THE NATIONAL QUALITY FORUM

Specifications for the Three-Item Care Transition Measure – CTM-3

The following material provides the detailed specifications for the proposed measure of patients' perspectives on coordination of hospital discharge care, the 3-Item Care Transition Measure (CTM-3). This measures is under consideration for endorsement by the National Quality Forum as a voluntary consensus standard.

For ease of discussion, the specifications have been divided into five domains:
1. Survey instrument;
2. Sampling (population, sampling frame, type of sampling, and sample size)
3. Survey administration (timing, mode, format, and maximizing response rates)
4. Scoring and patient-mix adjustment
5. Reporting data

Each specification *must* be adhered to unless otherwise indicated within the specification.

1. SURVEY INSTRUMENT: 3-ITEM CTM

1. The hospital staff took my preferences and those of my family or caregiver into account in deciding what my health care needs would be when I left the hospital.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/Don't Remember/ Not Applicable

2. When I left the hospital, I had a good understanding of the things I was responsible for in managing my health.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/Don't Remember/ Not Applicable

3. When I left the hospital, I clearly understood the purpose for taking each of my medications.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/Don't Remember/ Not Applicable

2. SAMPLING

2.1 Population
- Discharged patients from general acute care hospitals
- All patients, not just Medicare patients

2.2 Proxies
- No proxies are permitted to respond instead of patient
- Someone other than the person who received care is permitted to read the questions to the respondent and/or record the responses

2.3 Excluded populations
- Pediatric patients under age 18 years
- Patients who died in the hospital
- Patients who did not stay at least one night in the hospital
- Other patients as required by law or regulation in the state in which the hospital operates

2.4 Sampling frame

- All discharges between the first and last days of the month

2.5 Type of sampling
- Simple random sample of discharges generated on a monthly basis
- One-time basis after the end of the month *or* throughout the month
- Data shall be accumulated to create a "rolling" 12-month data file for the hospital

2.6 Sample size (modeled after other measurement sampling procedures)
- Minimum of 300 completed CTM-3 survey instruments over a 12-month period (either a target of N=25 completed surveys per month or proportionate sampling)
- Exception for small hospitals not able to reach 300 completed surveys: Hospital should sample as many discharges as possible.
- Calculation of the number of discharges that need to be sampled each month:

    1. Identify the number of completes needed over 12 months
        C= number of completes needed = 300
    2. Estimate the proportion of sampled patients expected to complete the survey. Let:
        I=expected proportion of ineligible sampled patients (e.g. patients who died after discharge)
        R=expected survey response rate among eligible respondents
        P=Proportion of sampled patients expected to complete the survey = (1- I) x R
    3. Calculate the number of discharges to sample
        N12= number of discharges to sample over 12 months = C/P
        N1= number of discharges to sample each month = N12/12

3. SURVEY ADMINISTRATION

3.1 Timing
- Between 48 hours and 6 weeks post discharge, regardless of mode of administration
- Data collection shall be closed out no later than six weeks following start of data collection for that respondent

3.2 Mode
- Mail only
    o The CTM-3 questionnaire only *or* combined with hospital-specific questions

- o Cover letter
  - May be tailored, but must include language indicating the purpose of the survey, explanation that participation is voluntary, and statement that the individual's health benefits will not be affected by participation
- o A second questionnaire with a reminder/thank you cover letter shall be sent to non-respondents
- Telephone only
  - o Standardized script should be used
  - o Interviewers administering the surveys must be trained before interviewing respondents[1]
  - o Must attempt to contact respondent at least five times unless respondent explicitly refuses to complete the survey. Attempts must be on different days and at different times of the day
- Mixed mode of mail and telephone
  - o Specifications for mail-only and telephone-only modes apply, except
    - Initial wave of mailing shall consist of instrument and cover letter as specified for mail-only; second mailing is not required
    - Non-respondents shall be contacted by telephone at least five times unless respondent explicitly refuses to complete the survey. Attempts must be on different days and at different times of the day
  - o Interviewers administering the surveys must be trained before interviewing respondents[2]

3.3 Format
- Administered as stand-alone instrument *or* combined with hospital-specific questions
- Number of hospital-specific questions is at hospital's discretion

4. SCORING AND PATIENT-MIX ADJUSTMENTS

4.1 Data timeframe
- 12 months of data on a "rolling" basis

4.2 Sampling rates
- Monthly samples must be weighted to control for varying sampling rates throughout the year to make the combined monthly samples representative of the full population of discharges

4.3 Scoring

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[1] The aims of the training program are to ensure that interviewers are: reading questions as worded; using non-directive probes; maintaining a neutral and professional relationship with the respondent; and recording only those answers that the respondent chooses.

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- The score reflects the overall quality of the care transition, with lower scored indicating a poorer quality transition, and higher scores indicating a better transition

Creating a 0-100 score:
1. Step 1 - Calculate the sum of responses across the 3 items (score Strongly Disagree = 1; Disagree = 2; Agree = 3; Strongly Agree = 4)
2. Step 2 - Count the number of question answered
3. Step 3 - Calculate the mean response (sum divided by count)
4. Step 4 - Use linear transformation to convert to 0-100 score

Example of scoring calculation using SPSS:
Step 1: SPSS Syntax
COMPUTE CTM3Sum = q1 + q2 + q3 .
EXECUTE .

Step 2: SPSS Syntax
COUNT CTM3Ct = q1 q2 q3 (1 thru 4) .
EXECUTE .

Step 3: SPSS Syntax
COMPUTE CTM3mean = CTM3Sum / CTM3Ct .
EXECUTE .

Step 4: SPSS Syntax
COMPUTE CTM3_0_100 = ((ctm3mean)-(1))/(3)*100 .
EXECUTE .

4.4 Patient-Mix Adjustment
The CTM is a patient-centered measure that assesses the extent to which hospital staff accomplished essential care processes. These care processes are to be extended universally to all hospitalized patients, irrespective of level of disease burden or socio-demographic status. As such, the CTM, a process of care measure, does not employ patient-mix adjustment techniques in calculating a summary score.

If, however, CTM-3 items were incorporated into another performance measurement tool that employs patient-mix adjustment for gender, age, educational level, ethnicity, self-rated health, or discharge status, such adjustment would have a neutral effect and would not influence CTM-3

scores. If the CTM-3 is administered in conjunction with an adjusted tool and patient-mix adjustment is thus desired, the following approach to patient-mix adjustment could be used with the CTM-3:

Specification 4.3 provide for the steps to producing raw CTM scores. Final scores shall include a patient-mix adjustment and adjustment for mode effects to better ensure the comparability of scores across hospitals—that is, the purpose of adjusting for patient mix is to estimate how different hospitals would be rated if they all provided care to comparable groups of patients.
- The following variables could be used in the patient-mix adjustment model:
  - Type of service (medical, surgical, obstetric)
  - Age (specified as a categorical variable)
  - Education (specified as a linear variable)
  - Self-reported general health status (specified as a linear variable)
  - Language other than English spoken at home
  - Interaction of age by service
- The patient-mix adjustment shall be a regression methodology also referred to as covariance adjustment. As an example:

Let y_{ipj} represent the response to item i of respondent j from hospital p (after recoding, if any, has been performed). The model for adjustment of a single item i is of the form:

$$y_{ipj} = \beta_i' \, x_{ipj} + \mu_{ip} + \varepsilon_{ipj}$$

where β_i is a regression coefficient vector, x_{ipj} is a covariate vector consisting of six or more adjuster covariates (as described above), μ_{ip} is an intercept parameter for hospital p, and ε_{ipj} is the error term. The estimates are given by the following equation:

$$\left(\hat{\beta}_i' \ \hat{\mu}_i' \right)' = \left(\mathbf{X}'\mathbf{X} \right)^{-1} \mathbf{X}' \mathbf{y}_i$$

where $\mu_i = \left(\mu_{i1}, \mu_{i2}, \ldots \mu_{ip} \right)'$ is the vector of intercepts, $\mathbf{y}_i$ is the vector of responses, and the covariate matrix is:

$$\mathbf{X} = \left(\mathbf{X}_a \quad u_1 \ u_2 \ \ldots u_p \right)$$

where the columns of $\mathbf{X}_a$ are the vectors of values of each of the adjuster covariates, and u_p is a vector of indicators for being discharged from hospital p, p = 1, 2,...P, with entries equal to 1 for respondents in hospital p and 0 for others.

The estimated intercepts are shifted by a constant amount to force their mean to equal the mean of the unadjusted hospital means $\bar{y}_{ip}$ (to make it easier to compare adjusted and unadjusted means), giving adjusted hospital means:

$$\hat{a}_{ip} = \hat{\mu}_{ip} + \left(1/P \right) \sum_p \bar{y}_{ip} - \left(1/P \right) \sum_p \hat{\mu}_{ip}$$

For single-item responses, these adjusted means are reported. For composites, the several adjusted hospital means are combined using the weighted mean:

$$\hat{a}_p = \sum_i w_i \hat{a}_{ip}$$

5. REPORTING

5.1 Data submission
- Data are to be submitted to and processed by qualified data management/analysis entities as detailed in The National Quality Forum-endorsed report, "A Comprehensive Framework for Hospital Care Performance Evaluation".
- Hospital/vendor develops the sampling frame of relevant discharges, draws the sample of discharges to be surveyed, and collects data from each sampled discharge
- Data shall be transmitted in a standard data file structure that includes a record for each sampled discharge for both respondents and non-respondents