Composite Measures

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NATIONAL QUALITY FORUM

Composite Measure

A composite measure is a combination of two or more individual measures in a single measure that results in a single score.

Examples

- 0076 Optimal Vascular Care (MN Community Measurement)
  - Percentage of adult patients ages 18 to 75 who have ischemic vascular disease with optimally managed modifiable risk factors (LDL, blood pressure, tobacco-free status, daily aspirin use)

- 0532 Pediatric Patient Safety for Selected Indicators (AHRQ)
  - Accidental puncture or laceration (PDI 1)
  - Decubitus ulcer (PDI 2)
  - Iatrogenic pneumothorax (PDI 5)
  - Postoperative sepsis (PDI 10)
  - Postoperative wound dehiscence (PDI 11)
  - Selected infections due to medical care (PDI 12)

NQF Endorses National Voluntary Consensus Standards of Performance Measures for Use in Accountability/Public Reporting and Improvement

- Quality
  - Structure
  - Process
  - Intermediate clinical outcome
  - Outcome
    - Use of services (used as proxy for outcome, cost)
  - Patient experience
- Resource use/cost
- Efficiency (combination of quality and resource use)
- **Composite** (combination of two or more individual measures in a single measure that results in a single score)

Types of Composite Measures

Often described based on the method used to combine the component scores

- All-or-none/any-or-none scoring (patient-level)
- Sum
- Average
- Weighted average
- Opportunity scoring

Composites – Pros and Cons

Pros

- Reflect complex and multidimensional nature of healthcare
- Summarize data from multiple measures
- Increase reliability

Cons

- Obscure information if data on individual components not transparent
- Increased methodological complexity, testing, analysis
- Unsound methods affect validity of conclusions about quality

NQF Endorsement Criteria

- Importance to measure and report (***must-pass***)
- Scientific acceptability of measure properties (***must-pass***)
- Usability
- Feasibility
- **If suitable for endorsement**, evaluate measure harmonization & best-in-class

Principles Related to Composite Measure Evaluation

- The individual measures included in the composite or subcomposite measures must be either:
  - NQF endorsed;
    OR
  - assessed to have met the individual measure evaluation criteria as the first step in evaluating the composite measure
- Composite measure as a whole also must meet evaluation criteria
- Composites are developed beginning with a conceptual construct of quality or with a set of measures one wishes to summarize into one score
- Methods for combining the component scores influence the interpretation of the composite measure results and must be justified

1. Importance to Measure and Report

- Must-pass criterion - must meet all 3 subcriteria

1a. High impact

- National health goal or priority
- Data on numbers of persons affected, high resource use, severity of illness, consequences of poor quality

1b. Performance gap/Opportunity for improvement

- Data demonstrating considerable variation in performance OR overall less than optimal performance
- Data on disparities in care
- Potential for reserve status for endorsed measures

1c. Evidence

- Quantity, quality, consistency of body of evidence

Importance to Measure and Report – Composite

- The purpose/objective of the composite measure and the construct for quality are clearly described.
- The component items/measures (e.g., types, focus) that are included in the composite are consistent with and representative of the conceptual construct for quality represented by the composite measure. Whether the composite measure development begins with a conceptual construct or a set of measures, the measures included must be conceptually coherent and consistent with the purpose.

2. Scientific Acceptability of Measure Properties

- Must-pass criterion - must meet both reliability and validity

2a. Reliability

2a1. Precise specifications

2a2. Reliability testing—data elements or measure score

2b. Validity (and threats to validity)

2b1. Specifications consistent with evidence

2b2. Validity testing—data elements or measure score

2b3. Justification of exclusions (also relates to evidence)

2b4. Risk adjustment

2b5. Identification of differences in performance

2b6. Comparability of data sources/methods

Scientific Acceptability of Measure Properties – Composite

- The composite measure is well defined and precisely specified so that it can be implemented consistently within and across organizations and allow for comparability. Composite specifications include methods for standardizing scales across component scores, scoring rules (i.e., how the component scores are combined or aggregated), weighting rules (i.e., whether all component scores are given equal or differential weighting when combined into the composite), handling of missing data, and required sample sizes.
- Component item/measure analysis (e.g., various correlation analyses such as internal consistency reliability), demonstrates that the included component items/measures fit the conceptual construct;
  OR
  justification and results for alternative analyses are provided

Scientific Acceptability of Measure Properties – Composite

- Component item/measure analysis demonstrates that the included components contribute to the variation in the overall composite score;
  OR
  if not, justification for inclusion is provided
- The scoring/aggregation and weighting rules are consistent with the conceptual construct. (Simple, equal weighting is often preferred unless differential weighting is justified. Differential weights are determined by empirical analyses or a systematic assessment of expert opinion or values-based priorities.)
- Analysis of missing component scores supports the specifications for scoring/aggregation and handling of missing component scores

Feasibility

- Extent to which the required data are readily available, retrievable without undue burden, and can be implemented for performance measurement.

  a. Clinical data generated and used during care process

  - Blood pressure, lab value vs. survey or observation

  b. Electronic sources

  - EHR, claims vs. abstracted and entered into database/registry
  - Is there a credible, near-term path to electronic collection?

  c. Data collection strategy can be implemented

  - Is it already in operational use or testing indicated ready for operational use?

Usability and Use (implement fall 2012)

Extent to which potential audiences (e.g., consumers, purchasers, providers, policymakers) 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.

a. Accountability and Transparency

- Used in accountability w/in3 yrs.; publicly reported w/in 6 yrs.
- If not in use at the time of initial endorsement, credible plan for implementation within the specified timeframes **AND**

b. Improvement

- Progress toward achieving the goal of high-quality, efficient healthcare for individuals or populations is demonstrated
- If not in use for performance improvement at the time of initial endorsement, credible rationale **AND**

Usability and Use

c. Benefits outweigh evidence of unintended negative consequences

- Facilitating progress toward achieving goal outweigh evidence of unintended negative consequences to individuals or populations (if such evidence exists)

- Previously under feasibility

Usability and Use – Composite

- Data detail is maintained such that the composite measure can be decomposed into its components to facilitate transparency and understanding
- Demonstration (through pilot testing or operational data) that the composite measure achieves the stated purpose/objective

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 same target population) or competing measures (both the same measure focus and same target population), the measures are compared to address harmonization and/or selection of the best measure.

5a. The measure specifications are harmonized with related measures OR the differences in specifications are justified.

5b. The measure is superior to competing measures (e.g., is a more valid or efficient way to measure) OR multiple measures are justified.

New Project on Composites

Clarification of Definitions and Criteria for composite measures

- Patient level (all/any-or-none) vs. aggregate level composite measures
- Psychometric vs. clinimetric models
- Combining processes and outcomes
- Distinguish from measures produced by CAHPS (more like PRO-based outcome measures)
- Distinguish from paired/grouped measures or measures with multiple numerators (*composite measures produce a single score*)

Measure Evaluation Guidance

- Reports on guidance for measure evaluation:
  - Composite Evaluation Framework
  - Evidence for the Focus of Measurement and Importance to Measure and Report
  - Measure Testing and Scientific Acceptability of Measure Properties
  - Measure Harmonization
- Updated Measure Evaluation Criteria
- Specific rating scales for evidence (1c), reliability (2a), and validity (2b)
- Decision tables for Importance to Measure and Report and Scientific Acceptability of Measure Properties

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