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# Performance Measurement: Managing and Using Home and Community-based Services Data for Quality Improvement

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**Performance Measurement:  
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for Quality Improvement**

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UNIVERSITY OF  
SOUTHERN MAINE



**Rutgers** Center for  
State Health Policy

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# Discussion Paper

## Community Living Exchange

Funded by Centers for Medicare & Medicaid Services (CMS)

### **Performance Measurement: Managing and Using Home and Community-Based Services Data for Quality Improvement**

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## Managing and Using Data for Quality Improvement

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The Data Management and Use Series represents the third in a group of papers synthesizing the ideas and practices of states as they improve the quality of home and community based services (HCBS) and supports for older persons and persons with disabilities.

In 2003, the Centers for Medicare & Medicaid Services (CMS) awarded grants to 19 states to enhance their quality management (QM) programs for HCBS programs.<sup>1</sup> CMS contracted with the Community Living Exchange Collaborative<sup>2</sup> to assist states in their grant activities by promoting information exchange and facilitating discussions on topics of common interest. As part of its work with the Community Living Exchange Collaborative, the Muskie School of Public Service, together with grantee states, identified three initial priority topics for working papers:

1. Quality Management (QM) Roles and Responsibilities
2. Discovery Methods for Remediation and Quality Improvement
3. **Managing and Using Data for Quality Improvement**

The Data Management and Use Series builds upon the concepts and techniques discussed in the two previous papers and provides additional resources for states as they seek to organize, analyze and report data in a way that informs decision making and supports quality management and improvement.

### Focus and Purpose of Data Use and Management Series

The focus of many QA/QI Systems Change grantees is the collection and automation of HCBS waiver data for use in program and outcome improvement initiatives. Challenges remain however on how to use the data that are collected and report information that is timely, accurate and cost-effective. States are challenged to integrate information from a variety of separate systems and present data in a format that is meaningful, purpose-driven and often dependent on the audience or stakeholder. CMS's requirement that states report data in a way that directly addresses HCBS waiver assurances adds complexity to this challenge.

A number of specific issues and questions were identified through monthly conference calls and one-on-one discussions with grantees. These include the following:

- **Performance Measurement:** How do states construct and use performance measures to evaluate HCBS programs?
- **Data Quality and Analysis:** How do states validate, clean and analyze waiver data in a way that supports project management and informs decision-making?
- **Data Presentation:** What types of tables, charts and graphics are used to present data, and how does the effectiveness of these formats vary depending on the type of information and/or pattern being conveyed?
- **Reporting:** What types of reports are generated from HCBS waiver data and how do these reports vary depending on the audience and purpose?

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<sup>1</sup> QA/QI grantee states include: California, Colorado, Connecticut, Delaware, Georgia, Indiana, Maine, Minnesota, Missouri, North Carolina, New York, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, Wisconsin, and West Virginia.

<sup>2</sup>The Community Living Exchange Collaborative is a partnership of the Rutgers Center for Health Policy, the National Academy for State Health Policy and Independent Living Research Utilization. Under contract with the Technical Exchange Collaborative, the Muskie School of Public Service is the lead for providing technical assistance in the area of quality assurance/quality improvement.

- **Data Integration:** How is data from different sources blended and linked to create a larger and more comprehensive data environment?

This paper reports on performance measurement from a program manager's perspective. It is not meant to be an exhaustive research document, nor does it single out any one correct approach. The paper is meant to facilitate communication between program units and analytic staff and serve as one reference for states as they continue to improve upon data collection techniques and use this information for ongoing quality management and improvement.

## Performance Measurement

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Measuring service use, cost and outcomes has become standard practice for many health care services. Over the past 10 years, there has been growing consensus about what is important to measure in hospitals, nursing facilities, and managed care organizations<sup>3</sup>. Other initiatives are underway between public and private entities to adopt and use measures as the basis for purchasing decisions, public reporting, incentive payment and performance improvement processes.<sup>4</sup>

Historically, there has been only limited application of measurement to home and community based services (HCBS). The purpose of this report is to outline the key components of performance measurement and to discuss their relevance and potential use in HCBS. Specifically, the report will:

- discuss the purpose of quality measures including their intended audiences and uses;
- identify the major domains of quality;
- specify the different types of measures;
- propose criteria for use in selecting measures;
- identify potential data sources;
- define the method for computing quality measures;
- determine standards for evaluating and using measures; and
- identify the limits of performance measurement.

The selection of performance measures is often the first step in data analysis because it gives the analysis focus. The paper offers practical approaches for states to gradually build a HCBS performance measurement set to serve as the foundation for their quality management activities and CMS required reporting.

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<sup>3</sup> Some consensus standards include quality indicators of the Agency for HealthCare Research and Quality for hospitals, [[http://www.qualityindicators.ahrq.gov/downloads/pqi/pqi\\_guide\\_v30.doc](http://www.qualityindicators.ahrq.gov/downloads/pqi/pqi_guide_v30.doc)], the HealthPlan Employer Data Measurement Set or HEDIS for managed care plans [<http://www.ncqa.org/Programs/HEDIS>], and the nursing facility indicators [[http://www.cms.hhs.gov/MinimumDataSets20/05\\_QualityIndicatorsandResidentReports.asp#TopofPage](http://www.cms.hhs.gov/MinimumDataSets20/05_QualityIndicatorsandResidentReports.asp#TopofPage)].

<sup>4</sup>Institute of Medicine. *Performance Measurement: Accelerating Improvement* (Preliminary Release). 2005. Washington DC: National Academy Press.

## **Purpose of Measurement**

Quality measurement is an essential feature of quality improvement. Valid, reliable and timely data about the care provided, consumer experience with care, and those providing care are fundamental to all strategies for monitoring and improving the quality of home and community-based care. This information is important to many constituencies including consumers, providers, program managers, and regulators (IOM, 2005).

Information on quality can help consumers make informed choices. Most consumers know little about the technical proficiencies of their health care. Some ask friends for advice. Some choose providers based on limited information. Information on quality can help consumers decide where and from whom to get care.

Providers can use quality measures to improve care provided in their own organizations. Information can be used to select areas for monitoring or investigation, to evaluate internal care processes and to develop action plans for quality improvement. Such information can also be used to identify best practices across providers and to focus educational needs and activities.

HCBS program managers use quality information to select providers or agencies with whom to contract, to identify system level areas for improvement or education, to identify areas where policy changes may be needed and to evaluate the impact of new policies and systems.

State and federal regulators use data from a variety of sources to identify quality problems, to target monitoring and enforcement processes and confirm corrective actions. This information can be used to schedule oversight and enforcement activities, to select cases for review, and to assign staff for site visits. The Centers for Medicare & Medicaid Services (CMS), as the federal overseer of HCBS waiver programs, requires states to submit evidence reports as a condition of waiver renewal. As will be discussed in later sections, states use performance measures to assure CMS that the waiver program is having the intended effect or that areas of critical importance are being monitored.

## **Domains of Quality**

The purpose of this section is to identify the major ways in which quality can be categorized for home and community-based services. Health care quality and the quality of home and community-based services in particular is a multi-dimensional and dynamic construct. There are a myriad of organizing schemes for defining the dimensions of quality and there are hundreds of variables that can be used to measure the various attributes of quality. The challenge in developing a performance measurement set is to find a way to identify the dimensions of quality that are of greatest interest to stakeholders yet still provide a balanced representation of the quality domains, to clearly define and organize these chosen measures, and to assure that the measures are accurate, reliable, interpretable and actionable.

For states just beginning to organize their performance measurement activities, the CMS quality assurances and *Quality Framework* are important resources for deciding which domains of quality to consider. While some overlap exists between the assurances and framework, their intended purposes are quite different. The quality assurances identify mandated activities that a state must address as a condition of waiver approval and renewal. Assurances are primarily operational in nature addressing program components that are essential to assuring that consumers have access to the program and that services meet their needs, are provided by qualified providers and have adequate safeguards. The *Quality Framework* describes the desired outcomes of the waiver program. Together they represent a good “starter set” of domains around which to organize a state’s performance measurement activities.

For states just starting to develop a quality management strategy, developing indicators and evidence around the CMS HCBS waiver assurances is most critical. A waiver will not be renewed unless a state can document that it has satisfied the required evidence presented in Table 1.

**Table 1: CMS HCBS Waiver Assurance Domains and Required Evidence<sup>5</sup>**

Assurance	Required Evidence
Level of Care (LOC) Determinations	<ul style="list-style-type: none"> <li>• Evaluation of level of care is provided to all applicants for whom there is reasonable indication that services may be needed in the future</li> <li>• Enrolled participants are reevaluated at least annually or as specified in its approved waiver.</li> <li>• The process and instruments described in the approved waiver are applied to determine LOC.</li> <li>• The state monitors LOC decisions and takes action to address inappropriate LOC determinations.</li> </ul>
Plan of Care (POC)	<ul style="list-style-type: none"> <li>• POCs address all participant’s assessed needs and personal goals, either by waiver services or through other means.</li> <li>• The state monitors POC development in accordance with its policies and procedures and takes appropriate action when it identifies inadequacies in the development of POCs.</li> <li>• POCs are updated/revised when warranted by changes in the waiver participant’s needs.</li> <li>• Services are specified by type, duration, scope and frequency and are delivered in accordance with the POC.</li> <li>• Participants are afforded choice.</li> </ul>
Qualified Providers	<ul style="list-style-type: none"> <li>• The state verifies, on a periodic basis, that providers meet required licensing and/or certification standards and adhere to other state standards.</li> <li>• The state monitors non-licensed/non-certified providers to assure adherence to waiver requirements.</li> <li>• The state identifies and rectifies situations where providers do not meet requirements.</li> <li>• The state implements its policies and procedures for verifying that training is provided in accordance with state requirements and the approved waiver.</li> </ul>
Health and Welfare	<ul style="list-style-type: none"> <li>• The state, on an ongoing basis, identifies and addresses and seeks to prevent instances of abuse, neglect and exploitation.</li> </ul>
Administrative Authority	<ul style="list-style-type: none"> <li>• The Medicaid agency or operating agency conducts routine, ongoing oversight of the waiver program.</li> </ul>
Financial Accountability	<ul style="list-style-type: none"> <li>• State financial oversight exists to assure that claims are coded and paid in accordance with the reimbursement methodology specified in the approved waiver.</li> </ul>

<sup>5</sup> Attachment A, CMS Letter to State Medicaid Directors: *Interim Procedural Guidance*, May 28, 2004.

Table 2 addresses some of the same issues as Table 1 but focuses more on the experience of the waiver from the consumer perspective. Once a state is able to meet the minimum requirements of the assurances (Table 1) and to document its evidence of compliance, a natural next step is to assess whether the program is having the *desired outcome*. The CMS *Quality Framework* sets up a structure for defining a waiver program’s desired outcomes.

**Table 2: CMS Quality Framework Domains and Desired Outcomes<sup>6</sup>**

<b>Focus</b>	<b>Desired Outcome</b>
Participant Access	<i>Individuals have access to home and community-based services and supports in their communities.</i>
Participant-Centered Service Planning and Delivery	<i>Services and supports are planned and effectively implemented in accordance with each participant’s unique needs, expressed preferences and decisions concerning his/her life in the community.</i>
Provider Capacity and Capabilities	<i>There are sufficient HCBS providers and they possess and demonstrate the capability to effectively serve participants.</i>
Participant Safeguards	<i>Participants are safe and secure in their homes and communities, taking into account their informed and expressed choices.</i>
Participant Rights and Responsibilities	<i>Participants receive support to exercise their rights and in accepting personal responsibilities.</i>
Participant Outcomes and Satisfaction	<i>Participants are satisfied with their services and achieve desired outcomes.</i>
System Performance	<i>The system supports participants efficiently and effectively and constantly strives to improve quality.</i>

Each of the above focus areas is further delineated into sub-domains. For example, under participant safeguards, a sub-domain notes that “medications are managed effectively and appropriately.” These sub-domains, as well as others that may be generated by stakeholders of a state’s HCBS waiver programs, can be seen as the foundation for constructing specific performance measures.

### **Types of Measures**

Quality measures are generally categorized as structure, process or outcome measures. **Structural** measures refer to the organizational aspects of care or services, such as facilities, staffing, and equipment. Structural characteristics can also include governance and management structure, the qualifications of staff, the mix of professional and nonprofessional staff, record keeping systems, and other internal quality review activities of an organization. Although structural measures of quality tend to be the easiest and most commonly used measures, the research is mixed with respect to the relationship between structural measures and outcomes of care or services<sup>7</sup>.

**Process of care** refers to the interaction between the consumer or user of care and the health care system. Process is usually divided into the technical component and the interpersonal component of the process. The technical component concerns the appropriateness of the intervention and the skill with which it was provided, including assessment, service planning, provision of care/or services; timeliness/delay in seeking care and adherence to practice guidelines.

<sup>6</sup> CMS Letter to State Medicaid Directors: *Quality Framework for Home and Community Based Services*, February 17, 2004.

<sup>7</sup> McGlynn, E. A., & Brook, R. H. (2001). Evaluating the quality of care *In* R. M. Anderson, T. H. Rice, & G. F. Kominski (Eds.), *Changing the US health care system: Key issues*.

The interpersonal component includes the social and psychosocial interaction between the service worker and the consumer, such as the care, concern, courtesy, and respect with which services are provided. A number of attributes underlie good interpersonal skills including communication, trust, understanding and empathy, and ability to show humanism, sensitivity and responsiveness<sup>8</sup> (Campbell et al., 2000).

**Outcomes** are consequences of care or services. They are the results of efforts to prevent, diagnose and treat conditions or the result of the support and services provided to people living at home. Outcomes have been categorized as care outcomes and user evaluation of care. Care outcomes may include the maintenance of or change in functional ability, health status, cognitive status, clinical status, and mortality. It is important to keep in mind that change-oriented care outcomes may not always be feasible and that outcomes focused on maintenance of status should be considered. Other measures of outcomes include consumer satisfaction and enablement. Although outcomes are viewed as one of the best ways to measure quality, they also are technically and methodologically difficult to use. Two of the primary challenges with outcome measures are (1) the need to adjust for differences in risk and severity of the populations being measured and (2) the difficulty of attributing an outcome to a particular provider or service<sup>9</sup>.

### **Selection of Measures**

Selecting a set of quality measures is a complex process that includes identifying candidate measures and obtaining input from experts and end users on the number, importance and presentation of the measures. This includes identifying individual measures that meet certain criteria and developing a set of measures that are balanced, comprehensive and robust.

The Institute of Medicine (IOM) recommends the following criteria be considered when selecting quality measures:<sup>10</sup>

**Importance of what is being measured.** Different stakeholders will have varying perspectives on the weight or degree of importance to assign any single measure or set of measures. Providing ways to get input into the selection of measures and refining those measures on an ongoing basis is an important part of the process.

**Impact on health and wellbeing.** The IOM recommends that the measures address important health priorities such as issues related to care or specific conditions or problems that significantly affect morbidity, disability, functional status, mortality or overall health. For people receiving home and community-based services, quality of life needs to be considered in addition to impact on health. These issues are particularly important for people who are living with a chronic illness or are coping with the end of life.

**Meaningfulness.** Measures should be easily understood by policymakers and consumers and refer to something that matters to them. People should be able to interpret what the measures mean and be able to act on the measures, if necessary. Particular attention should be paid to making information useful for consumers and to present the information in a way that clarifies the relevance of the measure to the consumer.

**Susceptibility to influence by the home and community based care system.** The measures should reflect aspects of care that policymakers or the intended audience or user of the information can influence. For

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<sup>8</sup> Campbell, S. M., Roland, M. O., & Buetow, S. A. (2000). Defining quality of care. *Social Science & Medicine*, 51, 1611-1625.

<sup>9</sup> McGlynn and Brook, 2001.

<sup>10</sup> Institute of Medicine, Hurtado, M. P., Swift, E. K., & Corrigan, J. M. (Eds). (2001). *Envisioning the national health care quality report*. Washington, D.C.: National Academy Press.



policymakers or providers, this would mean measures where it is possible to take specific actions in response to the measures. This is particularly challenging for home and community-based services since so often many different people may often be involved in providing care.

**Validity.** One of the most important issues underlying validity is whether there is a basis for asserting that certain processes lead to certain outcomes, or that any given outcome is the consequence of specified antecedent processes.<sup>11</sup> Outcome quality measures, for example, are most useful when we know the specific process of care that produced them. **If we do not know how an outcome relates to processes of care, we will not know what to do to improve the outcome.** The relationship of process of care to outcome is not always known, especially for many of the services provided by HCBS programs. In these cases, collecting data allows one to determine whether an intervention (or care process) has an effect on outcome.

**Reliability.** The measure should produce consistent results when repeated with different groups and when assessed by different people at different times. This is particularly important when a measure is being reported on an ongoing basis. Changes over time should reflect real changes in the attribute being measured and not ones that are an artifact of the data collection method. From the point of view of *constructing* measures (as opposed to implementing the data collection), it is important to clearly define the measure.

**Feasibility.** Feasibility refers to the ability to implement the measure, the availability of data, the cost to collect the data, and whether the measure can be used to compare different groups. Measures that are considered important and scientifically sound, but not feasible (at least in the short term), might still be included in an initial set of potential measures and maintained for consideration as the measure set is updated.

Table 3 identifies sets of quality measures for long term care and home and community based care. For a list of quality measures by CMS domain, age, population or data source, the Muskie School of Public Service has developed a web site at: <http://qualitychoices.muskie.usm.maine.edu/qualityindicators>.

## Data Sources

The availability of valid and reliable data is key to the construction of quality measures. Some of the desirable attributes for evaluating sources of data are: 1) the credibility and validity of the data; 2) the availability and consistency of the data over time and across sources; 3) the timeliness of the data; and 4) the ability to support subgroup and condition specific analysis.

The following is a brief description of the various sources of data available for the construction of measures for HCBS programs.

**Program Data.** Program data are maintained as part of the ongoing operations of HSBC programs. These could include enrollment data, service planning records, grievance and complaint data, provider files and reports, and audit information.

**Claims Data.** Claims data provide one source of quality measurement information for people who are receiving home and community based services under Medicaid and/or for people receiving state funded services. This can include information such as hospitalization rates for people with certain conditions, costs per member per month, and cost or utilization patterns by region or provider. Some states are also using Medicare data in conjunction with Medicaid data to examine cost and utilization patterns. It is also

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<sup>11</sup> Donabedian, A. (1980). The definition of quality and approaches to its assessment: Explorations in quality assessment and monitoring. Ann Arbor, MI: Health Administration Press.

**Table 3. Examples of Sets of Quality Measures for Long Term Care and Home and Community Based-Care Systems\***

Indicator Set	Purpose	Audience	Data Source	Use	Developer
<b>Home Care Indicators</b>					
OASIS Adverse Event and Outcome-Based Quality Improvement Reports (OBQI)	For internal quality improvement for agencies (initially)	<ul style="list-style-type: none"> <li>▪ Home Health Agencies</li> </ul>	OASIS data set for Medicare home health services	National	Univ. of Colorado CHSPR/CMS
ORYX Home Care Measures	To target accreditation surveys For performance monitoring For quality improvement	<ul style="list-style-type: none"> <li>▪ Hospital</li> <li>▪ Long Term Care</li> <li>▪ Home Care</li> <li>▪ Behavioral health care programs</li> </ul>	Various data sets	JCAHO organizations	Approved by JCAHO
interRAI MDS-HC Quality Indicators for Home Care	For quality improvement for agencies (initially)	<ul style="list-style-type: none"> <li>▪ State Medicaid and Aging agencies</li> <li>▪ Provider agencies</li> <li>▪ International</li> </ul>	MDS-HC	Selected states	interRAI
CHSRA Quality Indicators for Home Care	For quality improvement for agencies	<ul style="list-style-type: none"> <li>▪ Provider agencies</li> </ul>	OASIS data Or MDS-HC	Selected agencies –for ORYX	Univ. of Wisconsin CHSRA
VA Quality Measures for Home Care Programs	Quality Assurance	<ul style="list-style-type: none"> <li>▪ Veteran’s Administration</li> </ul>	Sample of Medical records	VA system	Veterans Admin.
<b>Quality Indicators for Developmental Disabilities</b>					
Core Indicators For Developmental Disabilities	To benchmark performance of the service system	<ul style="list-style-type: none"> <li>▪ State DD Departments</li> </ul>	Consumer/Family Surveys State-level data	In use by selected states	HSRI and NASDDS
Quality Indicators for Developmental Disabilities	For internal quality improvement For regulatory monitoring of ICF/MRs To inform consumers	<ul style="list-style-type: none"> <li>▪ Providers</li> <li>▪ Regulatory Agencies</li> <li>▪ Consumers</li> </ul>	In development	In development	Univ. of Wisconsin CHSRA/CMS
<b>Home Care Satisfaction/Consumer Outcomes</b>					
Satisfaction with Home Care (Developed by Scott Geron et al)	Measure client satisfaction with home care use	<ul style="list-style-type: none"> <li>▪ State agencies</li> <li>▪ Provider agencies</li> </ul>	Interview questionnaire	Selected states and programs	Geron, et al
Participant Experience Survey (MEDSTAT)	Measure consumer experience with services	<ul style="list-style-type: none"> <li>▪ State Waiver agencies</li> </ul>	Interview Questionnaire	In testing in selected states	MEDSTAT/CMS
<b>Nursing Facility Indicators</b>					
Quality Indicators for Nursing Facilities	To select facilities/cases for review For quality improvement To Inform decision making	<ul style="list-style-type: none"> <li>▪ State survey agencies</li> <li>▪ Providers</li> <li>▪ General Public</li> </ul>	MDS 2.0	National (required by CMS)	Univ. of Wisconsin CHSRA/CMS
<b>Residential Care Indicators</b>					
Quality Indicators for Residential Care	To select facilities/cases for review For quality improvement To Inform decision making	<ul style="list-style-type: none"> <li>▪ State survey agencies</li> <li>▪ Providers</li> <li>▪ General Public</li> </ul>	RAI-AL	In Maine; in development for other states	Texas A&M and Muskie School/ AHRQ
Observable Quality Indicators	Quality Improvement Inform Decision-making	<ul style="list-style-type: none"> <li>▪ Providers</li> <li>▪ Consumers</li> </ul>	Observable Indicator Survey	In development	University of Missouri

*\*See References for a list of websites for quality indicators.*

possible to use state specific claims data for programs that are not covered by Medicaid or Medicare. This could include, for example, pharmacy claims data (if a state has a pharmacy benefit) or claims for state funded programs. Some of the limitations of claims data are: 1) timeliness of the data, 2) completeness of the data (e.g. many people are receiving services under a variety of program and funding sources), 3) lack of clinical detail regarding functional or cognitive impairments, and 4) cost of analyzing claims data for quality measurement purposes.

**Assessment Data.** The measurement of quality in Medicaid home and community-based care is hampered by the lack of a consistent, standardized approach to assessing individuals, evaluating service or care needs or determining program eligibility. Every state uses its own assessment instrument for determining eligibility and developing care or service plans. The data elements, definitions and process for conducting these activities vary from state to state. They may also vary from program to program within a state.

**Survey and Interview Data.** Information on consumer choice, control, respect, dignity and other areas of interest to consumers are usually captured through consumer surveys or interviews. Although surveys provide an important way to capture information on consumer satisfaction and experience with care, there are a number of challenges associated with the collection of such data. These include: (1) the cost of interviewing people, (2) the need to trade-off cost with sample size (i.e. the size of the sample may be sufficient for statewide reporting but not for sub-population or program-specific reporting), and (3) the need for standardized interview instruments and a reference database for comparison purposes.

**Care/Service Plans.** Participant care plans are a source of quality information, especially when combined with claims data. Doing so allows states to measure whether service authorized in the care plan have actually been received. As with survey data, there are challenges to collecting data from care plans to populate measures. These include: (1) the cost of data abstraction; and (2) the variability of how plans are written and documented make abstraction tedious and sometimes impossible to gather consistent information.

### **Construction of Measures**

Quality measurements are usually constructed as a rate with a numerator and a denominator. The denominator defines the total number of observations that are possible. The numerator specifies the number of events that actually occurred. Following are examples of how performance measures are constructed:

- Measure 1:** The percent of participants who do not like where they live  
Numerator: The number of participants who report not liking where they live  
Denominator: The total number of participants in the program
- Measure 2:** The percent of participants who are high risk  
Numerator: The number of participants who meet the definition of high risk as defined by the state (e.g., 2+ hospitalizations in last 12 months, live alone, previous fall)  
Denominator: The total number of participants in the program
- Measure 3:** The percent high risk participants with emergency back up plans  
Numerator: The number of high risk participants with emergency back up plans  
Denominator: The total number of high risk participants in the program (taken from numerator of Measure 2)

The selection of the appropriate observations for the numerator and denominator is based on the *timeframe* for the measure and the *unit of analysis*. Timeframe can be expressed as either a point in time (number of participants as of December 31 of each year) or a period of time (number of participants throughout the calendar year). Units may be expressed as:

- population (older adults, people with physical disabilities or mental illness, children, etc)
- setting (home, residential, institution, hospital)
- geographic area (population-based, region)
- provider agency
- condition (disease or other condition)
- payor/program area (Medicaid, Medicare, state-funded, or private)

Once a quality measure is constructed, it is sometimes desirable to develop a method for risk adjusting the measure. Risk adjustment is a way to minimize the possibility that differences in outcomes between comparison groups are due to factors other than performance. For example, hospitalization rates between provider agencies may be significantly different because one agency has a disproportionately larger number of frail elderly. Readers are referred to the *Data Analysis* module of this series for more information about risk adjustment.

### **Standard Setting**

Results of performance measurement are evaluated against standards or benchmarks. Absolute standards include identification of a normative or threshold value for each quality indicator. Sentinel events, thresholds set by professional consensus or quality indicator “flags” represent absolute standards. Relative standards provide comparative rankings across entities or measure longitudinal change in performance.

***Sentinel events.*** A sentinel event is usually an adverse event that is likely to be associated with poor quality of care and tracks the frequency with which the event occurs. Examples of sentinel events or adverse outcomes include mortality, early readmission to a hospital, surgical complications, nosocomial infections or adverse drug reactions. Because sentinel events are important and unacceptable occurrences, even a single event is judged to be unacceptable.

***Percentile Ranking.*** Percentile ranking is a method for comparing the performance of an entity relative to its peers. Using this method, for example, the quality indicator of a provider agency is computed and ranked against the score of a peer group.

***Thresholds by Expert Panels.*** Another way to establish a standard is through the use of an expert panel. For some, this approach is more appropriate than using relative standards or statewide means.

***Other Relative Performance Standards.*** It is often the case that external standards or thresholds are not available. Another method for monitoring quality performance is to examine changes in the performance of indicators over time. This method is useful in the development of quality improvement programs. It provides an opportunity for an organization to assess its own performance, identify areas where improvement may be needed and to monitor the impact of actions taken.

***Reference Sample.*** For some measures, it may be possible to compare results to those of other states or national outcomes. When doing so, it is important to make certain that the construction of the measure is the same and that the comparison group is comparable.

## Limits of Performance Measurement

Up to now, we have been focusing on the uses and benefits of performance measurement. While absolutely critical to quality management and improvement, there are some decided limitations to performance measurement.

- **Limitations in *how much* we can measure:** It is impossible to measure and analyze 100 percent of the care that is provided. Nor can we measure all aspects of care. When designing a performance measurement strategy, therefore, it is important to select and rotate measures that represent a broad spectrum of care and its many dimensions.
- **Limitations in *when* we can measure.** By its very nature, measurement evaluates past performance. While findings indicate the probability of similar future performance, there is no guarantee. This suggests the need to engage in consistent and repeated measurement and to combine measurement with “real time” feedback, such as robust complaint systems.
- **Limitations in *what the data can tell us (generalizability)*** There is a general lack of evidence to suggest that how well an organization or agency performs in one area is indicative of care overall.<sup>12</sup> There is also uncertainty about how patient and disease factors influence performance. States are advised to use clusters of measures to assess performance across a given area of interest and to measure both processes and outcomes of care.

A related limitation is that it is not always easy to judge whether the difference in an indicator between two time periods is a result of changes or actions taken, or is a result of other randomly occurring effects.

While essential to quality management, performance measurement alone does not constitute a quality management system. Measurement data must be interpreted and acted upon in ways that improve performance.

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<sup>12</sup> R. Brook, E. McGlynn and P. Cleary, “Measuring Quality of Care,” *New England Journal of Medicine*: 335 (13) September 26, 1996.

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### Web Resources for Quality Indicators

Name of Resources	Website
OASIS	<a href="http://www.cms.hhs.gov/HomeHealthQualityInits/10_HHQQualityMeasures.asp#TopOfPage">http://www.cms.hhs.gov/HomeHealthQualityInits/10_HHQQualityMeasures.asp#TopOfPage</a>
Inter-RAI	<a href="http://www.jcaho.com/accredited+organizations/home+care/oryx/index.htm">http://www.jcaho.com/accredited+organizations/home+care/oryx/index.htm</a>
CHSRA	<a href="http://www.chsra.wisc.edu/chsra/projects/completed/quality/definitions.htm#qi_defs">http://www.chsra.wisc.edu/chsra/projects/completed/quality/definitions.htm#qi_defs</a>
VA	<a href="http://www.calnhs.org/homehealth/index.cfm?itemID=107170">http://www.calnhs.org/homehealth/index.cfm?itemID=107170</a>
Core Indicators for DD	<a href="http://www.hsri.org/nci/">http://www.hsri.org/nci/</a>
Quality Indicators for DD	<a href="http://www.chsra.wisc.edu/chsra/projects/completed/quality/icfmr.htm">http://www.chsra.wisc.edu/chsra/projects/completed/quality/icfmr.htm</a>
Satisfaction w/Home Care	<a href="https://www.gpra.net/surveys/hcsmHHA13.pdf">https://www.gpra.net/surveys/hcsmHHA13.pdf</a>
PES	<a href="http://www.cms.hhs.gov/HCBS/downloads/3_PES_ED.pdf">http://www.cms.hhs.gov/HCBS/downloads/3_PES_ED.pdf</a>
Quality Indicators for Nursing Homes	<a href="http://www.cms.hhs.gov/NursingHomeQualityInits/10_NHQQualityMeasures.asp#TopOfPage">http://www.cms.hhs.gov/NursingHomeQualityInits/10_NHQQualityMeasures.asp#TopOfPage</a>
Quality Indicators for Residential Care	<a href="http://muskie.usm.maine.edu/mds/RCF_QIMatrix.pdf">http://muskie.usm.maine.edu/mds/RCF_QIMatrix.pdf</a>
Observable Quality Indicators	<a href="http://www.nursinghomehelp.org/OIQ.pdf">http://www.nursinghomehelp.org/OIQ.pdf</a>