



Using Aggregate Measures for Quality Improvement

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March 19, 2008

Historically the most common approach to patient safety and quality of care is to evaluate treatment on an individual measure basis. Another way to assess care is to aggregate the applicable measures to determine if patients are receiving all the care that is covered by the quality measures. For the 5 Million Lives Campaign, the Institute for Healthcare Improvement and the Colorado Foundation for Medical Care recommend using an aggregate measure of care for internal patient safety and quality efforts. The specific aggregate measure recommended is the 'all-or-none' method of aggregation for the IHI bundles addressing the different topics.

There are two main types of aggregating measures. The all-or-none method examines the care given to an individual patient and assesses whether that patient received all the care they were eligible for during the stay. The measure is a simple yes or no with each patient being represented in the measure. The composite/absolute method combines all opportunities for care in a given patient group and represents the percentage of care events that were met in the hospital and the care topic is the basis for the measure.

For example, if there were two AMI patients and the first was eligible for three measures and the second was eligible for five measures, the composite/absolute method would aggregate the eight opportunities and report out how many times they were met. If the first patient received care that passed two measures and the second patient received care that passed four measures the Composite/Aggregate score for AMI treatment at the hospital would be 75% (6 out of 8). The all-or-nothing score for AMI treatment at the hospital would be 0% (neither patient passed **all** the measures to which they were eligible). In practice, the all-or-none method results in lower aggregate measure score. An explanation of the types of aggregate measures is described in Reeves, D., et al. "Combining multiple indicators of clinical quality: an evaluation of different analytic approaches." Med.Care 45.6 (2007): 489-96.

Ultimately, the determination to use aggregate measures and which method to use in the 5 Million Lives Campaign rests with each hospital. Drs. Nolan and Berwick advocated for the all-or-none measurement in a recent article in JAMA, (Nolan & Berwick, 2006). Using all-or-none is particularly important when the process measures interact with each

other and the failure to complete one step invalidates the care. For example, choosing the right prophylactic antibiotic during surgery may not help the patient if the medication is not given at the proper time. Failure to implement all steps in a Central Line Infection bundle invalidates protection and therefore, an all-or-none measure makes sense.

Patients deserve the right treatment and the all-or-none measurement describes care in this way. The all-or-none measure is easier for a patient to understand and identifies the issues most important to him or her: how they are being treated in a hospital.

The all-or-none method is recommended for improvement efforts. It may be more political to use a more forgiving method for reporting to the public, although as stated above, the all-or-nothing reporting is easier understood by patients. In the final analysis, their individual care is the issue that most concerns them as a patient.

The all-or-none method is also supported by a study on AMI treatment and mortality. When patients received more guideline recommended treatment, their mortality rate dropped. The relationship was linear, the more recommended treatments the patient received, the lower their mortality, Peterson, E. D., et al. "Association between hospital process performance and outcomes among patients with acute coronary syndromes." JAMA. 295.16 (2006): 1912-20.

When using an aggregate measure for accountability, the most common has been the composite/absolute measure. It was used for the CMS pay-for-performance demonstration project and in several articles using Joint Commission Core Measure quality data. (Glickman et al., 2007), (Landon et al., 2006), (Williams, Koss, Morton, & Loeb, 2006). The decision of which aggregate measure to use should be closely related to the purpose of the measure.

The Quality Measure Task Force of the Society of Thoracic Surgeons examined the effect of using different aggregation methods. Their findings reveal that combining process measures with outcomes can be an issue (O'Brien et al., 2007). Their recommendation was to use all-or-none aggregation when appropriate. Others have criticized both the all-or-none method as well as the composite method (Normand, Wolf, & McNeil, 2008).

Using an aggregate measure can help hospitals and other providers understand the way care is given. It is also very useful for measuring progress. The all-or-none method gets to the heart of patient safety and preventing harm by looking at the entire care episode of a patient. CFMC recommends exploring aggregate measures as you continue to improve the care.

References

The following references describe aggregate measures. Most articles address using the measure for accountability.

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