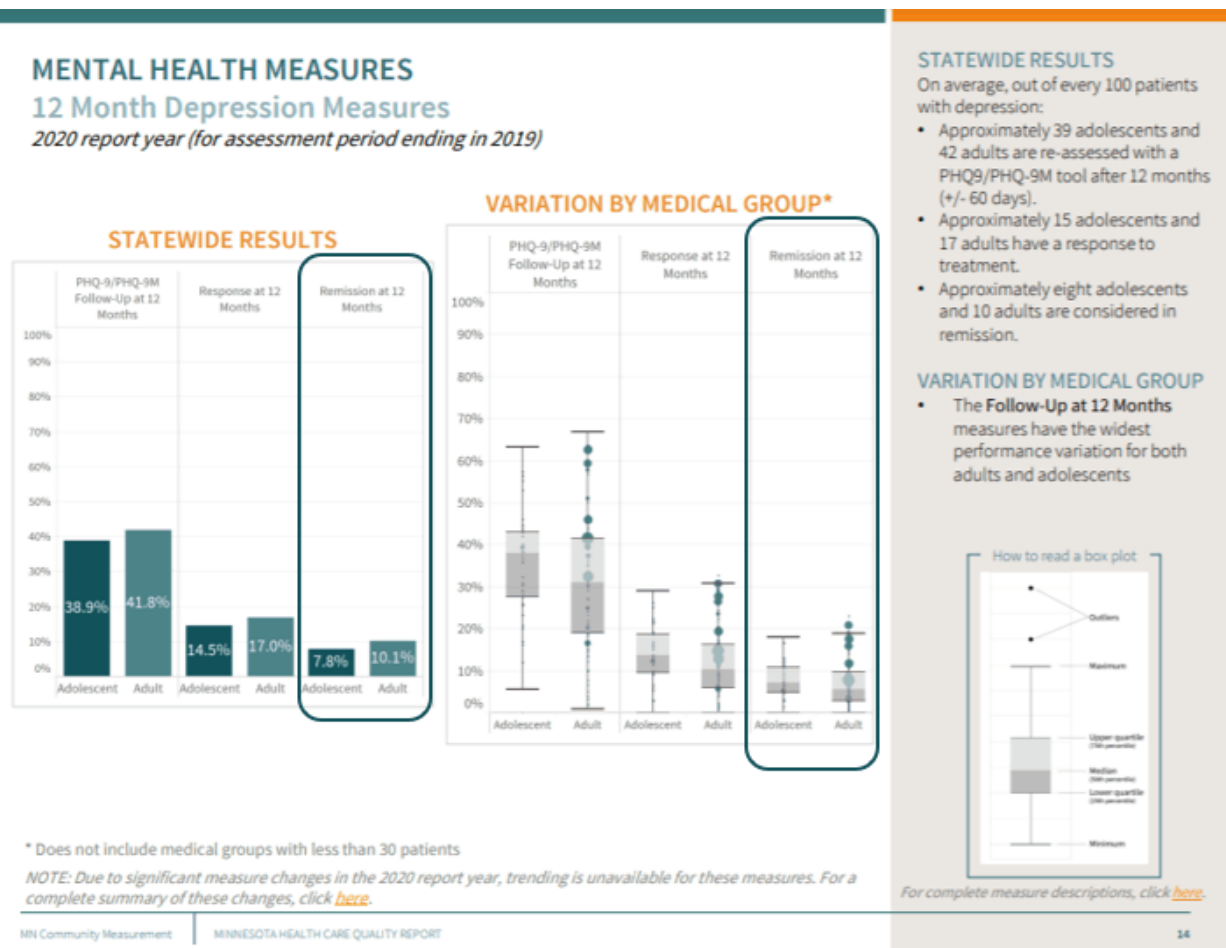
Include mean, std dev, min, max, interquartile range, and scores by decile. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities include. This information also will be used to address the sub-criterion on improvement (4b) under Usability and Use.

[Response Begins]

Minnesota Statewide Reporting

Depression Remission at 12 Months:

- Adults 10.1% (range 0% to 22.9%) 120,344 patients from 550 clinics
- Adolescents 7.8% (range 0% to 18.1%) 11,658 patients from 118 clinics



MNCM Statewide Reporting for Mental Health Measures; Health Care Quality Report 2020

The above image depicts the statewide rates that demonstrate both opportunity for improvement (very low rates) and wide variability between clinic site results. Box plot diagram further displays the range and variability with several clinics achieving rates in the upper quartile box as well as several clinics in the lower quartile ranges.

MNCM is unable to provide trend data over the lifecycle of this measure due to significant redesign of the measure construct effective in the 2020 report year. However, a two year comparison is provided in an additional report for understanding the impact of COVID-19 on measure outcomes.

Summary of Depression Measure Changes

The following changes were implemented during the 2020 report year:

Change	Previous Report Year	Current Report Year
Age Criteria	18 years and older at time of encounter	12 years and older at time of encounter
Expansion of followup window	+/- 30 days • 6-month measures: 5 – 7 months • 12-month measures: 11 – 13 months	+/- 60 days • 6-month measures: 4 – 8 months • 12-month measures: 10 – 14 months
Acceptable PRO tool	PHQ-9 only	PHQ-9 or PHQ-9M (regardless of age)
Required Exclusions	• Bipolar disorder • Personality disorder	• Bipolar disorder • Schizophrenia/psychotic disorder
Allowable Exclusions	• Permanent nursing home resident • Hospice/palliative care • Death	• Permanent nursing home resident • Hospice/palliative care • Death • Personality disorder – emotionally labile • Pervasive developmental disorder
Behavioral health provider	Diagnosis of major depression or dysthymia must be in the primary position for encounters in a behavioral health setting.	No restrictions on major depression or dysthymia diagnosis positioning for behavioral health providers.
Allowable timing of PHQ-9 /PHQ-9M	PHQ-9 score at the time of encounter	PHQ-9/PHQ-9M score at time of encounter or up to seven days prior

<https://mncm.org/reports/#community-reports>

Issue Brief Depression Care in 2020 for Adults and Adolescents

KEY FINDINGS

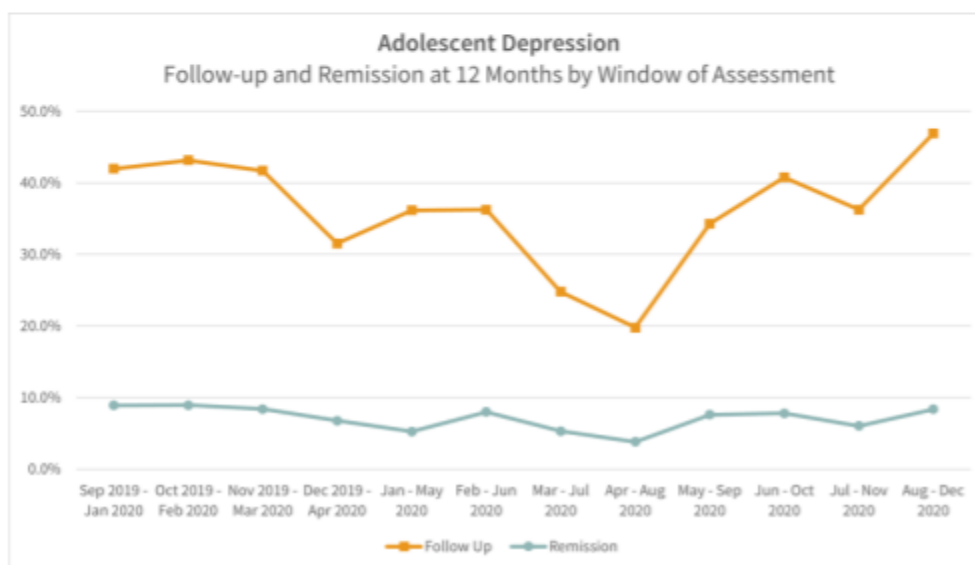
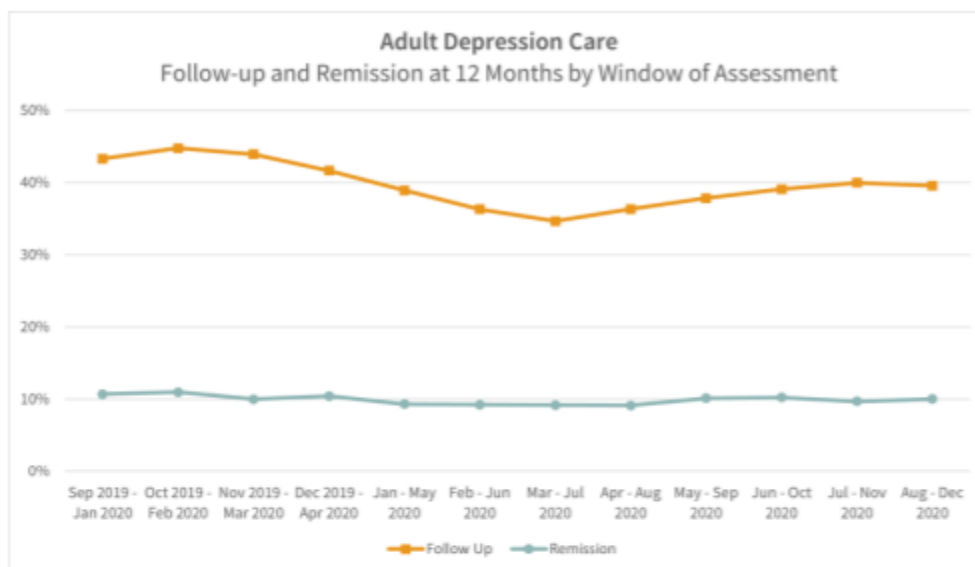
Adults

- Statewide, the PHQ-9/PHQ-9M Follow-up at 12 Months rate among adults decreased from 41.8% in 2019 to 39.6% in 2020. Additionally, the Remission at 12 Month rate among adults decreased from 10.1% in 2019 and 9.9% in 2020.
- In general, all demographic categories showed a decrease in both follow-up and remission rates between 2019 and 2020 for adults.
- The groups who experienced a significant worsening in their existing disparities were patients with the following demographic characteristics:
 - Follow-up at 12 Months: Asian, Native Hawaiian/Other Pacific Islander, on MHCP insurance and patients who are uninsured
 - Remission at 12 Months: Patients who are uninsured
 - Additionally, disparities worsened in some regions more than others.

Adolescents

- Statewide, the PHQ-9/PHQ-9M Follow-up at 12 Months rate among adolescents decreased from 38.9% in 2019 to 35.6% in 2020. Additionally, the Remission at 12 Month rate among adults decreased from 7.8% in 2019 and 7.0% in 2020.
- In general, all demographic categories showed a decrease in both follow-up and remission rates between 2019 and 2020 for adolescents.
- The groups who experienced a significant worsening in their existing disparities were patients with the following demographic characteristics:
 - Follow-up at 12 Months: Asian, males and on MHCP insurance
 - Remission at 12 Months: Asian
 - Additionally, disparities worsened in some regions more than others.

Since the design of the depression care measures tracks patients by the period of time in which they return the clinic for follow-up at 12 months, it is possible to see the impact at specific times during 2020.



Findings from Issue Brief Focus on Depression Measures- Impact of Pandemic COVID-19

The orange line/ square markers shows the percentage of patients that received a follow-up PHQ-9/PHQ-9M tool at 12 months. The light blue line/ round markers shows the percentage of patients who were considered in remission at 12 months (PHQ-9/PHQ-9M score less than 5). For each patient, the assessment window is 12 months (+/-60 days) after their index date, which creates some overlap in the time periods in the graph.

As expected, in 2020, the second quarter and the beginning of third quarter saw the lowest follow-up rates. This corresponds with the height of the COVID-19 disruptions to health care delivery. Interestingly, for adults, the rate of remission did not see the same decline. Despite the denominator for the adolescent population being smaller and thus having more volatile changes in rates, the population followed a similar pattern as the adult population.

<https://mncmsecure.org/website/Reports/Spotlight%20Reports/2020%20MY%20Issue%20Brief%20-%20Depression.pdf>

[Response Ends]

1b.03. If no or limited performance data on the measure as specified is reported above, then provide a summary of data from the literature that indicates opportunity for improvement or overall less than optimal performance on the specific focus of measurement. Include citations.

[Response Begins]

N/A

[Response Ends]

1b.04. Provide disparities data from the measure as specified (current and over time) by population group, e.g., by race/ethnicity, gender, age, insurance status, socioeconomic status, and/or disability.

Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included. Include mean, std dev, min, max, interquartile range, and scores by decile. For measures that show high levels of performance, i.e., "topped out", disparities data may demonstrate an opportunity for improvement/gap in care for certain sub-populations. This information also will be used to address the sub-criterion on improvement (4b) under Usability and Use.

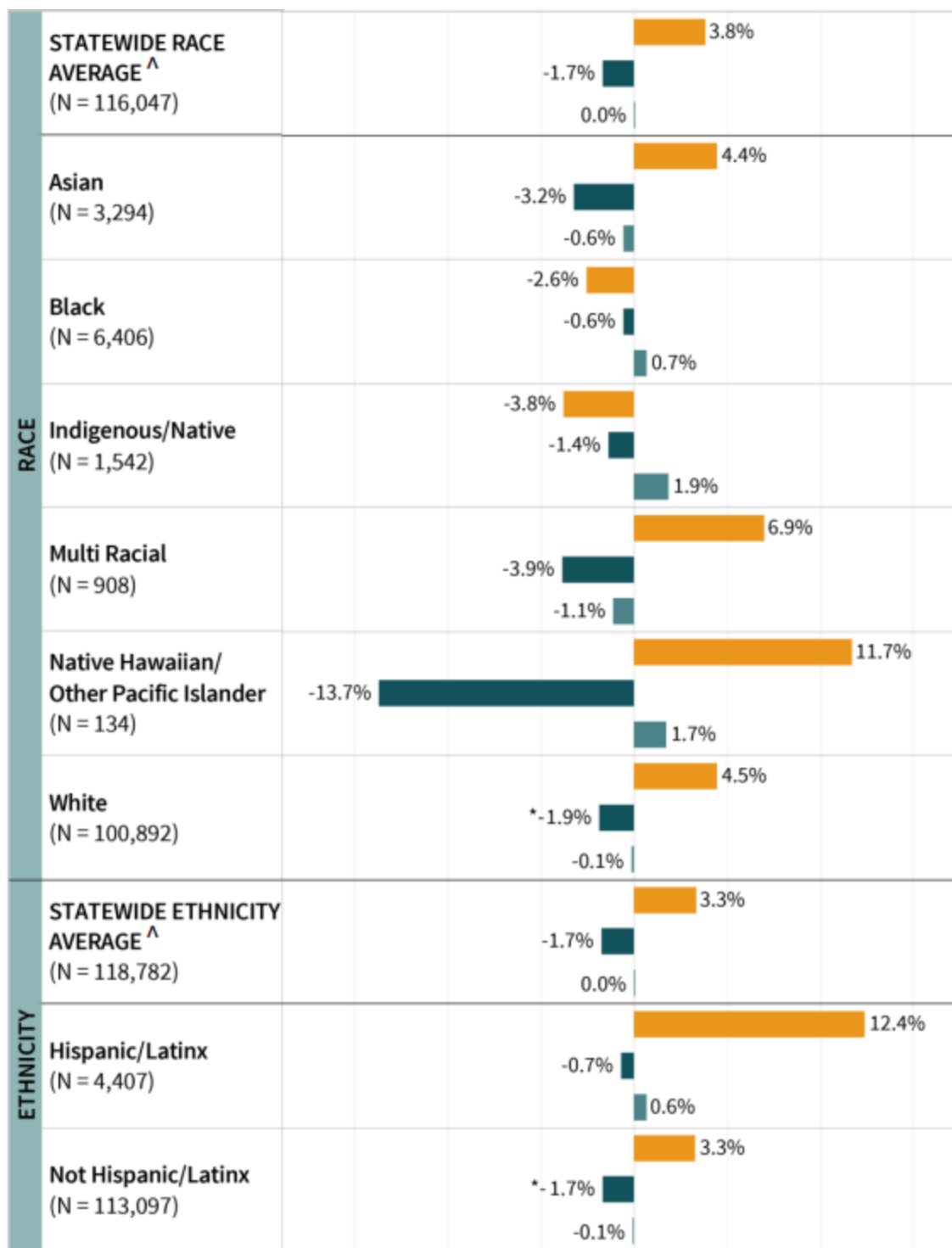
[Response Begins]

Information on Disparities:

Community Report: Depression Care in 2020 Minnesota- Adults and Adolescents

POPULATION CHANGES & RATE CHANGES – ADULTS

Race/ethnicity Comparison of 2020 to 2019



Race and Ethnicity Stratification of Rates; Impact of COVID-19 Pandemic

*Significant rate change from 2019

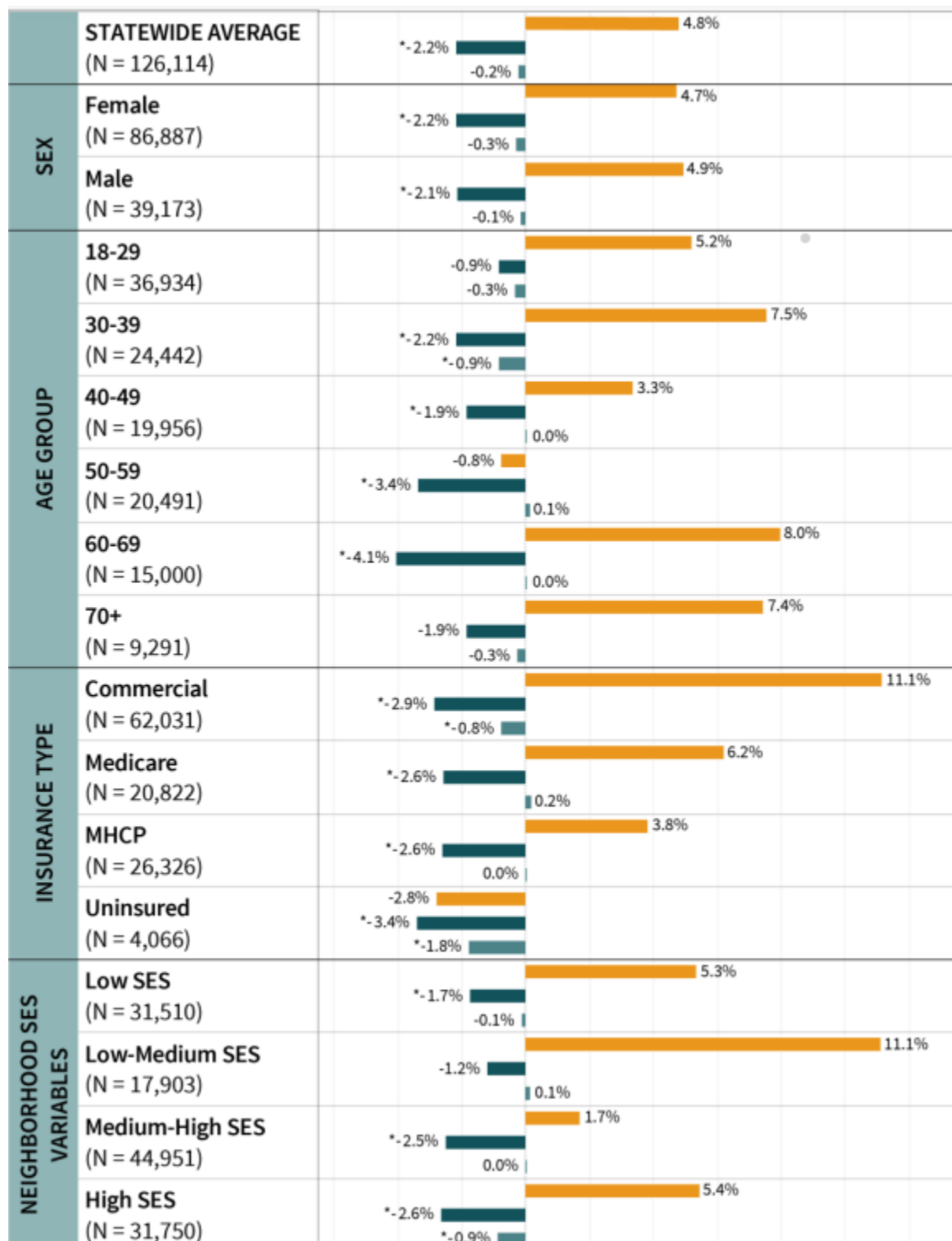
[^]Statewide race/ethnicity averages are averages for patients with race/ethnicity information available

This bar chart displays the adult population with stratifications by race and ethnicity. The gold bar depicts the volume of patients (percent change), the light green bar is the twelve month remission rate and the teal bar is the

twelve month follow-up rate. No significant decreases were noted for this measure's rates, however many categories of patients demonstrated an increase in the denominator.

POPULATION & RATE CHANGES – ADULTS

Sex, Age, Insurance Type, Neighborhood Socioeconomic (SES) Variables Comparison of 2020 to 2019



Gender, Age and SES Stratification of Rates; Impact of COVID-19 Pandemic

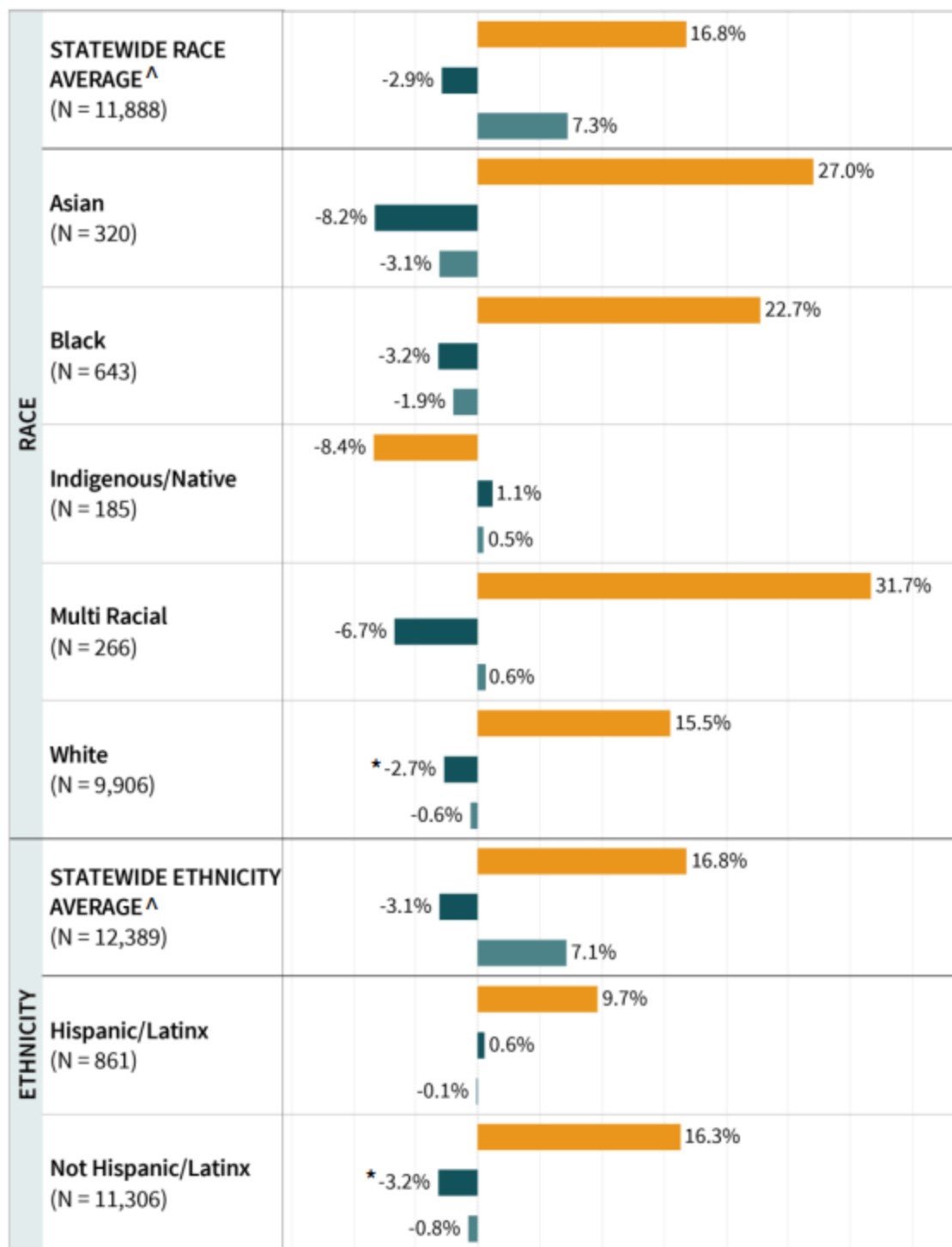
*Significant rate change from 2019

This bar chart displays the adult population with stratifications by gender, age, insurance product and socioeconomic category. The gold bar depicts the volume of patients (percent change), the light green bar is the twelve month remission rate and the teal bar is the twelve month follow-up rate. Significant decreases in rates were noted for ages 30 to 69, the commercial and uninsured populations and those of higher socioeconomic status.

Because of how the measure is designed, the population changes shown here reflect what happened in 2019. The Hispanic/Latinx and multi-race populations showed large increases in the number of patients; however, the number of patients reporting Hispanic/Latinx ethnicity or multiple races has been increasing for several years and is not unique to 2019 dates of service.

POPULATION CHANGES & RATE CHANGES – ADOLESCENTS

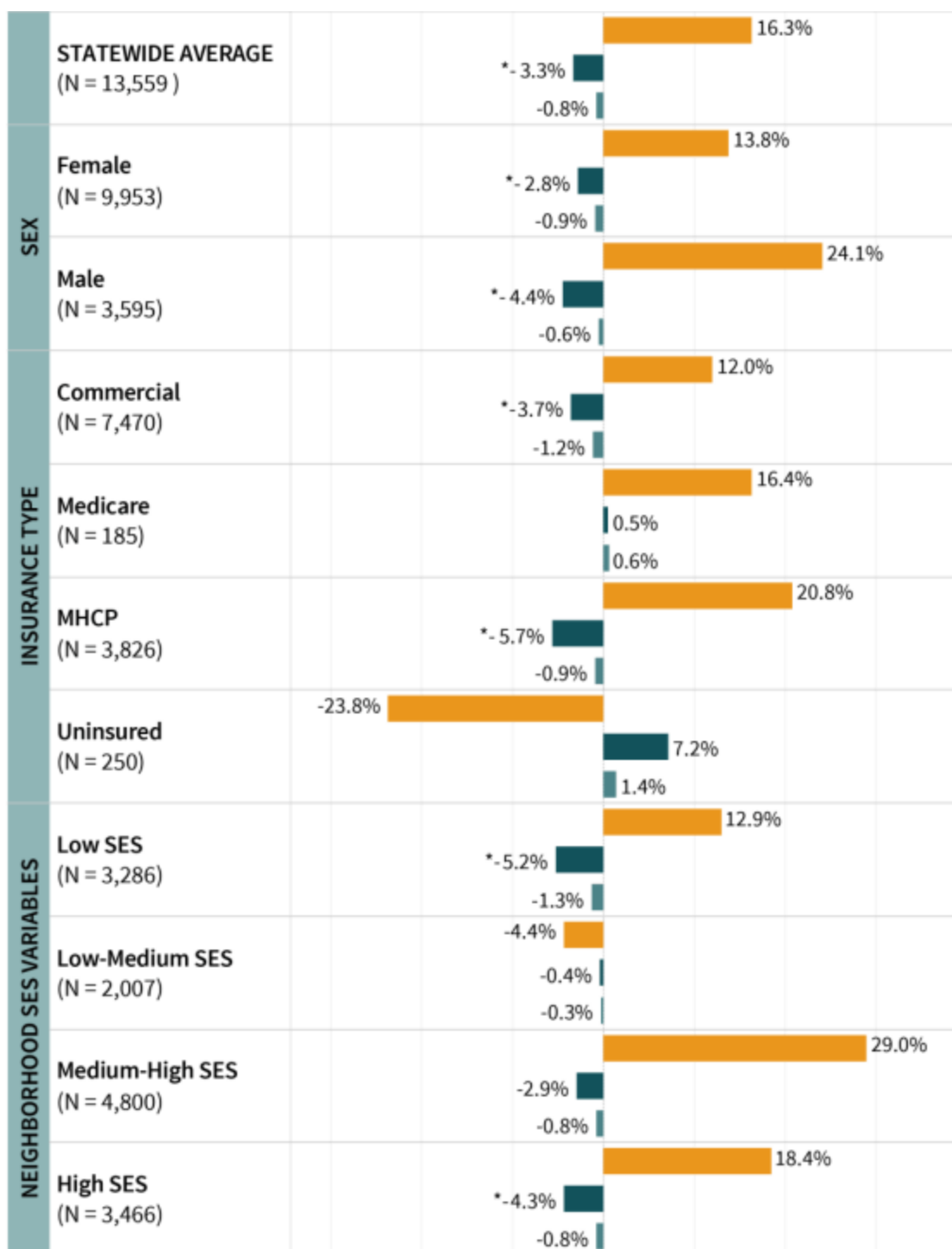
Race/ethnicity Comparison of 2020 to 2019



This bar chart displays the adolescent population with stratifications by race and ethnicity. The gold bar depicts the volume of patients (percent change), the light green bar is the twelve month remission rate and the teal bar is the twelve month follow-up rate. No significant decreases were noted for this measure's rates. Many categories of patients demonstrated an increase in the denominator.

POPULATION & RATE CHANGES – ADOLESCENTS

Sex, Age, Insurance Type, Neighborhood Socioeconomic (SES) Variables Comparison of 2020 to 2019



Gender and SES Stratification of Rates; Impact of COVID-19 Pandemic

This bar chart displays the adolescent population with stratifications by gender, age, insurance product and socioeconomic category. The gold bar depicts the volume of patients (percent change), the light green bar is the twelve month remission rate and the teal bar is the twelve month follow-up rate. No significant decreases in rates were noted.

Because of how the measure is designed, the population changes shown here reflect what happened in 2019. The adolescent depression measures were first publicly reported in the 2020 report year and so population increases are expected for the first few years in reporting a new measure.

<https://mncmsecure.org/website/Reports/Spotlight%20Reports/2020%20MY%20Issue%20Brief%20-%20Depression.pdf>

Although the measure does not demonstrate a high, topped out performance rate and demonstrates continued variability and opportunity for improvement, stratification by race/ ethnicity, gender, insurance and socioeconomic status indicate further opportunities for improvement.

[Response Ends]

1b.05. If no or limited data on disparities from the measure as specified is reported above, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations. Not necessary if performance data provided in above.

[Response Begins]

N/A

[Response Ends]

2. Scientific Acceptability of Measure Properties

Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. Measures must be judged to meet the sub criteria for both reliability and validity to pass this criterion and be evaluated against the remaining criteria.

spma.01. Indicate whether there are changes to the specifications since the last updates/submission. If yes, update the specifications in the Measure Specifications section of the Measure Submission Form, and explain your reasoning for the changes below.

[Response Begins]

Yes

[Yes Please Explain]

Several changes to the measure specifications were made:

- incorporating adolescents ages 12 to 17
- added PHQ-9M (modified for teens) PRO tool
- expanding the assessment window to +/- 60 days
- modified exclusion value set for personality disorder
- added exclusions for schizophrenia and pervasive developmental disorder

removed the requirement that the depression diagnosis be in the primary position for behavioral specialty

[Response Ends]

spma.02. Briefly describe any important changes to the measure specifications since the last measure update and provide a rationale.

For annual updates, please explain how the change in specifications affects the measure results. If a material change in specification is identified, data from re-testing of the measure with the new specifications is required for early maintenance review.

For example, specifications may have been updated based on suggestions from a previous NQF CDP review.

[Response Begins]

Since the last maintenance update, we convened our multi-stakeholder expert workgroup to consider modifying the measure to include adolescents as well as reviewing related measure construct components. As a result of our process, we are updating the measures to add the adolescent population; widen the follow-up assessment window; add the PHQ-9M tool; tighten up the personality disorders exclusions list; add exclusions for schizophrenia and pervasive developmental disorders and simplify the diagnosis criterion. Details are as follows:

For 2020 Report Year (dates of index event 1/1/2018 to 12/31/2018)

1. Incorporate adolescents into the depression measures

* Modify age range to include adolescents; age 12 and older

* Report measures as two separate stratifications by age (not combined); ages 12 to 17 and ages 18 and older

Reason: The U.S. Preventive Services Task Force and other guideline organizations recommend screening adolescents for depression. Depression is a significant problem for adolescents, affecting an estimated 11% of the population. Many mental health conditions are evident by age 14 and the consequences of adolescent depression can have a lifelong impact.

2. Widen the follow-up assessment window to +/- 60 days for all populations and all response and remission measures

- * Six-month measure's assessment window expands from 5 to 7 months to 4 to 8 months

- * Twelve-month measure's assessment window expands from 11 to 13 months to 10 to 14 months

Reason: Allowing a more reasonable assessment window that still fits the clinical course of recovery, allows for a comprehensive course of treatment and increases provider buy-in.

3. Patient Reported Outcome Tools for index/denominator and measuring outcomes of remission and response are the PHQ-9 and PHQ-9M

- * Add the PHQ-9M as a PRO tool that can be used

- * Providers may elect to use either tool; no measure construct restriction for age. For example, if a family practice clinic is currently using the PHQ-9 tool for their adult patients, they can elect to use the same tool for ages 12 to 17. Likewise, if a pediatric clinic is using the PHQ-9M in their practice, they can decide to administer the PHQ-9M to their 18/19/20 year old patients.

Reason: The expert panel reviewed 21 additional tools against standardized criteria and concluded very few had cut-points for severity levels of depression or remission. Further, using PRO tools with significantly different numbers of questions could impact the response measures (50% or greater in improvement of scores) in addition to adversely affecting denominator comparability. For example, if one practice is using the Beck BDI-II tool (21 questions/ total score 63/ denominator > 19/ remission < 14) and another practice is using the PHQ-9 (9 questions/ total score 27/ denominator > 9/ remission < 5), it can't be assured that the two tools are identifying the denominator of patients in the exact same way.

4. Modifications to exclusions include the following:

- * Personality disorders narrowed to emotionally labile conditions and moved to the allowable exclusion category

- * Add exclusion value set for schizophrenia or psychotic disorder as a required exclusion

- * Add exclusion value set for pervasive developmental disorder as an allowable exclusion

Reason: The expert panel determined these conditions may require a different course of treatment, and holding a provider responsible for remission/response within the timeframe defined by the measure may be inappropriate. In addition, the NQF Behavioral Steering Committee requested we examine the personality disorder exclusion.

5. For behavioral health settings, remove the requirement that the diagnosis of major depression or dysthymia must be in the primary position.

- * Relates to new exclusion for schizophrenia or psychotic disorder; no longer necessary

Reason: simplification of measures, position order of diagnosis is irrelevant in behavioral health settings.

Please refer to the data dictionary (sp.11) for the summary of redesign activities and changes to value sets or <https://helpdesk.mncm.org/helpdesk/KB/View/22742768--depression-changes-and-rationale>

[Response Ends]

sp.01. Provide the measure title.

Measure titles should be concise yet convey who and what is being measured (see [What Good Looks Like](#)).

[Response Begins]

Depression Remission at Twelve Months

[Response Ends]

sp.02. Provide a brief description of the measure.

Including type of score, measure focus, target population, timeframe, (e.g., Percentage of adult patients aged 18-75 years receiving one or more HbA1c tests per year).

[Response Begins]

The percentage of adolescent patients (12 to 17 years of age) and adult patients (18 years of age or older) with major depression or dysthymia who reach remission twelve months (+/- 60 days) after an index visit.

[Response Ends]

sp.04. Check all the clinical condition/topic areas that apply to your measure, below.

Please refrain from selecting the following answer option(s). We are in the process of phasing out these answer options and request that you instead select one of the other answer options as they apply to your measure.

Please do not select:

- Surgery: General

[Response Begins]

Behavioral Health: Depression

[Response Ends]

sp.05. Check all the non-condition specific measure domain areas that apply to your measure, below.

[Response Begins]

Health and Functional Status: Change

[Response Ends]

sp.06. Select one or more target population categories.

Select only those target populations which can be stratified in the reporting of the measure's result.

Please refrain from selecting the following answer option(s). We are in the process of phasing out these answer options and request that you instead select one of the other answer options as they apply to your measure.

Please do not select:

- Populations at Risk: Populations at Risk

[Response Begins]

Adults (Age >= 18)

Children (Age < 18)

Elderly (Age >= 65)

[Response Ends]

sp.07. Select the levels of analysis that apply to your measure.

Check ONLY the levels of analysis for which the measure is SPECIFIED and TESTED.

Please refrain from selecting the following answer option(s). We are in the process of phasing out these answer options and request that you instead select one of the other answer options as they apply to your measure.

Please do not select:

- Clinician: Clinician
- Population: Population

[Response Begins]

Clinician: Group/Practice

[Response Ends]

sp.08. Indicate the care settings that apply to your measure.

Check ONLY the settings for which the measure is SPECIFIED and TESTED.

[Response Begins]

Outpatient Services

[Response Ends]

sp.09. Provide a URL link to a web page specific for this measure that contains current detailed specifications including code lists, risk model details, and supplemental materials.

Do not enter a URL linking to a home page or to general information. If no URL is available, indicate "none available".

[Response Begins]

<https://helpdesk.mncm.org/helpdesk/KB/View/24186732-data-collection-technical-guide--depression-care>

<https://helpdesk.mncm.org/helpdesk/KB/View/20945873-risk-adjustment-how-is-the-expected-rate-calculated>

[Response Ends]

sp.10. Indicate whether Health Quality Measure Format (HQMF) specifications are attached.

Attach the zipped output from the eQCM authoring tool (MAT) - if the MAT was not used, contact staff. (Use the specification fields in this online form for the plain-language description of the specifications).

[Response Begins]

HQMF specifications are attached.

[Response Ends]

Attachment: 0710e_CMS159v9.zip

sp.11. Attach the data dictionary, code table, or value sets (and risk model codes and coefficients when applicable). Excel formats (.xlsx or .csv) are preferred.

Attach an excel or csv file; if this poses an issue, [contact staff](#). Provide descriptors for any codes. Use one file with multiple worksheets, if needed.

[Response Begins]

Available in attached Excel or csv file

[Response Ends]

Attachment: 0710e_MNCM Depression Care VS Specs Definitions w Redesign 3-22-2022 508.xlsx

For the question below: state the outcome being measured. Calculation of the risk-adjusted outcome should be described in sp.22.

sp.12. State the numerator.

Brief, narrative description of the measure focus or what is being measured about the target population, i.e., cases from the target population with the target process, condition, event, or outcome).

DO NOT include the rationale for the measure.

[Response Begins]

The number of patients in the denominator who reached remission, with a PHQ-9 or PHQ-9M result less than five, twelve months (+/- 60 days) after an index visit.

[Response Ends]

For the question below: describe how the observed outcome is identified/counted. Calculation of the risk-adjusted outcome should be described in sp.22.

sp.13. Provide details needed to calculate the numerator.

All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, time period for data collection, specific data collection items/responses, code/value sets.

Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at sp.11.

[Response Begins]

This PROM-PM outcome measure is longitudinal, seeking to measure the absence of depression symptoms (remission) within twelve months (+/- 60 days) for the patients with an index event of depression, measured as an elevated PHQ-9 or PHQ-9M.

The numerator is defined as patients with a twelve-month (+/- 60 days) PHQ-9 or PHQ-9M score of less than five.

The numerator rate is calculated as follows:

pts with major depression or dysthymia with a PHQ-9 or PHQ-9M score < 5 at 12 months(+/- 60 days)/

pts with major depression or dysthymia with index contact PHQ-9 > 9

Patients who do not have a twelve month +/- 60 day PHQ-9 or PHQ-9M score obtained remain in the denominator and are counted as not being in remission. Not having a PHQ-9 or PHQ-9M score within the 120 day window is considered a numerator miss.

Time period for data collection: there is a set index period for this measure, typically patients who have an index visit within a calendar period (e.g. index dates between 11/1/2017 and 10/31/2018) and then allowing enough time to pass to accommodate the timeframe for assessment. (e.g. for remission at twelve months +/- 60 days with index dates of service ending 10/31/2018, the assessment period for twelve month remission would go through 12/30/2019). Technically, the six- and twelve-month remission measures are collected together in the MN program, and the index assessment period is fourteen months in duration.

Denominator identification period (index) 11/1/2017 to 10/31/2018

Measure assessment period through 12/30/2019; reported in 2020

[Response Ends]

For the question below: state the target population for the outcome. Calculation of the risk-adjusted outcome should be described in sp.22.

sp.14. State the denominator.

Brief, narrative description of the target population being measured.

[Response Begins]

Adolescent patients (12 to 17 years of age) and adult patients (18 years of age or older) with major depression or dysthymia and an initial (index) PHQ-9 or PHQ-9M score greater than nine.

[Response Ends]

For the question below: describe how the target population is identified. Calculation of the risk-adjusted outcome should be described in sp.22.

sp.15. Provide details needed to calculate the denominator.

All information required to identify and calculate the target population/denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets.

Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at sp.11.

[Response Begins]

The target population, patients age 12 and older with major depression or dysthymia and an initial (index) PHQ-9 or PHQ-9M score greater than nine, is identified as follows:

Patients age 12 and older at the time of the index visit

AND Index visit

An index visit occurs when ALL of the following criteria are met during a face-to-face visit or contact with an eligible provider:

- a PHQ-9 or PHQ-9M result greater than nine
- an active diagnosis of Major Depression or Dysthymia (Major Depression or Dysthymia Value Set)
- the patient is NOT in a prior index period

An index period begins with an index visit and is 14 months in duration.

Denominator is stratified by age range for adolescents (12 to 17 years of age) and adults (18 years of age and older).

Patients who do not have a twelve month +/- 60 day follow-up PHQ-9 or PHQ-9M score obtained remain in the denominator for this measure.

Please refer to the attached data dictionary for an inclusive list of all ICD-9/ ICD-10 codes and data element definitions.

[Response Ends]

sp.16. Describe the denominator exclusions.

Brief narrative description of exclusions from the target population.

[Response Begins]

Patients who die, are a permanent resident of a nursing home or are enrolled in hospice are excluded from this measure. Additionally, patients who have a diagnosis of bipolar or personality disorder, schizophrenia or psychotic disorder, or pervasive developmental disorder are excluded.

[Response Ends]

sp.17. Provide details needed to calculate the denominator exclusions.

All information required to identify and calculate exclusions from the denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at sp.11.

[Response Begins]

Required exclusions:

- Patient had a diagnosis of Bipolar Disorder (*Bipolar Disorder Value Set*) any time prior to the end of their measure assessment period
- Patient had an active diagnosis of Schizophrenia or Psychotic Disorder (*Schizophrenia Psychotic Disorder Value Set*) any time prior to the end of their measure assessment period

Allowable exclusions:

- Patient had an active diagnosis of Personality Disorder – Emotionally Labile Conditions (*Personality Disorder – Emotionally Labile Value Set*) any time prior to the end of their measurement assessment period
- Patient had an active diagnosis of Pervasive Developmental Disorder (*Pervasive Disorder Value Set*) any time prior to the end of the measurement assessment period
- Patient was a permanent nursing home resident at any time during the denominator identification period or measure assessment period
- Patient was in hospice or receiving palliative care (*Palliative Care Value Set*) at any time during the denominator identification or measure assessment period
- Patient died prior to the end of their measurement assessment period

The direct data submission process in MN allows for both up-front exclusions of the population and, because this is a longitudinal outcome measure, processes are in place to allow exclusions that may occur after index during the course of the measurement assessment period. Please see field specifications in the attached data dictionary.

[Response Ends]

sp.18. Provide all information required to stratify the measure results, if necessary.

Include the stratification variables, definitions, specific data collection items/responses, code/value sets, and the risk-model covariates and coefficients for the clinically-adjusted version of the measure when appropriate. Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format in the Data Dictionary field.

[Response Begins]

This measure is stratified by age range and results are reported separately by age: Adolescents (12-17 years of age) and Adults (18 years of age and older).

[Response Ends]

sp.19. Select the risk adjustment type.

Select type. Provide specifications for risk stratification and/or risk models in the Scientific Acceptability section.

[Response Begins]

Statistical risk model

[Response Ends]

sp.20. Select the most relevant type of score.

Attachment: If available, please provide a sample report.

[Response Begins]

Rate/proportion

[Response Ends]

sp.21. Select the appropriate interpretation of the measure score.

Classifies interpretation of score according to whether better quality or resource use is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score

[Response Begins]

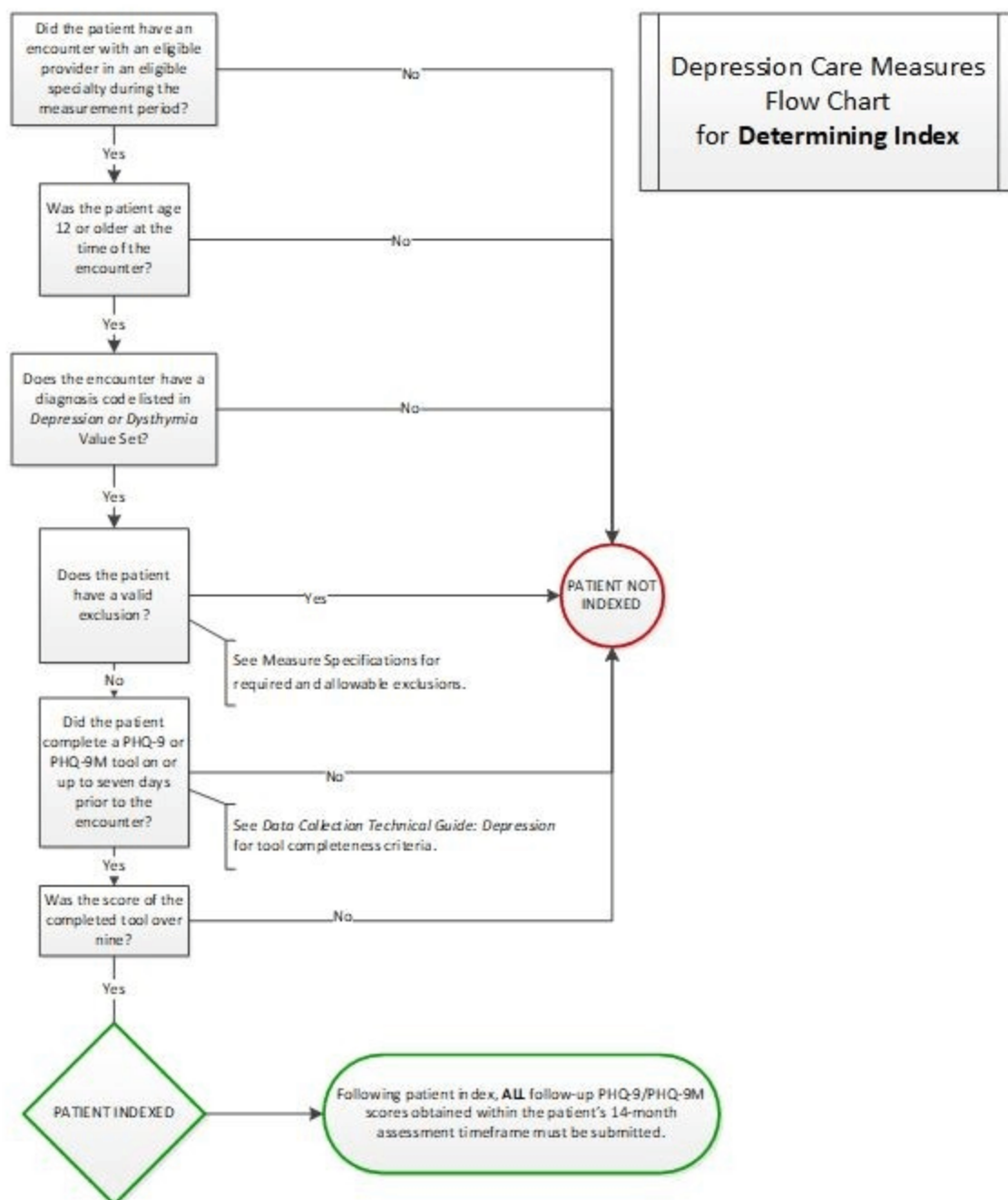
Better quality = Higher score

[Response Ends]

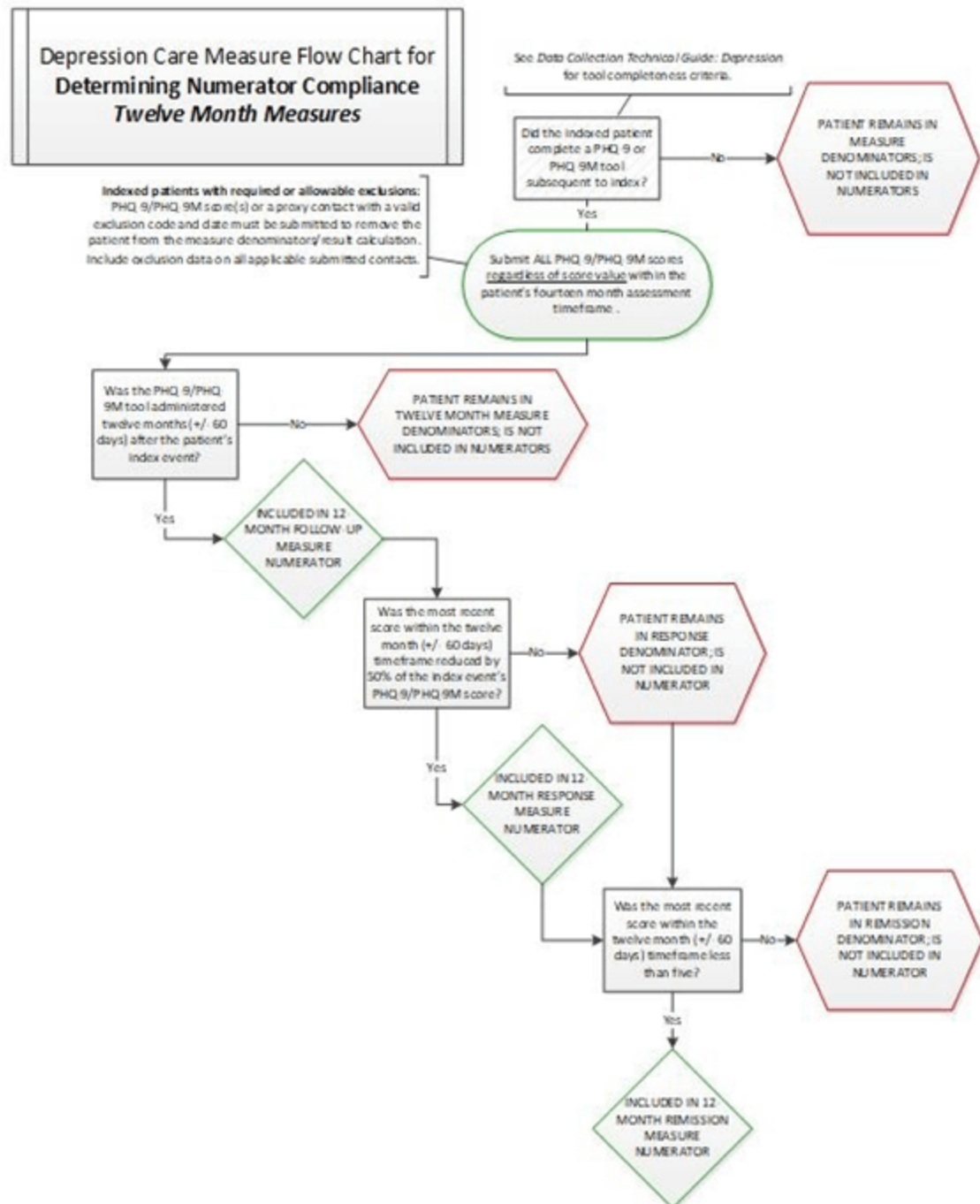
sp.22. Diagram or describe the calculation of the measure score as an ordered sequence of steps.

Identify the target population; exclusions; cases meeting the target process, condition, event, or outcome; time period of data, aggregating data; risk adjustment; etc.

[Response Begins]



Measure Calculation Algorithms; Determining Depression Index and Calculation of Numerator



This measure is calculated by submitting a visit level file for the eligible patients. Each record in the file represents a contact with the patient and PHQ-9 or PHQ-9M score associated with this contact. Data files are submitted to a HIPAA secure data portal. Programming within the data portal determines the starting point (index visit) and then calculates based on dates if a twelve month +/- 60 days PHQ-9 or PHQ-9M was obtained and the resulting score.

Calculation logic:

Is patient eligible for inclusion with diagnosis codes (Major Depression or Dysthymia Value Set) and PHQ-9 or PHQ-9M > 9?

If yes, mark the visit as index (anchor) and include this patient in the denominator.

Does patient have a PHQ-9 or PHQ-9M score completed with a contact date that is twelve months +/- 60 days from the index date?

If yes, include this score to calculate rate. Programming logic includes the most recent score within the +/- 60 day window.

If no, patient is included in the denominator only. Not having a PHQ-9 or PHQ-9M score within the 120 day window is considered a numerator miss.

If the patient does have a twelve month +/- 60 day PHQ-9 or PHQ-9M and the score is it less than five?

If twelve month +/- 60 day PHQ-9 or PHQ-9M is less than five; is considered a numerator case for rate calculation.

Reporting of this measure is currently at the clinic and medical group level.

Risk adjustment methodology uses individual patient level variables (age, insurance product depression severity level and zip code based deprivation index) to adjust for these variables at the clinic site and medical group practice level. Age is a continuous variable. Insurance product is Commercial, Medicare, Minnesota Health Care Plans (MHCP) and Cash or Uninsured patients. Depression severity level is based on the index PHQ-9 or PHQ-9M score, Moderate (PHQ9 below 15), Moderately Severe (PHQ9 15 to 19), Severe (PHQ9 over 19). The risk adjustment employs an actual to expected methodology where the actual measure result remains unaltered, instead a risk adjusted comparison is created based on same proportions of the risk factors that the clinic has. Our MNHealthscores website displays both the actual and expected rates in the detailed view.

[Response Ends]

sp.23. Attach a copy of the instrument (e.g. survey, tool, questionnaire, scale) used as a data source for your measure, if available.

[Response Begins]

Copy of instrument is attached.

[Response Ends]

Attachment: 0710e_PHQ9.pdf

Attachment: 0710e_PHQ-9-Modified-For-Teens-64711 GLAD-PC_(1).pdf

sp.24. Indicate the responder for your instrument.

[Response Begins]

Patient

[Response Ends]

sp.25. If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.

[Response Begins]

The measure and its denominator are not based on a sample. The measure was developed with the intent of full population reporting with the EMR as the data source. Not amenable to sampling because 1) each patient's starting point for measurement is different, depending on the date of elevated PHQ-9 or PHQ-9M and 2) the longitudinal nature of the measure tracking improvement over time.

[Response Ends]

sp.26. Identify whether and how proxy responses are allowed.

[Response Begins]

Proxy responses are not allowed, the PRO tool has to be completed by the patient. The tool is validated for multiple modes of administration and is translated and available in more than 90 languages.

<https://www.phqscreeners.com/select-screener>

[Response Ends]

sp.27. Survey/Patient-reported data.

Provide instructions for data collection and guidance on minimum response rate. Specify calculation of response rates to be reported with performance measure results.

[Response Begins]

Instructions from MNCM's Data Collection Guide

Patient Reported Outcome (PRO) Tools

The most important step in measuring the change in a patient's depression symptoms and ultimately their outcome of remission is to implement the administration of the PRO tools into your clinic's processes and workflows.

Patient Health Questionnaire (PHQ-9/PHQ-9M)

The PHQ-9 and/or PHQ-9M assessment tool must be implemented in a clinic in order for the clinic to participate in the Depression Care measures as the measures are based on serial PHQ-9 assessments and resulting scores.

Acceptable methods for obtaining PHQ-9/PHQ-9M scores include:

- Office visit/in-person
- Telephone encounter
- E-Visit
- Mail (post)
- Electronic administration (email, patient portal, iPad/tablet, patient kiosk)

Regardless of mode of administration, the content of all tools must be kept intact including question text, order, and scoring.

The PHQ-9/PHQ-9M tool contains nine items, each item earning a score from zero to three, providing a zero to 27 total severity score:

- If a patient chooses more than one answer, select the "worst" of the answers which will be the higher score.
- Valid scores are whole numbers 0 – 27.
- The patient must answer ALL nine questions for the score to be valid.
- If the PHQ-9/PHQ-9M result is missing, invalid or incomplete, do NOT submit zero for these encounters.

Tools that are not complete or are altered from their original form are invalid. **Do not submit scores from invalid tools.**

PHQ-9

The PHQ-9 is validated for use for ages 13 and older, however a medical group can elect to administer this tool for twelve-year-old patients as well. The depression measure development workgroup decided to not restrict the measure construct by age and supports the most efficient use of tools depending on the population of patients in each clinic.

References

Please include the following copyright information on all PHQ-9 assessment tools utilized by clinicians.

Developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke, and colleagues, with an educational grant from Pfizer Inc. No permission required to reproduce, translate, display, or distribute.

Permissions

This tool is in the public domain and requires no further permission for use. Results can be stored in an EMR and no approval is needed for other uses of the data such as research or publication. More information can be obtained from the tool developer. To obtain a copy of the PHQ-9 tool or additional language translations, please visit www.phqscreeners.com.

PHQ-9M Modified for Teens

The PHQ-9M is a modification of the PHQ-9 geared for use with adolescents and, although it has not been validated, is widely used. This tool is very similar to the PHQ-9 with only a few minor age-related wording modifications (e.g. schoolwork instead of newspaper) and scores with the same cut-points as the PHQ-9. The tool developer approved these minor wording changes.

The MNMCM depression measure development workgroup decided not to limit or restrict the measure construct tool use by the age of the patient, supporting the most efficient use of tool depending on the population of patients in each clinic.

References

Please include the following copyright information on all PHQ-9 assessment tools utilized by clinicians.

Modified with permission by the GLAD-PC team from the PHQ-9 (Spitzer, Williams, & Kroenke, 1999), Revised PHQ-A (Johnson, 2002), and the CDS (DISC Development Group, 2000)

A copy of this tool can be obtained from the MNMCM DDS Data Portal's Resources tab.

PHQ-9/PHQ-9M administration: Anyone can administer these tools, including office staff, the care team, receptionists, medical assistants, etc.

- Multiple modes of administration – can be administered via patient portal or mail

Partially completed PHQ-9/PHQ-9M tool: All nine questions must be completed for the tool to be valid

- Partially completed tools are not numerator compliant

Response rates are also calculated and reported along with this measure. Please refer to the display of response rates in question 1b.02.

[Response Ends]

sp.28. Select only the data sources for which the measure is specified.

[Response Begins]

Electronic Health Records

[Response Ends]

sp.29. Identify the specific data source or data collection instrument.

For example, provide the name of the database, clinical registry, collection instrument, etc., and describe how data are collected.

[Response Begins]

The data source is the medical group's/ clinic's medical record information, most frequently from an EMR. A CSV file is created by each medical group and uploaded to a password protected, HIPAA secure data portal which performs rate calculation. Selected Patient Reported Data, not because it is necessarily a separate data source, but

because this measure is based on a patient reported outcome tool, a PRO-PM measure. Frequently this PRO tool, the PHQ-9, is housed within a clinic's EMR, or in paper charts is a part of the patient's medical record.

Data collection guides are located on our corporate website:

- direct data submission <https://helpdesk.mncm.org/helpdesk/KB/View/24186732-depression-care-guides>
- PIPE data files <https://helpdesk.mncm.org/helpdesk/KB/View/41088290-pipe-data-files>

PROM

The PHQ-9 depression assessment tool is a patient reported outcome tool that is in the public domain and can be obtained for free use on the Patient Health Questionnaire (PHQ) Screeners website at www.phqscreeners.com. Modes of administration include traditional paper, mail, electronic and telephonic. The tool is available on the website with 79 language translations available.

The PHQ-9 tool is validated for use as a measure to assess the level of depression severity (for initial treatment decisions) as well as an outcome tool (to determine treatment response). [Löwe B, Unutzer J, Callahan CM, Perkins AJ, Kroenke K. Monitoring depression treatment outcomes with the Patient Health Questionnaire-9. Med Care 2004;42:1194-1201 and Kroenke K, Spitzer RL, Williams JBW, Löwe B. The Patient Health Questionnaire somatic, anxiety, and depressive symptom scales: a systematic review. Gen Hosp Psychiatry 2010]

The PHQ-9M is a modified version of the PHQ-9 tool for adolescents. Please refer to discussion in question sp.27

[Response Ends]

sp.30. Provide the data collection instrument.

[Response Begins]

Available at measure-specific web page URL identified in sp.09

[Response Ends]

2ma.01. Indicate whether additional empirical reliability testing at the accountable entity level has been conducted. If yes, please provide results in the following section, Scientific Acceptability: Reliability - Testing. Include information on all testing conducted (prior testing as well as any new testing).

Please separate added or updated information from the most recent measure evaluation within each question response in the Scientific Acceptability sections. For example:

Current Submission:

Updated testing information here.

Previous Submission:

Testing from the previous submission here.

[Response Begins]

Yes

[Response Ends]

2ma.02. Indicate whether additional empirical validity testing at the accountable entity level has been conducted. If yes, please provide results in the following section, Scientific Acceptability: Validity - Testing. Include information on all testing conducted (prior testing as well as any new testing).

Please separate added or updated information from the most recent measure evaluation within each question response in the Scientific Acceptability sections. For example:

Current Submission:

Updated testing information here.

Previous Submission:

Testing from the previous submission here.

[Response Begins]

Yes

[Response Ends]

2ma.03. For outcome, patient-reported outcome, resource use, cost, and some process measures, risk adjustment/stratification may be conducted. Did you perform a risk adjustment or stratification analysis?

[Response Begins]

Yes

[Response Ends]

2ma.04. For maintenance measures in which risk adjustment/stratification has been performed, indicate whether additional risk adjustment testing has been conducted since the most recent maintenance evaluation. This may include updates to the risk adjustment analysis with additional clinical, demographic, and social risk factors.

Please update the Scientific Acceptability: Validity - Other Threats to Validity section.

Note: This section must be updated even if social risk factors are not included in the risk adjustment strategy.

[Response Begins]

Yes - Additional risk adjustment analysis is included

[Response Ends]

Measure testing must demonstrate adequate reliability and validity in order to be recommended for endorsement. Testing may be conducted for data elements and/or the computed measure score. Testing information and results should be entered in the appropriate fields in the Scientific Acceptability sections of the Measure Submission Form.

Measures must be tested for all the data sources and levels of analyses that are specified. If there is more than one set of data specifications or more than one level of analysis, contact NQF staff about how to present all the testing information in one form.

All required sections must be completed.

For composites with outcome and resource use measures, Questions 2b.23-2b.37 (Risk Adjustment) also must be completed.

If specified for multiple data sources/sets of specifications (e.g., claims and EHRs), Questions 2b.11-2b.13 also must be completed.

An appendix for supplemental materials may be submitted (see Question 1 in the Additional section), but there is no guarantee it will be reviewed.

Contact NQF staff with any questions. Check for resources at the [Submitting Standards webpage](#).

For information on the most updated guidance on how to address social risk factors variables and testing in this form refer to the release notes for the [2021 Measure Evaluation Criteria and Guidance](#).

Note: The information provided in this form is intended to aid the Standing Committee and other stakeholders in understanding to what degree the testing results for this measure meet NQF's evaluation criteria for testing.

2a. Reliability testing demonstrates the measure data elements are repeatable, producing the same results a high proportion of the time when assessed in the same population in the same time period and/or that the measure score is precise. For instrument-based measures (including PRO-PMs) and composite performance measures, reliability should be demonstrated for the computed performance score.

2b1. Validity testing demonstrates that the measure data elements are correct and/or the measure score correctly reflects the quality of care provided, adequately identifying differences in quality. For instrument based measures (including PRO-PMs) and composite performance measures, validity should be demonstrated for the computed performance score.

2b2. Exclusions are supported by the clinical evidence and are of sufficient frequency to warrant inclusion in the specifications of the measure;

AND

If patient preference (e.g., informed decision-making) is a basis for exclusion, there must be evidence that the exclusion impacts performance on the measure; in such cases, the measure must be specified so that the information about patient preference and the effect on the measure is transparent (e.g., numerator category computed separately, denominator exclusion category computed separately).

2b3. For outcome measures and other measures when indicated (e.g., resource use):

an evidence-based risk-adjustment strategy (e.g., risk models, risk stratification) is specified; is based on patient factors (including clinical and social risk factors) that influence the measured outcome and are present at start of care; 14,15 and has demonstrated adequate discrimination and calibration

rationale/data support no risk adjustment/ stratification.

2b4. Data analysis of computed measure scores demonstrates that methods for scoring and analysis of the specified measure allow for identification of statistically significant and practically/clinically meaningful 16 differences in performance;

OR

there is evidence of overall less-than-optimal performance.

2b5. If multiple data sources/methods are specified, there is demonstration they produce comparable results.

2b6. Analyses identify the extent and distribution of missing data (or nonresponse) and demonstrate that performance results are not biased due to systematic missing data (or differences between responders and non-responders) and how the specified handling of missing data minimizes bias.

2c. For composite performance measures, empirical analyses support the composite construction approach and demonstrate that:

2c1. the component measures fit the quality construct and add value to the overall composite while achieving the related objective of parsimony to the extent possible; and

2c2. the aggregation and weighting rules are consistent with the quality construct and rationale while achieving the related objective of simplicity to the extent possible.

(if not conducted or results not adequate, justification must be submitted and accepted)

Definitions

Reliability testing applies to both the data elements and computed measure score. Examples of reliability testing for data elements include, but are not limited to: inter-rater/abstractor or intra-rater/abstractor studies; internal consistency for multi-item scales; test-retest for survey items. Reliability testing of the measure score addresses precision of measurement (e.g., signal-to-noise).

Validity testing applies to both the data elements and computed measure score. Validity testing of data elements typically analyzes agreement with another authoritative source of the same information. Examples of validity testing of the measure score include, but are not limited to: testing hypotheses that the measures scores indicate quality of care, e.g., measure scores are different for groups known to have differences in quality assessed by another valid quality measure or method; correlation of measure scores with another valid indicator of quality for the specific topic; or relationship to conceptually related measures (e.g., scores on process measures to scores on outcome measures). Face validity of the measure score as a quality indicator may be adequate if accomplished through a systematic and transparent process, by identified experts, and explicitly addresses whether performance scores resulting from the measure as specified can be used to distinguish good from poor quality. The degree of consensus and any areas of disagreement must be provided/discussed.

Examples of evidence that an exclusion distorts measure results include, but are not limited to: frequency of occurrence, variability of exclusions across providers, and sensitivity analyses with and without the exclusion.

Patient preference is not a clinical exception to eligibility and can be influenced by provider interventions.

Risk factors that influence outcomes should not be specified as exclusions.

With large enough sample sizes, small differences that are statistically significant may or may not be practically or clinically meaningful. The substantive question may be, for example, whether a statistically significant difference of one percentage point in the percentage of patients who received smoking cessation counseling (e.g., 74 percent v. 75 percent) is clinically meaningful; or whether a statistically significant difference of \$25 in cost for an episode of care (e.g., \$5,000 v. \$5,025) is practically meaningful. Measures with overall less-than-optimal performance may not demonstrate much variability across providers.

Please separate added or updated information from the most recent measure evaluation within each question response in the Importance to Scientific Acceptability sections. For example:

2021 Submission:

Updated testing information here.

2018 Submission:

Testing from the previous submission here.

2a.01. Select only the data sources for which the measure is tested.

[Response Begins]

Electronic Health Records

[Response Ends]

2a.02. If an existing dataset was used, identify the specific dataset.

The dataset used for testing must be consistent with the measure specifications for target population and healthcare entities being measured; e.g., Medicare Part A claims, Medicaid claims, other commercial insurance, nursing home MDS, home health OASIS, clinical registry).

[Response Begins]

This measure is in full implementation with submission of data from all primary care and behavioral health (psychiatry) clinics in Minnesota. MNMCM receives patient level data via a HIPAA secure data portal, so each year data is available for reliability, validity and risk adjustment variable testing on a large population. For this measure, due to its longitudinal nature, no sampling is allowed and the full population of eligible patients, regardless of payer, is included.

Please note that the data source is electronic health record; all primary care and behavioral health clinics in MN are on electronic health records, therefore the data source for testing no longer includes paper records.

[Response Ends]

2a.03. Provide the dates of the data used in testing.

Use the following format: "MM-DD-YYYY - MM-DD-YYYY"

[Response Begins]

2021 submission

Denominator identification period (index) 11/1/2017 to 10/31/2018

Measure assessment period through 12/30/2019; reported in 2020

Measure Assessment Period: For each patient, the measure assessment period begins with an index event and is 14 months (12 months +/- 60 days) in length.

[Response Ends]

2a.04. Select the levels of analysis for which the measure is tested.

Testing must be provided for all the levels specified and intended for measure implementation, e.g., individual clinician, hospital, health plan.

Please refrain from selecting the following answer option(s). We are in the process of phasing out these answer options and request that you instead select one of the other answer options as they apply to your measure.

Please do not select:

- *Clinician: Clinician*
- *Population: Population*

[Response Begins]

Clinician: Group/Practice

[Response Ends]

2a.05. List the measured entities included in the testing and analysis (by level of analysis and data source).

Identify the number and descriptive characteristics of measured entities included in the analysis (e.g., size, location, type); if a sample was used, describe how entities were selected for inclusion in the sample.

[Response Begins]

2021 Submission

Sites represent all primary care and behavioral health (psychiatry) clinics in Minnesota and bordering cities in other states that wish to participate. Clinics represent urban and rural, large multi-specialty health care systems, medium and small practices that care for adult patients with depression. Over 115 medical groups representing 788 clinics were included in the testing of this measure, representing 118,132 adults and 7,237 adolescents.

[Response Ends]

2a.06. Identify the number and descriptive characteristics of patients included in the analysis (e.g., age, sex, race, diagnosis), separated by level of analysis and data source; if a sample was used, describe how patients were selected for inclusion in the sample.

If there is a minimum case count used for testing, that minimum must be reflected in the specifications.

[Response Begins]

2021 Submission

118,132 adult patients and 7,237 adolescents were included for testing and analysis. There was no elimination of patients based on age, race/ethnicity, or diagnosis with the exception of valid clinical co-morbid diagnoses for exclusions (bi-polar disorder and personality disorder) which are already excluded from the denominator.

[Response Ends]

2a.07. If there are differences in the data or sample used for different aspects of testing (e.g., reliability, validity, exclusions, risk adjustment), identify how the data or sample are different for each aspect of testing.

[Response Begins]

Reliability and validity statistics performed at the clinic level for all clinics with ≥ 30 patients in the denominator.

[Response Ends]

2a.08. List the social risk factors that were available and analyzed.

For example, patient-reported data (e.g., income, education, language), proxy variables when social risk data are not collected from each patient (e.g. census tract), or patient community characteristics (e.g. percent vacant housing, crime rate) which do not have to be a proxy for patient-level data.

[Response Begins]

Social risk factors available and analyzed for this measure include age, race, ethnicity, primary language, country of origin and zip code-based deprivation index.

[Response Ends]

Note: If accuracy/correctness (validity) of data elements was empirically tested, separate reliability testing of data elements is not required – in 2a.07 check patient or encounter-level data; in 2a.08 enter “see validity testing section of data elements”; and enter “N/A” for 2a.09 and 2a.10.

2a.09. Select the level of reliability testing conducted.

Choose one or both levels.

[Response Begins]

Patient or Encounter-Level (e.g., inter-abstractor reliability; data element reliability must address ALL critical data elements)

Accountable Entity Level (e.g., signal-to-noise analysis)

[Response Ends]

2a.10. For each level of reliability testing checked above, describe the method of reliability testing and what it tests.

Describe the steps—do not just name a method; what type of error does it test; what statistical analysis was used.

[Response Begins]

Reliability/ Validity of the PROM- PHQ-9 and PHQ-9M

As PHQ-9 depression severity increased, there was a substantial decrease in functional status of all 6 SF-20 subscales in addition to an increase in symptom-related difficulty, sick days and health care utilization. Construct validity, using mental health professional re-interview as the criterion standard, has demonstrated a PHQ-9 score ≥ 10 has a sensitivity of 88% and a specificity of 88% for major depression. Additionally, a score <5 almost always signifies the absence of a depressive disorder, with a positive likelihood ratio of 0.04. Also, ROC analysis showed that the area under the curve for the PHQ-9 in diagnosing major depression was 0.95, suggesting a test that discriminates well between persons with and without major depression.

The internal reliability of the PHQ-9 was excellent, with Cronbach’s alpha of 0.89 in the PHQ-9 Primary Care Study and 0.86 in the PHQ OBGYN Study. Test-retest reliability of the PHQ-9 was also excellent.

Correlation between the PHQ-9 completed by the patient in the clinic and that administered telephonically by the MHP within 48 hours was 0.84, and the mean scores were nearly identical (5.08 vs 5.03). [Validity of a Brief Depression Severity Measure Kronke, Kurt, Spitzer, Robert et al. J Gen Internal Medicine 2001 September; 16(9): 606–613.

www.ncbi.nlm.nih.gov/pmc/articles/PMC1495268/

[2020 Update] In addition to the adults and elderly, the PHQ-9 has been validated in the adolescent populations (age 13 to 17). The PHQ-9M Modified for Teens is the PHQ-9 tool with

slight word changes (in CAPS below) in three questions to modify the tool for the adolescent population with age appropriate terms.

Q2: Feeling down, depressed, IRRITABLE, or hopeless?

Q5: Poor appetite, WEIGHT LOSS, or overeating?

Q7: Trouble concentrating on things like SCHOOL WORK, reading, or watching TV?

Otherwise, the nine questions used in scoring the tool are identical to the PHQ-9. The copyright statement on the PHQ-9M tool states: *Modified with permission by the GLAD-PC team from the PHQ-9 (Spitzer, Williams & Kroenke, 1999), Revised PHQ-A (Johnson, 2002) and the CDS (DISC Development Group, 2000)*

Although widely used in pediatric practices and endorsed by the AAP, APA and AACAP, the modified version of the PHQ-9 tool has not had separate validation studies, as the nine questions are essentially the same as the original PHQ-9, which has been validated for adolescents ages 13 and older. The APA recommends using the modified version of the PHQ-9 for children ages 11 to 17 to assess depression symptom severity (APA, 2015). American Psychiatric Association. 2015. Online Assessment Measures. *Severity Measure for Depression, Child Age 11 to 17 (PHQ-9 modified for Adolescents [PHQ-A], Adapted)*.

<https://www.psychiatry.org/psychiatrists/practice/dsm/dsm-5/online-assessment-measures>

Reliability of the PROM-PM:

Reliability is a function of provider-to-provider variation and samples size. Empirical testing of computed performance scores for reportable clinics was conducted using a beta-binomial model. Reliability ranges from 0.0 (no consistency) to 1.00 (perfect consistency). The extent to which the reliability falls below 1.00 is the extent to which errors of measurement are present. Reliability of 0.70 or greater is considered acceptable for drawing conclusions about groups.

- The BETABIN macro was used on each measure (SAS).
- Use the macro to get α and β .
- provider-to-provider variance: $\sigma^2 = (\alpha \beta) / (\alpha + \beta + 1)(\alpha + \beta)^2$
- plug this variance value into the reliability equation: $\sigma^2 / (\sigma^2 + (p(1 - p)/n))$
 - p = rate
 - n = number of eligible patients
- Determine reliability rate for each clinic.
- Average the reliability rate over all clinics.

2021 Submission

All results are stratified by adults and adolescents.

[Response Ends]

2a.11. For each level of reliability testing checked above, what were the statistical results from reliability testing?

For example, provide the percent agreement and kappa for the critical data elements, or distribution of reliability statistics from a signal-to-noise analysis. For score-level reliability testing, when using a signal-to-noise analysis, more than just one overall statistic should be reported (i.e., to demonstrate variation in reliability across providers). If a particular method yields only one statistic, this should be explained. In addition, reporting of results stratified by sample size is preferred (pg. 18, [NQF Measure Evaluation Criteria](#)).

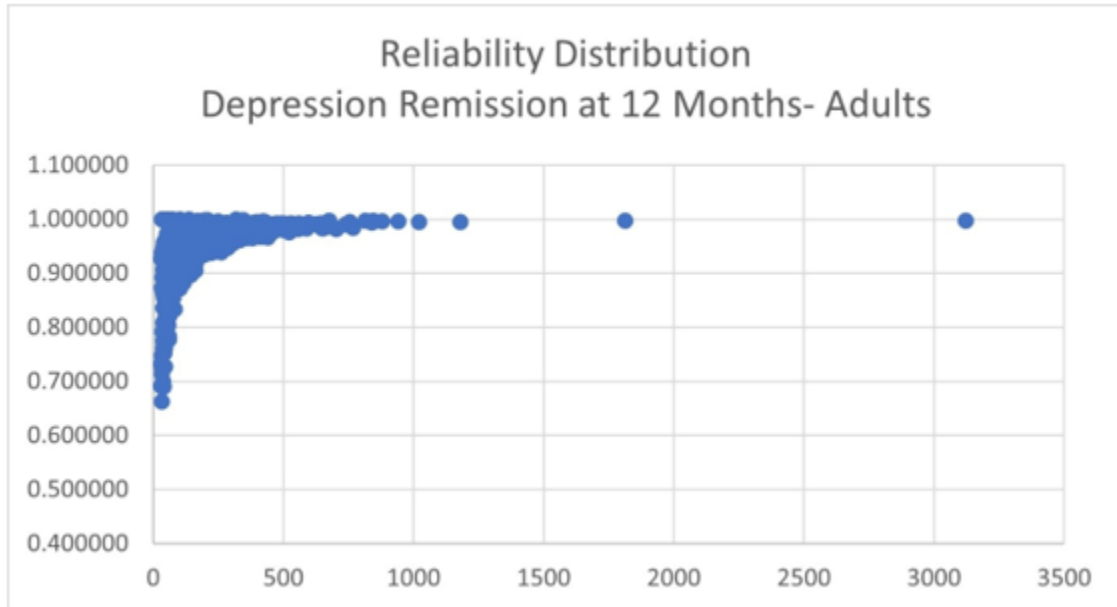
[Response Begins]

2021 Submission

Adults age 18 and older

Beta-binomial Reliability Performance Score- Adults 0.944666

of clinics = 550, number of patients = 118,132

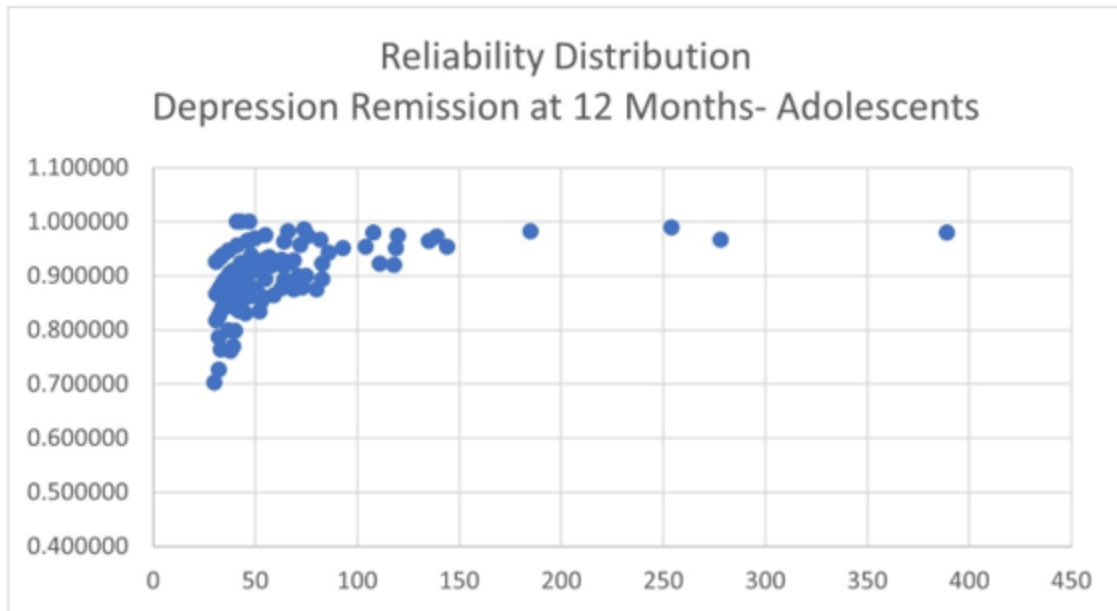


[2020 Update] Beta-binomial Reliability Performance Score- Adults 0.944666 (# of clinics = 550, number of patients = 118, 132)

Adolescents Age 12 to 17

[Beta-binomial Reliability Performance Score- Adolescents 0.900688

of clinics = 118, number of patients = 7,327



[2020 Update] Beta-binomial Reliability Performance Score- Adolescents 0.900688 (# of clinics = 118, number of patients = 7,327)

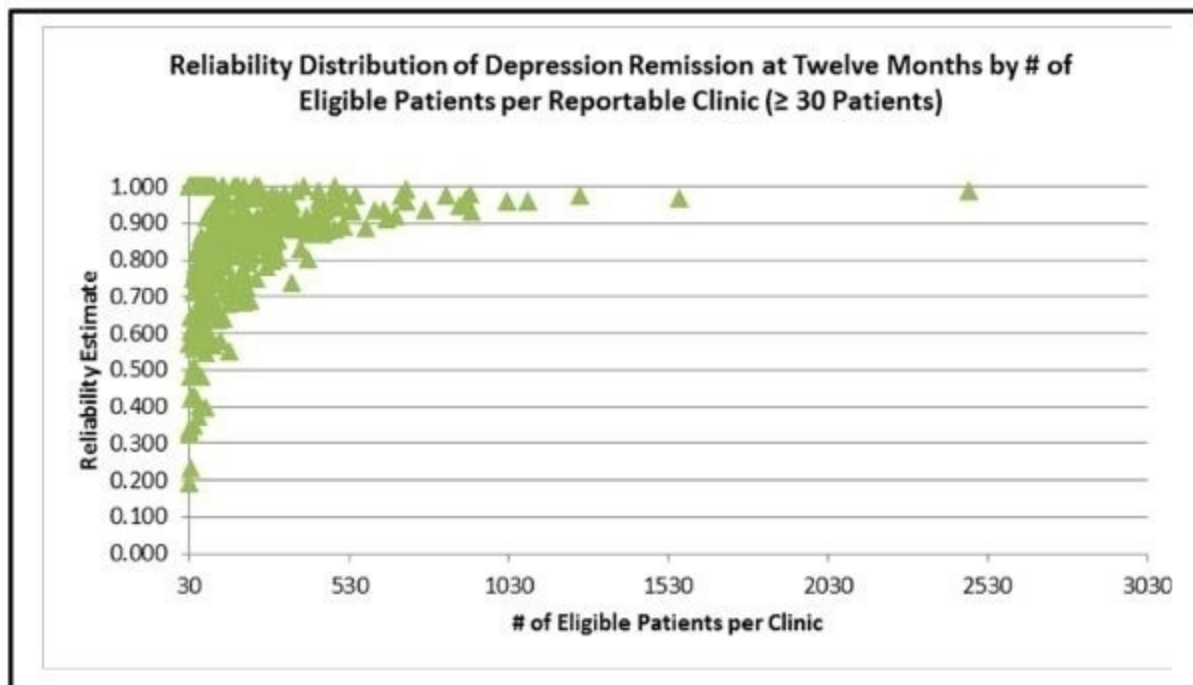
2013 Submission

Original Reliability testing of Adult measure

Reliability = 0.846

Reportable clinics (≥ 30 patients)

- $\alpha = 1.4708$
- $\beta = 29.2042$
- σ^2 (provider to provider variance) = 0.00144
- average reliability = 0.846



Adult patients age 18 and older with an index date 7/1/2011 to 6/30/2012 reported in 2013.

[Response Ends]

2a.12. Interpret the results, in terms of how they demonstrate reliability.

(In other words, what do the results mean and what are the norms for the test conducted?)

[Response Begins]

PROM- PHQ-9

- PHQ-9 score > 10 has a sensitivity of 88% and a specificity of 88% for major depression.
- Cronbach's alpha of 0.89 in the PHQ-9 Primary Care Study and 0.86 in the PHQ OBGYN Study.
- PHQ-9M is only a slight modification of the original tool with developer's permission

The PHQ-9 patient reported outcome tool demonstrates sound psychometric properties (reliability, validity, specificity, and sensitivity to change) and is appropriate for measuring patient outcomes related to depression.

The PRO-PM Measure:

Clinic level reliability statistics are stratified by adult patients age 18 and older and adolescent patients age 12 to 17.

- Reliability score = 0.944666 (Adult) and 0.900688 (Adolescents)

[2020 Update] For clinics reporting measure results for adults (550 clinics and 118,132 patients), the reliability performance score was calculated at 0.944666. A beta-binomial reliability (signal-to-noise) score of greater than 0.70 indicates that it is acceptable to draw conclusions about groups, in this case by the comparison of clinic site level reporting. With a reliability score

exceeding 0.94, there is the ability to distinguish higher performing clinics from lower performing clinics.

It is noted that the reliability performance score increased with the changes made to the measure during the redesign process (enhanced exclusions and widening the assessment window to +/- 60 days.)

Although there are fewer clinics reporting measure results for adolescents (118) and fewer adolescents (7,327) as compared to the adult population, the reliability performance score is still quite high at 0.900688. This demonstrates that for the adolescent population, results can be used to distinguish higher performing clinics from lower performing clinics.

This data analysis, along with precise specifications and excellent validation results of critical data elements, demonstrates this measure construct to be reliable and detects meaningful differences among provider groups.

[Response Ends]

2b.01. Select the level of validity testing that was conducted.

[Response Begins]

Patient or Encounter-Level (data element validity must address ALL critical data elements)

Accountable Entity Level (e.g. hospitals, clinicians)

Empirical validity testing

[Response Ends]

2b.02. For each level of testing checked above, describe the method of validity testing and what it tests.

Describe the steps—do not just name a method; what was tested, e.g., accuracy of data elements compared to authoritative source, relationship to another measure as expected; what statistical analysis was used.

[Response Begins]

Reliability/ Validity of the PROM- PHQ-9:

As PHQ-9 depression severity increased, there was a substantial decrease in functional status of all 6 SF-20 subscales in addition to an increase in symptom-related difficulty, sick days and health care utilization. Construct validity, using mental health professional re-interview as the criterion standard, has demonstrated a PHQ-9 score > 10 has a sensitivity of 88% and a specificity of 88% for major depression. Additionally, a score <5 almost always signifies the absence of a depressive disorder, with a positive likelihood ratio of 0.04. Also, ROC analysis showed that the area under the curve for the PHQ-9 in diagnosing major depression was 0.95, suggesting a test that discriminates well between persons with and without major depression.

The internal reliability of the PHQ-9 was excellent, with Cronbach's alpha of 0.89 in the PHQ-9 Primary Care Study and 0.86 in the PHQ OBGYN Study. Test-retest reliability of the PHQ-9 was also excellent. Correlation between the PHQ-9 completed by the patient in the clinic and that administered telephonically by the MHP within 48 hours was 0.84, and the mean scores were nearly identical (5.08 vs 5.03).

[Validity of a Brief Depression Severity Measure Kronke, Kurt, Spitzer, Robert et al. J Gen Internal Medicine 2001 September; 16(9): 606–613. www.ncbi.nlm.nih.gov/pmc/articles/PMC1495268/

Validity of the PROM-PM:

Data Element Validity: Validating the submitted data via the direct data submission process is completed in four steps: denominator certification, data quality checks, validation audit, and the two-week medical group review period.

Pre-submission certification occurs prior to data collection and extraction/ abstraction ensures that all medical groups apply the denominator criteria correctly and in a consistent manner. MNMCM staff review the documentation to verify all criteria were applied correctly, prior to approval for data submission.

Denominator certification documentation for this measure includes:

- Date of Birth (ranges)
- Date of Service (ranges)
- ICD-10 Codes used
- Attestation of inclusion of patients both with newly diagnosed depression and those with existing depression and elevated PHQ-9
- Exclusions to the measure and attest to mechanism to submit exclusion code/ reason for exclusion reasons that may happen after a patient has an index contact.

Groups additionally supply their query code for review.

Following data submission to the MNMCM Data Portal there are additional data quality checks in place for evaluating the accuracy of data submitted. During file upload, program checks for valid dates, codes and values and presents users with errors and warnings. Additionally, MNMCM staff review population counts (denominator) and outcome rates for any significant variance from the previous year's submission and may prompt further clarification from the medical group.

Validation audits verify that the clinical data submitted for the numerator component of the measure matched the data in the patient record. Other data elements are also audited to verify the patient was included in the denominator correctly (e.g., diagnosis of depression).

Validity Performance Score: Correlation was performed against several different measures.

Interpretation of correlation statistics is as follows:

1. Perfect: If the value is near ± 1 , then it is said to be a perfect correlation: as one variable increases, the other variable tends to also increase (if positive) or decrease (if negative).
2. High degree: If the coefficient value lies between ± 0.50 and ± 1 , then there is said to be a strong correlation.

Hypotheses tested included:

1. The correlation between two similar depression outcome measures; depression remission (PHQ-9 < 5) and depression response (PHQ-9 \geq 50 percent improved from index initial PHQ-9 score). The hypothesis is that clinics who do well achieving the response outcome will also do well at achieving remission. Clinically, patients with depression who have a response to treatment don't always reach remission, but the clinic-level measure rates should show some correlation.
2. The correlation between depression outcome rates and the rates of follow-up with a PHQ-9/ PHQ-9M. Patients who have regular follow-up PHQ-9 assessments with their providers represent ongoing evaluation of the patient's treatment plan and are more likely to achieve remission (PHQ-9 or PHQ-9M < 5) or a response to treatment (PHQ-9 or PHQ-9M is equal to or greater than 50% improved from index PHQ-9).
3. The correlation between patients who achieve remission and those who achieve response but not remission. This is an enhancement to the hypothesis stated in #1 in that it separates the measure rates into two distinct populations.

4. For the adult population, the correlation between depression outcome measures and another chronic condition measure for a diabetes composite measure. The hypothesis is expected to be somewhat weak because the conditions of depression (chronic-episodic) and diabetes (chronic) reflect different clinical course of care, different outcomes, and a different measure construct. However, there may be some correlation.

[Response Ends]

2b.03. Provide the statistical results from validity testing.

Examples may include correlations or t-test results.

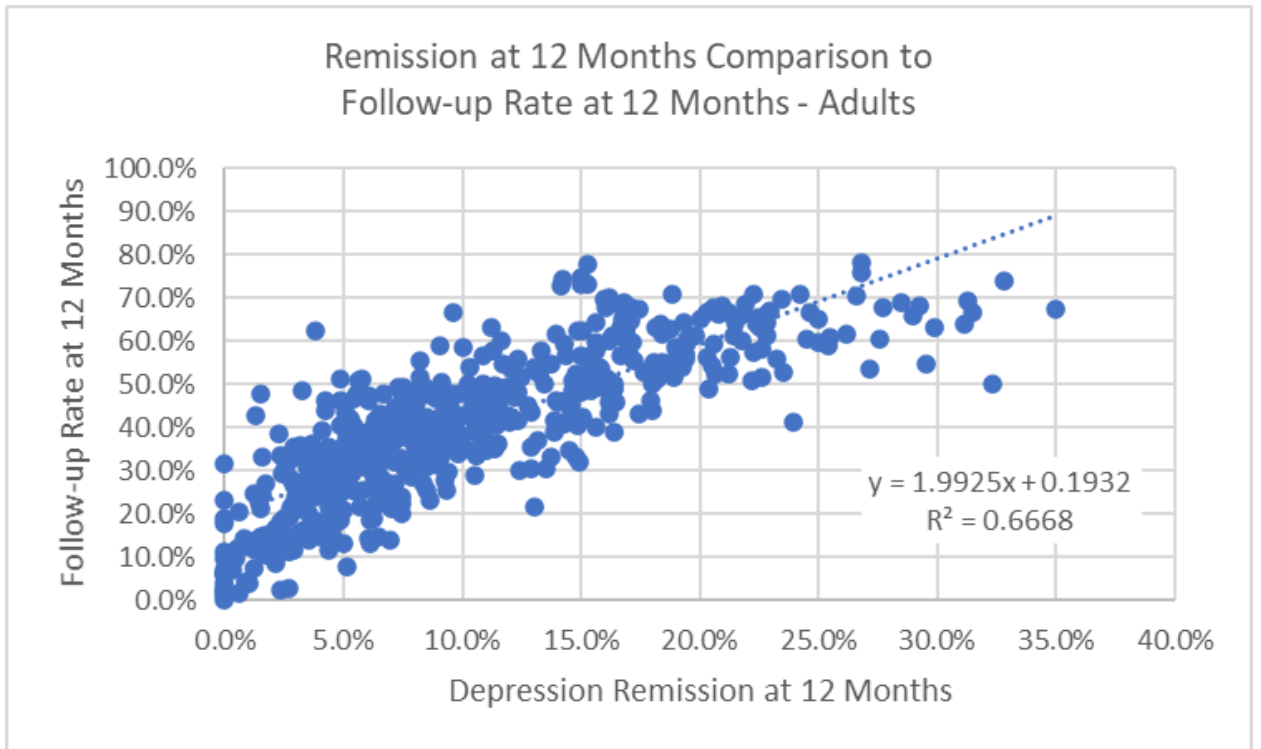
[Response Begins]

2021 Submission

Validity Performance Scores (Correlation)- Adults

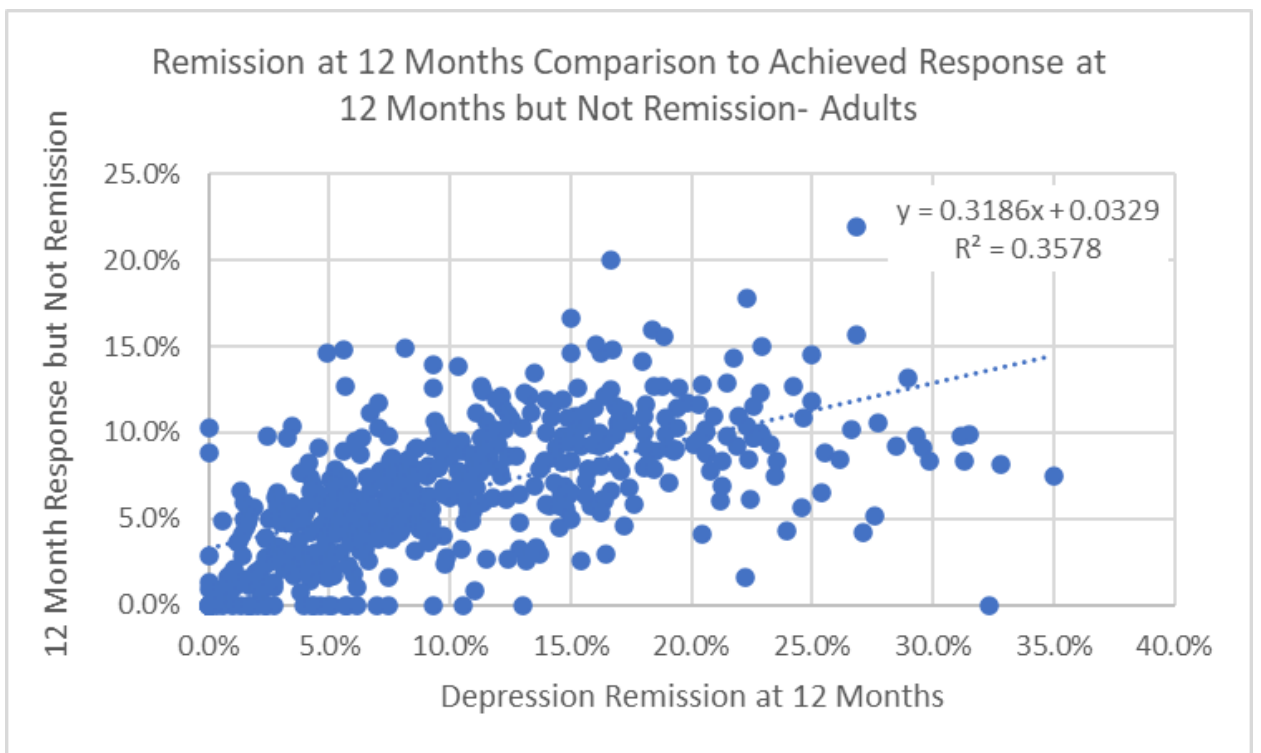
Hypothesis	Description	r-squared
#1	Correlation between depression remission (PHQ-9 < 5) and depression response (PHQ-9 ≥ 50 percent improved from index initial PHQ-9 score)	0.9051
#2	Correlation between depression outcome rates and the rates of follow-up	0.6666
#3	Correlation between patients who achieve remission and those who achieve response but not remission	0.3578
#4	Correlation between depression outcome and a diabetes composite measure	0.128

Display of Hypothesis #2 Correlation between Depression Remission at 12 Months and Follow-up Rate at 12 Months



Correlation between Depression Remission at 12 Months and Rate of Follow-up at 12 Months; 550 clinics and 118,132 patients R-Squared value of 0.6668

Display of Hypothesis #3 Correlation between Depression Remission at 12 Months and Patients who Achieve Response but Not Remission at 12 Months

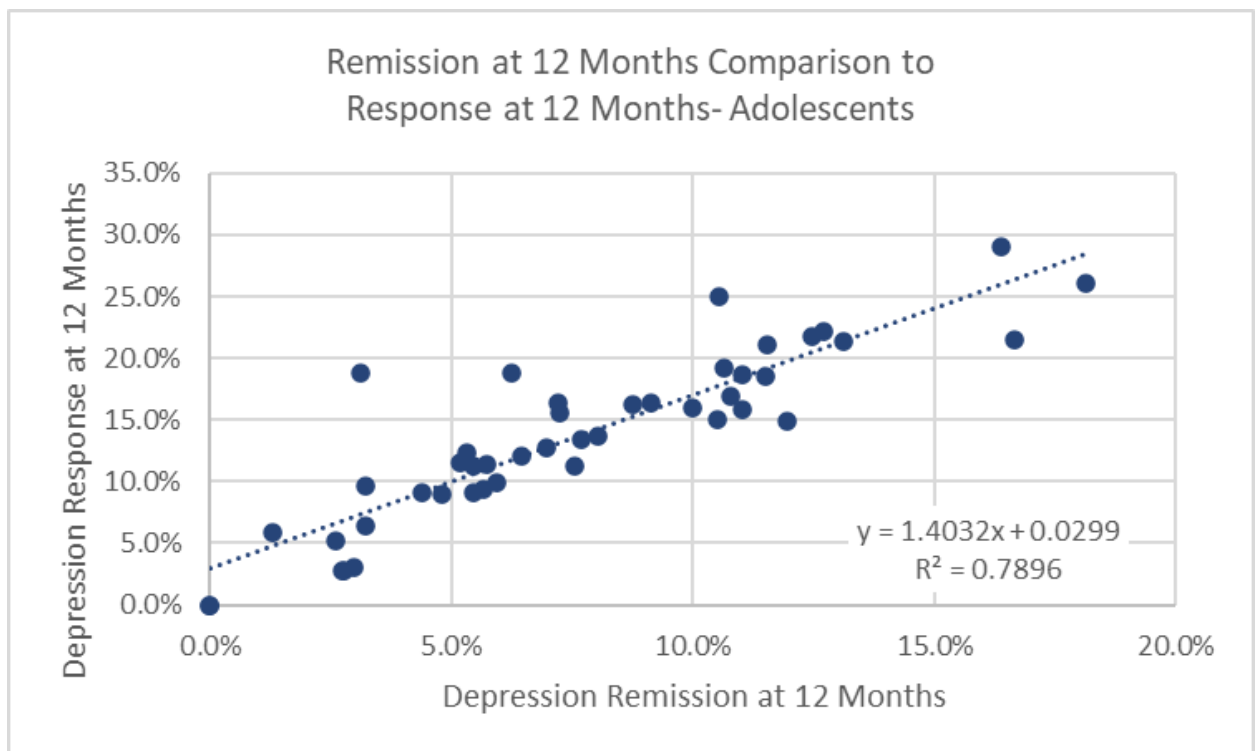


Correlation between Depression Remission at 12 Months and Patients who Achieve Response but Not Remission at 12 Months; 550 clinics and 118, 132 patients R-Squared value of 0.3578

Validity Performance Scores (Correlation)- Adolescents

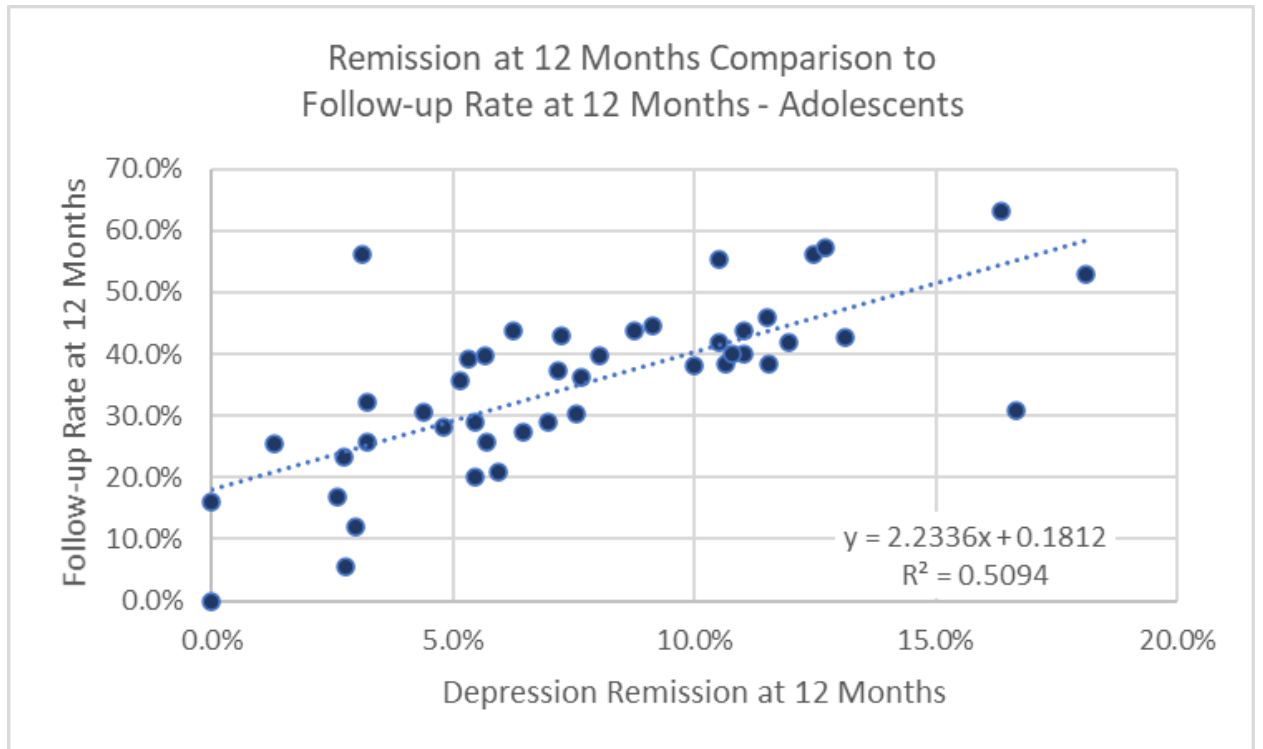
Hypothesis	Description	r-squared
#1	Correlation between depression remission (PHQ-9 < 5) and depression response (PHQ-9 \geq 50 percent improved from index initial PHQ-9 score)	0.7896
#2	Correlation between depression outcome rates and the rates of follow-up	0.5094
#3	Correlation between patients who achieve remission and those who achieve response but not remission	0.2366

Display of Hypothesis #1 Correlation between Depression Remission at 12 Months and Depression Response at 12 Months



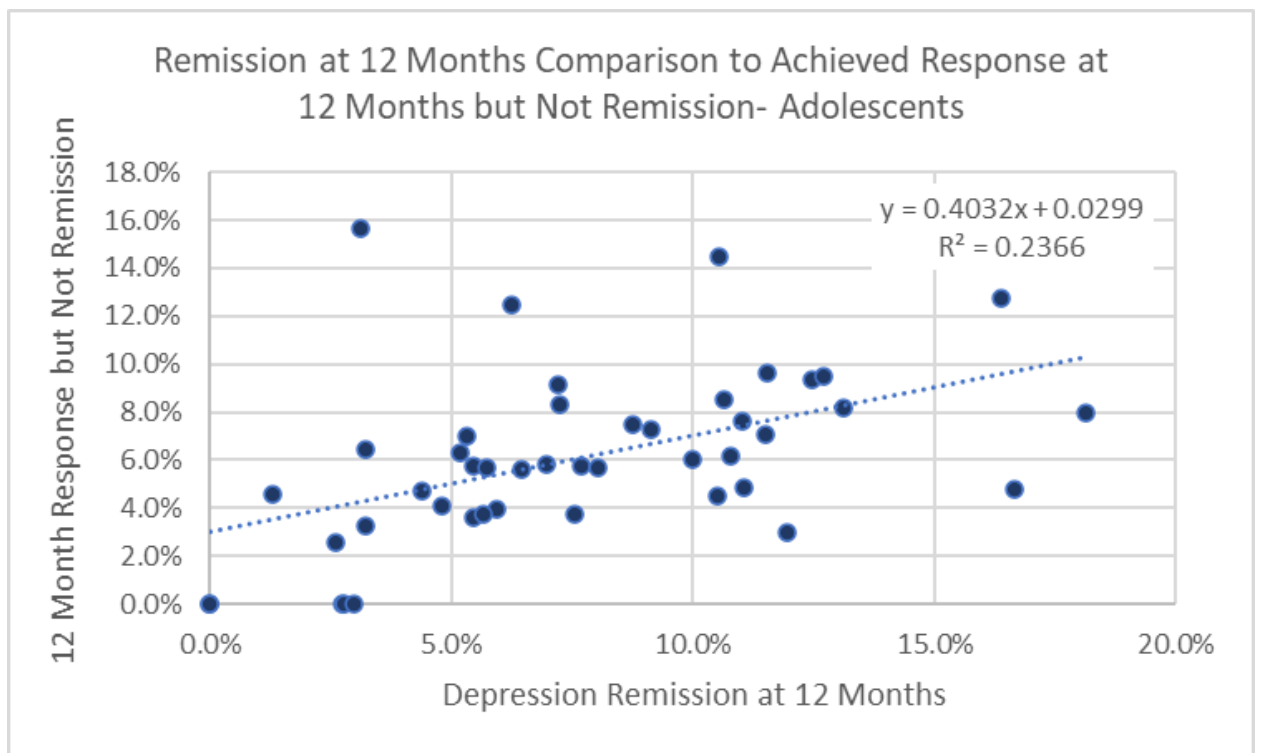
Correlation between Depression Remission at 12 Months and Depression Response at 12 Months; 45 medical groups and 112,115 patients R-Squared value of 0.7896

Display of Hypothesis #2 Correlation between Depression Remission at 12 Months and Rate of Depression Follow-up at 12 Months



Correlation between Depression Remission at 12 Months and Rate of Follow-up at 12 Months; 45 medical groups and 112,115 patients R-Squared value of 0.5094

Display of Hypothesis #3 Correlation between patients who achieve remission and those who achieve response but not remission



Correlation between Depression Remission at 12 Months and Patients who Achieve Response but not Remission ; 45 medical groups and 112,115 patients R-Squared value of 0.5094

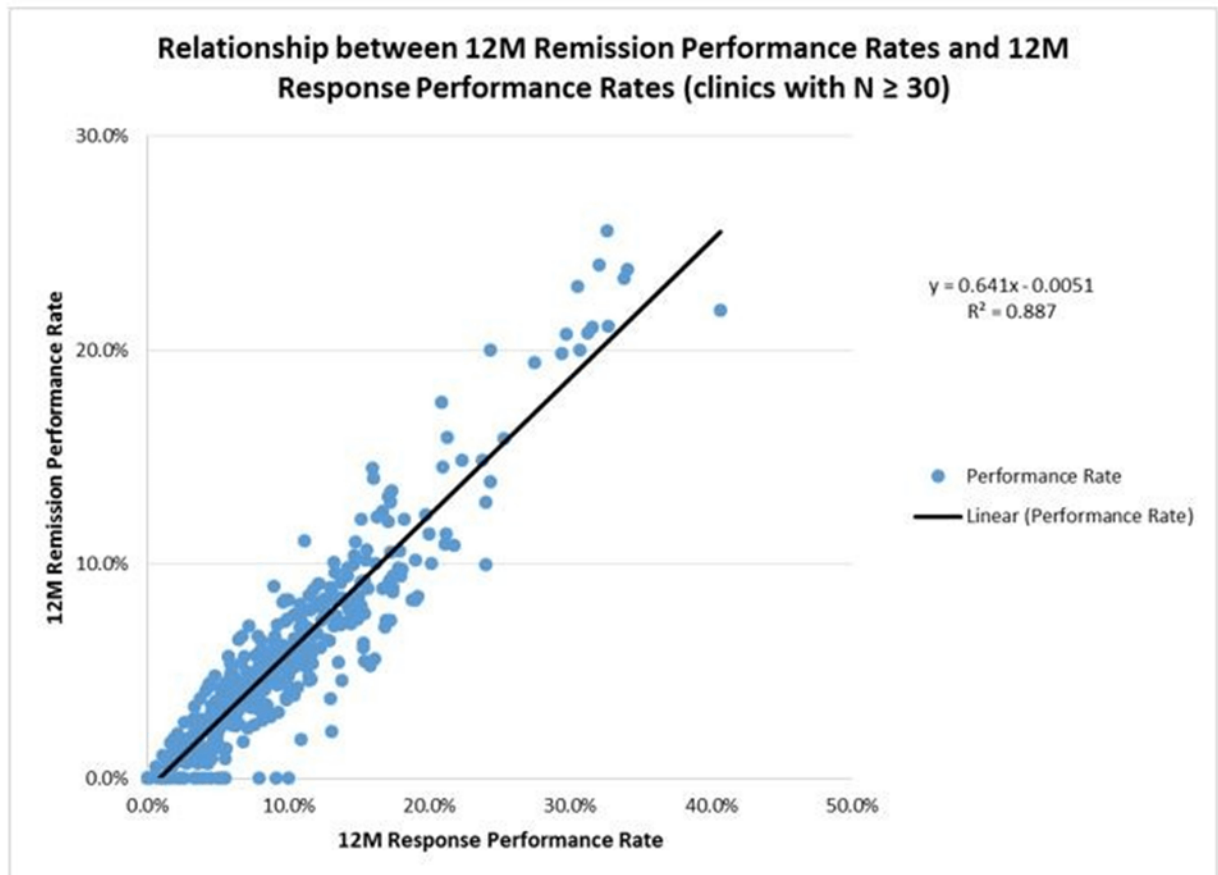
2020 Validation Summary- Data Elements

Pre-Submission	Post-submission Data Quality Checks	Audit of Data Source
<p>49% of groups passed with no errors.</p> <p>Types of errors: dates of service, dates of birth, ICD-10 codes, exclusions not applied correctly, intended to submit only one screening per patient</p> <p>Typically, most groups are able to correct file extraction issues, but this year eight groups did not proceed with correction and submission, citing EMR changes, resource limitations and inabilities related to prioritization during the COVID-19 pandemic.</p>	<p>58% of those that submitted data passed initial quality checks.</p> <p>Types of errors: insurance data, RELC data, file formatting that caused improper rate calculation (dx codes with extra spaces or no decimals), transposed counts for adult and adolescent populations, inability to submit full dates of service for the adolescent population, inconsistent patient ID format which impacted indexing and outcomes, incorrect dates of service/dates of birth</p> <p>Three groups did not proceed with correction of their submission, citing EMR changes, resource limitations and inabilities related to prioritization during the COVID-19 pandemic.</p>	<p>30% of groups that submitted data were audited; 94% passed the audit.</p> <p>Types of errors: file formatting produced incorrect PHQ-9 scores, inconsistent patient IDs</p>

2013 Submission

Validity Performance Score

Correlation between similar depression measures- adults



Validity Performance Score- Correlation between Response and Remission- Adults R-squared = 0.887 Remission = PHQ-9 < 5, Response is ≥ 50% improved

[Response Ends]

2b.04. Provide your interpretation of the results in terms of demonstrating validity. (i.e., what do the results mean and what are the norms for the test conducted?)

[Response Begins]

The PHQ-9/PHQ-9M patient reported outcome tool demonstrates sound psychometric properties (reliability, validity, specificity, and sensitivity to change) and is appropriate for measuring patient outcomes related to depression.

There was high compliance with critical data element validity as demonstrated by annual validation audit processes.

Correlation between different measures was performed. If the coefficient value lies between ± 0.50 and ± 1 , then there is said to be a strong correlation.

Hypothesis #1- Correlation between depression remission (PHQ-9 < 5) and depression response (PHQ-9 ≥ 50 percent improved from index initial PHQ-9 score). The rates of remission and response demonstrated a strong correlation confirming the hypothesis that clinics whose patients achieve a response to treatment have more success in achieving depression remission at 12 months. Clinically, patients with depression who have a response to treatment don't always reach remission, but the correlation between rates is high. Because these measures are subset of each other, additional measures were used for correlation.

Hypothesis #2 Correlation between depression outcome rates and the rates of follow-up. The measure construct is dependent on follow-up assessment of the patient to achieve the desired outcome, and patients who are not assessed remain in the denominator, but the act of administering an assessment tool alone is not enough to guarantee the desired outcome which requires a stepwise approach to the therapeutic treatment of depression (medication and/or therapy). There is a fairly strong correlation between these two measures supporting the hypothesis that patients who have regular follow-up PHQ-9 assessments with their providers represent ongoing evaluation of the patient's treatment plan and are more likely to achieve remission (PHQ-9 or PHQ-9M < 5) or a response to treatment (PHQ-9 or PHQ-9M is equal to or greater than 50% improved from index PHQ-9).

Hypothesis #3 Correlation between patients who achieve remission and those who achieve response but not remission. Demonstrated that there is a linear positive direction in the correlation between clinics whose patients achieve remission versus those who achieve response but not remission. A separate analysis for patients who were assessed with a follow-up PHQ-9 demonstrates that remission was at 24% while significant depression symptoms persisted for 49% of the patients (24% moderate, 15% major and 10% severe)

Hypothesis #4 For the adult population, the correlation between depression outcome measures and another chronic condition measure for a diabetes composite measure. As expected, the correlation between these measures was not as strong, but still represented a positive linear relationship. The conditions of depression (chronic-episodic) and diabetes (chronic) reflect different clinical courses of care, different outcomes, and different measure constructs.

[Response Ends]

2b.05. Describe the method for determining if statistically significant and clinically/practically meaningful differences in performance measure scores among the measured entities can be identified.

Describe the steps—do not just name a method; what statistical analysis was used? Do not just repeat the information provided in Importance to Measure and Report: Gap in Care/Disparities.

[Response Begins]

DATA COLLECTION

Data are reported at two levels: by clinic site and medical group. Clinic abstractors collect data from medical records either by extracting the data from an electronic medical record (EMR) via data query or from abstraction of paper-based medical records. All appropriate Health Insurance Portability and Accountability (HIPAA) requirements are followed for data transfer to MNMCM.

MNMCM staff conduct an extensive validation process including pre-submission data certification, post submission data quality checks of all files, and audits of the data source for selected clinics. For medical record audits, MNMCM uses NCQA's "8 and 30" File Sampling Procedure, developed in 1996 in consultation with Johns Hopkins University. For a detailed description of this procedure, see www.ncqa.org. Audits are conducted by trained MNMCM auditors who are independent of medical groups and/or clinics. The validation process ensures the data are reliable, complete and consistent.

ELIGIBLE POPULATION SPECIFICATIONS The eligible population for each measure is identified by a medical group on behalf of their individual clinics. MNMCM's 2019 DDS Data Collection Guides provide technical specifications for the standard definitions of the eligible population, including elements such as age.

NUMERATOR SPECIFICATIONS For DDS measures, the numerator is the number of patients identified from the eligible population who meet the numerator criteria. The numerator is calculated using the clinical quality data submitted by the medical group; this data is verified through MNMCM's validation process

7.2.4.1. Confidence intervals

Confidence intervals using the method of Agresti and Coull

The Wilson method for calculating confidence intervals for proportions (introduced by Wilson (1927), recommended by Brown, Cai and DasGupta (2001) and Agresti and Coull (1998)) is based on inverting the hypothesis test given in Section 7.2.4. That is, solve for the two values of p_0 (say, p_{upper} and p_{lower}) that result from setting $z = z_{1-\alpha/2}$ and solving for $p_0 = p_{upper}$, and then setting $z = z_{\alpha/2}$ and solving for $p_0 = p_{lower}$. (Here, as in Section 7.2.4, $z_{\alpha/2}$ denotes the variate value from the standard normal distribution such that the area to the left of the value is $\alpha/2$.) Although solving for the two values of p_0 might sound complicated, the appropriate expressions can be obtained by straightforward but slightly tedious algebra. Such algebraic manipulation isn't necessary, however, as the appropriate expressions are given in various sources. Specifically, we have

Formulas for the confidence intervals

$$U.L. = \frac{\hat{p} + \frac{z_{1-\alpha/2}^2}{2n} + z_{1-\alpha/2} \sqrt{\frac{\hat{p}(1-\hat{p})}{n} + \frac{z_{1-\alpha/2}^2}{4n^3}}}{1 + \frac{z_{1-\alpha/2}^2}{n}}$$

$$L.L. = \frac{\hat{p} + \frac{z_{\alpha/2}^2}{2n} + z_{\alpha/2} \sqrt{\frac{\hat{p}(1-\hat{p})}{n} + \frac{z_{\alpha/2}^2}{4n^3}}}{1 + \frac{z_{\alpha/2}^2}{n}}$$

The Wilson method for calculating confidence intervals for all clinic rates and statewide rates.

www.itl.nist.gov/div898/handbook/prc/section2/prc241.htm

Equation for the Calculation of Confidence Intervals; Wilson Method

CALCULATING RATES

Due to the dynamic nature of patient populations, rates and 95 percent confidence intervals are calculated for each measure for each medical group/clinic regardless of whether the full population or a sample is submitted. The statewide average rate is displayed when comparing a single medical group/clinic to the performance of all medical groups/clinics to provide context. The statewide average is calculated using all data submitted to MNMCM which may include some data from clinics located in neighboring states.

RISK ADJUSTMENT Risk adjustment is a technique used to enable fair comparisons of clinics/medical groups by adjusting for the differences in risk among specific patient groups. MNMCM uses an "Actual to Expected" methodology for risk adjustment. This methodology does not alter a clinic/medical group's result; the actual rate remains unchanged. Instead, each clinic/medical group's rate is compared to an "expected rate" for that clinic/medical group based on the specific characteristics of patients seen by the clinic/medical group, compared to the total patient population.

All expected values for DDS measures are calculated using a logistic regression model including the following variables: health insurance product type (commercial, Medicare, Medicaid, uninsured, unknown), patient age, and deprivation index. The deprivation index was added in 2018 and includes ZIP code level average of poverty, public assistance, unemployment, single female with child(ren), and food stamps (SNAP) converted to a single index that is a proxy for overall socioeconomic status.

A population proportions test is used to determine whether there is a statistically significant difference between the expected and actual rates of optimally managed patients attributed to each clinic/medical group. The methodology uses a 95 percent test of significance.

The tables for the risk-adjusted measures include the following information:

- Medical group/clinic name
- Performance

o "Above Average" = Clinic or medical group's actual rate is significantly above its expected rate

- o “Expected” = Clinic or medical group’s actual rate is equivalent to its expected rate
- o “Below Average” = Clinic or medical group’s actual rate is significantly below its expected rate
 - Patients = Number of patients at a medical group/clinic site that meet the denominator criteria for the measure.
 - Actual Rate = Actual percentage of patients meeting criteria (unadjusted rate).
 - Expected Rate = Expected percentage of patients meeting criteria based on the clinic’s/medical group’s mix of patient risk (adjusted rate).
 - Actual to Expected Ratio = Actual percentage of patients meeting criteria divided by the expected percentage of patients meeting criteria for the clinic’s/medical group’s mix of patient risk.

THRESHOLD FOR PUBLIC REPORTING

MNCM has established minimum thresholds for public reporting of DDS measures to ensure statistically reliable rates. Only medical groups and clinics that meet the threshold of 30 patients in the denominator of each measure are publicly reported.

[Response Ends]

2b.06. Describe the statistical results from testing the ability to identify statistically significant and/or clinically/practically meaningful differences in performance measure scores across measured entities.

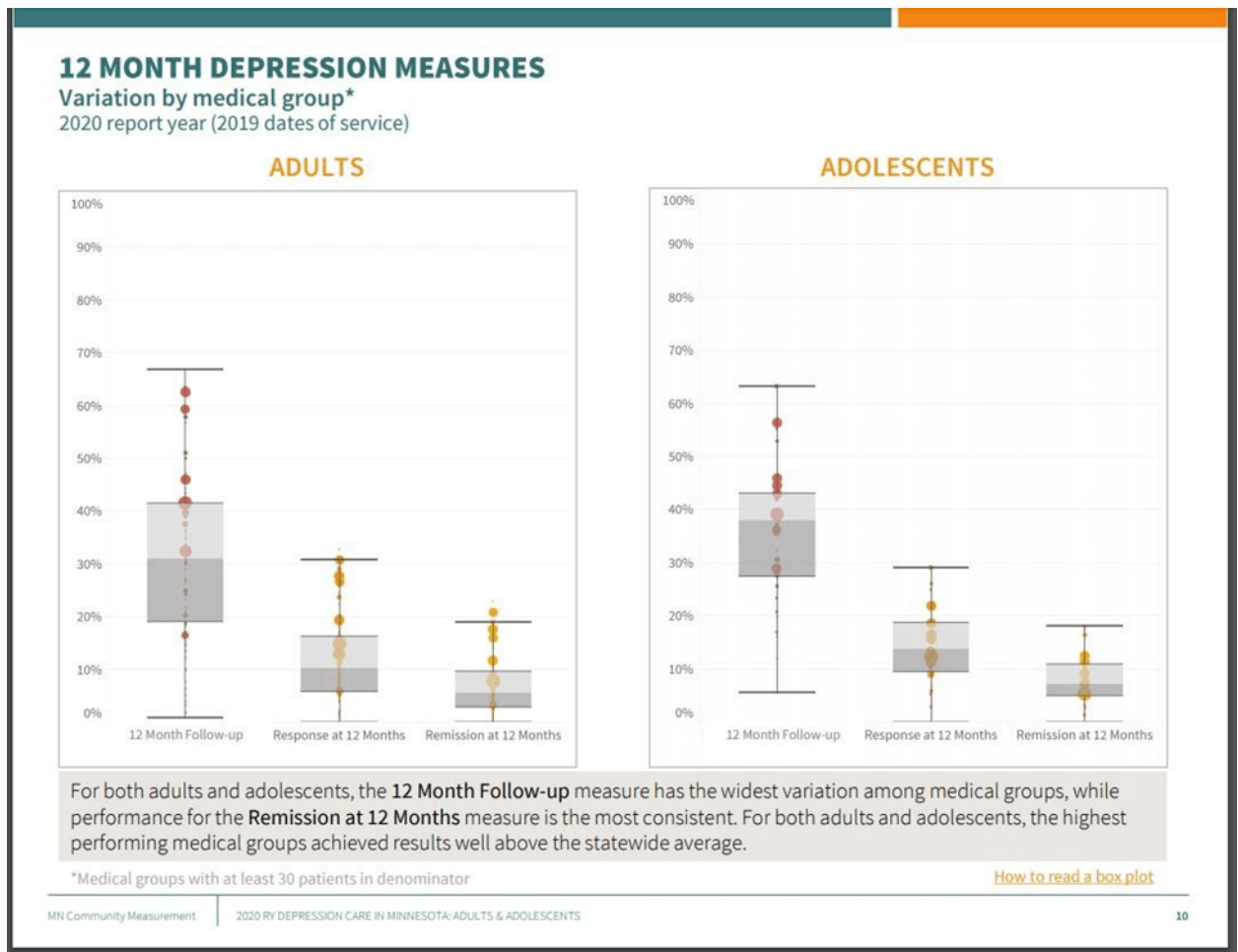
Examples may include number and percentage of entities with scores that were statistically significantly different from mean or some benchmark, different from expected; how was meaningful difference defined.

[Response Begins]

DEPRESSION CARE IN MINNESOTA: ADULTS & ADOLESCENTS 2020 REPORT YEAR (2019 DATES OF SERVICE)

https://mncmsecure.org/website/Reports/Spotlight%20Reports/2020_DepressionCare_Adults&Adolescents_Report.pdf

Variability is demonstrated by box plot quartiles demonstrating outliers, the minimum and maximum values, upper quartile, median and lower quartile. Distribution of rates demonstrates variability and opportunity for improvement.



MNCM Methods for Identifying Meaningful Differences; Variability Demonstrated by Box Plot Diagram

The image above depicts the variability of rates among medical groups around the statewide average:

- Adults 10.1% (range 0% to 22.9%) 120,344 patients from 550 clinics
- Adolescents 7.8% (range 0% to 18.1%) 11,658 patients from 118 clinics

The box plot diagram demonstrates that many medical groups fall within the upper quartile range. However, the overall rates are low and signal room for improvement.

MEDICAL GROUPS WITH HIGHEST PERFORMANCE												
2020 report year (2019 dates of service)												
Medical groups with above average performance on at least 50 percent of measures for which they were eligible.												
MEDICAL GROUP	ADULTS						ADOLESCENTS					
	Six Month Follow-up	Response at Six Months	Remission at Six Months	12 Month Follow-up	Response at 12 Months	Remission at 12 Months	Six Month Follow-up	Response at Six Months	Remission at Six Months	12 Month Follow-up	Response at 12 Months	Remission at 12 Months
Amery Hospital and Clinic	●	●	●	●	●	●	○	○	○	○	○	○
CentraCare Health	○	○	○	○	○	○	●	●	●	●	●	●
Entira Family Clinics	●	●	●	●	●	●	●	●	●	●	●	●
Essentia Health	●	●	●	●	●	●	○	○	○	○	○	○
HealthPartners Central Minnesota Clinics	●	●	●	●	●	●	○	○	○	○	○	○
HealthPartners Clinics	●	●	●	●	●	●	○	●	○	●	○	○
Lake Region Healthcare	●	●	●	●	●	●	○	●	○	●	○	●
Lakewood Health System	○	●	○	●	○	●	<	<	<	<	<	<
Mankato Clinic, Ltd.	●	●	●	●	●	●	●	●	●	●	●	●
Olmsted Medical Center	●	●	●	●	●	●	○	○	○	○	○	○
Ortonville Area Health Services	●	●	●	●	●	○	<	<	<	<	<	<
Park Nicollet Health Services	●	●	●	●	●	●	●	●	○	●	○	●
Sanford Health	●	●	●	●	●	●	○	○	○	○	○	○
Westfields Hospital and Clinic	●	●	●	●	●	●	<	<	<	<	<	<

● Above statewide average ○ Average or below statewide average < Not reportable (too few patients in measure denominator)

MN Community Measurement 2020 RY DEPRESSION CARE IN MINNESOTA: ADULTS & ADOLESCENTS 11

Display of MN Medical Groups Who Achieved Average Performance on at Least 50% of the Eligible Measures

The above image is a display of top medical groups in MN with the highest performance rates, having achieved above average performance on at least 50 percent of the measures. For example, the medical groups Entira Family Clinics and Mankato Clinic achieved above average rates in all measures which is delineated with a gold circle. Measure rates that were average or below the statewide average are designated with an open circle. A carat < indicates that there were too few patients in the denominator (e.g., adolescents) to calculate the measure.

[Response Ends]

2b.07. Provide your interpretation of the results in terms of demonstrating the ability to identify statistically significant and/or clinically/practically meaningful differences in performance across measured entities.

In other words, what do the results mean in terms of statistical and meaningful differences?

[Response Begins]

Measure continues to demonstrate significant opportunity for both maintaining contact with patients with depression (ongoing follow-up) and achieving an outcome of remission. Measure

results demonstrate opportunity for improvement in depression outcomes and identify meaningful differences among providers.

[Response Ends]

2b.08. Describe the method of testing conducted to identify the extent and distribution of missing data (or non-response) and demonstrate that performance results are not biased due to systematic missing data (or differences between responders and non-responders). Include how the specified handling of missing data minimizes bias.

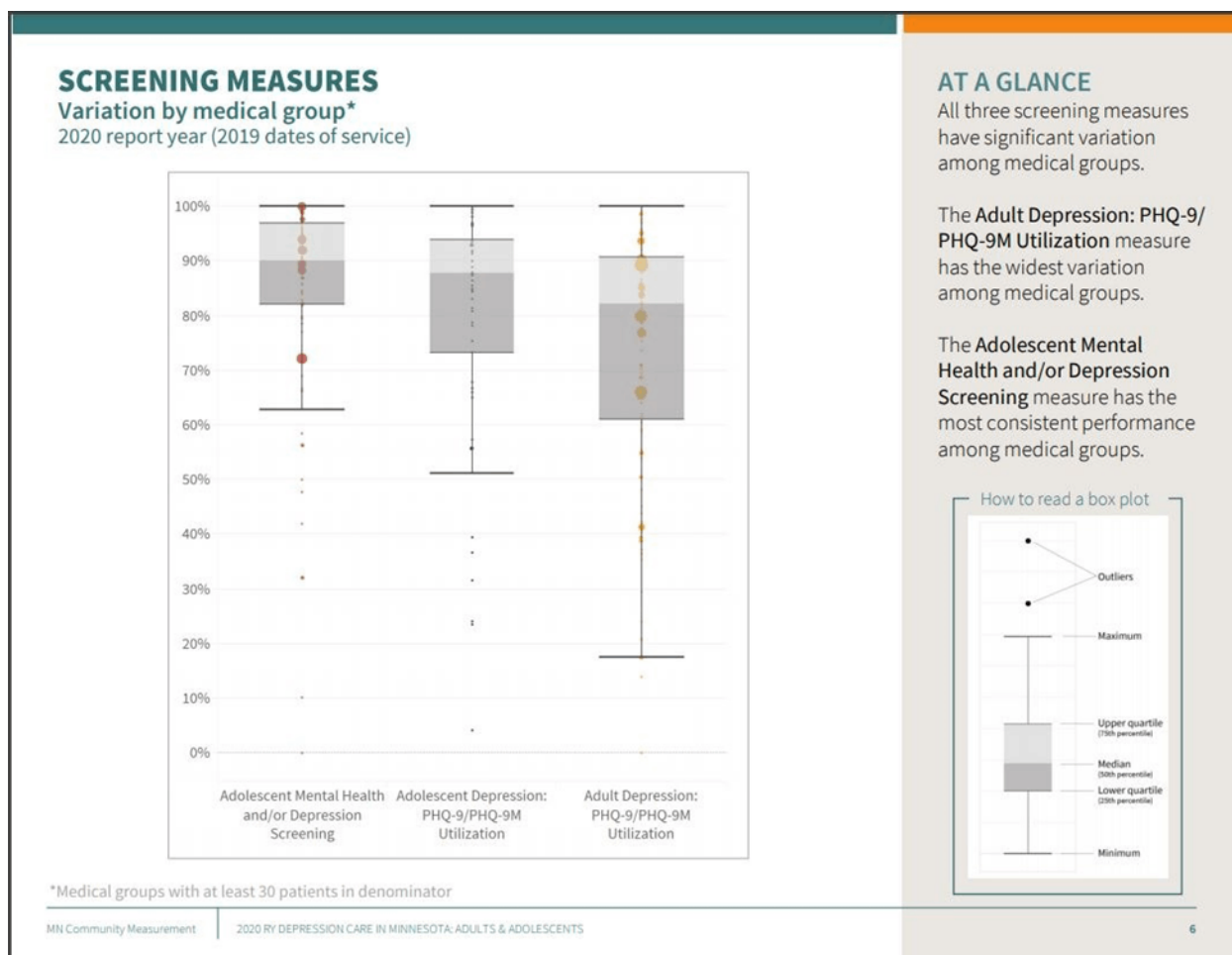
Describe the steps—do not just name a method; what statistical analysis was used.

[Response Begins]

Though it is well recognized that maintaining ongoing contact with this population of patients with depression is critical to their successful remission of symptoms, it is also very challenging to do so. Of any patient population, patients with depression are least likely to be able to self-advocate and require processes and systems in place for maintaining contact. MN has made incremental improvements in rates of follow-up PHQ-9 at 12 months, from 17.0% in 2010 to 41.8% in 2019 for adults. Adolescents, a new population for this measure have a 2019 follow-up rate of 38.9%

Missing data, in this case, follow-up PHQ-9 patient reported outcome assessment is not an issue as those patients who are not re-assessed in follow-up remain in the denominator and are treated as if they are not in remission. However, low outcome rates are not solely attributed to lack of follow-up. A portion of patients are still experiencing symptoms of depression and are not in remission. A separate analysis for patients who were assessed with a follow-up PHQ-9 demonstrates that remission was at 24% while significant depression symptoms persisted for 49% of the patients (24% moderate, 15% major and 10% severe)

There is a companion related measure that allows medical groups to understand their use of the PHQ-9/ PHQ-9M tool, NQF # 0712 Depression Utilization of PHQ-9M. This measure reports the rate of tool administration for patients with a diagnosis of depression or dysthymia seen during a four month measurement period.



Companion measure for utilization of the PHQ-9 for patients with major depression/ dysthymia; supports the outcome measures

The image above displays the box plot chart for the companion measure that informs PHQ-9/PHQ-9 usage for patients with a diagnosis of major depression or dysthymia. If there was avoidance of measuring the depression outcome measures of response and remission, a medical group would have a very low rate here as assessing with a PHQ-9/PHQ-9M tool is required for indexing into the denominator. This diagram shows statewide information and very few outliers with low PHQ-9/PHQ-9M administration rates.

[Response Ends]

2b.09. Provide the overall frequency of missing data, the distribution of missing data across providers, and the results from testing related to missing data.

For example, provide results of sensitivity analysis of the effect of various rules for missing data/non-response. If no empirical sensitivity analysis was conducted, identify the approaches for handling missing data that were considered and benefits and drawbacks of each).

[Response Begins]

Missing data is not an issue. Patients who are not assessed with a follow-up PHQ-9/ PHQ-9M at twelve months (+/- 60 days) are included in the denominator and treated as if they are not in remission.

[Response Ends]

2b.10. Provide your interpretation of the results, in terms of demonstrating that performance results are not biased due to systematic missing data (or differences between responders and non-responders), and how the specified handling of missing data minimizes bias.

In other words, what do the results mean in terms of supporting the selected approach for missing data and what are the norms for the test conducted; if no empirical analysis was conducted, justify the selected approach for missing data.

[Response Begins]

Missing data is not an issue for this measure as constructed; please see discussion in 2b.09

[Response Ends]

Note: This item is directed to measures that are risk-adjusted (with or without social risk factors) OR to measures with more than one set of specifications/instructions (e.g., one set of specifications for how to identify and compute the measure from medical record abstraction and a different set of specifications for claims or eQMs). It does not apply to measures that use more than one source of data in one set of specifications/instructions (e.g., claims data to identify the denominator and medical record abstraction for the numerator). Comparability is not required when comparing performance scores with and without social risk factors in the risk adjustment model. However, if comparability is not demonstrated for measures with more than one set of specifications/instructions, the different specifications (e.g., for medical records vs. claims) should be submitted as separate measures.

2b.11. Indicate whether there is more than one set of specifications for this measure.

[Response Begins]

No, there is only one set of specifications for this measure

[Response Ends]

2b.12. Describe the method of testing conducted to compare performance scores for the same entities across the different data sources/specifications.

Describe the steps—do not just name a method. Indicate what statistical analysis was used.

[Response Begins]

[Response Ends]

2b.13. Provide the statistical results from testing comparability of performance scores for the same entities when using different data sources/specifications.

Examples may include correlation, and/or rank order.

[Response Begins]

[Response Ends]

2b.14. Provide your interpretation of the results in terms of the differences in performance measure scores for the same entities across the different data sources/specifications.

In other words, what do the results mean and what are the norms for the test conducted.

[Response Begins]

[Response Ends]

2b.15. Indicate whether the measure uses exclusions.

[Response Begins]

Yes, the measure uses exclusions.

[Response Ends]

2b.16. Describe the method of testing exclusions and what was tested.

Describe the steps—do not just name a method; what was tested, e.g., whether exclusions affect overall performance scores; what statistical analysis was used?

[Response Begins]

When known, exclusions are removed “up-front”, prior to data submission and validated through the denominator certification process as described in 2b.02 and may not be available for analysis. When exclusions occur after the index contact event, they are included in the data submission for this measure and are available for analysis.

2021 Submission

With the redesign of this measure to incorporate the adolescent population, the measure development workgroup reviewed all exclusions and enhanced the measure to additionally exclude patients with schizophrenia and pervasive developmental disorder. An updated exclusion analysis was performed in 2020, demonstrating an overall rate of exclusion of 3.45% of 140,099 patients.

[Response Ends]

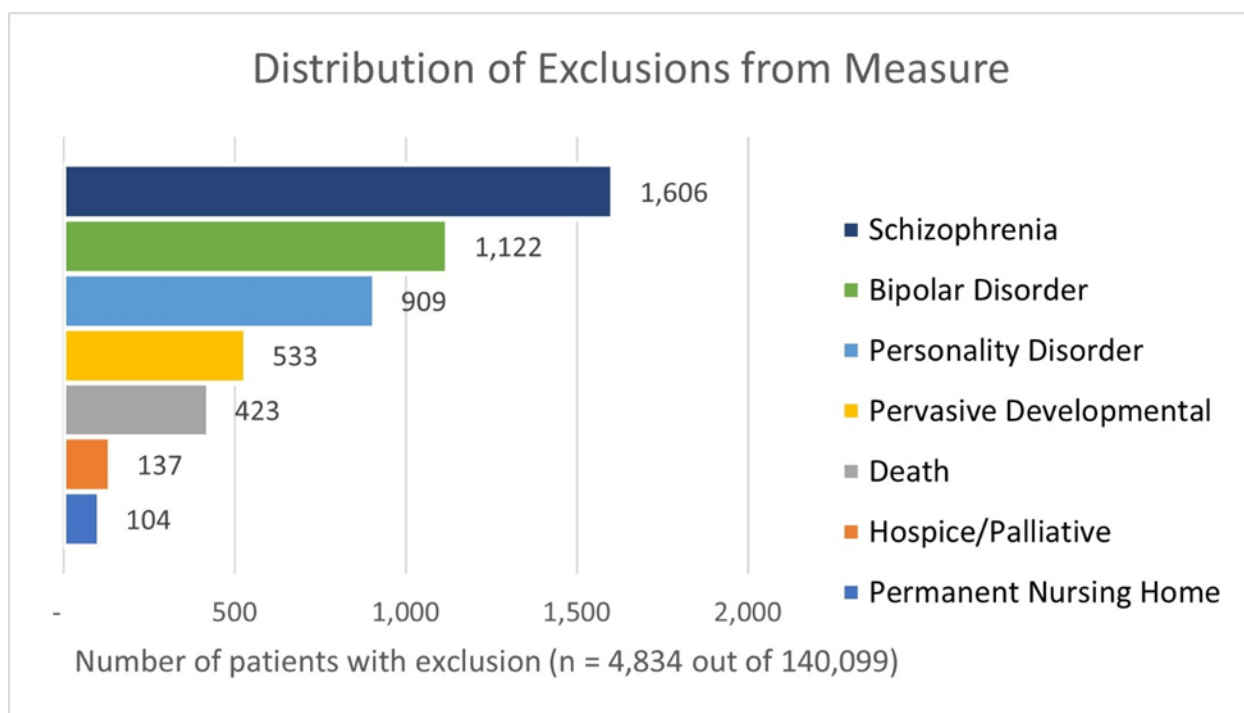
2b.17. Provide the statistical results from testing exclusions.

Include overall number and percentage of individuals excluded, frequency distribution of exclusions across measured entities, and impact on performance measure scores.

[Response Begins]

2021 Submission

2020 Updated Exclusion Analysis



Distribution of Exclusions of Patients with a Diagnosis of Major Depression or Dysthymia. Rate of 3.45%

The above image is a stacked bar chart demonstrating the frequency of exclusions used for a population of 140,099 patients. The most frequently occurring exclusion is schizophrenia (blue bar) followed by bipolar disorder (green bar). This is not a surprising result because clinically, these two conditions can have a depressive component. However, their treatments and outcomes are very different from major depression and they represent appropriate exclusions from the measure.

2013 Submission

2013- When known, exclusions are removed “up-front”, prior to data submission and validated through the denominator certification process and these exclusions are not available for analysis. When exclusions occur after the index contact event, they are included in the data submission for this measure and are available for analysis. 97.0% of the eligible patients remain in the denominator without need for further exclusion because of events or diagnoses occurring after index. Of the 3% of the population that do require exclusion after index, 86% were because of diagnosis of bipolar or personality disorder and 14% due to death, hospice or permanent nursing home residence.

[Response Ends]

2b.18. Provide your interpretation of the results, in terms of demonstrating that exclusions are needed to prevent unfair distortion of performance results.

In other words, the value outweighs the burden of increased data collection and analysis. Note: If patient preference is an exclusion, the measure must be specified so that the effect on the performance score is transparent, e.g., scores with and without exclusion.

[Response Begins]

Depression, like many chronic or episodic conditions, does not often exist in isolation from other medical conditions. Some mental health conditions like bipolar disorder or schizophrenia can have a component of depression or occur concurrently, but patients with these conditions have very different outcomes and to include them would distort the result of the measure. The goals related to measure development in terms of exclusions are to be patient centered and as inclusive as possible without distortion of the measure results.

Overall, exclusions do not limit or reduce the desired target population of patients with major depression or dysthymia. [2020 update]Updated analysis of modifications and additions to exclusions demonstrate continued appropriate clinical indication without reducing the target population. Reliability performance scores for the adult population increased slightly with measure redesign (from 0.846 to 0.9446)

For more information on the review and rationale for changes related to the redesign of the measure including the review of exclusions:

<https://helpdesk.mncm.org/helpdesk/KB/View/22742768--depression-changes-and-rationale>

[Response Ends]

2b.19. Check all methods used to address risk factors.

[Response Begins]

Statistical risk model with risk factors (specify number of risk factors)

[Statistical risk model with risk factors (specify number of risk factors) Please Explain]

Four risk variables: Age, Insurance Type, Depression Severity and Deprivation Index

Patient Age, Patient Insurance Type (Commercial, Medicare, State Public Programs, Uninsured and Unknown Insurance Type), Depression Severity Level at Time of Index (3 levels), and [2020 update] Deprivation Index of Patient Zip Code (percentage of households with SNAP Benefits, Living under Poverty Level, On Public Assistance, Single Female with Children and Percentage of Adults Unemployed).

[Response Ends]

2b.20. If using statistical risk models, provide detailed risk model specifications, including the risk model method, risk factors, risk factor data sources, coefficients, equations, codes with descriptors, and definitions.

[Response Begins]

MNCM uses Logistic Regression Modeling to create values supporting a method of Indirect Standardization Risk Adjustment, commonly referred to as Expected Value. Indirect standardization does not change the actual performance rates, rather answers the question: "If all providers had this medical group/ clinic's mix of patients, what would the statewide average be?". This method compares the provider's actual performance to the expected rate.

Example Clinic X	Unadjusted	Standardized to Clinic X Patient Mix
Statewide	39%	32%
Clinic X	35%	35%

Example Clinic X	Unadjusted	Standardized to Clinic X Patient Mix
Clinic X vs Statewide	Below	Above (Actual : Expected = 1.09

Risk variables used for this measure include age, initial PHQ-9/ PHQ-9M score, insurance product and patient neighborhood deprivation index (based on zip-code). Deprivation index includes use of SNAP benefits, living under the poverty level, unemployed status, public assistance, and single female with children. In MN, the ratio ranges are -6.41 (Red Lake) to +1.42 (Flom) with a mean of zero. "A measure of census-tract neighborhood deprivation is likely a good proxy for a range of individual-level and true area-level constructs relevant to outcomes of interest and feasible to obtain." [National Academies of Sciences, Engineering, and Medicine, 2017: Accounting for Social Risk Factors in Medicare Payment]

2021 Submission

12 Month Remission- Adults

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
C o m p a r e d t o P a t i e n t					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
s w i t h C o m m e r c i a l l n					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
s u r a n c e a n d M o d e r a t					

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	e D e p r e s s i o n					

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	P a r a m e t e r				S t a n d a r d E r r o r	W a l d C h i - S q u a r e

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	I n t e r c e p t			0 . 0 3 1 2	5 5 9 9 . 0 4 0 1	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
p t - a g e				0 . 0 0 0 6 6 1	3 7 3 . 0 7
m d c r				0 . 0 0 3 0 9	1 2 2 . 3 1 7 3

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	m h c p			0 . 0 2 5 9	3 9 2 . 2 0 7 8	
	u n i n s			0 . 0 5 8 6	3 8 . 0 5 7 7	

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	u n d t				0 . 0 3 4 9	1 5 0 . 4 5 6 5

Analysis of Maximum Likelihood Estimates					
mod-severe			0.0219	184.1034	

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	s e v e r e			0 . 0 2 9 5	3 8 6 . 7 9 6	
	d e p - i d x			0 . 0 1 3	1 0 6 . 4 3 8 7	

SAS Statistical Software Output Analysis of Variables Selected for Risk Adjustment; 12 Month
Remission Adults

Table of results for data elements selected for the risk stratification model (age, insurance product, severity of depression at index event and deprivation index. All variables have a Chi-squared p value of less than .0001.

12 Month Remission- Adolescents

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
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e n t s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
C					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c m					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c p					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
P					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
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r					

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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
D					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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p					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
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si					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
o					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n					
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P					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
a		s	t		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
r		t	a		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
a		i	r		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
m		r	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		a	a		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
t		t	r		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		e	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
r				E	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
				r	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
				r	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
				c	

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				r	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n					
n			1	.	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
t		.	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		e	s		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
r		1	0		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
c		1	1		

<p>A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e</p>					
e		3			

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
p					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
p		-	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
t		c	.		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
-		.	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
a		0	2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
g		3	2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		5	9		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
		4			

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c m					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
d					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
c		.	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
r		1	0		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
			0	4	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
		8	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
			2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c m					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c h					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
c		.	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
p		2	8		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
		4	5		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
		5	6		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
u					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n					
n			1	.	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c i					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
n		0	2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
s		2	4		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
			5		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
u					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
d		.	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
t		1	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
		4	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
		2	9		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
			s		

<p>A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c</p>					
m		-	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
o					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
d		.	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
-		3	7		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
s		6	7		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		6	7		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
v					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
s					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
v		.	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		e	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
r		3	2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		6	4		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
			1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
d		c	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
p		1	0		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
-					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c i					
		3	4		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
d		s	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c x					
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SAS Statistical Software Output Analysis of Variables Selected for Risk Adjustment; 12 Month Remission Adolescents

Table of results for data elements selected for the risk stratification model (age, insurance product, severity of depression at index event and deprivation index. All variables have a Chi-squared p value of less than .0001.

Definitions for Logistic Model

AIC – This is the Akaike Information Criterion. It is calculated as $AIC = -2 \log L + 2((k-1) + s)$, where k is the number of levels of the dependent variable and s is the number of predictors in the model. AIC is used for the comparison of nonnested models on the same sample. Ultimately, the model with the smallest AIC is considered the best, although the AIC value itself is not meaningful.

SC – This is the Schwarz Criterion. It is defined as $-2 \log L + ((k-1) + s) \log(\sum f_i)$, where f_i 's are the frequency values of the i^{th} observation, and k and s were defined previously. Like AIC, SC penalizes for the number of predictors in the model and the smallest SC is most desirable and the value itself is not meaningful.

-2 Log L – This is negative two times the log-likelihood. The -2 Log L is used in hypothesis tests for nested models and the value in itself is not meaningful.

Intercept Only – This column refers to the respective criterion statistics with no predictors in the model, i.e., just the response variable.

Intercept and Covariates – This column corresponds to the respective criterion statistics for the fitted model. A fitted model includes all independent variables and the intercept. We can compare the values in this column with the criteria corresponding Intercept Only value to assess model fit/significance.

Test – These are three asymptotically equivalent Chi-Square tests. They test against the null hypothesis that at least one of the predictors' regression coefficient is not equal to zero in the model. The difference between them are where on the log-likelihood function they are evaluated.

Likelihood Ratio – This is the Likelihood Ratio (LR) Chi-Square test that at least one of the predictors' regression coefficient is not equal to zero in the model. The LR Chi-Square statistic can be calculated by $-2 \log L(\text{null model}) - 2 \log L(\text{fitted model}) = 231.289 - 160.236 = 71.05$, where $L(\text{null model})$ refers to the Intercept Only model and $L(\text{fitted model})$ refers to the Intercept and Covariates model.

Score – This is the Score Chi-Square Test that at least one of the predictors' regression coefficient is not equal to zero in the model.

Wald – This is the Wald Chi-Square Test that at least one of the predictors' regression coefficient is not equal to zero in the model.

Chi-Square, DF and Pr > ChiSq – These are the Chi-Square test statistic, Degrees of Freedom (DF) and associated p-value (PR>ChiSq) corresponding to the specific test that all of the predictors are simultaneously equal to zero. We are testing the probability (PR>ChiSq) of observing a Chi-Square statistic as extreme as, or more so, than the observed one under the null hypothesis; the null hypothesis is that all of the regression coefficients in the model are equal to zero. The DF defines the distribution of the Chi-Square test statistics and is defined by the number of predictors in the model. Typically, PR>ChiSq is compared to a specified alpha level, our willingness to accept a type I error, which is often set at 0.05 or 0.01. The small p-value from all three tests would lead us to conclude that at least one of the regression coefficients in the model is not equal to zero.

[Response Ends]

2b.21. If an outcome or resource use measure is not risk-adjusted or stratified, provide rationale and analyses to demonstrate that controlling for differences in patient characteristics (i.e., case mix) is not needed to achieve fair comparisons across measured entities.

[Response Begins]

not applicable

[Response Ends]

2b.22. Select all applicable resources and methods used to develop the conceptual model of how social risk impacts this outcome.

[Response Begins]

Published literature

Internal data analysis

[Response Ends]

2b.23. Describe the conceptual and statistical methods and criteria used to test and select patient-level risk factors (e.g., clinical factors, social risk factors) used in the statistical risk model or for stratification by risk.

Please be sure to address the following: potential factors identified in the literature and/or expert panel; regression analysis; statistical significance of $p < 0.10$ or other statistical tests; correlation of x or higher. Patient factors should be present at the start of care, if applicable. Also discuss any "ordering" of risk factor inclusion; note whether social risk factors are added after all clinical factors. Discuss any considerations regarding data sources (e.g., availability, specificity).

[Response Begins]

During the measure development process, the expert panel discusses potential variables for risk adjustment that are important to consider for the measured population, in this case patients with depression. The group decides what clinical variables in addition to the MNCM standard demographic data (gender, age, zip, race/ethnicity, country of origin, primary language, and insurance product) to collect through the data collection and submission process. The potential risk adjustment variables are then evaluated for appropriate inclusion in the model based on a chi square t test value less than 0.05.

Guiding principles for variable selection include the following:

- Conceptual relationship with outcome
- Empirical association with outcome
- Variation across measured entities
- Not confounded with the effect of health care
- Resistant to manipulation or gaming
- Accurate data that can be reliably and feasibly captured
- Contribution of unique variation in the outcome (not redundant)
- Potentially, improvement in risk model
- Potentially, face validity and acceptability

Please refer to the response in question 2b.20 for a description of the Indirect Standardization Risk Adjustment process.

[Response Ends]

2b.24. Detail the statistical results of the analyses used to test and select risk factors for inclusion in or exclusion from the risk model/stratification.

[Response Begins]

2021 Submission

12 Month Remission- Adults

Updated model includes a variable of deprivation index (dep_idx) (NOTE: Maximum likelihood estimates contained in the output below are the same estimates that appear above in 2b.20)

rem1 2_a Depr essio n Remi ssion at 12 Mont hs- Adult s					
Prod uct Varia bles					
The FREQ Proc edur e					
prod _nm	Fr e q u e n c y	P e r c e n t	Cu m ul ati ve Fr eq ue nc y	Cu m ul ati ve Pe rc en t	
Com merci al	5 5 8 1 3	4 6 . 3 8	55 81 3	46 .3 8	

rem1 2_a Depr essio n Remi ssion at 12 Mont hs- Adult s				
Medi caid	2 7 3 8 4	2 2 . 7 5	83 19 7	69 .1 3
Medi care	1 9 6 0 9	1 6 . 2 9	10 28 06	85 .4 3
Self- Paid/ Unin sured	4 1 8 3	3 . 4 8	10 69 89	88 .9
Unde termi ned	1 3 3 5 5	1 1 . 1	12 03 44	10 0
com m	Fr e q u e n c y	P e r c e n t	Cu m ul ati ve Fr eq ue nc y	Cu m ul ati ve Pe rc en t
0	6 4 5 3 1	5 3 . 6 2	64 53 1	53 .6 2

rem1 2_a Depression Remission at 12 Months- Adults				
1	5 5 8 1 3	4 6 .3 8	12 03 44	10 0
mdcr	Frequency	Percentage	Cumulative Frequency	Cumulative Percentage
0	1 0 0 7 3 5	8 3 .7 1	10 07 35	83 .7 1
1	1 9 6 0 9	1 6 .2 9	12 03 44	10 0
mhcp	Frequency	Percentage	Cumulative Frequency	Cumulative Percentage

rem1 2_a Depr essio n Remi ssion at 12 Mont hs- Adult s				
0	9 2 9 6 0	7 7 . 2 5	92 96 0	77 .2 5
1	2 7 3 8 4	2 2 . 7 5	12 03 44	10 0
mdcd _uni ns	Fr e q u e n c y	P e r c e n t	Cu m ul ati ve Fr eq ue nc y	Cu m ul ati ve Pe rc en t
0	8 8 7 7 7	7 3 . 7 7	88 77 7	73 .7 7
1	3 1 5 6 7	2 6 . 2 3	12 03 44	10 0

rem1 2_a Depr essio n Remi ssion at 12 Mont hs- Adult s				
unins	Fr e q u e n c y	P e r c e n t	Cu m ul ati ve Fr eq ue nc y	Cu m ul ati ve Pe rc en t
0	1 1 6 1 6 1	9 6 .5 2	11 61 61	96 .5 2
1	4 1 8 3	3 .4 8	12 03 44	10 0
undt	Fr e q u e n c y	P e r c e n t	Cu m ul ati ve Fr eq ue nc y	Cu m ul ati ve Pe rc en t
0	1 0 6 9 8 9	8 8 .9	10 69 89	88 .9

rem12_a Depression Remission at 12 Months- Adults				
1	13355	11. 1	120344	100

SAS Statistical Software Output Analysis of Variables Selected for Risk Adjustment; Frequency and Logistic Procedures Adults

rem12_a Depression Remission at 12 Months- Adults		
Product Variables		
The LOGISTIC Procedure		
Model Information		
Data Set	RA.REM12_A_PROD_VARS	
Response Variable	remiss_12	
Number of Response Levels	2	
Model	binary logit	
Optimization Technique	Fisher's scoring	
Number of Observations Read	120344	
Number of Observations Used	120344	
Response Profile		
Ordered Value	remiss_12	Total Frequency

rem12_a Depression Remission at 12 Months- Adults		
11		12201
20		108143

SAS Statistical Software Output Analysis of Variables Selected for Risk Adjustment; Frequency and
Logistic Procedures Adults

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
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	o n a t 1 2 M o n t h s - A d u l t s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
C					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
m					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i p					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
e					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i d					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i t					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
P					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i t					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
i					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
e					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
n					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i t					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
s					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i w					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
i					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i t					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i h					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
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m					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
e					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i c					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
I					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
n					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i u					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i r					
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a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o					

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r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i t					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
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D					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i p					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i r					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
n					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
P				S	W

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
a		s	t	a	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
a		i	r	d	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
m				C	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
e					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
t		r	r	i	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
e				-	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
r				E	S

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
			r	q	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
			r	u	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
				c	a

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
			r	r	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
				e	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
I				0	5

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
n				5	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
t				0	9

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
e				9	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
r				1	.

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i c					
				2	0

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
e				4	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
p				0	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
t				1	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
p				3	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i t					
				7	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
-				3	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
g				0	0

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
e					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
				1	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
m				0	1

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
d				2	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
c			0	2	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
				0	3

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
				9	1

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
				7	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
				3	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
m			0	3	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i h					
				9	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
c			0	2	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
p					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
				2	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
				9	0

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
				7	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
				8	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
u			0	3	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
n				8	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
i					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
n				5	0

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
s			8	5	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
				6	7

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
				7	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
u				0	1

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
n				5	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
d				0	0

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
t					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
			4	4	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
				9	5

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
					6

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
				5	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
m				0	1

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o					
o				8	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
d				0	4

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
-				2	.

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
s			1	1	1

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
e				9	0

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i v					
				3	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
e				4	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i r					
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
e					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
s				0	3

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
e				8	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i v					
				0	6

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
e					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
e			7	9	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
					6

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
d				1	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
e				.	0

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
p				0	6

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
-				1	.

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
i		3	3	4	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i d					
				3	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n					
x				8	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i					
				7	

SAS Statistical Software Output Analysis of Variables Selected for Risk Adjustment; Frequency and Logistic Procedures Adults

Odds Ratio Estimates	Depression Remission at 12 Months-Adults		
Effect	Point Estimate	95% Wald Confidence Limits	
pt_age	1.013	1.012	1.014
mdcr	0.71	0.669	0.755
mhcp	0.575	0.545	0.608
unins	0.696	0.621	0.781
undt	0.652	0.609	0.698
mod_severe	0.743	0.712	0.775
severe	0.557	0.526	0.591
dep_idx	1.143	1.114	1.172

SAS Statistical Software Output Analysis of Variables Selected for Risk Adjustment; Frequency and Logistic Procedures Adults

12 Month Remission- Adolescents (new population) (NOTE: Maximum likelihood estimates contained in the output below are the same estimates that appear above in 2b.20)

rem1 2_c Depression Remission at 12 Months- Adolescents					
Product Variables					
The FREQ Procedure					
prod _nm	Frequency	Percent	Cumulative Frequency	Cumulative Percent	
Commercial	6671	57.22	6671	57.22	
Medicaid	3173	27.22	9844	84.44	
Medicare	159	13.6	1003	85.8	
Self-Paid/ Uninsured	328	28.1	1031	88.2	

rem1 2_c Depr essio n Remi ssion at 12 Mont hs- Adol esce nts					
Unde termi ned	1 3 2 7	1 1 . 3 8	11 65 8	10 0	
com m	Fr e q u e n c y	P e r c e n t	Cu m ul ati ve Fr eq ue nc y	Cu m ul ati ve Pe rc en t	
0	4 9 8 7	4 2 . 7 8	49 87	42 .7 8	
1	6 6 7 1	5 7 . 2 2	11 65 8	10 0	
mdcr	Fr e q u e n c y	P e r c e n t	Cu m ul ati ve Fr eq ue nc y	Cu m ul ati ve Pe rc en t	

rem1 2_c Depr essio n Remi ssion at 12 Mont hs- Adol esce nts					
0	1 1 4 9 9	9 8 . 6 4	11 49 9	98 .6 4	
1	1 5 9	1 . 3 6	11 65 8	10 0	
mhcp	Fr e q u e n c y	P e r c e n t	Cu m ul ati ve Fr eq ue nc y	Cu m ul ati ve Pe rc en t	
0	8 4 8 5	7 2 . 7 8	84 85	72 .7 8	
1	3 1 7 3	2 7 . 2 2	11 65 8	10 0	

rem1 2_c Depr essio n Remi ssion at 12 Mont hs- Adol esce nts						
mdcd _uni ns	Fr e q u e n c y	P e r c e n t	Cu m u l a t i v e F r e q u e n c y	Cu m u l a t i v e P e r c e n t		
0	8 1 5 7	6 9 . 9 7	81 57	69 .9 7		
1	3 5 0 1	3 0 . 0 3	11 65 8	10 0		
unins	Fr e q u e n c y	P e r c e n t	Cu m u l a t i v e F r e q u e n c y	Cu m u l a t i v e P e r c e n t		
0	1 1 3 3 0	9 7 . 1 9	11 33 0	97 .1 9		

rem12_c Depression Remission at 12 Months- Adolescents				
1	328	2.81	11658	100
undt	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	1031	88.62	10331	88.62
1	1327	11.38	11658	100

SAS Statistical Software Output Analysis of Variables Selected for Risk Adjustment; Frequency and Logistic Procedures Adolescents

rem12_c Depression Remission at 12 Months- Adolescents		
Product Variables		
The LOGISTIC Procedure		

rem12_c Depression Remission at 12 Months- Adolescents		
Model Information		
Data Set	RA.REM12_C_PROD_VARS	
Response Variable	remiss_12	
Number of Response Levels	2	
Model	binary logit	
Optimization Technique	Fisher's scoring	
Number of Observations Read	11658	
Number of Observations Used	11658	
Response Profile		
Ordered Value	remiss_12	Total Frequency
11		913
20		10745

SAS Statistical Software Output Analysis of Variables Selected for Risk Adjustment; Frequency and Logistic Procedures Adolescents

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					
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	o n t h s - A d o l e s c e n t s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M C					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M m					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M p					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
d					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M t					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o					
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
P					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
ti					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n					
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M t					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M w					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
it					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M h					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M C					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M m					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M m					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
ci					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
I					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
I					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
u					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M c					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
d					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M M					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
d					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M t					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
D					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
p					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
si					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					
P		E	S		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
a		s	t		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
r		t	a		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
a		i	r		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
m		r	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
r				E	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					
				r	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					
				r	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					
				r	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
I					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
n		1	.		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h					
		.	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					
		6	5		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
r		1	0		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M c					
		1	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M p					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M t					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
p		-	0		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					
-		.	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
a		0	2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
g		3	2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					
		4			

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M m					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
d					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M c					
		.	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
r		1	0		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					
		0	4		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					
		8	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					
		2			

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M m					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
c		.	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
p		2	8		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					
		4	5		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					
		5	6		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
u					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
n		1	.		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M i					
		.	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
n		0	2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
		2	4		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
u		-	0		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
n		0	.		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
d		.	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M t					
		1	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					
		4	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					
		2	9		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M m					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
d		.	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					
-		3	7		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
		6	7		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					
			6	7	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
v					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
v		.	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
r		3	2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					
		6	4		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					
			1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
d					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
p		1	0		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M					
-		0	5		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M i					
		3	4		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
d		9	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s D e p r e s s i o n R e m i s s i o n a t 1 2 M o n t h s					
x					

SAS Statistical Software Output Analysis of Variables Selected for Risk Adjustment; Frequency and Logistic Procedures Adolescents

Odds Ratio Estimates Depression Remission at 12 Months-Adolescents			
Effect	Point Estimate	95% Wald Confidence Limits	
pt_age	0.965	0.923	1.01
mdcr	0.897	0.494	1.629
mhcp	0.782	0.661	0.925
unins	0.359	0.19	0.678
undt	0.867	0.693	1.084
mod_severe	0.693	0.595	0.807
severe	0.529	0.433	0.647
dep_idx	1.11	0.998	1.234

SAS Statistical Software Output Analysis of Variables Selected for Risk Adjustment; Frequency and Logistic Procedures Adolescents

No variables were excluded for statistical reasons. However, some data variables were not included because they were not available (e.g., income) or reasonably available.

Statistical analysis demonstrates that the variables selected are a good fit for the measure stratified by adults and adolescents. There are some inherent differences for the adolescent population based on age and insurance coverage. For example, the age range is smaller for the adolescent population (12 - 17) and the volume of Medicare coverage is significantly less than adults. Although not all variables perform in the same manner for adolescents, MNMCM decided to keep the variables consistent across the measure and continue to stratify the outcome results by adults and adolescents.

It is critical to understand that in our reporting of these measures, that the actual outcome rate does not change or adjust the outcome; the actual rate is displayed along with the expected rate based on risk variables.

2013 Submission

2013 Original Model Development:

Originally, the depression remission at six months measure (#0710) was tested to determine the appropriate selection of variables using the following method:

The effect of risk adjustment on clinic ranking is examined in three ways. First, the clinic's unadjusted and adjusted quality measures are compared using correlation analysis. Two types of correlation are used, Pearson and Kendall. Pearson's correlation examines the correlation when the measures are treated as continuous measures. A high correlation (close to 1) means that the two measures strongly co-vary, when one is high the other is high. Kendall's correlation examines the similarity between the unadjusted and adjusted quality measure in terms of the similarity in the way clinics are ranked by the measures. Because of the focus of Kendall's correlation on comparing ranks and the interest in the use of clinic quality scores for clinic comparison, Kendall's correlation is likely to be the most useful correlation measure.

The second comparison ranks the clinics into performance rank deciles based on the unadjusted and adjusted scores and then examines how decile rankings based on unadjusted measures compare to decile rankings based on adjusted measures. The third comparison ranks clinics into Poor, Below Average, Average, Above Average, and Excellent categories using statistical methods that take into account the quality measure's confidence interval which is calculated based on the number of patients each clinic reports. These two methods are compared directly in our accompanying report on the quality deviations ranking approach.

Risk adjustment is necessary only when there is heterogeneity across clinics. There was significant heterogeneity across clinics in insurance product mix ($\chi^2 = 10120$, $p < .001$), patient age ($\chi^2 = 5325$, $p < .001$), gender ($\chi^2 = 1267$, $p < .001$), initial severity ($\chi^2 = 1759$, $p < .001$), and distance to the clinic ($\chi^2 = 35015$, $p < .001$).

TABLE 1: EFFECT OF POTENTIAL RISK ADJUSTERS ON DEPRESSION						
Variable	Contrast	Estimate	T-value	Odds Ratio	Lower 95% CI	Upper 95% CI
1A: MODEL WITHOUT SES AND RACE FROM ZIP CODE DATA						
Age						
18-25	66+	-0.62**	-6.66	0.54**	0.45	0.65
26-50	66+	-0.68**	-8.70	0.51**	0.44	0.59
51-65	66+	-0.66**	-8.48	0.52**	0.45	0.60
Gender						
Female	Male	-0.08	-1.88	0.92	0.85	1.00
Comorbidity						
Moderate	Severe	0.57**	10.56	1.77**	1.59	1.97
Moderately Severe	Severe	0.39**	6.84	1.48**	1.33	1.66
Variable	Contrast	Estimate	T-value	Odds Ratio	Lower 95% CI	Upper 95% CI
Distance from Clinic						
<5 miles	Same Zip	-0.05	-0.86	0.95	0.85	1.07
5-10 miles	Same Zip	-0.09	-1.44	0.92	0.82	1.03
10-20 miles	Same Zip	-0.06	-1.03	0.94	0.83	1.06
20+ miles	Same Zip	-0.10	-1.33	0.90	0.78	1.05
Insurance						
Medicare	Commercial	-0.48**	-9.72	0.55**	0.48	0.63
Medicaid / MSHO / Special Needs / Self-pay / Uninsured	Commercial	-0.59**	-8.83	0.62**	0.56	0.68
Constant		-1.85	-1.76			

Statistical Model Outputs from Original Development; Adults

1B: MODEL WITH SES AND RACE FROM ZIP CODE DATA			
Age			
18-25	66+	-0.62**	-6.65
26-50	66+	-0.68**	-8.67
51-65	66+	-0.66**	-8.47
Gender			
Female	Male	-0.08	-1.87
Comorbidity			
Moderate	Severe	0.57**	10.51
Moderately Severe	Severe	0.39**	6.80
Distance from Clinic			
<5 miles	Same Zip	-0.05	-0.78
5-10 miles	Same Zip	-0.09	-1.45
10-20 miles	Same Zip	-0.07	-1.19
20+ miles	Same Zip	-0.09	-1.22
Insurance			
Medicare	Commercial	-0.59**	-8.74
Medicaid / MSHO / Special Needs / Self- pay / Uninsured	Commercial	-0.46**	-9.43
Zip Code Data			
Median Income		0.03	1.91
Percent Black		0.00	-0.81
Percent Hispanic		0.38	0.72
Constant		-1.99	-1.89
** indicates statistical significance.			

Statistical Model Outputs from Original Development; Adults

[Response Ends]

2b.25. Describe the analyses and interpretation resulting in the decision to select or not select social risk factors.

Examples may include prevalence of the factor across measured entities, availability of the data source, empirical association with the outcome, contribution of unique variation in the outcome, or assessment of between-unit effects and within-unit effects. Also describe the impact of adjusting for risk (or making no adjustment) on providers at high or low extremes of risk.

[Response Begins]

2021 Submission

MNCM staff met with a team of researchers at the University of Minnesota that work with health disparities research to better understand if Race, Ethnicity, Language and Country of Origin (RELO) variables met the criteria of having a conceptual relationship (i.e., race should affect the measure) and were not confounded by the clinic's contribution. The data demonstrates that RELO variables do have an impact to some degree but proving both a conceptual relationship and not being a confounding factor was not a consensus that the MNCM Risk Adjustment Committee could reach. They concluded that geography is what should be considered. Neighborhoods are what truly matter ; an actual neighborhood defined by census block tracks. Neighborhoods appear to incorporate numerous factors that do impact risk adjustment. They include some parts

of RELO, but also median income, traditional family wealth, incarceration rates, food, single family homes, safety, truancy, ambient noise level and factors we know to be social determinants of health.

Race, Ethnicity, Language and Country of Origin (RELO) data were not used because of potential implicit bias. For these reasons, the deprivation index was selected as a proxy for social determinants of health.

[Response Ends]

2b.26. Describe the method of testing/analysis used to develop and validate the adequacy of the statistical model or stratification approach (describe the steps—do not just name a method; what statistical analysis was used). Provide the statistical results from testing the approach to control for differences in patient characteristics (i.e., case mix) below. If stratified ONLY, enter “N/A” for questions about the statistical risk model discrimination and calibration statistics.

Validation testing should be conducted in a data set that is separate from the one used to develop the model.

[Response Begins]

2013- The analyses were conducted at the patient level, with patients nested within clinics. Patient characteristics, such as age, gender, initial severity, insurance product, distance between the patient's zip code and the clinic's zip code, and an indicator (fixed effect) for each clinic were included in the model. The patient characteristics measure the relationship between those characteristics and patient outcomes. The clinic indicators measure clinic differences in performance controlling for patient characteristics. The clinic indicators also control for unobserved differences across clinics that may be correlated with the risk adjusters and result in biased estimates of the risk adjustment effects.

The analysis of whether follow-up is correlated with remission was done using Stata's implementation of Heckman's method for correcting for sample selection. The sample selection occurs because remission is observed only for those who are followed up at six months. The Heckman procedure estimates two models: one for follow-up and one for remission. The procedure tests whether follow-up is correlated with remission. The measures included in the follow-up equation are age, gender, initial severity, insurance product, and distance to the clinic. The measures included in the remission equation are age, gender, initial severity, insurance product, and a clinic fixed effect.

A logistic model specification that accounts for the binary nature of remission (depression is a binary outcome - yes/no) is used. Severity at initial diagnosis, age, gender, and insurance product were included as risk adjusters.

2021 Submission Update

The analyses were conducted at the patient level and then rolled up to the clinic level to complete testing at the level of the clinic. Patient characteristics, such as age, initial severity, insurance product, deprivation index and an indicator (fixed effect) for each clinic was included in the model. The patient characteristics measure the relationship between those characteristics and patient outcomes. The clinic indicators measure clinic differences in performance controlling for patient characteristics. The clinic indicators also control for unobserved differences across clinics that may be correlated with the risk adjusters and result in biased estimates of the risk adjustment effects.

The measures included in the follow-up equation are age, initial severity, insurance product, and zip code level deprivation index. The measures included in the remission equation are age, initial severity, insurance product, deprivation index and a clinic fixed effect. A logistic model specification that accounts for the binary nature of remission (depression is a binary outcome – yes/no) is used.

[Response Ends]

2b.27. Provide risk model discrimination statistics.

For example, provide c-statistics or R-squared values.

[Response Begins]

2021 Submission

12 Month Remission- Adults

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
C o m p a r e d t o P a t i e n t					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
s w i t h C o m m e r c i a l l n					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
s u r a n c e a n d M o d e r a t					

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	e D e p r e s s i o n					

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	P a r a m e t e r				S t a n d a r d E r r o r	W a l d C h i - S q u a r e

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	I n t e r c e p t				0 . 0 3 1 2	5 5 9 9 . 0 4 0 1

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	p t - a g e			0 . 0 0 0 6 6 1	3 7 3 . 0 7	
	m d c r			0 . 0 0 3 0 9	1 2 2 . 3 1 7 3	

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	m h c p			0 . 0 2 5 9	3 9 2 . 2 0 7 8	
	u n i n s			0 . 0 5 8 6	3 8 . 0 5 7 7	

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	u n d t			0 . 0 3 4 9	1 5 0 . 4 5 6 5	

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	m o d - s e v e r e			0 . 0 2 1 9	1 8 4 . 1 0 3 4	

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	s e v e r e			0 . 0 2 9 5	3 8 6 . 7 9 6	
	d e p - i d x			0 . 0 1 3	1 0 6 . 4 3 8 7	

SAS Statistical Software Output Analysis of Variables Selected for Risk Adjustment; 12 Month
Remission Adults

Table of results for data elements selected for the risk stratification model (age, insurance product, severity of depression at index event and deprivation index. All variables have a Chi-squared p value of less than .0001.

12 Month Remission- Adolescents

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
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e n t s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
C					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c o					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c m					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c p					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
d					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
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a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
o					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c m					
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ci					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
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M					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c o					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
D					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c p					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
si					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c o					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n					
n					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
P					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
a		s	t		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
r		t	a		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
a		i	r		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c m					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		a	a		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
t		t	r		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		e	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
r				E	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
				r	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
				r	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
				c	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
				r	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
I					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n					
n			1	.	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
t		.	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		e	s		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
r		1	0		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
c		1	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e			3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c p					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
p		-	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
t			c	.	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
-		.	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
a		0	2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
g		3	2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		5	9		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
			4		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c m					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
d					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
c		.	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
r		1	0		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
			0	4	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
		8	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
			2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c m					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c h					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
c		.	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
p		2	8		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
		4	5		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
		5	6		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
u					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n					
n			1	.	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c i					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
n		0	2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
s		2	4		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
			5		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
u					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n					
n		c	.		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
d		.	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
t		1	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
		4	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
		2	g		

Analysis of Maximum Likelihood Estimates 12 Month Remission - Adolesc					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c m					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
o					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
d		.		d	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
-		3	7		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
s		6	7		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		6	7		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
v			5		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
s					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
v		.	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		e	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
r		3	2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		6	4		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
			1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
d		c	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		.	.		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
p		1	0		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
-					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c i					
		3	4		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
d		s	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c x					
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SAS Statistical Software Output Analysis of Variables Selected for Risk Adjustment; 12 Month Remission Adolescents

Table of results for data elements selected for the risk stratification model (age, insurance product, severity of depression at index event and deprivation index. All variables have a Chi-squared p value of less than .0001.

2013 Submission

2013- Risk adjustment is necessary only when there is heterogeneity across clinics. There was significant heterogeneity across clinics in insurance product mix ($\chi^2 = 10120$, $p < .001$), patient age ($\chi^2 = 5325$, $p < .001$), gender ($\chi^2 = 1267$, $p < .001$), initial severity ($\chi^2 = 1759$, $p < .001$), and distance to the clinic ($\chi^2 = 35015$, $p < .001$).

[Response Ends]

2b.28. Provide the statistical risk model calibration statistics (e.g., Hosmer-Lemeshow statistic).

[Response Begins]

2021 Submission

2020 12 Month Remission- Adults

	N o R i s k A d j u s t m e n t		A d u l t 1 2 M o n t h R e m i s s i o n				
--	------------------------------------------------------------------------------	--	-------------------------------------------------------------------------------------------------------	--	--	--	--

	No Risk Adjustment	Adult 12 Month Remission				
			Impact of Risk Adjustment on Comparison			

	N o R i s k A d j u s t m e n t	A d u l t 1 2 M o n t h R e m i s s i o n				
		s o n t o M e a n				
		C l i n i c D i s t r i b u t i o n				

N o R i s k A d j u s t m e n t		A d u l t 1 2 M o n t h R e m i s s i o n				
			R i s k A d j u s t e d C o m p a r i s o n			

No Risk Adjustment	Adult 12 Month Remission				
			Below Expected		
	Below Average		103^		

No R i s k A d j u s t m e n t	A d u l t 1 2 M o n t h R e m i s s i o n				
	A v e r a g e	3 *			
	A b o v e A v e r a g e	0			
		1 0 6			

Two Dimensional Table Displaying the Impact of Risk Adjustment for Individual Clinics

The above table is a two-dimensional display of the impact of risk adjustment. If the 150 clinics that are statistically below the mean before adjustment, 47 of those clinics (green cell/+ symbol) are considered “Expected” once the social and medical factors are considered. Conversely, blue cells/ * symbol represents the clinics whose rating decreased as a result of risk adjustment. The gray cells/ ^ symbol represents the number of clinics (majority) whose rating did not change as a result of risk adjustment.

The design of this risk adjustment is that clinics with higher risk patients are given a lower threshold to mean and the clinics with lower risk patients are given a higher threshold when compared to all other clinics.

The relative risk level for a clinic can be determined by comparing the state mean to the clinics expected value.

		A c c u r t t 1 2 N c n t r F e n i s s i c n				
		A v e r a g e F i s k S c o r e a t C l i n i c l e v e l				

		A d j u s t e d r i s k s c o r e			
		A v e r a g e			
		A b o v e r a g e			

Two Dimensional Table Displaying the Average Risk

The average risk level for clinics that are originally listed as below average is 1.11 (state average is 1.0), the below average clinics that are reevaluated as “expected” have a higher risk level 1.23 (green cell/+ symbol) than the clinics that remained below average (1.06). The clinics that were above average but after risk adjustment have a lower average risk score of 0.94 (blue cell/ * symbol). This is how the model is supposed to work in that there are not radical shifts based on risk variables which could indicate measure or risk model instability.

2020 12 Month Remission- Adolescents

		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
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		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
		I m p a c t o f R i s k A d j u s t m e n t o n C o				

		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
		m p a r i s o n t o M e a n				

		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
		C l i n i c D i s t r i b u t i o n				

		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
			R i s k A d j u s t e d C o m p a r i s o n			

		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
			B e l o w E x p e c t e d			

		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
	N o R i s k A d j u s t m e n t	B e l o w A v e r a g e	1 ^			
		A v e r a g e	1 *			

		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
		A b o v e A v e r a g e	0			
			2			

Two Dimensional Table Displaying the Impact of Risk Adjustment for Individual Clinics

The above table is a two-dimensional display of the impact of risk adjustment. If the 104 clinics that are statistically equal to the mean before adjustment, 1 of those clinics are considered "Below Expected" (blue cells/ * symbol) and 12 clinics were above average but following risk adjustment they are at their expected rates once the social and medical factors are considered.

		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
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		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
		A v e r a g e R i s k S c o r e a t C l i n i c L e				

		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
		v e l				

		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
	N o R i s k A d j u s t m e n t	B e l o w A v e r a g e				
		A v e r a g e				

		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
		A b o v e A v e r a g e				

Two Dimensional Table Displaying the Average Risk

The average risk level for clinics that are originally listed as below average is 0.99 (state average is 1.0), the below average clinics that are reevaluated as “expected” have a comparable risk level 0.96 (green cell/+ symbol) than the clinics that remained below average. The clinics that were average or above average but after risk adjustment have a lower average risk score of 0.97 and 0.99 (blue cells/ * symbol). This is how the model is supposed to work in that there are not radical shifts based on risk variables which could indicate measure or risk model instability.

The design of this risk adjustment is that clinics with higher risk patients are given a lower threshold to mean and the clinics with lower risk patients are given a higher threshold when compared to all other clinics.

2013 Submission

Original Depression Remission at Six Months



Original Model Development; Adults

[Response Ends]

2b.29. Provide the risk decile plots or calibration curves used in calibrating the statistical risk model.

The preferred file format is .png, but most image formats are acceptable.

[Response Begins]

2021 Submission

12 Month Remission- Adults

	N o R i s k A d j u s t m e n t		A d u l t 1 2 M o n t h R e m i s s i o n				
--	------------------------------------------------------------------------------	--	-------------------------------------------------------------------------------------------------------	--	--	--	--

	N o R i s k A d j u s t m e n t	A d u l t 1 2 M o n t h R e m i s s i o n				
		I m p a c t o f R i s k A d j u s t m e n t o n C o m p a r i				

	N o R i s k A d j u s t m e n t	A d u l t 1 2 M o n t h R e m i s s i o n				
		s o n t o M e a n				
		C l i n i c D i s t r i b u t i o n				

No Risk Adjusted Remission		Adult 12 Month Remission			
			Risk Adjusted Comparison		

	N o R i s k A d j u s t m e n t	A d u l t 1 2 M o n t h R e m i s s i o n				
				B e l o w E x p e c t e d		
		B e l o w A v e r a g e		1 0 3 ^		

No Risk Adj ust m e n t	Ad u l t 1 2 M o n t h R e m i s s i o n				
	A v e r a g e	3 *			
	A b o v e A v e r a g e	0			
		1 0 6			

Two Dimensional Table Displaying the Impact of Risk Adjustment for Individual Clinics

The above table is a two-dimensional display of the impact of risk adjustment. If the 150 clinics that are statistically below the mean before adjustment, 47 of those clinics (green cell/+ symbol) are considered “Expected” once the social and medical factors are considered. Conversely, blue cells/ * symbol represents the clinics whose rating decreased as a result of risk adjustment. The gray cells/ ^ symbol represents the number of clinics (majority) whose rating did not change as a result of risk adjustment.

12 Month Remission- Adolescents

		A d d i t i o n a l e s c e n t 1 2 N o n t h R e m i s s i o n				
--	--	--------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--

		A d d i t i o n a l e s c e n t 1 2 M o n t h R e m i s s i o n				
		I m p a c t o f R i s k A d j u s t m e n t o n C o				

		A d d l e s c e n t 1 2 N o n t h R e m i s s i o n				
		n p a r i s o n t o N e a n				

		A d d i t i o n a l e s c e n t 1 2 N o n t h R e m i s s i o n				
		C l i n i c D i s t r i b u t i o n				

		A d d l e s c e n t 1 2 N o n t h R e m i s s i o n				
				R i s k A d j u s t e d O n p a r i s o n		

		A d d i t i o n a l e s c o r e s a t 1 2 m o n t h r e m i s s i o n				
				B e l o w E x p e c t e d		

		A d d i t i o n a l e s c o r e s a t 1 2 M o n t h R e m i s s i o n				
	N o F i s k A d j u s t m e n t	B e l o w A v e r a g e	1 ^			
		A v e r a g e	1 *			

	Below Expected				
	Above Average	0			
		2			

Two Dimensional Table Displaying the Impact of Risk Adjustment for Individual Clinics

The above table is a two-dimensional display of the impact of risk adjustment. If the 104 clinics that are statistically equal to the mean before adjustment, 1 of those clinics are considered "Below Expected" (blue cells/ * symbol) and 12 clinics were above average but following risk adjustment they are at their expected rates once the social and medical factors are considered.

2013 Submission

2013- Original Depression Remission at Six Months

TABLE 2 – COMPARISON OF UNADJUSTED AND ADJUSTED DECILE RANKS (N / PERCENT OF ROW)*											
Unadjusted Decile Rank	Risk Adjusted Decile Rank										
	0 to 10%	10% to 20%	20% to 30%	30% to 40%	40% to 50%	50% to 60%	60% to 70%	70% to 80%	80% to 90%	90% to 100%	Total
0% to 10%	21 80.77	4 15.38	0 0.00	0 0.00	0 0.00	1 3.85	0 0.00	0 0.00	0 0.00	0 0.00	26
10% to 20%	2 8.33	16 66.67	6 25.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	24
20% to 30%	2 7.14	0 0.00	12 42.86	7 25.00	6 21.43	0 0.00	1 3.57	0 0.00	0 0.00	0 0.00	28
30% to 40%	1 3.45	5 17.24	5 17.24	9 31.03	6 20.69	2 6.90	0 0.00	1 3.45	0 0.00	0 0.00	29
40% to 50%	0 0.00	1 4.35	3 13.04	7 30.43	7 30.43	5 21.74	0 0.00	0 0.00	0 0.00	0 0.00	23
50% to 60%	0 0.00	0 0.00	0 0.00	3 11.54	6 23.08	10 38.46	5 19.23	2 7.69	0 0.00	0 0.00	26
Unadjusted Decile Rank	Risk Adjusted Decile Rank										
	0 to 10%	10% to 20%	20% to 30%	30% to 40%	40% to 50%	50% to 60%	60% to 70%	70% to 80%	80% to 90%	90% to 100%	Total
60% to 70%	0 0.00	0 0.00	0 0.00	0 0.00	1 3.85	6 23.08	10 38.46	7 26.92	1 3.85	1 3.85	26
70% to 80%	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	2 7.69	8 30.77	12 46.15	4 15.38	0 0.00	26
80% to 90%	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	2 7.69	4 15.38	17 65.38	3 11.54	26
90% to 100%	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	4 15.38	22 84.62	26
Total	26	26	26	26	26	26	26	26	26	26	260
*Grey cells indicate no change in rank. Blue cells indicate increase in rank after risk adjustment, and red cells indicate decrease in rank after risk adjustment. N is the number of clinics in each cell, and the percent of row is the percent of the total unadjusted decile ranked clinics in each cell.											

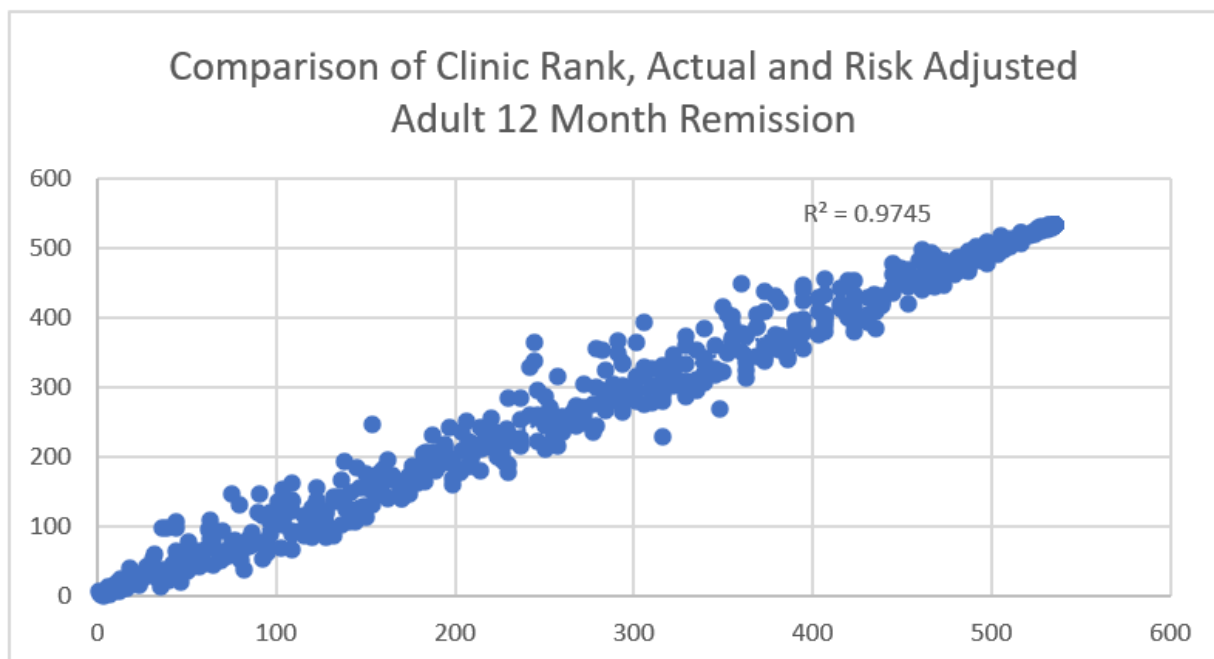
Depression at 12 Months Remission***Risk Variables: Product, Severity, Age Band*****Clinic Distribution 2013 Dates****Result Compared to Expected**

Before RA	After Risk Adjustment			
	Below	Expected	Above	Total
Significantly Below	39	50	0	89
Average	0	249	1	250
Significantly Above	0	9	48	97
	39	308	49	396
Better	51	13%		
Same	336	85%		
Worse	9	2%		

2013 - Impact of Risk Adjustment on Comparison to the Mean; Areas of Change Color Coded

[Response Ends]**2b.30. Provide the results of the risk stratification analysis.****[Response Begins]****2021 Submission**

12 Month Remission- Adults



Comparison of Clinic Rank; Actual to Expected Risk adjusted Rate

Above is a comparison of the clinic ranking when unadjusted (vertical) and with Risk Adjustment (horizontal), The R Squared of the trend line is .9745, proving a high correlation between unadjusted and adjusted values. Risk adjustment should not greatly alter the results but instead fine tune at the edges for the clinics with unusual patient risk.

The relative risk level for a clinic can be determined by comparing the state mean to the clinics expected value.

12 Month Remission- Adults

		A c c u r t i c l e s c o n f i d e n t i f y i n g t h e p a t i e n t s w h o h a v e r e c e i v e d t h e t r e a t m e n t a n d h a v e r e m i s s i o n a t t w e l v e m o n t h s a f t e r t h e i n i t i a l a s s e s s m e n t a n d h a v e r e m i s s i o n a t t w e l v e m o n t h s a f t e r t h e i n i t i a l a s s e s s m e n t a n d h a v e r e m i s s i o n a t t w e l v e m o n t h s a f t e r t h e i n i t i a l a s s e s s m e n t				
		A v e r a g e a n s w e r s f r o m t h e p a t i e n t s w h o h a v e r e c e i v e d t h e t r e a t m e n t a n d h a v e r e m i s s i o n a t t w e l v e m o n t h s a f t e r t h e i n i t i a l a s s e s s m e n t a n d h a v e r e m i s s i o n a t t w e l v e m o n t h s a f t e r t h e i n i t i a l a s s e s s m e n t				

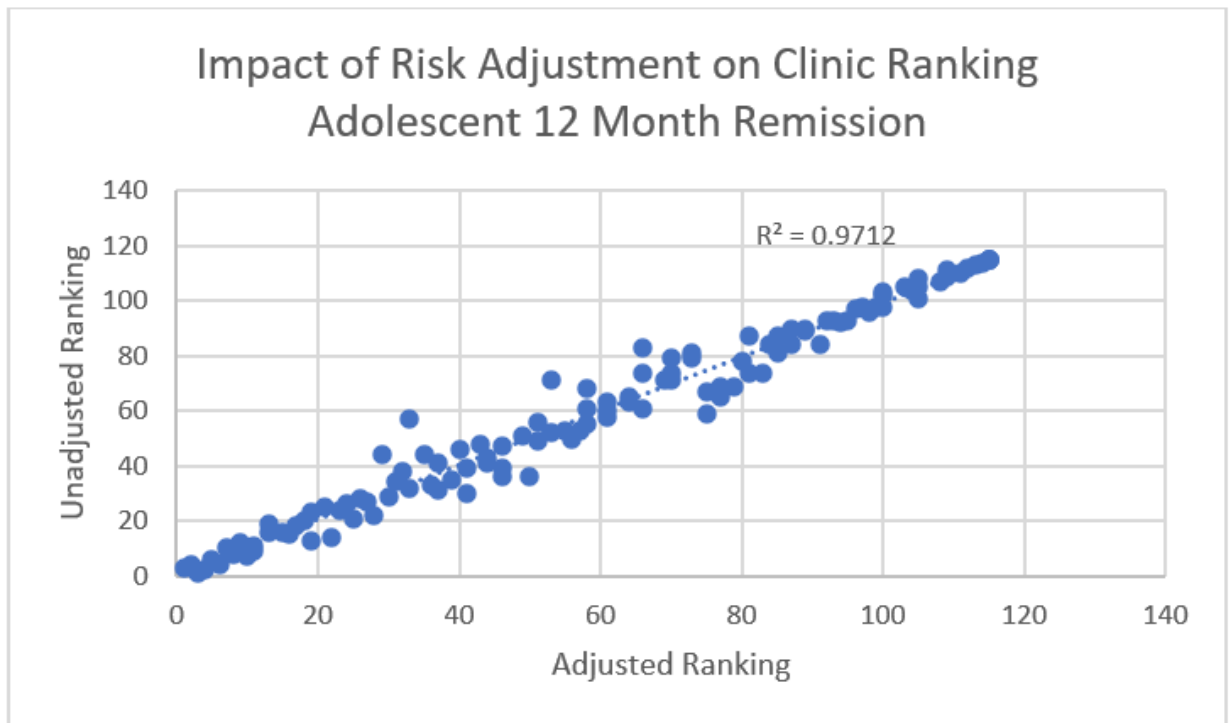
		A c c u l t 1 2 M o n t h R e m i s s i o n			
	N o R i s k A d j u s t m e n t	E l o v A v e r a g e			

		A d j u s t e d r i s k s c o r e			
		A v e r a g e			
		A b o v e r a v e r a g e			

Two Dimensional Table Displaying the Average Risk

The average risk level for clinics that are originally listed as below average is 1.11 (state average is 1.0), the below average clinics that are reevaluated as “expected” have a higher risk level 1.23 (green cell/+ symbol) than the clinics that remained below average (1.06). The clinics that were above average but after risk adjustment have a lower average risk score of 0.94 (blue cell/ * symbol).

12 Month Remission- Adolescents



Comparison of Clinic Rank; Actual to Expected Risk adjusted Rate

		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
--	--	--------------------------------------------------------------------------------------------------------------------------------	--	--	--	--

		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
		A v e r a g e R i s k S c o r e a t C l i n i c L e				

		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
		v e l				

		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
	N o R i s k A d j u s t m e n t	B e l o w A v e r a g e				
		A v e r a g e				

		A d o l e s c e n t 1 2 M o n t h R e m i s s i o n				
		A b o v e A v e r a g e				

Two Dimensional Table Displaying the Average Risk

The average risk level for clinics that are originally listed as below average is 0.99 (state average is 1.0), the below average clinics that are reevaluated as “expected” have a comparable risk level 0.96 (green cell/+ symbol) than the clinics that remained below average. The clinics that were average or above average but after risk adjustment have a lower average risk score of 0.97 and 0.99 (blue cells/ * symbol).

Risk adjustment should not cause dramatic changes in the relative ranking else it would call into question the measure design itself. In the above charts, the ranking before and after are compared. The R Squared if 0.9745 for the Adult population and 0.9712 for adolescents,

confirming that the ranking after risk adjustment has a high degree of connection to the ranking before risk adjustment.

Does this risk adjustment model make sense for the clinics who have an expected value that is higher or lower?

Evaluated the ten highest risk clinics and the ten lowest risk clinics, does it make sense based on the type of clinic, clinic characteristics and socioeconomic/ demographic in which the clinic is located? Clinic characteristics demonstrated results as expected; clinics with lower socioeconomic values had more patients at risk.

Clinics with highest risk patient population	
Clinic	Clinic Characteristic Supporting Risk Variables
Advanced Medical Clinic, Inc.	Clinic focus is for economically limited patients, high portion of uninsured
Indian Health Board of Minneapolis	Focus is for inner city Native American population, which usually is economically limited
Native American Community Clinic	Focus is for inner city Native American population, which usually is economically limited
NorthPoint Health & Wellness Center	Federally Qualified Healthcare Center (FHCQ), serving culturally diverse and economically limited population
Planned Parenthood Minnesota, North Dakota, South Dakota - Duluth	Young patient population, which is more transient
Ramsey County Mental Health Center	Clinic focus is for economically limited patients, high portion of uninsured
Stark Clinic- Northside	Rule 29 mental health clinic, located in a culturally diverse and economically limited geographic location
Stark Clinic-York	Rule 29 mental health clinic, located in a culturally diverse and economically limited geographic location
University of Minnesota Physicians - Broadway Family Medicine Clinic	Clinic focus is for economically limited patients, high portion of uninsured
West Side Community Health Services - McDonough Homes Clinic	Clinic focus is for economically limited patients, high portion of uninsured
Clinics with lowest risk patient population	
Clinic	Clinic Characteristic Supporting Risk Variables
Allina Health - Abbott Northwestern General Medicine Associates - Edina	located in a high-income suburb
Allina Health - Sharpe Dillon Cockson & Associates	located in a high-income suburb
Glencoe Regional Health Services - Lester Prairie	rural location with 98% white population, high school grad or greater 89%
HealthPartners - Mahtomedi Clinic	located in a high-income suburb
M Health Fairview Clinic Edina	located in a high-income suburb
Northwest Family Physicians - Rogers	rural location with 91% white population, high school grad or greater 96%
Park Nicollet Clinic - Shorewood	located in a high-income suburb
Park Nicollet Clinic - St. Louis Park Internal Medicine	located in a high-income suburb
Richfield Medical Group	located in a moderate to high income suburb
Sanford Sioux Falls Internal Medicine Clinic	Mid-sized city with 85% white population, high school grad or greater 92%

2013 Submission

2013- We tested the overall correlation between the unadjusted and risk adjusted depression measure using two methods, a Pearson correlation and a Kendall's Tau correlation. In both cases, the value 1 represents a perfect correlation and the value 0 represents a complete lack of correlation between unadjusted and adjusted measures. The Pearson correlation compares the risk adjusted and unadjusted clinic depression values and is .95 which shows a very strong correlation between the unadjusted and adjusted depression measure. The Kendall's Tau

correlation compares unadjusted and adjusted rank order of clinics and was .81. This is still a strong correlation, but not as strong as the .95 correlation between risk-adjusted and unadjusted clinic values.

[Response Ends]

2b.31. Provide your interpretation of the results, in terms of demonstrating adequacy of controlling for differences in patient characteristics (i.e., case mix).

In other words, what do the results mean and what are the norms for the test conducted?

[Response Begins]

2021 Submission

12 Month Remission- Adults

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
C o m p a r e d t o P a t i e n t					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
s w i t h C o m m e r c i a l l n					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
s u r a n c e a n d M o d e r a t					

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	e D e p r e s s i o n					

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	P a r a m e t e r				S t a n d a r d E r r o r	W a l d C h i - S q u a r e

Analysis of Maximum Likelihood Estimates					
Intercept			0.0312	5599.0401	

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	p t - a g e			0 . 0 0 0 6 6 1	3 7 3 . 0 7	
	m d c r			0 . 0 0 3 0 9	1 2 2 . 3 1 7 3	

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	m h c p			0 . 0 2 5 9	3 9 2 . 2 0 7 8	
	u n i n s			0 . 0 5 8 6	3 8 . 0 5 7 7	

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	u n d t			0 . 0 3 4 9	1 5 0 . 4 5 6 5	

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	m o d - s e v e r e			0 . 0 2 1 9	1 8 4 . 1 0 3 4	

	A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s					
	s e v e r e			0 . 0 2 9 5	3 8 6 . 7 9 6	
	d e p - i d x			0 . 0 1 3	1 0 6 . 4 3 8 7	

SAS Statistical Software Output Analysis of Variables Selected for Risk Adjustment; 12 Month Remission Adults

Table of results for data elements selected for the risk stratification model (age, insurance product, severity of depression at index event and deprivation index. All variables have a Chi-squared p value of less than .0001.

12 Month Remission- Adolescents

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--

e n t s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
C					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c o					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c m					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c p					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c o					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
P					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
ti					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c s					
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c w					
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c i t					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c h					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
C					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c o					
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c m					
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c m					
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
ci					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
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a					

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M					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
o					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
a					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
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D					

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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c p					
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r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
si					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c o					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n					
n					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
P					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
a		s	t		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
r		t	a		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
a		i	r		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
m		r	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		a	a		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
t		t	r		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		e	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
r				E	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
				r	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
				r	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
				c	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
				r	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n					
n			1	.	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
t		.	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		e	s		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
r		1	0		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
c		1	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e			3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c p					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
p		-	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
t			c	.	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
-		.	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
a		0	2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
g		3	2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		5	9		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
		4			

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c m					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
d		c	.		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
c		.	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
r		1	0		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
			0	4	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
		8	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
			2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c m					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c h					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
c		.	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
p		2	8		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
			4	5	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
		5	6		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
u					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n					
n			1	.	

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
i		.	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
n		0	2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
s		2	4		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
			5		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
d		.	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
t		1	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
		4	3		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
		2	9		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
			s		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c m					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
o					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
d		.	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
-		3	7		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
s		6	7		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		6	7		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
v			5		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
r					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
s					

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
v		.	1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		e	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
r		3	2		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
e		6	4		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
			1		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t					
d		c	c		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
p		1	0		

A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c i					
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A n a l y s i s o f M a x i m u m L i k e l i h o o d E s t i m a t e s 1 2 M o n t h R e m i s s i o n - A d o l e s c e n t s					
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SAS Statistical Software Output Analysis of Variables Selected for Risk Adjustment; 12 Month Remission Adolescents

Table of results for data elements selected for the risk stratification model (age, insurance product, severity of depression at index event and deprivation index. All variables have a Chi-squared p value of less than .0001.

Our analysis of risk adjustment factors for the measure indicates that age, depression severity at diagnosis, insurance provider variables (MSHO, Medicaid, and Medicare) and zip code based deprivation index are related to depression remission.

Tests of significance at .01%

- All tested factors remain significant.

After analyzing the entire Depression suite of measures, it was reconfirmed that Age, Product, Severity Levels and Deprivation Index are important and significant factors in the outcome, are present at the initial patient encounter, are beyond the control of the provider and all variables are already being collected so no additional provider burden is required.

2013 Submission

2013- Tests of significance at .01%

- MHCP and Uninsured are significant factors; Medicare and Commercial are not significant from each other
- All four age ranges are significant from each other
- Severity is a significant factor

Results at 12 Months follow the same pattern as with the six month measure. It appears that the main reason for the change in remission from 8.1 to 5.7 is the change in follow up. For the patients who did return for the visit; they had the same level of remission at 12 months (25.2%) compared to 6 months (24.9%)

[Response Ends]

2b.32. Describe any additional testing conducted to justify the risk adjustment approach used in specifying the measure.

Not required but would provide additional support of adequacy of the risk model, e.g., testing of risk model in another data set; sensitivity analysis for missing data; other methods that were assessed.

[Response Begins]

No additional statistical testing.

[Response Ends]

3. Feasibility

Extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

3.01. Check all methods below that are used to generate the data elements needed to compute the measure score.

[Response Begins]

Generated or collected by and used by healthcare personnel during the provision of care (e.g., blood pressure, lab value, diagnosis, depression score)

Coded by someone other than person obtaining original information (e.g., DRG, ICD-10 codes on claims)

[Response Ends]

3.02. Detail to what extent the specified data elements are available electronically in defined fields.

In other words, indicate whether data elements that are needed to compute the performance measure score are in defined, computer-readable fields.

[Response Begins]

ALL data elements are in defined fields in electronic health records (EHRs)

[Response Ends]

3.03. If ALL the data elements needed to compute the performance measure score are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using data elements not from electronic sources.

[Response Begins]

N/A

[Response Ends]

3.05. Complete and attach the [NQF Feasibility Score Card](#).

[Response Begins]

[Response Ends]

Attachment: 0710e_nqf_ecqm_feasibility_final_scorecard 0710e.xlsx

Attachment: 0710e_CMS 159 Patient Results.pdf

3.06. Describe difficulties (as a result of testing and/or operational use of the measure) regarding data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implementation issues.

[Response Begins]

MNCM has developed a direct data submission process in use since 2006, whereby medical groups submit a patient level data file of a minimal data set (only those elements needed for measure calculation, risk adjustment and stratification/ analysis) to our HIPAA secure data portal for rate calculation and public reporting.

MNCM is implementing a new method for data collection which significantly reduces the burden for providers in terms of submitting data, identifying the denominator and the new system efficiently centralizes application of specifications. This warehouse system, PIPE (Process Intelligence Performance Engine) receives and stores all ambulatory encounters, diagnosis, problem lists, medications, labs, etc. <https://mncmsecure.org/website/Services/05%20-%20Overview%20of%20PIPE.pdf>

Over the years, we have learned the following:

- Data Submission- Providing data collection software for medical groups wishing to submit data was not always the best and most efficient way of collecting data. As electronic health records use becomes more pervasive in our state, providing templates of data file submissions proved to be more efficient.
- Specifications- Detailed specifications with instructions on how to handle most situations (e.g. detailed instructions on blood pressure values) has been valuable to medical groups, increased data accuracy.
- Audit- Audit methods have insured the accuracy of our data and we are able to successfully compare providers because everyone is pulling their data the same way and subject to the same rules.
- Confidentiality- Patient confidentiality has been addressed by numerous mechanisms. Patient information is protected by 1) password protection with a password only available to the medical group submitting data, 2) file upload process is encrypted as data is transferred and 3) Data is stored on a separate secure server and meets all HIPAA protection rules.
- Acceptance of Data- Vast improvement in terms of the timeliness of the data submitted by medical groups six weeks after the end of the measurement period as compared to prior method of health plan's samples and the results over a year old. Providers are more accepting of the results as compared to previous methods of pooling health plan samples.
- Health Plans: pay for performance and the inclusion of measures within contracts significantly impacts the number of groups participating in each measure.
- Patient Reported Outcome (PROM) assessment tools. Consideration for inclusion of a PROM includes the following: a tool that is psychometrically sound (valid/ reliable/ specific and sensitive to change), providers are amenable to the use of the tool, can be implemented into clinical work flows, can be administered by multiple modes including electronic administration and tool is valuable to patients and does not cause undue completion burden.

[Response Ends]

Consider implications for both individuals providing data (patients, service recipients, respondents) and those whose performance is being measured.

3.07. Detail any fees, licensing, or other requirements to use any aspect of the measure as specified (e.g., value/code set, risk model, programming code, algorithm),

Attach the fee schedule here, if applicable.

[Response Begins]

There are no fees associated with participation and submitting data for this measure. Results are available to 1) all data submitters within the HIPAA secure MNCM data portal and 2) to the public on our consumer facing website MN Health Scores at www.mnhealthscores.org and 3) annual health care quality report on our corporate website at www.mncm.org. There are resource costs to the medical groups in terms of creating extracts from their EMR systems.

[Response Ends]

4. Usability and Use

Extent to which potential audiences (e.g., consumers, purchasers, providers, policy makers) are using or could use performance results for both accountability and performance improvement to achieve the goal of high-quality, efficient healthcare for individuals or populations.

Extent to which intended audiences (e.g., consumers, purchasers, providers, policy makers) can understand the results of the measure and are likely to find them useful for decision making.

NQF-endorsed measures are expected to be used in at least one accountability application within 3 years and publicly reported within 6 years of initial endorsement, in addition to demonstrating performance improvement.

4a.01. Check all current uses. For each current use checked, please provide:

Name of program and sponsor

URL

Purpose

Geographic area and number and percentage of accountable entities and patients included

Level of measurement and setting

[Response Begins]

Public Reporting

[Public Reporting Please Explain]

Several mechanisms for publicly reporting this measure are in place. Consumer-facing public website MN HealthScores is located at <https://www.mnhealthscores.org/> rates (including actual, expected and health score rating) are available for every clinic in MN and surrounding border communities. Measure is published as part of the MNCM Annual Health Care Quality Report, Annual Disparities by Insurance Type and Disparities by Race, Ethnicity, Language, Country of Origin and the focus of several issue briefs. <https://mncm.org/reports/#community-reports>

Payment Program

[Payment Program Please Explain]

Measure is included in two CMS Quality Payment Programs, it is QPP # 370 in the MIPS Merit-based Incentive Payment System and CMS159v10 in the e-CQM program.

<https://ecqi.healthit.gov/ecqm/ep/2020/cms159v8>

<https://qpp.cms.gov/resources/resource-library>

Decile Rates for Benchmarking e-CQM:

Decile	Rates
3	3.62 - 4.79
4	4.80 - 6.83
5	6.84 - 8.22
6	8.23 - 10.41
7	10.42 - 13.50

Decile	Rates
8	13.51 - 16.66
9	16.67 - 23.90
10	≥ 23.91

CMS Decile Rates for Benchmarking Depression Remission at 12 Months

[Response Ends]

4a.02. Check all planned uses.

[Response Begins]

Public reporting

Payment Program

[Response Ends]

4a.03. If not currently publicly reported OR used in at least one other accountability application (e.g., payment program, certification, licensing), explain why the measure is not in use.

For example, do policies or actions of the developer/steward or accountable entities restrict access to performance results or block implementation?

[Response Begins]

[Response Ends]

4a.04. If not currently publicly reported OR used in at least one other accountability application, provide a credible plan for implementation within the expected timeframes: used in any accountability application within 3 years, and publicly reported within 6 years of initial endorsement.

A credible plan includes the specific program, purpose, intended audience, and timeline for implementing the measure within the specified timeframes. A plan for accountability applications addresses mechanisms for data aggregation and reporting.

[Response Begins]

[Response Ends]

4a.05. Describe how performance results, data, and assistance with interpretation have been provided to those being measured or other users during development or implementation.

Detail how many and which types of measured entities and/or others were included. If only a sample of measured entities were included, describe the full population and how the sample was selected.

[Response Begins]

Performance results are provided to all medical groups who submit data for this state-wide measure via several options:

- Preliminary measure rates are provided immediately after file upload to HIPAA secure, password protected data portal
- A two-week review process is conducted to allow groups to review and potentially appeal prior to public reporting of rates
- Rates are reported by medical group and clinic level on public website MN Healthscores at www.mnhealthscores.org/
- Additionally, rates including all historical rates can be obtained from the MNMCM data portal (pass-word protected)

[Response Ends]

4a.06. Describe the process for providing measure results, including when/how often results were provided, what data were provided, what educational/explanatory efforts were made, etc.

[Response Begins]

Currently, data is collected once per year and results are provided on an annual basis. See question 4a.05 for the process and list of multiple mechanisms for receiving results and providing feedback.

MNCM provides recorded webinars for each measure or measure set that provides education for measure specification (denominator, numerator, exclusions) measure calculation and understanding results.

Education and explanation are also included in our hard copy reports. The annual Health Care Quality Report provides descriptive information along with the results for each measure plus appendices for guidelines for comparing measures over time, data sources and data collection, and methodology (attribution, weighting, rate calculation, risk adjustment). <http://mncm.org/reports-and-websites/reports-and-data/health-care-quality-report/>

[Response Ends]

4a.07. Summarize the feedback on measure performance and implementation from the measured entities and others. Describe how feedback was obtained.

[Response Begins]

As this measure is included in two public programs, feedback and comments are provided through CMS' JIRA website. Responses to questions, concerns and suggestions are required to be completed within 48 hours of the question submission. Several clarifications of the measure specifications have occurred as a result of this process.

[Response Ends]

4a.08. Summarize the feedback obtained from those being measured.

[Response Begins]

MNCM periodically conducts a survey of medical groups in which all clinics in the state are invited to participate and provide feedback. There are structured questions asking the users about measure value and burden.

2018 Medical Group Survey

To what degree does your medical group find value in the measure? (n = 129)

High Value 24.0% (31)

Moderate Value 31.9% (41)

- 60% rated the measure as moderate or high value

How easy or difficult is it to obtain the data needed for DDS submission for this measure? (n = 124)

Very Easy 11.3% (14)

Easy 37.1% (46)

Difficult 29.8% (37)

Very Difficult 21.8% (27)

MNCM anticipates a significant drop in burden when the PIPE data collection system is implemented for all groups in MN by year end 2023.

[Response Ends]

4a.09. Summarize the feedback obtained from other users.

[Response Begins]

The MNCM Measurement and Reporting Committee, a multi-stakeholder committee of the MNCM Board of Directors, reviews and recommends approval of the slate of measures for public reporting on an annual basis.

https://mncmsecure.org/website/MARC/Slate%20of%20MNCM%20Measures%20for%202021%20Reporting_FINAL.pdf

[Response Ends]

4a.10. Describe how the feedback described has been considered when developing or revising the measure specifications or implementation, including whether the measure was modified and why or why not.

[Response Begins]

As indicated in question spma.o2: Briefly describe any important changes to the measure specifications since the last measure update and provide a rationale.

Since the last maintenance update, we convened our multi-stakeholder expert workgroup to consider modifying the measure to include adolescents as well as reviewing related measure construct components. As a result of our process, we are updating the measures to add the adolescent population; widen the follow-up assessment window; add the PHQ-9M tool; tighten up the personality disorders exclusions list; add exclusions for schizophrenia and pervasive developmental disorders and simplify the diagnosis criterion. Details are as follows:

For 2020 Report Year (dates of index event 1/1/2018 to 12/31/2018)

1. Incorporate adolescents into the depression measures

* Modify age range to include adolescents; age 12 and older

* Report measures as two separate stratifications by age (not combined); ages 12 to 17 and ages 18 and older

Reason: The U.S. Preventive Services Task Force and other guideline organizations recommend screening adolescents for depression. Depression is a significant problem for adolescents, affecting an estimated 11% of the population. Many mental health conditions are evident by age 14 and the consequences of adolescent depression can have a lifelong impact.

2. Widen the follow-up assessment window to +/- 60 days for all populations and all response and remission measures

- * Six-month measure's assessment window expands from 5 to 7 months to 4 to 8 months
- * Twelve-month measure's assessment window expands from 11 to 13 months to 10 to 14 months

Reason: Allowing a more reasonable assessment window that still fits the clinical course of recovery, allows for a comprehensive course of treatment and increases provider buy-in.

3. Patient Reported Outcome Tools for index/denominator and measuring outcomes of remission and response are the PHQ-9 and PHQ-9M

- * Add the PHQ-9M as a PRO tool that can be used
- * Providers may elect to use either tool; no measure construct restriction for age. For example, if a family practice clinic is currently using the PHQ-9 tool for their adult patients, they can elect to use the same tool for ages 12 to 17. Likewise, if a pediatric clinic is using the PHQ-9M in their practice, they can decide to administer the PHQ-9M to their 18/19/20 year old patients.

Reason: The expert panel reviewed 21 additional tools against standardized criteria and concluded very few had cut-points for severity levels of depression or remission. Further, using PRO tools with significantly different numbers of questions could impact the response measures (50% or greater in improvement of scores) in addition to adversely affecting denominator comparability. For example, if one practice is using the Beck BDI-II tool (21 questions/ total score 63/ denominator > 19/ remission < 14) and another practice is using the PHQ-9 (9 questions/ total score 27/ denominator > 9/ remission < 5), it can't be assured that the two tools are identifying the denominator of patients in the exact same way.

4. Modifications to exclusions include the following:

- * Personality disorders narrowed to emotionally labile conditions and moved to the allowable exclusion category
- * Add exclusion value set for schizophrenia or psychotic disorder as a required exclusion
- * Add exclusion value set for pervasive developmental disorder as an allowable exclusion

Reason: The expert panel determined these conditions may require a different course of treatment, and holding a provider responsible for remission/response within the timeframe defined by the measure may be inappropriate. In addition, the NQF Behavioral Steering Committee requested we examine the personality disorder exclusion.

5. For behavioral health settings, remove the requirement that the diagnosis of major depression or dysthymia must be in the primary position.

- * Relates to new exclusion for schizophrenia or psychotic disorder; no longer necessary

Reason: simplification of measures, position order of diagnosis is irrelevant in behavioral health settings.

Please refer to the data dictionary (sp.11) for the summary of redesign activities and changes to value sets or <https://helpdesk.mncm.org/helpdesk/KB/View/22742768--depression-changes-and-rationale>

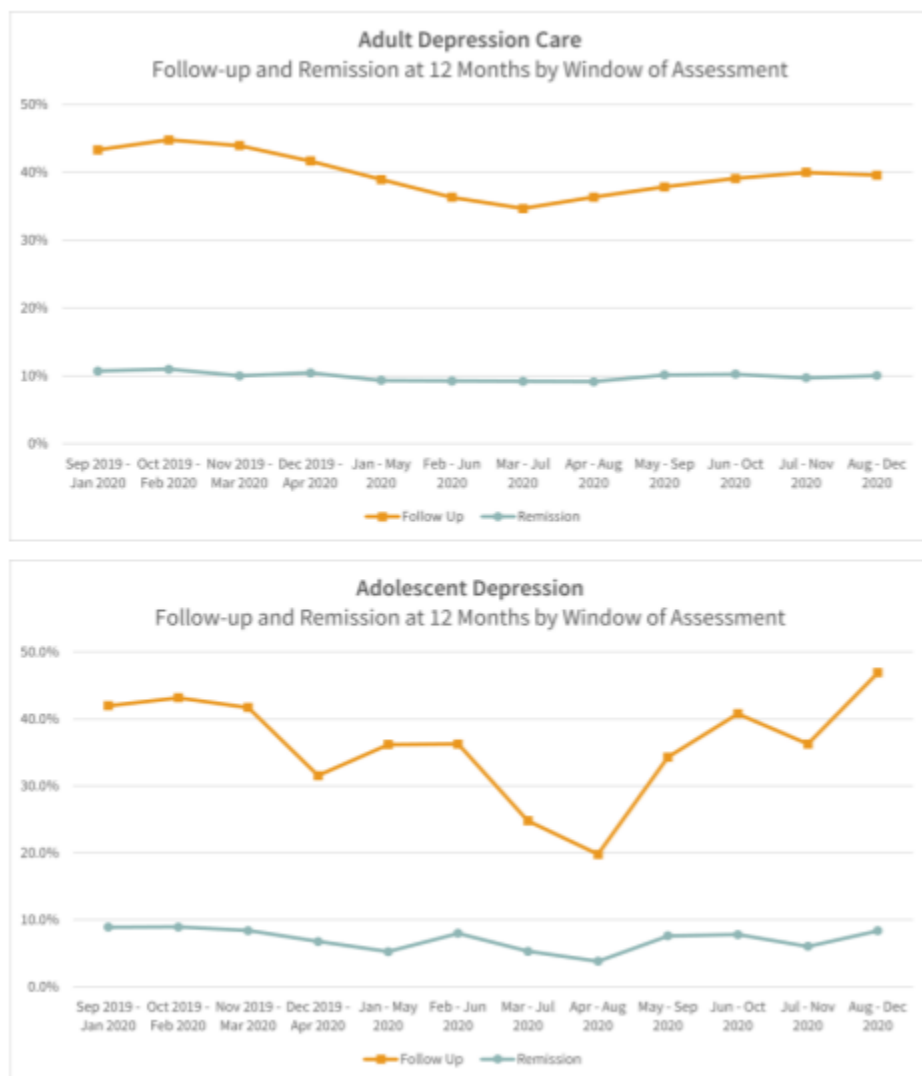
[Response Ends]

4b.01. You may refer to data provided in Importance to Measure and Report: Gap in Care/Disparities, but do not repeat here. Discuss any progress on improvement (trends in performance results, number and percentage of people receiving high-quality healthcare; Geographic area and number and percentage of accountable entities and patients included). If no improvement was demonstrated, provide an explanation. If not in use for performance improvement at the time of initial endorsement, provide a credible rationale that describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

[Response Begins]

It is not possible to provide trending information for this measure over time due to recent measure redesign that expanded the assessment window. One measure that we can track for a two year period of

time is medical groups' ability to follow-up with their patients. However, this was confounded by the extensive changes in the care delivery system as a result of the pandemic.



Month-to-Month Rates of Remission and Follow-up Rates; Impact of Pandemic

[Response Ends]

4b.02. Explain any unexpected findings (positive or negative) during implementation of this measure, including unintended impacts on patients.

[Response Begins]

No unintended negative consequences identified.

[Response Ends]

4b.03. Explain any unexpected benefits realized from implementation of this measure.

[Response Begins]

- Increased screening for depression, diagnosis of major depression or dysthymia and increase in rates of follow-up assessments for the managing of successful outcomes of response and remission.
- Increasing widespread use of a simple but effective PRO tool that can be used for screening, diagnosis and the monitoring of treatment outcomes for depression
- Increased national use of the measure, adaptation of the measure for use by health plans (HEDIS)
- Incorporation of adolescents helps address a significant condition that can have lifelong impacts.

[Response Ends]

5. Comparison to Related or Competing Measures

If a measure meets the above criteria and there are endorsed or new related measures (either the same measure focus or the same target population) or competing measures (both the same measure focus and the same target population), the measures are compared to address harmonization and/or selection of the best measure.

If you are updating a maintenance measure submission for the first time in MIMS, please note that the previous related and competing data appearing in question 5.03 may need to be entered in to 5.01 and 5.02, if the measures are NQF endorsed. Please review and update questions 5.01, 5.02, and 5.03 accordingly.

5.01. Search and select all NQF-endorsed related measures (conceptually, either same measure focus or target population).

(Can search and select measures.)

[Response Begins]

0711: Depression Remission at Six Months

1884: Depression Response at Six Months- Progress Towards Remission

1885: Depression Response at Twelve Months- Progress Towards Remission

0712: Depression Assessment with PHQ-9/ PHQ-9M

[Response Ends]

5.02. Search and select all NQF-endorsed competing measures (conceptually, the measures have both the same measure focus or target population).

(Can search and select measures.)

[Response Begins]

[Response Ends]

5.03. If there are related or competing measures to this measure, but they are not NQF-endorsed, please indicate the measure title and steward.

[Response Begins]

N/A

[Response Ends]

5.04. If this measure conceptually addresses EITHER the same measure focus OR the same target population as NQF-endorsed measure(s), indicate whether the measure specifications are harmonized to the extent possible.

[Response Begins]

Yes

[Response Ends]

5.05. If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden.

[Response Begins]

MN Community Measurement is the measure steward for these related measures and they are completely harmonized. The remission measures are considered the “gold standard” of depression outcomes and measure the same population of patients at two different points in time, six and twelve months after index contact with diagnosis and elevated PHQ-9. The response measures, also at six and twelve months, are considered as progress towards the desired goal of remission with a reduction in PHQ-9 score of greater than 50% representing a reduction in the severity of symptoms.

[Response Ends]

5.06. Describe why this measure is superior to competing measures (e.g., a more valid or efficient way to measure quality). Alternatively, justify endorsing an additional measure.

Provide analyses when possible.

[Response Begins]

N/A

[Response Ends]

Appendix

Supplemental materials may be provided in an appendix.:

Available at measure-specific web page URL identified in sp.09

Contact Information

Measure Steward (Intellectual Property Owner): MN Community Measurement

Measure Steward Point of Contact: Cole, Collette, cole@mncm.org

Amo, Jessica, amo@mncm.org

Measure Developer if different from Measure Steward: MN Community Measurement

Measure Developer Point(s) of Contact: Cole, Collette, cole@mncm.org

Amo, Jessica, amo@mncm.org

Additional Information

1. Provide any supplemental materials, if needed, as an appendix. All supplemental materials (such as data collection instrument or methodology reports) should be collated one file with a table of contents or bookmarks. If material pertains to a specific criterion, that should be indicated.

[Response Begins]

Available at measure-specific web page URL identified in sp.09

[Response Ends]

2. List the workgroup/panel members' names and organizations.

Describe the members' role in measure development.

[Response Begins]

Original Work Group Members (2006)

Nancy Jaekels - Institute for Clinical Systems Improvement, Vice President Member Relations & Strategic Initiatives

Katrina Beckstrom - HealthPartners - Care Innovation & Measurement, Senior Quality Coordinator

Michael Trangle, MD - HealthPartners Clinics/ Regions Hospital, Associate Medical Director

Kenneth Joslyn, MD - Medica Health Plan, Medical Director Quality and Population Health

Jim Chase - MN Community Measurement, President

Diane Mayberry - MN Community Measurement, Chief Operating Officer

Anne Snowden - MN Community Measurement, Director of Performance Measurement & Reporting

Carrie Trygstad- MN Community Measurement, Project Manager

This group worked in concert with the ICSI DIAMOND project for measure development; the original charter of the workgroup includes:

- o Develop population-wide, ambulatory care measures(s) of the quality of care for patients diagnosed with Depression, consistent with the work of the ICSI DIAMOND project.

- Process measures (ie: quality of coding, depression screening, completion of PHQ-9 survey, 3 month follow-up visit)

- Outcome measures (response and remission rates)

- o Develop direct data collection, submission and reporting plan

- Physicians and non-physicians

- Primary care and Behavioral Health Care

Updated Work Group Members (2010)

Name Specialty/ Representation Organization

Katrina Beckstrom Sr. Quality Coordinator HealthPartners

Sara Bonneville MDH/ Health Reform MN Department of Health

Ron Brand Community Mental Health MN Association Community Mental H.

Katie Burns MDH/ Health Reform MN Department of Health

Rod Christensen, MD Primary Care Allina

Jane Duncan MNMCM State Contract MN Community Measurement

Paul Goering, MD Behavioral Allina

Tim Hernandez, MD Primary Care Family Health Services

Nancy Jaeckels ICSI/ DIAMOND ICSI

Roger Kathol, MD Behavioral Minnesota Psychiatric Society

Diane Mayberry MNCM Measure Dev. MN Community Measurement

Collette Pitzen MNCM Measure Dev. MN Community Measurement

Mary Rains Health Plan Blue Cross Blue Shield MN

Jerry Storck DHS Behavioral Department Human Services

Michael Trangle, MD Behavioral HealthPartners

Mark Williams, MD Behavioral Mayo Clinic

Mark Zipper Behavioral Allina (alternate)

Measure Development Workgroup for Re-design (2016)

Name Member Type Organization

Michael Trangle, MD Clinical Provider; Psychiatrist; Chair Health Partners Medical Group

Mark Williams, MD Clinical Provider; Psychiatrist Mayo Clinic

Parnjai Johnson, MD Clinical Provider; Psychiatrist Park Nicollet Clinic

David Rossmiller, MD Clinical Provider; Family Medicine Entira Family Clinics

Shannon Neale, MD Clinical Provider; Family Medicine Park Nicollet Clinic

Laura Saliterman, MD Clinical Provider; Pediatrics/ MARC South Lake Pediatrics

Amelia Versland, PhD Clinical Provider; Psychologist Hennepin County Medical Center

Julie Erickson, PhD LP Clinical Provider; Psychologist Children's Minnesota

Dianne Burd, MSW LICSW Clinical Provider, Social Worker Gillette Children's Specialty Health

Terry Murray, MEd Data Analyst Allina Health

Leif Solberg, MD Quality Improvement/ Family Medicine HealthPartners Institute

Wendy Scheckel, RN Quality Improvement Olmsted Medical Center

Terri Lloyd, BSN MA Clinic Administration Children's Health Network

Cara Broich, RN CPHQ Health Plan/ Quality Improvement Medica

Kimberley Witczak Consumer Co-Founder Woody Matters

Collette Pitzen Facilitator/ Measure Development MN Community Measurement

Jasmine Larson Measure Development MN Community Measurement

NCQA's Adaptation of depression measures for HEDIS included input on the inclusion of the adolescent population from the following advisory panels:

- * NCQA Behavioral Health Measurement Advisory Panel

- * NCQA Committee on Performance Measurement (CPM)

- * NCQA Technical Measurement Advisory Panel

- * National Collaborative for Innovation in Quality Measurement(NCINQ) Measurement Advisory Panel

- * NCINQ Consumer Panel

- * NCINQ Foster Care Panel

- * NCINQ Mental Health Panel

- * NCINQ State Panel

[Response Ends]

3. Indicate the year the measure was first released.

[Response Begins]

2008

[Response Ends]

4. Indicate the month and year of the most recent revision.

[Response Begins]

Revisions finalized in October, 2016

[Response Ends]

5. Indicate the frequency of review, or an update schedule, for this measure.

[Response Begins]

Annual

[Response Ends]

6. Indicate the next scheduled update or review of this measure.

[Response Begins]

October, 2022

[Response Ends]

7. Provide a copyright statement, if applicable. Otherwise, indicate "N/A".

[Response Begins]

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PHQ-9: Copyright

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[Response Ends]

8. State any disclaimers, if applicable. Otherwise, indicate "N/A".

[Response Begins]

N/A

[Response Ends]

9. Provide any additional information or comments, if applicable. Otherwise, indicate "N/A".

[Response Begins]

N/A

[Response Ends]