

Total Cost of Care and Resource Use (TCOC) Technical Implementation Guidelines

Purpose

To provide guidance on implementing the National Quality Forum (NQF) endorsed Total Cost of Care and Resource Use (TCOC) measures. TCOC is a standardized measurement approach that allows for cost and resource use comparisons between providers, insurers, and regions over time.

Methodology Overview

The **Total Cost of Care** is a measure of the total cost of treating a population in a given time period expressed as a risk adjusted per member per month (PMPM). The measure includes all services associated with treating a patient including inpatient, outpatient, professional, pharmacy, and ancillary services; and depending on the application, can include members of a population that have not incurred any medical care expense (per capita). Using appropriate and comprehensive risk adjustment tools/methods allows for fair comparisons between providers, insurers, and regions over time.

The **Total Resource Use** measure is very similar to the total cost of care measure with the only difference being that costs are replaced with a value that measures resource consumption (e.g. the frequency and intensity of services utilized to manage a patient). In short, resource consumption is measured by using standardize pricing to value all medical services. The Total Care Relative Resource Values (TCRRV™) assesses the frequency and intensity of all services and is relative across the entire health care continuum.

Both Total Cost of Care and Total Resource Use measures are based on a risk adjusted PMPM relative to a specified peer group or benchmark. The Total Cost of Care is the risk adjusted total paid amount divided by the sum of the member months attributed to the provider. The Total Resource Use measure is the risk adjusted total resources divided by the sum of the member months attributed to the provider. The total resources are the sum of the Total Care Relative Resource Values, which are a standardized price value that acts in the same fashion as a dollar.

For more information about the methodology used by HealthPartners, see the [Total Cost of Care white paper](#), [Resource Use white paper](#), [Comparative Reporting technical paper](#), and [Attribution technical paper](#) on the [TCOC website](#).

TCOC Criteria

| | |
|---------------------------|--|
| Measurement Period | Include all medical and pharmacy claims with a first date of service within a 12 month period that include 3 months of paid claims runout. This will ensure an accurate reflection of all claims experience by place of service as inpatient claims take longer to be submitted for payment. |
| Products | Commercial. |
| Ages Included | >1 to 64. Determine the age based on the last day of the measurement period (i.e. December 31 of the measurement year). |



| | |
|--------------------------------|--|
| Enrollment Criteria | Minimum of 9 months enrollment during performance measurement period. Sum member months to the member level and exclude all members with less than 9 months of member months. |
| Person Level Truncation | \$125,000 allowed amount person level truncation. Sum medical paid, pharmacy paid, medical TCRRVs™, and pharmacy TCRRVs™ to the member level to create a total member paid amount. For members that have a total member paid amount greater than \$125,000, a factor (i.e. \$125,000 / Allowed Amount) is applied to medical and pharmacy spend in the same proportion so the member's total medical and pharmacy paid amount equals \$125,000. |

TCOC Guidelines

The following will describe the TCOC guidelines for membership, attribution, and risk adjustment application.

Membership

The total cost of care and resource use measures are designed to compare populations to identify variations in total cost of treating the population, the number of resources consumed by the population and the price per resource associated to the services delivered. Since the basis of the comparison is the overall peer group, the population needs to be limited to control for known variances, such as a commercial population.

The *process* is explained below.

- Determine monthly eligibility based on the standard/consistent day within a month (i.e. 15th of the month).
- Include all commercial eligible membership records that match the measurement period.
- Determine the age based on the last day of the measurement period (December 31 of the measurement year) and exclude all members that are <1 or greater than 64.
- Sum the monthly medical membership and pharmacy membership counts to the member level. Identify all members that do not have a pharmacy benefit for their entire medical enrollment period and zero out all of their pharmacy member months along with their pharmacy claims. Note a member cannot have more pharmacy member months than medical member months.
- Exclude all members that have <9 months of medical enrollment for the measurement period.

Output: Each member will have a medical member month total and a pharmacy member month total.

Attribution

TCOC and Resource use are patient centric measures; therefore, a member needs to belong to a specific unit of measure. When the member does not belong to a region, community, health plan or even selected provider group, a form of attribution will be necessary. There are a variety of attribution methods that exist to meet varying needs across the country. The method used in TCOC must be consistently applied across the population measured.

The HealthPartners attribution approach (offered as an attribution option) attributes members to the provider that provides the largest percentage of primary care office visits as determined by the specialty of the servicing physician during the performance measurement period. In the event of a tie, the provider with the most recent visit will be attributed to the member.



The HealthPartners' attribution *process* is explained below.

- Include professional claims with an office place of service code within the measurement period (claim form 1500 and place of service code = 11, 19 and 22).
- Include only physicians, physician assistants, and nurse practitioners.
- Assign a specialty to each claim based on the practicing specialty of the servicing physician.
 - Include only the following specialties: family medicine, internal medicine, pediatrics, geriatrics, obstetrics and gynecology. It may be necessary to map organizational physician specialties that are more granular to the above categories.
 - If physician's practicing specialty is not available, utilize organizational physician credentialed specialty.
 - If physician's credentialed specialty is not available, populate specialty with the servicing provider's specialty.
 - Exclude all claims that are not assigned a specialty.
- Count each visit once for all claims that meet the above criteria.
- Calculate majority of services.
 - Sum to the member and provider level.
 - Divide the member and provider total level by the member total level to create a percentage of services provided field.
 - The provider with the highest percentage is attributed the member.
 - If a tie occurs, choose the provider with the most recent visit.

Output: Each member will have one provider assigned.

Risk Adjustment

The Total Cost of Care and Resource Use of a population are impacted significantly by the underlying population's risk profile. The higher a population's risk score the higher the expected TCOC and Resource Use. The standard risk adjustment tools are designed to quantify the morbidity variation in cost in direct relation to the morbidity variation in risk. For example, a population with a 1% higher risk score is expected to have 1% higher TCOC and Resource Use.

There are many risk adjustment tools on the market that perform similarly, as shown in the Society of Actuaries' (SOA) *Accuracy of Claims-Based Risk Scoring Models* ([published 2016 study](#)). The HealthPartners Total Cost of Care and Resource Use measures were endorsed by the National Quality Forum (NQF) using the Johns Hopkins' Adjusted Clinical Grouper (ACG); however, the findings in the SOA study suggest other comparable risk groupers are available. If other risk adjusters are used, reliability and validity testing should be performed. The risk adjustment tool used must be consistent across the population measured.

Once risk adjustment is applied, calculate risk adjusted metrics.

Output: Each member is assigned a risk score and metrics are risk adjusted.

Base Codes

Below are the base code requirements for TCOC application.

- Inpatient: MS-DRG.
- Outpatient: Revenue CPT and modifier.
- Professional: Place of service, CPT, and modifier.
- Pharmacy: NDC.
- Membership: Member identification.

Data Inputs & Outputs

See below for the data element inputs and outputs to the TCOC measurement process.

Inputs

| Membership | Attribution | Risk Adjustment |
|--|---------------------------------|--|
| Membership records by month | Member identifier | Member identifier |
| Product | Attributed Provider identifier | Age, based on the members age on the last day of your measurement period |
| Total member months. Determine monthly eligibility based on the standard/consistent day within a month (i.e. 5th of the month). Include all retrospective membership adjustments | Attributed Physician identifier | Gender |
| Member identifier | Date of service | RVN CPT4 Code |
| Age based on the members age on the last day of your measurement period | CPT4 Code | ICD9 Diagnosis Code (1 -5) |
| Gender | | CPT4 Code |
| Pharmacy benefit coverage flag | | CPT / Revenue CPT4 Modifier |
| | | Place of Service |

Outputs

| Attribution | Risk Adjustment | Total Resource Use | Total Cost of Care |
|---------------------------------|-------------------|---|--|
| Member identifier | Member identifier | Member identifier | Member identifier |
| Attributed Provider identifier | ACG risk score | Total member months (from membership file) | Total member months (from membership file) |
| Attributed Physician identifier | ACG code | Risk score from (from risk adjustment process) | Risk score from (from risk adjustment output) |
| | | Member-level truncation factor (see claims processing section of this document) | Member-level truncation factor (see claims processing section of this document) |
| | | Total medical TCRRVs (from TCRRV output) | Total medical paid amount, include all payments to the provider for services rendered, plan and member liability |
| | | Total pharmacy TCRRVs (from TCRRV output) | Total pharmacy paid amount, include all payments, plan and member liability |
| | | Attributed Provider identifier (from attribution file) | Attributed Provider identifier (from attribution file) |
| | | Attributed Physician identifier (from attribution file) | Attributed Physician identifier (from attribution file) |

Implementation

HealthPartners provides three analytic packages free of charge to external users implementing Total Cost of Care and Resource Use in their organizations. Click on the below links for implementation user guides.

- Non-SAS users have the ability to apply TCRRVs™ by service category to their data ([Non-SAS TCRRV™ Application](#)).
- SAS users can choose between the two below analytical packages depending on their specific needs. The distributed model allow for multiple entities to apply TCOC specifications independently and submit aggregated output data to a central entity where final aggregated TCOC measures are generated. Both packages include the option to include risk adjusted utilization metrics (comprehensive module).

| TCOC Analytic Package | Distributed TCOC Analytic Package |
|---|---|
| 1. Applies TCRRVs™ to claims. | 1. Applies TCRRVs™ to claims. |
| 2. Assigns members to analysis groups (optional). | 2. Assigns members to analysis groups (optional). |
| 3. Applies risk adjustment to TCOC measures and utilization metrics (optional). | 3. Applies risk adjustment to TCOC measures and utilization metrics (optional). |
| 4. Calculates TCOC measures and service category benchmarks. Utilization benchmarks are optional. | 4. Allows multiple entities to compile and summarize data. |
| 5. Produces TCOC summary report | 5. Calculates aggregated TCOC measures and service category benchmarks. Aggregated utilization benchmarks are optional. |
| | 6. Produces aggregated TCOC summary report |

Final Total Cost of Care and Resource Use Metrics

The final Total Cost of Care and Resource Use measures are expressed as a risk adjusted total cost or resource use per member per month:

$$\text{Risk Adjusted Total Allowed Amount PMPM} = \frac{(\text{Total Allowed Amount} / \text{population membership})}{(\text{relative risk score})}$$

$$\text{Risk Adjusted Total Resource Use PMPM} = \frac{(\text{Total TCRRVs}^{\text{TM}} / \text{population membership})}{(\text{relative risk score})}$$

Both the Total Cost of Care and Resource Use measures are typically compared to a peer group or benchmark, which generates an index relative to the peer group or benchmark.

Total Cost of Care Calculation – Total Cost Index (TCI)

| | |
|-----------|---|
| Numerator | Total PMPM = (Total Medical Cost / Medical Member Months) + (Total Pharmacy Cost / Pharmacy Member Months) |
|-----------|---|

| | |
|-------------|------------|
| Denominator | Risk Score |
|-------------|------------|

| | |
|-------------------|--|
| Rate Calculations | Risk Adjusted PMPM = Total PMPM / Risk Score |
|-------------------|--|

$$\text{TCI} = \text{Risk Adjusted PMPM} / \text{Peer Group Risk Adjusted PMPM}$$



Resource Use Index Calculation – Resource Use Index (RUI)

| | |
|--------------|---|
| Numerator | Total Resource PMPM = (Total Medical TCRRV™ / Medical Member Months) + (Total Pharmacy TCRRV™ / Pharmacy Member Months) |
| Denominator | Risk Score |
| Calculations | Risk Adjusted Total Resource Use PMPM = Total Resource PMPM / Risk Score |
| | RUI = Risk Adjusted Resource Use PMPM / Peer Group Average Risk Adjusted Resource Use PMPM |

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*This work is based on the patented algorithm of **HealthPartners, Inc. (Bloomington, MN)** and is used with their permission.*

Comparability Guidelines

Before any populations are compared, the supporting data should be evaluated to ensure that the comparisons are fair and that variations are understood. An acceptable level of completeness should be evaluated by the user of the measure, balancing the risk associated to the use of the results versus the benefit of the information. For example, more data consistency and completeness is needed for consumer transparency or financial arrangements versus improvement opportunity assessments. The more complete the data, the higher the reliability of the results produced by the measure.