

Beginner's Guide to Measuring Educational Outcomes in CEhp

Sources of Data in CE

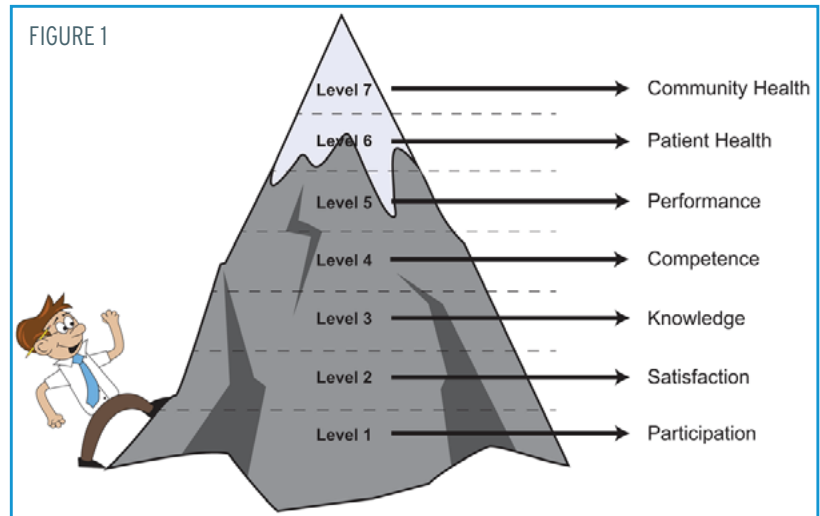
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Overview of Moore's Model and Sources of Data

Applying Moore's conceptual framework for higher level outcomes assessment in CME leads CME professionals into an increasingly complex world of data, foreign nomenclatures and operational challenges (Figure 1).

At first glance, the upper levels (Levels 5–7) may appear to be overwhelming to many CME providers. CME professionals are generally comfortable with data sources such as attendance records, questionnaires, pre- and post-tests, observations and self-reported results, which are required for levels of Participation, Satisfaction, Knowledge and Competence (Levels 1–4).

However, that same confidence level is not apparent at the higher levels when planning outcomes assessments of Performance (Level 5), Patient Health (Level 6) or Community Health (Level 7), each of which requires the use of one or more sets of clinical, administrative, pharmacy or other type of practice-based data to generate the desired



outcomes evaluation (See Figure 2).¹ Unlike questionnaires and similar instruments, clinical care documents tend to be outside of the control of the CME planner, and therefore present a perceived barrier to participation.

Learning Objectives of this Module

The goal of this module in the Beginner's Guide to Measuring Educational Outcomes in CEhp is to help build confidence through an understanding of the types of data, and sources of data, required to measure performance and achieve higher level outcomes (Levels 5–7) as defined by the Moore model. But, first, it is important to understand how to practically plan activities to assure that you can successfully begin achieving higher levels of outcomes for your organization.

Planning Rules for Performance-based Outcomes

Rule Number 1

Work Backwards from the Measure.

It sounds simple, but we have seen many people try to build their educational plans and strategies based on goals that are unachievable, due to the fact that the data required to measure success is beyond reach, too expensive to acquire, incomplete, fragmented, or due to any number of other reasons. If you start any initiative by first considering what one is attempting to measure, and then working in reverse to

FIGURE 2
FROM MOORE ET AL.¹
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Expanded CME Framework	Description	Source of Data
Participation LEVEL 1	The number of physicians and others who participated in the CME activity	Attendance records
Satisfaction LEVEL 2	The degree to which the expectations of the participants about the setting and delivery of the CME activity were met	Questionnaires completed by attendees after a CME activity
Learning: Declarative knowledge LEVEL 3A	The degree to which participants state <i>what</i> the CME activity intended them to know	<i>Objective:</i> Pre- and posttests of knowledge. <i>Subjective:</i> Self-report of knowledge gain
Learning: Procedural knowledge LEVEL 3B	The degree to which participants state <i>how</i> to do what the CME activity intended them to know how to do	<i>Objective:</i> Pre- and posttests of knowledge <i>Subjective:</i> Self-report of knowledge gain
Competence LEVEL 4	The degree to which participants <i>show</i> in an educational setting <i>how</i> to do what the CME activity intended them to be able to do	<i>Objective:</i> Observation in educational setting <i>Subjective:</i> Self-report of competence; intention to change
Performance LEVEL 5	The degree to which participants <i>do</i> what the CME activity intended them to be able to do in their practices	<i>Objective:</i> Observation of performance in patient care setting; patient charts; administrative databases <i>Subjective:</i> self-report of performance
Patient health LEVEL 6	The degree to which the health status of patients improves due to changes in the practice behavior of participants	<i>Objective:</i> Health status measures recorded in patient charts or administrative databases <i>Subjective:</i> Patient self-report of health status
Community health LEVEL 7	The degree to which the health status of a community of patients changes due to changes in the practice behavior of participants	<i>Objective:</i> Epidemiological data and reports <i>Subjective:</i> Community self-report participants

make sure that all of the data elements are reasonably within reach, the chances of ultimate success rise significantly.

This notion of “working backwards from the measure” is supported by Moore et al² who advised that, when planning, one should “start with the end in mind.” In CME planning, Moore advised beginning with Level 7 outcomes, and then traveling backwards through each of the various levels to better understand where to begin planning activities for providers, based on identified gaps in performance or knowledge. Here, we recommend considering a similar approach based on the desired measures of success at each level, working backwards until you recognize alignment between your gap-analysis, the desired outcomes level, and realistic data sources that can sufficiently power your desired measures.

Rule Number 2

You Can't Improve What You Can't Measure.

In Avedis Donabedian's landmark 1966 paper,³ the founder of modern healthcare quality and outcomes research proposed the Donabedian Model. This conceptual model defines a framework for examining health services and evaluating quality of care,⁴ which includes three categories of measures: structure, process and outcomes.⁵

Although the Moore model is very helpful for planning at the macro level, in order to understand the data source required, one must also consider the type(s) of measures that are to be included within each particular targeted Moore level. The Donabedian Model provides a highly useful way to connect the Moore levels, with the type(s) of targeted measures, and in turn the related data sources required. It also can serve as a framework for analyzing other characteristics germane to data sources that also must be considered, such as data latency (how old is the data), data cadence (how often can I access the data), data refresh rate (how often is the data updated), duration of access to the data, and other criteria that are beyond the scope of this module.

Where Does the Data Come From?

Regardless of the level of outcomes and related type of measures being targeted, access to healthcare data is required to achieve success. Understanding the “data source” required for each measure however, can be confusing due to the myriad of data classification systems in place.

However, one straightforward approach is to use the NQF (National Quality Forum) data source model, which is an integral part of the standard measure specification template used by NQF to define endorsed measures. This data source model is also embedded within the NQF Quality Positioning System™.⁶ By using this data source model as part of your CME planning process, mapping measures to data sources will be simplified.

The following are the NQF defined data sources and a description of where they may be most useful to you in your CME planning process:

- *Administrative Claims*—Administrative claims data, or “claims data,” typically result when healthcare services are utilized and providers submit their

claims for reimbursement. These data can be highly valuable as they include patient demographic information, diagnosis, procedures, provider of care, amount billed and reimbursed for services, and dates of service. A variety of structure and process measures can be calculated based on claims data. The greatest limitation of claims data is that it does not include physiological data elements, such as blood pressure or lab values, and therefore its use in outcomes measures is self-limiting.

- *Paper Medical Records*—The abstraction of data elements from the patient paper-based medical record can be one of the most accurate methods for obtaining clinical data for measuring performance. This data source will provide most of the data needed to power process and outcomes measures. Acquiring data from the patient paper medical record however, is laborious and costly, which makes it difficult to use for upper level outcomes initiatives (Moore Level 6 or 7), and, in general, for any large scale study.
- *Electronic Clinical Data*—Data from electronic data sources, such as EHRs and Clinical Data Registries, hold the most promise as a cost-effective data source for enabling outcomes assessment across all high levels (Moore Level 5–7). The data in these systems are capable of powering structure, process and outcomes measures. Specific to EHRs, the limitations to date have been the limited interoperability available for extracting data, and the lack of complete, or codified data in the EHR. Clinical data registries when used alone, or in combination with EHRs, may provide a more accurate data source to enable large scale outcomes assessment of performance, patient and community health.
 - » Electronic Clinical Data Sources Identified by NQF include: Electronic Health Records (EHRs), Imaging/Diagnostic Studies, Laboratory Systems, Pharmacy Systems, and Clinical Data Registries
- *Healthcare Provider Surveys*—Data from patient responses to healthcare provider surveys have become a permanent fixture in quality measurement and value-based payment programs. These surveys, such as the Centers for Medicare and Medicaid

NQF's online Quality Positioning Systems™ (www.qualityforum.org/QPS/) tool can be very helpful when designing programs that require linking performance measures and data sources.

Services (CMS) HCAHPS (Hospital Consumer Assessment of Healthcare Providers and Systems) patient experience of care survey, can offer a great source of subjective data from the view of the patient, but are limited to the data points and measures prescribed by the survey owner.

- *Management Data*—Practice management system

data, or “PMS” data, mirror “claims” data, but from the provider, rather than the payor, perspective. PMS data result when healthcare services are utilized and include information provided to payors as part of their claims for reimbursement. Similar to claims data, PMS data can be highly valuable as they include patient demographic information, diagnosis, procedures, provider of care, amount billed for services, and dates of service. In addition, the PMS may be able to identify denominator data of all patients across a provider’s practice, which may decrease the burden by limiting data collection needs to only the numerator. An example is in the case of a diabetes measure, where the denominator can be identified by the PMS, and only the HbA1C lab value is abstracted from the patient record.

- *Patient Reported Data/Surveys*—Data from patient responses to surveys, including patient reported outcomes surveys, are an emerging data source that hold a great deal of promise for reaching high level outcomes assessment. These surveys tend to be less structured than standardized healthcare provider surveys (e.g. HCAHPS), and may offer a great source of subjective data from the view of the patient.

Case Study

In 2013 the American College of Physicians (ACP) and CE-City developed and launched a quality improvement (QI) clinical data registry (CDR), named the Genesis Registry™ (Genesis). Genesis was conceived based on a needs assessment, which took into account practice-based performance gaps in internal medicine, as well as market-based provider needs related to the shift from service to value. The goals for the registry were set high, and included achieving Performance (Moore Level 5), Patient Health (Moore Level 6) and Community Health (Moore Level 7) outcomes, with support for process and outcomes measures at each level. Using the analysis methods described in this article, the parties realized that this would require continuous data acquisition directly from the practice EHRs. To minimize the burden on providers and EHR vendors, Genesis was designed using electronic enabled measures (eMeasures) with support for standard EHR file formats. Genesis also includes CME (e.g. ACP Smart Medicine™) and other interventions linked to relevant measures, to guide knowledge and performance improvement. Today, the Genesis Registry supports over 5,000 providers and includes over 6 million patients. Continuous performance reports are being generated at the practice performance (Moore Level 5) and patient (Moore Level 6) levels. CME knowledge assessments (Moore Level 3) are also being collected. Additional community outcomes analysis is planned (Moore Level 7), as well as the future inclusion of other measures and data sources.

References

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- ⁶ NQF Quality Positioning Systems™ (www.qualityforum.org/QPS/) 