Guidance for Calculating the Plan All-Cause Readmissions (PCR) Measure in the 2019 Adult and Health Home Core Sets

Introduction

Readmission to the hospital within 30 days of discharge is frequently avoidable and can lead to adverse patient outcomes and higher costs. The Plan All-Cause Readmissions (PCR) measure in the Medicaid Adult and Health Home Core Sets assesses the percentage of acute inpatient hospital discharges resulting in an unplanned hospital readmission within 30 days (see Table 1 for an overview of the measure). State reporting of the PCR measure can help drive quality improvement efforts and monitor progress in reducing readmissions in Medicaid.

This fact sheet was developed to help states calculate and report the PCR measure for the federal fiscal year (FFY) 2019 reporting cycle of the Adult and Health Home Core Sets. The fact sheet explains how data are reported for the measure and provides step-by-step guidance on calculating the measure. Additional resources are listed at the end of the fact sheet.

Changes to the PCR measure for the FFY 2019 reporting cycle

The PCR measure uses a risk adjustment methodology specific to the Medicaid population to calculate a count of expected readmissions. For FFY 2019 reporting, the data elements that states report were changed to include a count of expected readmissions. The count of expected readmissions is a prediction of the state's performance based on its demographic and clinical case mix in the Medicaid population. It is calculated by classifying the state's case mix and applying risk weights to each eligible hospital stay. The PCR measure also includes an observed-to-expected (O/E) ratio, which is the ratio of the actual (observed) count of readmissions in relation to the risk-adjusted (expected) count of readmissions. The O/E ratio is interpreted as "lower-is-better":

- O/E ratio < 1.0 means that the state had *fewer* readmissions than expected given the case mix

- O/E ratio = 1.0 means that the number of readmissions was the *same* as expected given the case mix

- O/E ratio > 1.0 means that the state had *more* readmissions than expected given the case mix

Table 1. Overview of the PCR Measure in the 2019 Adult and Health Home Core Sets

Measure steward	National Committee for Quality Assurance (NCQA)
Description	The number of acute inpatient stays during the measurement year that were followed by an unplanned acute readmission for any diagnosis within 30 days and the predicted probability of an acute readmission. States report the following data: • Count of Index Hospital Stays (IHS) • Count of Observed 30-Day Readmissions • Count of Expected 30-Day Readmissions
IHS	An acute inpatient stay with a discharge on or between January 1 and December 1 of the measurement year.
Index Admission Date	The IHS admission date.
Index Discharge Date	The IHS discharge date.
Age	Ages 18 to 64 as of the Index Discharge Date.
Continuous enrollment	365 days prior to the Index Discharge Date through 30 days after the Index Discharge Date.
Allowable gap	No more than one gap in enrollment of up to 45 days during the 365 days prior to the Index Discharge Date and no gap during the 30 days following the Index Discharge Date.
Anchor date	Index Discharge Date.
Required benefits	Medical.

How to Report the PCR Measure for the 2019 Adult and Health Home Core Sets

This section explains how states should report the data elements for the PCR measure in MACPro, the web-based reporting system, and highlights the data elements that are calculated automatically by the reporting system.

The Count of Index Hospital Stays (IHS) (column 1), the Count of Observed 30-Day Readmissions (column 2), and the Count of Expected Readmissions (column 4) are reported by states. The Observed Readmission Rate (column 3), the Expected Readmission Rate (column 5), and the Observed-to-Expected Ratio (column 6) are calculated by the web-based reporting system using the three reported data elements.

Table 2. Overview of PCR Reporting in MACPro

	(1) Count of IHS	(2) Count of Observed 30-Day Readmissions	(3) Observed Readmission Rate Col. 3 = Col. 2/ Col. 1	(4) Count of Expected 30-Day Readmissions	(5) Expected Readmission Rate Col. 5 = Col. 4/ Col. 1	(6) O/E Ratio Col. 6 = Col. 2/ Col. 4
Total Ages 18-64	State reports data element in MACPro	State reports data element in MACPro	Data element calculated by MACPro	State reports data element in MACPro	Data element calculated by MACPro	Data element calculated by MACPro

Step-by-Step Guide to Calculating the Plan All-Cause Readmissions (PCR) Measure

This section is intended to supplement the technical specification for the PCR measure with step-by-step guidance for calculating the measure. The steps are aligned with the data elements reported in or calculated by MACPro. For FFY 2019 reporting, the measurement year is calendar year (CY) 2018. Supplemental data sources, such as electronic health records or registry data, cannot be used to calculate the PCR measure.

Column 1: Count of IHS

Identify the eligible population, identify IHS for the eligible population, and count the number of IHS for the measurement year.

Identify the Eligible Population
The Count of IHS is based on discharges, not beneficiaries. Include all acute inpatient discharges for beneficiaries who had one or more discharges on or between January 1 and December 1 of the measurement year. The eligible population is defined as follows:

- **Age**: Beneficiaries must be 18 to 64 years of age as of the Index Discharge Date for the IHS.

- **Continuous Enrollment**: Beneficiaries must be continuously enrolled for 365 days prior to the Index Discharge Date through 30 days after the Index Discharge Date. There should be no more than one gap in enrollment of up to 45 days during the 365 days prior to the Index Discharge Date and no gap during the 30 days following the Index Discharge Date.

Identify IHS for the Eligible Population

    Step 1. Identify all acute inpatient discharges on or between January 1 and December 1 of the measurement year. Inpatient stays where the discharge date from the first setting and the admission date to the second setting are two or more calendar days apart must be considered distinct inpatient stays and should be counted separately. The measure includes acute discharges from any type of acute facility (including behavioral health care facilities).

    Step 2. For acute-to-acute direct transfers, keep the original admission date as the Index Admission Date, and use the direct transfer's discharge date as the Index Discharge Date. A direct transfer is when the discharge date from the first inpatient setting precedes the admission date to a second inpatient setting by one calendar day or less.

    Step 3. Exclude hospital stays where the Index Admission Date is the same as the Index Discharge Date.

    Step 4. Exclude hospital stays if the beneficiary died during the stay, had a principal diagnosis of pregnancy on the discharge claim, or had a principal diagnosis of a condition originating in the perinatal period on the discharge claim.

Reporting

Count the number of IHS and enter the value into Column 1 of the reporting table.

Column 2: Count of Observed 30-Day Readmissions

Determine the number of IHS that were followed by at least one acute readmission for any diagnosis within 30 days of the Index Discharge Date.

Identify Index Hospital Stays Followed by an Admission within 30 days after Discharge

    Step 1. Identify all acute inpatient stays with an admission date on or between January 3 and December 31 of the measurement year.

    Step 2. For acute-to-acute direct transfers, keep the original admission date as the Index Admission Date, and use the direct transfer's discharge date as the Index Discharge Date. A direct transfer is when the discharge date from the first inpatient setting precedes the admission date to a second inpatient setting by one calendar day or less.

    Step 3. Exclude acute inpatient hospital admissions for beneficiaries with a principal diagnosis of pregnancy or for a condition originating in the perinatal period.

    Step 4. Exclude planned admissions with a principal diagnosis of maintenance chemotherapy, a principal diagnosis of rehabilitation, an organ transplant, or a potentially planned procedure without a principal acute diagnosis.

    Step 5. For each IHS, determine if any of the acute inpatient stays identified in steps 1-4 have an admission date within 30 days after the IHS discharge date (Index Discharge Date).

Reporting

Count the number of observed IHS with a readmission within 30 days and enter the value into Column 2 of the reporting table.

Column 3: Observed Readmission Rate

The Observed Readmission Rate is the percentage of acute inpatient stays during the measurement year that were followed by an unplanned acute readmission for any diagnosis within 30 days. It is equal to the Count of 30-Day Readmissions (Column 2) divided by the Count of Index Hospital Stays (Column 1). This data element is automatically calculated for states by MACPro.

Column 4: Count of Expected 30-Day Readmissions

Each IHS has a chance of resulting in a readmission within 30 days. That risk is based on attributes of the beneficiary and hospitalization (e.g., gender, surgical stay, discharge condition) and their associated risk weights. The sum of the risk across all IHS is the Count of Expected 30-Day Readmissions.

Step 1. Classify the Risk Adjustment Categories for Each IHS
For each IHS, classify the risk adjustment categories based on presence of surgeries, discharge condition, gender, and age from the IHS, and comorbidities from the classification period.

Surgeries	Determine if the beneficiary underwent surgery during the inpatient stay. Download the list of codes to identify surgeries, using Table HCC-Surg, available on the NCQA website at https://www.ncqa.org/hedis/measures/hedis-2019-risk-adjustment-tables-usage-agreement/hedis-2019-risk-adjustment-tables/.
Discharge Condition	Assign a Discharge Clinical Condition (CC) category code or codes to the IHS based on its primary discharge diagnosis, using Table PCR-DischCC, available on the NCQA website at https://www.ncqa.org/hedis/measures/hedis-2019-risk-adjustment-tables-usage-agreement/hedis-2019-risk-adjustment-tables/.
Comorbidities	Assign Risk Adjustment Determination of Comorbidities based on all the encounters during the 12 months prior to the Index Discharge Date. For more information, see the "Steps for Utilization Risk Adjustment Determination" in the Technical Specifications for the Adult Core Set and Health Home Core Set Measures. See the resources at the end of the Fact Sheet for links.

Step 2. Assign Risk Adjustment Weights
For each IHS, enter the base risk weight for a Medicaid beneficiary and identify risk adjustment weights based on presence of surgeries, discharge condition, comorbidity, gender, and age. Obtain risk adjustment weights for each classification using the risk adjustment tables available on the NCQA website at https://www.ncqa.org/hedis/measures/hedis-2019-risk-adjustment-tables-usage-agreement/hedis-2019-risk-adjustment-tables. The CC-COMORBID, HCC-RANK, and HCC-COMB tables can be found in the Shared Risk Adjustment Tables, while the remaining tables needed to calculate the measure are in the PCR Risk Adjustment Tables.

- The base risk weight sets an average readmission rate and is the same for all Medicaid beneficiaries.
- Each weight indicates how much the attribute raises or lowers the chance of a 30-day readmission.

Table 3 illustrates the assignment of risk adjustment weights according to the beneficiary demographics and presence of surgeries, discharge condition, and presence of comorbidities for a discharge for a hypothetical Medicaid beneficiary.

Table 3. Example of Risk Adjustment Weighting based on the Attributes of a Hypothetical IHS

Hypothetical Attributes	Value	Weight	Table File	Table Tab
Assignment of Risk Adjustment Weights	See Step 2	--	--	--
Base Risk Weight	Yes	-2.7612	PCR Risk Adjustment tables	PCR-MD-OtherWeights
Gender/Age	Female & Age 18-44	0.0027	PCR Risk Adjustment tables	PCR-MD-OtherWeights
Surgical Weight	Yes	-0.2120	PCR Risk Adjustment tables	PCR-MD-OtherWeights
Discharge CC	CC-71 (Paraplegia)	1.0712	PCR Risk Adjustment tables	PCR-MD-DischCC-Weight
HCC-PCR	HCC-18 (Diabetes with Chronic Complications)	0.1616	PCR Risk Adjustment tables	PCR-MD-ComorbHCC-Weight
	HCC-55 (Drug/Alcohol Dependence)	0.3681	PCR Risk Adjustment tables	PCR-MD-ComorbHCC-Weight
Sum of Weights	See Step 3	-1.3696	--	--
Estimated Readmission Risk for Hypothetical IHS	See Step 4	0.2027	--	--

Step 3. Sum Risk Adjustment Weights
Sum all the risk adjustment weights for each IHS. Table 3 illustrates the sum of the weights for a hypothetical discharge.

Step 4. Calculate the Estimated Readmission Risk for each IHS
Use the formula below to calculate the Estimated Readmission Risk based on the sum of the weights for each IHS. As shown in Table 3, the Estimated Readmission Risk for a hypothetical discharge is 0.2027, applying the formula below.

$$\text{Estimated Readmission Risk} = \frac{e^{(\Sigma \text{WeightsForIHS})}}{1 + e^{(\Sigma \text{WeightsForIHS})}}$$

Where:
Estimated Readmission Risk = [exp (sum of weights for IHS)] / [1 + exp (sum of weights for IHS)]
Note: "Exp" refers to the exponential or antilog function.

Reporting

Use the formula below to calculate the Count of Expected Readmissions. Sum the estimated readmission risk for each IHS (calculated in Step 4) and report in Column 4 of the reporting table. The Count of Expected Readmissions should be reported to four decimal places.

$$Count\ of\ Expected\ Readmissions = \Sigma \left(\text{Estimated Readmission Risk} \right)$$

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Column 5: Expected Readmission Rate

The Expected Readmission Rate is the percentage of acute inpatient stays during the measurement year that are predicted to be followed by an unplanned acute readmission for any diagnosis within 30 days. It is equal to the Count of Expected 30-Day Readmissions (Column 4) divided by the Count of Index Hospital Stays (Column 1). This data element is automatically calculated for states in the web-based reporting system

Column 6: Observed-to-Expected (O/E) Ratio

The Observed-to-Expected (O/E) ratio is the ratio of the count of actual (observed) readmissions in relation to the count of risk-adjusted (expected) readmissions. It is equal to the Count of Observed 30-Day Readmissions (Column 2) divided by the Count of Expected 30-Day Readmissions (Column 4). This data element is automatically calculated for states in MACPro.

For More Information

Please refer to the following resources for additional information on calculating the PCR measure for FFY 2019 Adult and Health Home Core Set reporting:

- The technical specifications for the PCR-AD measure are available in the FFY 2019 Adult Core Set Resource Manual, at https://www.medicaid.gov/license-agreement.html?file=%2Fmedicaid%2Fquality-of-care%2Fdownloads%2Fmedicaid-adult-core-set-manual.pdf.

- The technical specifications for the PCR-HH measure are available in the FFY 2019 Health Home Core Set Resource manual, at https://www.medicaid.gov/license-agreement.html?file=%2Fstate-resource-center%2Fmedicaid-state-technical-assistance%2Fhealth-home-information-resource-center%2Fdownloads%2FFFY-19-HH-Core-Set-Manual.pdf

- The risk adjustment tables are available on the NCQA website at https://www.ncqa.org/hedis/measures/hedis-2019-risk-adjustment-tables-usage-agreement/hedis-2019-risk-adjustment-tables/. The PCR tables are found both in the Shared Risk Adjustment Tables and in the PCR Risk Adjustment Tables.

For technical assistance related to calculating and reporting the PCR measure in the Adult and Health Home Core Sets, contact the TA mailbox at MACqualityTA@cms.hhs.gov.

For more information on tools to reduce Medicaid readmissions, please refer to "The Hospital Guide to Reducing Medicaid Readmissions," available at https://www.ahrq.gov/professionals/systems/hospital/medicaidreadmitguide/index.html.