

University of Maryland Center on Aging

*Medicare/Medicaid
Integration Project*

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Quality Methods and Measures

A Technical Assistance Paper of
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The Medicare/Medicaid Integration Program

The purpose of The Robert Wood Johnson Foundation (RWJF) Medicare/Medicaid Integration Program (MMIP) is to end the fragmentation of financing, case management, and service delivery that currently exists between Medicare and Medicaid. States are provided with grant support and technical assistance in their efforts to restructure the way in which they finance and deliver acute and long-term care. Technical assistance focuses on those states that have been awarded grants but is not limited to grantees. It is recognized that other states and initiatives can benefit from this help.

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Information about the MMIP can be obtained from the following locations:

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National Chronic Care Consortium

The National Chronic Care Consortium (NCCC) is a mission-driven organization of leading nonprofit health systems in the United States and Canada dedicated to transforming the delivery of chronic care services. Each NCCC member seeks to integrate care across a full continuum of services, including primary care, hospitals, nursing homes, and community-based long-term care. Members are required to demonstrate a high standard of excellence in chronic disease management, innovative care financing, integrated service delivery, and a commitment to a common vision and collaboration in establishing best practice methods. Members work together as an operational laboratory to improve systems both for people with serious and disabling conditions and for their family caregivers. These conditions represent the fastest-growing and highest-cost segment in healthcare.

The NCCC has also established a subsidiary corporation, the NCCC National Resource Center on Chronic Care Integration, to provide education, information, and consultation.

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About This Report

This report is one of five technical assistance reports prepared by the National Chronic Care Consortium (NCCC) for the Medicare/Medicaid Integration Program Office. The five reports focus on topics pertinent to creating more integrated delivery networks or coordinated systems of care for people who are dually eligible for Medicare and Medicaid. The topics chosen include:

1. Case Management: Methods and Issues
2. Targeting Beneficiaries Who Are Most at Risk
3. Primary Care for People with Chronic Conditions: Issues and Models
4. Quality Methods and Measures
5. Integrating Information: Selected Issues

The reports draw upon written documents prepared by the NCCC for its healthcare system membership, for healthcare organizations at large, and for organizations participating in the State of Minnesota's dually eligible demonstration, Minnesota Senior Health Options (MSHO). Excerpts from the following NCCC publications/materials appear in this report with permission.

- *Innovations and Issues in Clinical Integration: Improving Systems for MSHO Clients*, MSHO Annual Educational Forum Proceedings, November 17, 1997.
- *Integrating Pharmaceutical Care: A Vision and Framework*, by Deborah Paone, Richard Levy, and Richard Bringewatt. 1999. Published jointly by the National Chronic Care Consortium and the National Pharmaceutical Council.
- *Population-Based Planning: Emerging Approaches for Chronic Disease*, by Deborah Paone. 1999.
- *State of the Art in Network Performance Measures*, by David R. Nerenz, Ph.D. 1998.
- *Transforming Care Delivery: Bridging Concepts and Practices*, Proceedings from the NCCC National Conference September 21–23, 1997.
- *Using SASI to Advance Systems Integration: Findings Report*, by Deborah Paone. 1999.
- *Utilization Benchmarks and Techniques in Working with Community Frail Elders*, MSHO Clinical Integration and Care Management Forum, June 24, 1999.

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Introduction

Current efforts at creating a better financing and delivery structure for the dually eligible population often focus on several key elements (Saucier, Bowers, and Baird 2000):

- A person-centered, consumer-focused approach
- Coordinated, integrated care delivery that provides social services, medical services, and supportive services—according to beneficiary need
- Sound screening and assessment processes to appropriately identify need and target services
- Simplified administrative procedures, such as enrollment
- Good communication mechanisms across service providers
- Proactive incentives to reward collaboration, improve care outcomes, and discourage cost-shifting
- Clear accountability across settings of care—where a quality management system that reaches across settings can monitor individual-level and population-level outcomes

This last point—that of quality management and measurement—is the focus of this report.

The Institute of Medicine (IOM) defines quality as “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge” (Lohr 1990).

Dr. Elizabeth McGlynn, a senior analyst at RAND, points out the complexity of the concept of quality in her analysis of this definition. She states:

The [IOM] definition suggests that:

- Quality performance occurs on a continuum, theoretically ranging from unacceptable to excellent.
- The focus is on services provided by the healthcare delivery system.
- Quality may be evaluated from the perspective of individuals or populations.

- Research evidence must be used to identify the services that improve health outcomes.
- In the absence of scientific evidence regarding effectiveness, professional consensus can be used to develop criteria (McGlynn 1997).

The Institute of Medicine (IOM) defines quality as:

the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.

Many questions come to mind when considering the issues in evaluating the quality of care received through a dually eligible demonstration or through any program that attempts to bring together separate providers to act as a single network for a defined population group.

These questions include the following:

1. How do payers and regulators currently assess the quality of care provided by health plans and healthcare delivery systems?
2. Has anyone measured care provided by an “integrated” healthcare delivery network?
3. What are the types of individual or population-based measures one could use to indicate superior performance of a healthcare delivery system in serving the dually eligible beneficiary?
4. What methods do healthcare organizations use in their own internal quality assessment and improvement processes?
5. Where should quality measurement be headed?

This report will address each of these questions.

External Review Activities

How do payers and regulators currently assess the quality of care provided by health plans and healthcare delivery systems?

That is, how do agencies that are external to the healthcare organization evaluate quality?

The passage of the Medicare and Medicaid acts in the mid-1960s brought increased federal and state oversight of providers who were paid under one or both of these programs. In general, states retained the function of licensing healthcare facilities and providers in their states, as well as establishing requirements to be a participating provider in the Medicaid program. The federal government created certification standards for participating in the Medicare program.

These licensure standards and certification requirements were developed around each type of provider. Therefore, hospitals, nursing homes, home health agencies, laboratories, rehabilitation centers, adult day health centers, etc., all had (and still have) different requirements and standards. Health plans, often viewed as a provider of medical insurance, were usually regulated by the state's insurance commissioner. Private accreditation organizations such as the Joint Commission for Accreditation of Healthcare Organizations (JCAHO) and the National Committee for Quality Assurance (NCQA) were recognized by the Health Care Financing Administration (HCFA) and/or by state governments as having appropriate standards and a consistent, accreditation process that could maintain an arms-length distance from any given institution. Therefore, organizations satisfactorily completing the accreditation process of JCAHO (in the case of hospitals) or NCQA (in the case of health plans) were granted deemed status as fulfilling the necessary requirements to participate in the Medicare program and, depending on the state, the Medicaid program.

These efforts at quality oversight often focused on elements of structure or process, and less so on outcomes or the results of the processes unless there were clear indications of poor care, for example, death, severe morbidity outside norms, gross negligence. Therefore, a standard of care for a given hospital or nursing home might be to ensure that the institution had an infection control committee and that all of its nurses were licensed. A standard of care for a health plan might be that it had a standard grievance and complaints process. A standard of care for a physician's office might be that it used proper equipment for x-rays

performed in the clinic or that the phlebotomists were properly certified.

Therefore, each organization or provider is measured individually and is compared to standards which are focused on the structure of the organization or its processes as proxy indicators for good quality. Federal and state oversight is generally focused on meeting **minimum** standards for licensure and certification. Accreditation agency standards generally provide for a **range of performance** from poor to excellent. Thus, federal, state, and voluntary accreditation standards are three formal sources for external quality oversight of healthcare providers and health plans. That is, these standards are used by an outside agency to come into an organization and evaluate it to determine if it "makes the grade" based on published requirements for that industry or type of institution.

In recent years external evaluators of care, such as HCFA, state governments, and employers, increasingly have been interested in more outcome-based standards. At the root of this interest is the question posed by the payers of care: "What are we getting for our healthcare dollar?" External evaluators are trying to answer this question through development of standardized assessment data collection instruments or key quality indicators that are used as the centerpiece in a quality monitoring system and increasingly tied to a payment system.

Witness the development by HCFA of the Minimum Data Set (MDS) for nursing facilities, the Outcome and Assessment Information Set (OASIS) for home care agencies, and the National Committee for Quality Assurance's (NCQA) Health Plan Employer Data and Information Set (HEDIS) for health plans. These tools move us closer to evaluating "the results" of the structures and processes used. There are limitations, however. First, they may not adequately provide for differences in severity of the patients/clients being served by a given organization. Also, there is an underlying assumption that the results experienced are under the control or can be strongly influenced by that organization. Other factors, such as the influence of patient lifestyle

choices or preferences, may not be accounted for and considered. Finally, there may not be enough scientific evidence to dictate what course of action yields the best results.

There is the belief that such measures/indicators will provide enough information to compare one organization with another. Take as an example the influenza immunization rates for elderly people enrolled in a given health plan's Medicare product. The assumption is that the better health plans will have more of their elderly enrollees immunized. This is a population-based measure of performance. The rate reported would show the percentage of the entire elderly enrolled population that is immunized.

However, what if Health Plan A has fewer elderly people immunized than Health Plan B, but has put a great deal of effort into improving the muscle strength and nutritional status of its elderly enrollees and, it so happens, fewer of these enrollees suffer from the flu? How does one compare the two health plans? Any measure will not tell the whole story, but a set of measures looking at related issues will probably yield a better picture.

An instrument currently being used to evaluate quality of care from the consumer's perspective—that is, satisfaction with the care provided under a health plan—is the Consumer Assessment of Health Plans (CAHPS) survey, which was developed under a cooperative agreement by Harvard University, RAND, the Research Triangle Institute, and the Agency for Health Care Policy and Research (now renamed the Agency for Health Care Research and Quality). HCFA adopted CAHPS in 1999 to gauge consumer response to Medicare risk plans. However, some problems with the use of this instrument among the elderly—especially those with lower literacy levels—have been identified, and caution is warranted.

It is not easy to arrive at appropriate outcome measures, even in looking at whole populations. For example, if we were to select improvement in functional status among the elderly population as an indicator of quality provided, we would have to know the following:

- What is the “normal” rate of functional decline among the elderly?
- Can functional decline be reversed?
- Are some things (like ability to eat without assistance) more or less able to be modified than other things (like the ability to walk without assistance)?

- How can function be best measured? Is there a standard, reliable way to measure function?
- What is the best way to improve function? Is it exercise, diet, adaptive equipment, medication, or education?
- Which healthcare organization is responsible for improving a person's (or set of people) functional status, since it is not currently tied to a particular service? Is it the physician seeing the person in a clinic, the hospital that may treat the person once a year for an acute illness, or the home health agency that provides a month of service following hospitalization?
- What if functional decline is slowed in certain areas, rather than reversed? Would the measurement system pick this up?

In the mid-1980s HCFA tried to provide consumers with information about our nation's hospitals by publishing reported mortality statistics for each institution. These “death rate reports” (death seen as the antithesis of quality) caused quite a stir for many reasons, not the least of which was they had not taken into account the severity of illness of patients coming into the hospital. Thus, tertiary or quaternary academic medical centers often appeared to be providing “bad care” because so many more of their patients (proportionately) died. These academic centers, not surprisingly, voiced strong opposition to the yearly mortality reports.

Designing Measures

Dr. David Eddy (1997) of Kaiser Permanente provides insight into the elusive nature of performance measurement and the difficulty in identifying indicators of performance in a recent article in *Health Affairs*. He states:

The design of a performance measure, and therefore how good it is, depends on several factors: the purpose of the measure, the entity whose quality is being measured, the dimension of quality being measured, the type of measure [e.g., process, outcome], and who will use the measure. It is important to identify these, because a measure that is good for one purpose, entity, dimension, or audience might be bad for another.

Dr. Eddy provides several examples of the purpose of a measure, for example, to describe the effect of an intervention on a specified group of patients (a typical “outcomes study”) or to compare the quality of care being delivered by different entities, such as different health plans or hospitals. He cautions that a common error is to take a measure that was designed to track outcomes and use it to compare plans. Confounding factors that affect outcomes and that may be outside of the plans’ control will make the comparisons meaningless. Decisions made from such comparisons using the wrong measure would be ill advised. Dr. Eddy goes on to urge the following:

- Use more process measures where a particular process is known to be effective.
- Ensure the clinical significance of any measure, understand its statistical characteristics, make sure the measure is relevant and feasible to use, and evaluate its cost-effectiveness.
- Rotate measures to guard against the potential that some organizations would de-emphasize things that are not measured.
- Work toward an information framework that includes not only an electronic medical record, but also the dictionaries, data standards, and linkages to connect to other databases.
- Use case-based measures that involve interviewing a randomly selected group of people served.
- Standardize a core measurement set and provide adequate funding for measurement.

Dr. David Nerenz (1998) of Henry Ford Health System emphasizes that a measurement set has to have some intuitive appeal and be relatively easy to use. In a report on the state-of-the-art of network performance measures, he describes

several important characteristics of measures:

- **“Face Validity” Basis in Peer Experience for Lay Users**—The meaning and underlying purpose of a measure should be clear to the users. For example, patients understand about average wait times for appointments, but have much less “feel” for a hospital readmission rate (Hibbard, Sofaer, and Jewett 1996). Clinicians may have the opposite preferences because of their higher level of technical knowledge and focus on clinical parameters.
 - **Clinical Detail for Acceptance by Clinicians**—Clinicians are also particularly sensitive to the importance of different severity levels, comorbidities, demographic and social factors, and possible genetic or environmental factors in evaluating processes and outcomes of care (Epstein 1995; Tanenbaum 1994). A measure of glycemic control for all diabetics in all settings, for example, is less likely to be accepted and used than a measure of glycemic control for Type I diabetics stratified by age, duration of disease, and site of care.
 - **Stability over Time and Link to Key “Decision Dimensions” for Purchasers**—Purchasers making decisions about which health plans to offer employees or which networks to include in “carve-out” contracts require that the information included in a measure set be timely, predictive of employees’ future experience, and reflective of experience of a broad spectrum of employees affected. For example, measures of excellence of ICU care may not be as useful as more global measures of patient satisfaction with access, since most employees will seek access to care of some kind in a period of time, but few will be admitted to the ICU.
- Dr. Elizabeth McGlynn (1997) provides advice on selecting indicators for external reporting, urging organizations to consider:
- **Relevance**—Is the measure important? Will the results of the measure facilitate actions?
 - **Scientific Soundness**—Is the measure reliable (will repeated measurements produce the same result)? Is it valid (the measure truly reflects that aspect of quality of care being delivered)? Is it adjustable (factors other than quality are also accounted for in the final score)?
 - **Feasibility**—Is it feasible to use the measure? (For example, consider the population base available to be measured, the resource issues, the data gathering issues.)

Measuring Integration Across Networks

Has anyone measured care provided by an “integrated” healthcare delivery network?

In the late 1990s many healthcare organizations expressed interest in becoming part of “vertically integrated” care networks (a continuum of services and settings connected to each other through formal relationships) either through partnership or ownership. While most “integrated networks” did not get much past the legal process to execute merger or acquisition agreements, it did raise the question of what constituted an integrated network and how care outcomes could be measured across a number of providers and organizations all serving the same patient/beneficiary at different points in time.

This is particularly relevant to people with chronic illness. Dr. Nerenz (1998) writes:

Chronic illness typically implies not only more frequent and more intensive provision of healthcare, but a higher likelihood of need for a mix of services across the care continuum and the need for contact with more individual providers and more physical locations for service (Wagner 1997; Von Korff et al. 1997). Organized delivery systems offer the theoretical advantage of “seamless-ness,” and more highly coordinated care across the continuum and across a diverse set of providers and care sites. An organization that can provide inpatient, outpatient, home health, rehabilitation, and other forms of care under the same administrative structure, using the same medical records system, with a single patient registration and billing system, and a coherent approach to practice patterns and guidelines, presumably offers patients with chronic illness a more coordinated, rational, effective pattern of care. There is still a lack of compelling evidence that these theoretical advantages regularly occur in practice, but “success stories” are relatively easy to find (Wagner, Austin, and Von Korff 1996; NCCC 1997).

With the development of “integrated networks” comes the need to measure quality longitudinally, and across a continuum. Unfortunately, real barriers exist to measuring care provided via an integrated model. To begin, each service sector has its own standards and these do not intersect much.

Standards for each service sector have been developed with that one facility type in mind, that is, with a focus on the essential components of care or service provided by that type of entity. General acute care hospitals respond to the accreditation standards of the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), rehabilitation hospitals to the Commission on Accreditation of Rehabilitation Facilities (CARF), physicians to their own specialty boards in medicine, home care agencies and nursing homes to federal and state standards, health plans to the National Commission for Quality Assurance (NCQA)—with compliance to standards often evaluated via an on-site certification process and extensive record review.

This focus has helped to create some basic level of capability and comparability across organizations. For example, we expect that every hospital will have a licensed physician on staff, every nursing home to have a process for resident participation, every health plan to have a process for enrollment. This has also served to cement fragmentation. The plethora of standards and expectations hone in on the practices of that one type of organization but do not consider how that organization may need to interact with many others in the pursuit of superior outcomes on behalf of an individual. That is, we are able to evaluate each piece to some extent, but it is difficult to measure the whole.

In addition, there is no standard for objectively evaluating the level of integration between providers who are collaborating together as an integrated service network toward the delivery of care to a defined population. The task appears daunting given the lack of connections between different providers, the complexity of processes and sheer number of people involved in serving a single beneficiary, and the lack of financial or other incentives for working together toward cumulative outcomes. However, a number of attempts have been made to examine and measure integration across systems.

Health System Integration Study

In the mid-1990s Stephen Shortell, Ph.D., Professor of Health Services Management at Northwestern University, and his colleagues examined 11 organized delivery systems (multi-organizational hospital systems) over a one to four year period to examine factors affecting system integration and performance. Working hypotheses were developed and definitions offered:

- **Functional integration**—the extent to which key support functions and activities (for example, strategic planning, information management) are coordinated across operating units.
- **Physician-system integration**—the extent to which physicians identify with the system and are involved in various aspects of shared accountability with the system.
- **Clinical integration**—the extent to which patient care services are coordinated across the various operating units within a system (Shortell et al. 1996).

The study involved extensive collection of primary and secondary data over a four-year period, including field work involving on-site interviews with system participants. Measures of perceived integration were obtained using a 54-item five-point Likert scale (strongly disagree to strongly agree) and self-administered questionnaires completed by system and operating unit managers, selected board members, and selected physician leaders. Selected measures are listed below.

- Performance appraisal criteria and reward systems contain incentives for cooperation and coordination across operating units.
- Personnel are cross-trained and used across operating units.
- There is little unnecessary duplication of support services (dietary, housekeeping, maintenance, laundry) among operating units.
- Systemwide values and norms are agreed on and widely shared by all operating units.
- Individual operating units are willing to subordinate interests to those of the system.
- Elements of the overall system strategic planning process are well coordinated.
- Results from quality assurance/improvement studies are shared across operating units.

- Common policies for quality assurance/improvement exist across the operating units.
- Integrated clinical and financial data are shared across operating units.
- Useful comparative financial data is provided to the operating units.
- Clinical activities and services are well coordinated among operating units.
- The medical staff at each operating unit practice in a way that takes into account the activities and needs of other units.

Shortell and his colleagues reported on a number of findings, among them that more progress was made with integration of functional activities than in the areas of physician-system integration or clinical integration and that integration was a very difficult endeavor.

Self-Assessment for Systems Integration

In 1995 the National Chronic Care Consortium (NCCC) developed the Self-Assessment for Systems Integration (SASI™) tool, designed as an internal resource for multi-organizational healthcare provider systems (NCCC 1995). The purpose of this tool was to assist these emerging healthcare networks to plan, implement, and measure integration across their full continuums of care, particularly focusing on populations with chronic care needs. The tool would allow for a critical self-assessment of a multi-organizational

Table 1: SASI Objectives

1. **Governance structures** support goal development and improve the ability of individual care providers to work together as a single system.
2. **Management strategies and structures** support cross-site, interdisciplinary integration efforts.
3. **Information technology systems** allow providers in all settings to share meaningful information about clients, costs, and operations.
4. **Financing systems** promote system-wide management of cumulative costs, tied to care outcomes.
5. The needs of **high-risk populations** are identified.
6. A **full array** of effective and efficient services is provided.
7. Care management is focused on **disability prevention** and organized around **defined populations** (e.g., high-risk, condition-specific).
8. **Seamless care** is provided across settings and over time.
9. **Clients are involved** in care management and self-care activities.

Table 2: Highlights from Organizational Self-Assessment on Barriers and Strategies by nine SASI Objectives

SASI Area	Barriers	Strategies
Governance	<ul style="list-style-type: none"> • Need for systems thinking on the board • Size, composition, structure of the board • Lack of awareness of chronic care/chronic care populations 	<ul style="list-style-type: none"> • Educate board • Change size, structure, etc. • Establish accountability within the board for special populations, e.g., a committee of the board
Management	<ul style="list-style-type: none"> • Time, money constraints • “People issues,” e.g., lack of understanding of a continuum approach • Lack of information system to support chronic care • No return on investment (ROI) criteria or measures that take into account important indicators for chronic care 	<ul style="list-style-type: none"> • Dedicate office of chronic disease, and establish lines of authority • Have orientation for key staff on the chronic care continuum • Develop IS workplans that include tracking chronic populations • Set management goals that take into account chronic care; measure activities against these goals.
Information Systems	<ul style="list-style-type: none"> • Cost of IS upgrades, hardware, etc. • No agreement on what info needed nor standards for sharing • Lack of knowledge or expertise in establishing IS across settings • No operational plan to guide IS • Staff/practitioners not prepared to interpret data 	<ul style="list-style-type: none"> • Define network information needs more clearly; create a data set group across the network specifically for chronic care • Review current systems and their interface abilities • Create an infrastructure for IS planning that fits into overall network IS plan • Train/educate on data analysis/interpretation
Financing	<ul style="list-style-type: none"> • Missing links in services funded • Few capitated lives for some providers • Lack of good cross-network cost or actuarial data upon which to base rates • No performance data to serve as a balance to cost focus • Discord between revenue and delivery side 	<ul style="list-style-type: none"> • Secure more capitated contracts allowing for greater flexibility in service provision • Analyze existing cost data across services and tie data together • Establish performance indicators, track outcomes of pilot chronic disease programs • Establish guiding principles and open dialogue
Population Profiling/ High Risk	<ul style="list-style-type: none"> • IS inadequate for population profiling • Lack of system or process for soliciting client/family input on needs, preferences • Low or no enrollment—can’t justify expense for risk ID 	<ul style="list-style-type: none"> • Seek better information sources, e.g., employers, health plans • Create focus groups of patients, families, community • Work toward larger enrollee groups
Full Service Array	<ul style="list-style-type: none"> • Contracts not based on risk sharing between providers, no financial incentives • No consistent vision for preventive services • Lack of feedback to/from community agencies regarding services consumers need and the availability/quality of existing services 	<ul style="list-style-type: none"> • Obtain more risk-based contracts with other providers’ incentives aligned • Conduct pilots around disease groups with preventive efforts tracked • Create feedback/communication mechanisms with community agencies
Care Management/ Disability Prevention	<ul style="list-style-type: none"> • Network coordination infrastructure is immature, weak • Lack of support for care management tools already developed • Lack of core competencies across network to apply tools; knowledge base varies by practitioner • No major pressures financially to manage care differently (yet) • Network is not directed to outcome-based practice 	<ul style="list-style-type: none"> • Continue disease management pilots that help demonstrate effectiveness of integrated care management methods and tools • Integrate human resources and technology across the whole network (minimum level of competency) • Work toward more integrated financial systems that promote disability prevention • Create population “teams” to develop and implement plans toward re-orienting to outcomes-based practice
Seamless Care	<ul style="list-style-type: none"> • No integrated IS to support seamless care • Organizational infrastructure does not support an integrated approach • Limited number of practitioners with expertise to work in teams, to coordinate care • Professional turf issues over roles and responsibility for transitions 	<ul style="list-style-type: none"> • Work toward IS or data sharing across sites • Employ and support practitioners with skills and expertise in this area • Establish clear guidelines for responsibility for transfer and patient education
Client Involvement	<ul style="list-style-type: none"> • No consistent way to promote client involvement • Lack of training to think/work with patients in this way 	<ul style="list-style-type: none"> • Develop a co-management care delivery approach with patients • Have clients on care pathway teams • Establish system for accountability and shared decision-making

delivery “system” at a point in time. Nine objectives for integration were outlined (Table 1).

Several organizations that used the self-assessment tool shared key barriers to achieving these objectives and strategies they pursued. Common themes and issues emerged from their assessments. Barriers to achieving the goals outlined in the tool often included lack of understanding of what integration meant, inability to think “system” versus department or facility, and time and money constraints. Strategies for moving ahead often included education/training, further development of a system-wide infrastructure, and better evaluation methods to measure results. Table 2 provides highlights for each objective.

Joint Commission on Accreditation of Healthcare Organizations (JCAHO)

The Joint Commission on Accreditation of Healthcare Organizations is a private, nonprofit voluntary accreditation organization that accredits hospitals, nursing homes, home health agencies, and ambulatory care organizations. Responding to changes in the industry, especially the development of multi-organizational healthcare systems, JCAHO (1996) developed standards for healthcare networks, which it defined as “an entity that provides, or provides for, integrated health care services to a defined population of individuals. A network offers comprehensive services . . . and is characterized by a centralized structure that coordinates and integrates services provided by component organizations and practitioners participating in the network.”

The 1996 healthcare network standards were organized into eight domains including: Rights, Responsibilities and Ethics; Continuum of Care; Educational and Communication; Health Promotion and Disease Prevention; Leadership; Management of Human Resources; Management of Information; and Improving Network Performance.

Sample standards from the 1996 accreditation manual for healthcare networks are listed below.

- The network develops and implements a code of ethical business and professional behavior for its activities and those of its components. (RI.1.)
- The network facilitates timely communication of information among components and practitioner sites to support continuity of care. (CC.5.)

- The network informs members about the scope of health care services included in the network’s benefit package. (ED. 1.3)
- The network’s scope of services, including those provided by contract or agreement, is defined in writing and approved by appropriate network leaders. (LD.1.6)
- The competence of all personnel and clinical staff is continuously assessed, maintained, and improved. (HR.2)
- The network defines, captures, analyzes, transmits, and reports aggregated data and information that supports managerial decisions, operations, performance-improvement activities, and member care. (IM.7)
- The network continuously measures preventive services and health promotion programs to evaluate their effectiveness. (PI.3.2.6)

Consortium Research on Indicators of System Performance (CRISP)

The CRISP project was initially composed of 23 large healthcare systems that volunteered to test and refine a set of system-level performance measures (Nerenz, Zajac, and Rosman 1993). Ninety-one indicators were developed after an extensive literature search and telephone and in-person interviews with representatives of major health systems. Preliminary research at Henry Ford Health System indicated that about 40 percent of the indicators could be calculated readily from existing data elements, 30 percent could be calculated with significant additional effort, and the other 30 percent would require new data collection.

The first phase of CRISP involved an inventory of data systems to assess the feasibility of data collection for the 91 indicators. From this work, 33 indicators were deemed feasible for a first round of data collection and analysis. Participating healthcare systems ranked the 33 indicators and created a list of 12 “Tier I” indicators that could serve as a starting point for an ongoing performance measurement function across the multi-organizational healthcare system. Six “Tier II” indicators were also selected for preliminary testing because of their long-term significance to systems (Table 3).

Many possible uses of this type of indicator data were enumerated by the researchers developing CRISP, including use by:

Table 3: CRISP Indicators

Sample Tier I	Sample Tier II
<ul style="list-style-type: none"> • Population Health: general health index (SF-36 tool used), prevention index • Community Benefit: proportion of system expenses devoted to charity care • Quality of Care: hospital readmission rate • Episode Prevention: hospital admissions per member per year, incidence of low birthweight babies • Episode Characteristics: number of services per episode (for selected diagnoses), hospital days per 1,000 members • Satisfaction: AAHP member satisfaction survey • Efficiency: percentage of system expenses for administration • Financial Performance: profitability, debt service coverage ratios 	<ul style="list-style-type: none"> • Population Health: disease-specific outcomes of care (using SF-36 and disease-specific function and symptom scales) • Quality of Care: compliance with standard care patterns (for selected diagnoses) • Episode Characteristics: redundancy of services provided within episodes • Episode Prevention: frequency of preventable acute episodes within chronic conditions (e.g., ER visits for patients with asthma), illness-based medical care episodes per member per year, percentage of new breast cancer cases classified as “advanced”

- Accreditation and regulatory agencies to move toward system-level performance standards
- Large purchasers who act on behalf of small businesses or large numbers of employees to assess performance prior to making healthcare purchasing decisions
- Individuals who can rely on the credibility of performance information prior to making their purchasing decisions
- Clinicians who can assess the processes and outcomes of care for large numbers of patients in their groups for purposes of continuous quality improvement
- System managers who can use this expanded set of performance measures for internal quality improvement projects
- Health system boards and CEOs who need a broad basis for evaluating performance, beyond financial data, which are usually the best and most detailed data the board sees

The second phase of CRISP included 14 of the original healthcare organizations, plus nine new systems. The objectives of the second phase were to test, refine, and assess the validity of a core set of health system-level performance indicators (see Table 3, Tier II) (Zajac, Green-Weir, and Nerenz 1995, 33). The group had to agree to common units of measurement, data definitions, and comparable

patient populations. This required an acknowledgment that “the role of healthcare includes the prevention of disease and the management of chronic conditions, and not merely the treatment of acute illness. Assessing the success and effectiveness of health systems requires that the populations for [whom] those systems [are] responsible are identified.” This served as a real challenge to those organizations that were not health plans with defined enrollment. Provider systems had no reasonable way of identifying a population, except by the people that use services. Therefore, the CRISP project involved creating proxies for population “membership.” For example, for measures of health status, a “user” was defined as an adult having a continuous relationship with a primary care provider associated with a healthcare system. A sample of users was determined by randomly choosing from among individuals who had visited system primary care providers on a specific day.

Scorecard Approach

Another approach to performance measurement at a healthcare organizational level has been the use of a balanced scorecard to indicate and assess dimensions of performance. For example, Henry Ford Health System developed such a scorecard for their health plan (Health Alliance Plan) with the following dimensions (Sahney 1998):

- **Financial Performance**—includes such indicators as revenue, net income, cost per member per month
- **Operating Performance**—includes member satisfaction, provider satisfaction, member disenrollment rate, hospital days per thousand members, HEDIS performance score
- **Growth**—includes growth in membership by plan product, market share

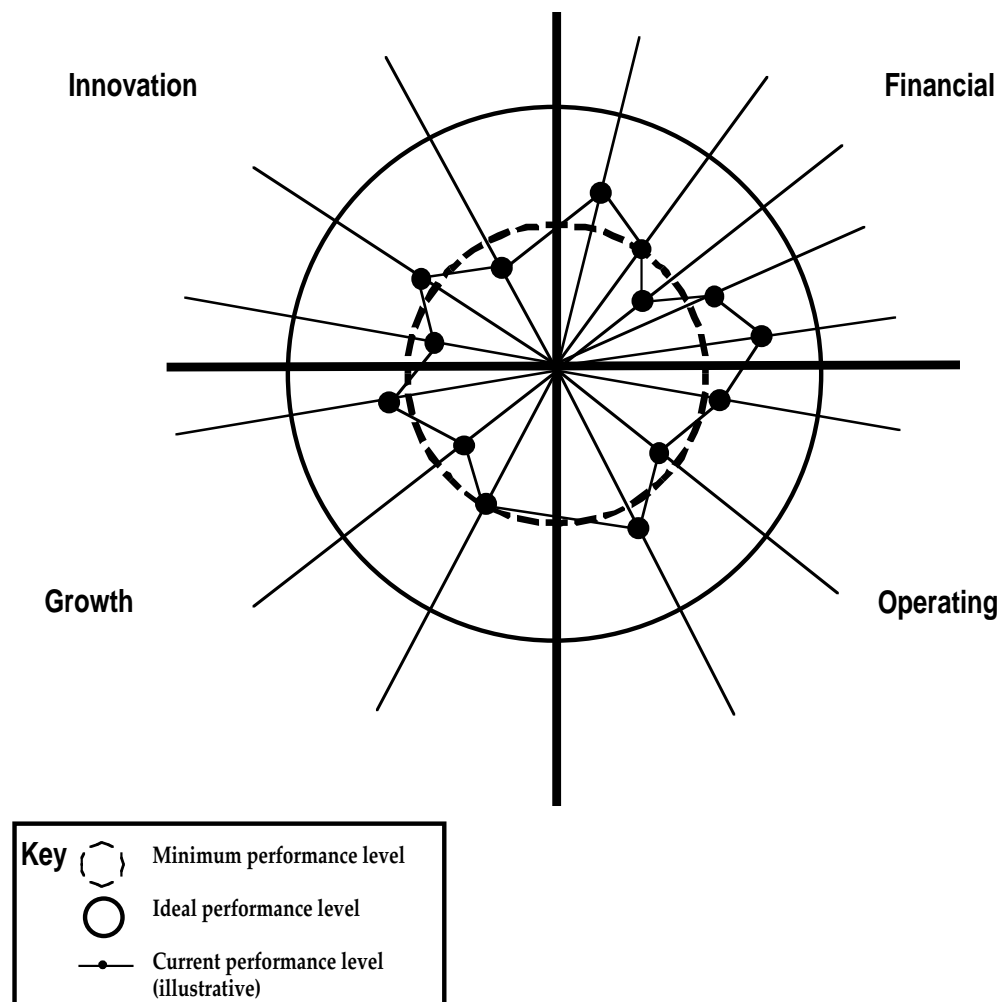
- **Innovation**—includes percent of revenue from products introduced or geographical markets entered in the past five years

To develop such a scorecard, five steps are offered:

- Step 1. Define a vision for the organization. (What does it want to become in ten years?)
- Step 2. Define key dimensions (four or five areas in which the organization has to set strategic objectives).
- Step 3. Develop key performance measures.
- Step 4. Define operational definitions.
- Step 5. Set targets.

Targets for the measures in each domain would be set and actual experience compared to targets. This was displayed on one chart with one domain in each quadrant (Figure 1). One advantage of this scorecard approach is that it provides an easy-to-understand snapshot of progress for the whole system.

Figure 1: Example of Scorecard Approach



Selecting Measures

What are the types of individual or population-based measures one could use to indicate superior performance of a healthcare delivery system in serving the dually eligible beneficiary?

Indicators Used in On Lok

With regard to the dually eligible population, it is useful to examine the On Lok/PACE program (Program of All-Inclusive Care for the Elderly) for comparisons. Dually eligible demonstrations focus on a population that comprises mainly people who are 65 or older, often having one or more chronic conditions, and a portion of whom may be eligible for nursing home care. Individuals enrolled in PACE program sites are dually eligible, are nursing home eligible, but live outside of a nursing home setting. PACE provides integrated primary care, acute care, long-term care and supportive services in a team-based model. Some of the PACE indicators may be relevant for dual programs. The PACE program sites have used indicators of performance such as:

- Timeliness of enrollment, enrollment rate, and disenrollments due to death or other reasons
- Enrollee/caregiver complaints or grievances
- Access to primary care, other needed services
- Enrollee/family involvement in care decisions, and satisfaction with services provided
- Acute care utilization—hospital discharges, length of stay (LOS), inpatient days per annum, re-admission rates
- Nursing home utilization—LOS for short-term stays and long-term stays
- Inpatient psychiatric and rehabilitative services
- Use of prescription drugs, psychotropic drugs
- Use of in-home personal care/chore services
- Attendance at the PACE adult day center
- TB screening rates, influenza immunizations, pneumonia immunizations

Minimum Indicators for Plan Performance

Are there minimum indicators of health plan performance? P. Silverman (1997, 51) offers proxies for system performance. He suggests that health plans in each state provide certain data (using comparable data definitions) to the public to allow for better understanding of that state's major healthcare issues and utilization patterns. The following population-based indicators are offered:

- Enrollment/disenrollment numbers and primary reasons
- Utilization of key services, for example, primary care visits per 1,000 enrollees, specialty visits per 1,000 enrollees, hospital admissions per 1,000 enrollees, and hospital days per 1,000 enrollees (as compared to utilization rates for people of the same age, using either national norms, rates from the specific state in which the plan operates, or another relevant comparison group)
- Consumer satisfaction information (as compared to satisfaction of a relevant comparison group)
- Access to care information, for example, average waiting time for non-urgent appointments and travel time to primary care providers (as compared to the experience of a relevant comparison group with these components)
- The number and reasons for grievances filed

Developing Better Measures

Obviously, we need to develop better measures of quality when evaluating delivery system performance across providers for a population with chronic care needs. Moving beyond looking at setting-specific utilization statistics, health plan immunization rates, or self-reported satisfaction at one point in time, we hope to understand other dimensions of quality related to: cumulative clinical outcomes, satisfaction over time with a series of healthcare interactions, and cumulative costs.

To look at cumulative outcomes of care, we will need to have a better understanding of relevant population “norms” (for example, for functional decline) against which we can evaluate outcomes for a population group treated at a specific setting or enrolled in a given health plan. We will also need a reliable way to “add up” the experience over time and across settings. We will need to start with validated instruments that can be used easily and that do not overtax our limited information system capabilities. Some possibilities are offered here for purposes of discussion.

Sample Population-Based Clinical Indicators for a Frail Older Adult Population

Nutritional Health	Percent at optimal weight, given height, age
Functional Capability	Percent change in muscle strength and balance over a given time period Percent change in activities of daily living or instrumental activities of daily living (compare these rates of change to expected rate of decline at a population level)
Depression	Percent change in score on Geriatric Depression Scale or other valid instrument (compare to expected rate of depressive symptoms or to previous score for population)
Cognitive Health	Percent change in score on Mini Mental Status Examination or other valid instrument (compare to expected rate of cognitive decline on a population level)
Medication Management	Percent reduction in number of elderly people on psychotropic drugs (compare to previous rate of psychotropic drug use—assumed high—or compare to a target range of need for such drugs in this population) Percent reduction in use of “potentially harmful” drugs, as per the Beer’s list or other researched, clinically acceptable, published list of drugs that are harmful for the elderly

Sample Satisfaction Indicators

Overall Health Outlook	Percent improvement in self-reported health status over a given time period
Beneficiary Satisfaction	Percent change in satisfaction over a given time period Indication of how well personal health goals were addressed by the system (no obvious measurement tool for this)
Family/Caregiver Satisfaction	Percent change in satisfaction over a given time period
Provider Satisfaction	Percent change in satisfaction over a given time period

Sample Financial Indicators

Cumulative Costs	Costs incurred over a given time period, for example, one year, for a person. (These could be compared to expected costs or prior year’s expenditures) This would entail adding up the costs incurred by an individual beneficiary, at each level or care setting used, within the given time period
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Issues to consider include how to “count” costs. Should charges be used as a proxy for costs? Are out-of-pocket expenditures made by the beneficiary included? How will costs be tracked? Since each setting has its own billing methods and information system, how will the individual records be matched to arrive at a cumulative experience? Would only a sample of individuals be selected and results extrapolated to the rest of the population?

There are measurements and operational issues for each of these proposed areas, but they do suggest a kind of profiling that would be more relevant for a dually eligible older population than measures that are typically used today.

Providers' Internal Quality Improvement Efforts

What methods do healthcare organizations use in their own internal quality assessment and improvement processes?

Just as interest in outcomes by external review agencies has increased, we have seen a parallel shift in the efforts of internal quality management staff to look at outcomes. The healthcare sector has changed its approach to internal quality management over the last 15 years, from a focus on quality *assurance* to a focus on quality *improvement*. This has been described as the shift from examining care provided by one individual or provider (“finding the bad apple”) to attention to outcomes of care provided by whole systems and its impact on the health status of a population (“making the whole orchard better”) (Coombs and Norris 1998, 217). There is a realization that it is not often individual incompetence or failure that produces poor outcomes, but that the organizational systems themselves can result in adverse events. Dr. Donald Berwick, founder of the Institute for Healthcare Improvement, has been a notable champion of better system processes (Berwick 1994; Banks et al. 1995; Berwick 1998).

In the clinical arena, quality measurement usually focuses on achieving the best clinical outcomes for a given patient or a defined group of patients, for example, people with stage II congestive heart failure, people with diabetes, or people who are candidates for hip replacement surgery. Thus, the unit of analysis can be the individual patient or a carefully defined group of patients with similar clinical characteristics. This may be a different way of looking at quality than how purchasers or the accrediting/regulating agencies who are evaluating a specific institution look at quality measurement and improvement.

Continuous quality improvement (CQI) moves from a one-shot approach in quality measurement to look at both processes and outcomes related to a given practice in delivering care or providing service over time. CQI is a method for targeting an area to improve, identifying current practice, selecting performance indicators for improvement, identifying alternative methods, implementing new practice, and evaluating the success of the new methods. Presumably this cycle could be repeated again and again, as warranted. A few successful efforts are worth noting as examples (Pehrson 1994). (These are results from CQI team

studies at several Intermountain Health Care hospitals.)

- In a pilot effort, the CQI team at Valley View Hospital decreased repeated radiology exams from a 7 percent to a 3 percent repeat rate, reducing unnecessary exposure for patients and saving \$3,700 per year.
- A CQI team at Utah Valley Regional Medical Center reorganized management of newborns at risk of developing neonatal sepsis. Data from a study following implementation of the new methods showed that the number of infants with this diagnosis decreased from 11.6 percent to 5.3 percent in a three-month period. The total average length-of-stay for infants on antibiotics decreased from 130 days to 28 days.

The continuous quality improvement “movement” is now more than a decade old. While some organizations have embraced CQI and made it standard procedure, others have tried and failed at this method for improving quality at the patient care level. Why? Several interesting insights emerge from the experience to date:

- The attempt to transfer classic industrial CQI theory into the clinical arena is more difficult than originally anticipated (Goldberg and Horowitz 1999).
- Common problems arise in how CQI efforts at healthcare systems and health plans are directed and carried out. For example, there was a lack of investment in education and training of staff; top management was involved in day-to-day monitoring efforts, which was ineffective; short-term cost savings were the focus of the efforts; physicians were brought into the process too late or were “force-fed” results (Pehrson 1994).
- Voluntary changes in physicians’ practice patterns have not been demonstrated through the simple dissemination of guidelines for conditions that were developed from scientific

evidence (Goldberg and Horowitz 1999). In fact, physicians have, at times, resisted using guidelines.

Goldberg and Horowitz (1999) cite an example of two teams that focused on improving hypertension outcomes in a defined group of people but had different results largely as a result of poor data and insufficient clinical input. One team achieved impressive results; the other did not. The researchers determined that three key factors need to be present to achieve results:

- Teams need to be guided by experienced advocates and content experts.
- Teams need to focus on tailoring feasible interventions already known to work, on the basis of controlled evidence from the literature.
- The entire process needs to be supported by readily available real-time data.

The centerpiece of most current quality improvement efforts is evidence-based medicine. Coombs and Norris (1998, 216) state that evidence-based medicine “goes beyond what might be implied by the name (that is, simply a compiling of the scientific evidence that might define best clinical practice). Evidence-based medicine embraces a broader definition of not only the collection of scientific evidence, but also the definition of process for delivery, explicit strategies for decision making support (involving both the provider and the patient), and a clear definition of outcome measures.” However, as Coombs and Norris (217) assert, “The measurement and monitoring of outcomes depend heavily on the availability of timely, accurate data derived from clinician-patient interaction.” Thus, quality measurement and reliable data/information technology are tightly intertwined. The lack of reliable consistent data has been a sore spot for many healthcare organizations that have poured millions into information systems to find they do not provide the data desired. Dr. McGlynn cites the lack of good, available, detailed clinical information as a barrier to achieving better quality measurement and improvement. Unfortunately, most quality monitoring is based on areas for which there readily exists enrollment or claims data—these may or may not be areas of interest.

In his report on quality improvement in healthcare organizations, Dr. Brent James (1989, 26) urges healthcare organizations to *eliminate inappropriate variation and document continuous improvement* if it is to continuously improve quality and control costs. He outlines seven steps in achieving this goal (Table 4).

Table 4: Continuous Improvement Steps

Seven Steps for Continuous Improvement

1. Find a process. Healthcare is a complicated series of related processes, and the first step is to choose a process that needs quality improvement.
2. Assemble a team that knows the process.
3. Identify customers, process outputs, and measure customer expectations regarding the outputs.
4. Document the process.
5. Generate output and process specifications.
6. Eliminate inappropriate variation. There will be some level of random variation (“random noise within the system”); the organization needs to concentrate on specific variation that represents an attributable contribution to variation.
7. Document continuous improvement (innovate).

Such a process takes investment and a long-term commitment. These things are hard to find in our current marketplace, especially given payment restrictions and financial pressures that are exacerbating the problem of a short-term focus.

Nevertheless, some healthcare organizations have invested in “fast track” performance improvement in order to more quickly respond to customers, senior leadership, and to payers—and to tap the talent and energy of results-oriented teams who want to realize improvements faster. One strategy is to develop “blitz” improvement teams—recommended by the Juran Institute for tackling cost-cutting projects in approximately five weeks. A small group of employees meets intensively with a facilitator trained by the Institute to identify the root cause of the problem associated with a process. Next steps include designing a remedy, developing an implementation plan, and preparing spreadsheets to track progress and measure success. Implementation follows. This may be an effective approach for specific problem or process that is contained to one area of the organization.

Another strategy being pursued is called the “Breakthrough Series”—launched by the Institute for Health Care Improvement. Healthcare organization representatives participate in a collaborative that meets for several days every few months to soak up information about specific changes identified by a panel of experts. This information and what the representatives do with it back home potentially offers breakthrough results, better outcomes, and reduced costs related to a particular medical condition or treatment. Participants test the changes within their own organizations between meetings and subsequently share and compare their experiences. The collaborative wraps up with a national conference which showcases the improvement techniques and their results. This, too, may be effective in focusing on a specific task, group, or method where the changes can be implemented effectively and the evidence is compelling as to what “best practice” is.

Whatever method is used, change agents are advised to ensure that the results from fast-track improvement efforts last by applying the plan-do-check-act (PDCA) cycle or another systematic approach that involves revisiting the process that was the focus of change. Healthcare leaders are also advised to be discriminating when it comes to selecting projects for fast track improvement. One expert cautions (O’Malley 1997), “Changes that affect several systems at once probably should not be accelerated.”

In addition, we have seen that proper implementation methods, data, and clinical expertise and leadership are key to rolling out the improvement if it is to last and if it is to be disseminated throughout a healthcare organization.

Quality Measurement in the Future

Where should quality measurement be headed?

To move ahead in measuring performance of networks of care as applied to chronic care populations, we will need to step back and think about quality from different vantage points and in different ways.

We may need to look at “quality” from various perspectives. At a minimum we should obtain the consumer’s perspective, the provider’s perspective, and the payer’s perspective.

From the **consumer** perspective, good care may be indicated not only by good clinical methods and technical skills in performing medical procedures (these things are often assumed to be present), but also by the absence of negative “administrative hassles” or “bad service,” for example, duplicate assessments, burdensome paperwork, complex administrative processes for obtaining services, long waiting times for service, telephone run-arounds, and other indicators of care delivery that is poorly organized from the consumer’s experience. Consumers want easy access to a range of good choices and they expect that one set of practitioners communicates all necessary information to the next set of practitioners. They expect that medical decision-making not only will be based on their immediate needs, but also will take into account their personal health goals (for example, “I want to remain well enough to stay in my own home.”). They are particularly sensitive about decisions being made about their care by others who are distant from their care.

From the **provider’s** perspective, quality means the best clinical and health status outcomes achieved for an individual, through treatment and a set of services provided at the right time in the best manner. Providers often feel the tension between three forces:

1. Their own judgment about what has been shown to be the best course of treatment for a given patient, given community norms and standards of practice
2. The patient’s own demands and values
3. The costs of care and the payments received for caring for this patient (McGlynn 1997)

The quality measurement system should take into account the broader definitions of health so that evaluations of effectiveness of different

interventions can include a holistic definition. However, we must focus on dimensions which are reasonably within the ability of healthcare providers and the delivery system to influence.

To providers caring for people with chronic illness, quality care over time also means that disability and decline in the population is delayed or reduced. This means that network payment arrangements need to cover costs of all necessary services, and there should be maximum flexibility in what kind of service can be offered to meet the individual’s need and preference. The focus should be on longitudinal care outcomes, not on results at one point in time. Artificial restrictions on where or how care can be provided inevitably work to the detriment of both the beneficiary and the healthcare system. However with this flexibility comes the need for clear evidence-based guidelines or protocols that can guide decision-making—aggregating many individual patient experiences so that the results from one course of action over another become very clear. Providers want decision support tools and methods that can help them get the best services to their patients in a timely way and that can assure them that they are recommending the best courses of action. Since clear communication channels between providers and information sharing networks across settings do not currently exist, one of the first activities of a network is to develop these linkages.

From the **purchaser/payer’s** perspective, care should be efficacious and result in the best outcome for that individual that is possible, within the payment corridors established for the population group. From a total population perspective, costs should not exceed available funding even though on an individual level, need may exceed per capita revenue. Quality represents a way of evaluating how well healthcare dollars are being spent for those whom the purchaser is financially responsible (McGlynn 1997).

To evaluate the performance of a network, we will need to focus on both the individual as our unit of analysis and then on a targeted population group as our unit of analysis. That is, we need to see the micro picture and the macro picture—the person as an individual and the aggregate experience of many people as a group.

Because there is no currently acceptable way to evaluate networks, we may need to understand

how quality is evaluated from each service sector that makes up the integrated healthcare delivery system—that is, quality in the physician’s office, quality in the hospital, quality in community-based services, quality in the nursing home, quality in the home care agency, quality in the rehabilitation unit—and then find ways to bring these performance reviews and standards closer together. We need to find some valid way to look at the total picture. We may want to consider structure, process, and outcome measures.

Structural components might include how accessible the buildings are to people with disabilities, whether the right equipment is present and used, how wide the doorways are to allow wheelchair access, how safe the locked cabinets are where medications are kept. There are structural components that are tied to each care setting. There are also structural components related to the overall network which seeks to be more than the sum of its parts. Therefore, we want to pay attention to the infrastructure of the network, for example, whether the network has established an overall information management system for clinical and administrative information that needs to be shared, whether there are network-wide standards and consistency in patient education materials, and what kind of management and governance structure or oversight body the network has set up with agreement by each service unit to a method of ensuring accountability.

The **processes** of care delivery might include whether the nurse correctly documents a skin condition or how well the physician communicates instructions for a prescribed medication. Again, there are process measures for each service setting, but there are also process measures for the overall network. For example, we might be particularly interested in how clinicians/staff in different settings communicate effectively with each other, how they coordinate care and collaborate to ensure the best clinical and functional outcomes for the individual. We might be interested in what processes are used to monitor the person’s condition on an ongoing basis or how a person’s informal caregivers—family members—are educated and trained to support the person at home. For people with chronic illness who go in and out of healthcare settings, we will be particularly interested in easy, effective transitions from one setting to another with the appropriate information sharing and preparation occurring.

The **outcomes** that are experienced might include whether the patient recovers from pneumonia in the hospital (an individual outcome), how far the patient is able to walk after a stroke through aggressive rehab therapy (an individual outcome), or whether the incidence of stroke in the

community declines over time (a population-based outcome). There are outcomes of care that can be identified at “discharge” from each service unit, but in an integrated network model, we are equally interested in outcomes across settings and over time, that is, the longitudinal outcomes of a whole set of experiences and events that occurred within the healthcare delivery network.

Therefore, we might want to examine all the people who had diabetes who were served by the network over a two-year period and examine indicators that would help us evaluate good clinical management of these patients, for example, the number with retinal eye exams and what those exams show, the number with hemoglobin tests and what those tests show, and the number having regular foot exams. Other indicators could include the number of people with diabetes requiring amputations or who have lost vision due to the disease. In addition to these clinical outcomes, there are financial outcomes (how much money was spent in delivering care) and satisfaction outcomes (how successful the experience was from the patient’s perspective).

Dr. David Nerenz (1998) writes that the unique needs of people with chronic illnesses require a different approach to quality measurement. As applied to healthcare, then, we should look for the following in a good delivery system:

- Continuity and coordination of care across multiple specialties, individual providers, and sites of care
- The management of functional health status, independence, and the ability to perform normal daily activities in addition to management of the biological aspects of disease
- Coordination of supportive social and psychological services with medical services
- Frequent monitoring of disease status (for example, blood glucose monitoring for diabetes, prothrombin time measurement for patients with clotting disorders)
- Planning for predictable declines in health in later stages of the disease course
- Prevention of acute exacerbations of disease
- Provision of “sub-acute” residential services for purposes of either caregiver respite, stabilization of disease, or humane management of terminal care
- The patient/family experience of illness as long, continuous episodes rather than isolated clinical encounters

- Information management, both from provider to patient and from provider to provider

Given these features of patient needs, Nerenz then states that a measurement system must include the ability to assess:

- Health, function, and independence, not necessarily cure of disease
- Coordination among multiple providers and sites of care
- Prevention of acute exacerbations
- Costs for whole episode or period of time, not individual unit of service
- Satisfaction
- Quality of care vis-a-vis accepted guidelines and standards, including the provision of necessary services and the avoidance of unnecessary or futile services

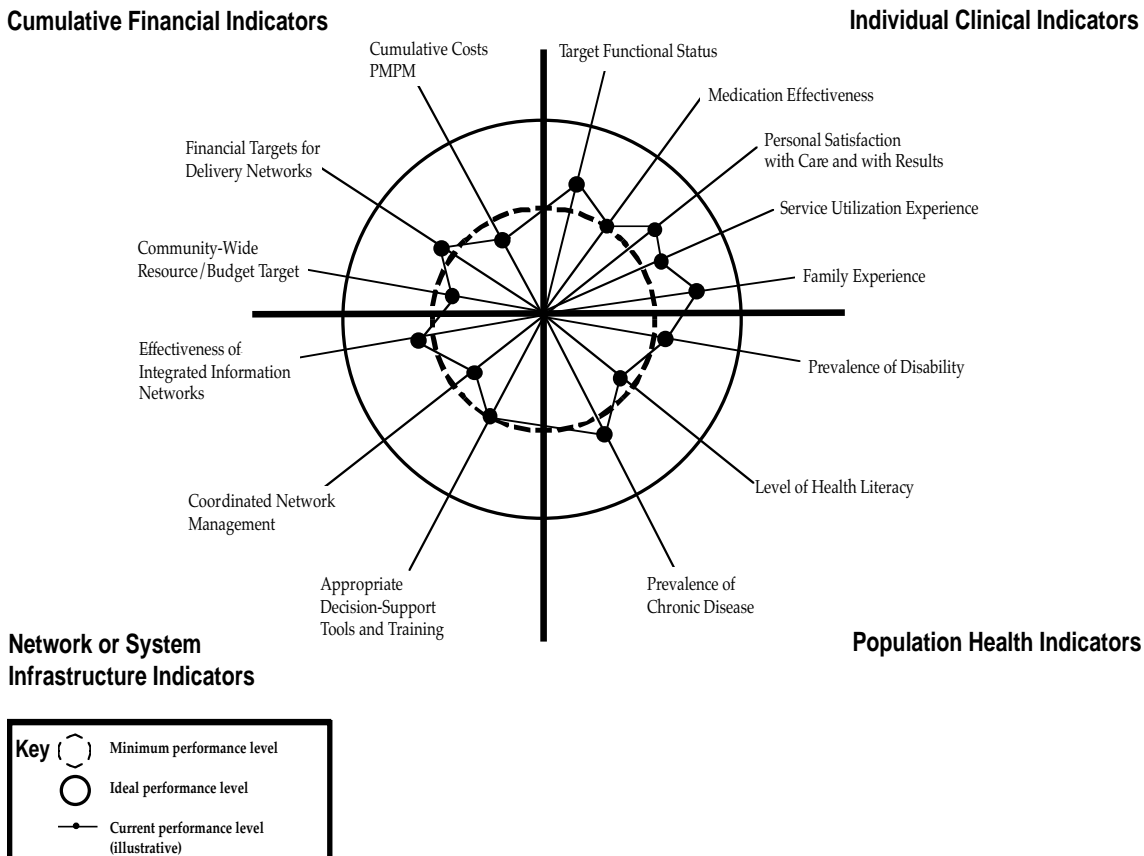
- The extent to which care is provided with a minimum of “administrative hassles”
- The overall “burden of illness” for patients, families, and other caregivers

Dr. Nerenz further describes desirable features of a performance measurement system as follows:

1. Systems should be designed around clear purpose and target audience.
2. The measures should be defined in quantitative, objective terms.
3. The measures, taken together, should provide a comprehensive “picture” of the network.
4. The measurement system has documented reliability, validity, and sensitivity.
5. Adjustments are made for case mix or disease severity.
6. There is appeal (of the system) to users.

Figure 2: Example of Scorecard Approach

Adopting the scorecard approach, perhaps a future measurement set for chronic care programs would include indicators in the following domains:



Challenges

There are numerous challenges facing external quality evaluators and internal quality management personnel seeking improvement in the outcomes of care provided by a set of providers within a network. We draw again from the work of Dr. David Nerenz (1996) who discusses challenges facing the healthcare system in using a population-based approach to provide care and to evaluate performance.

First, it is difficult to define a population with meaningful boundaries. Members of a population that may be defined by a healthcare organization as a group, may not recognize themselves as belonging to that group or see this “membership” having any meaningful impact on their health status. Furthermore, since relationships with a particular health plan, hospital, or physician are voluntary, the individual within that population may freely choose to go elsewhere for care and unexpectedly sever the relationship with that healthcare organization, leaving goals unrealized and prevention “investment costs” sunk.

Second, it is hard to determine who is the ultimate decision maker. Between city, county, and state health departments, private healthcare organizations, social service agencies, health plans, etc., there is a fragmented mix of responsibility and overlapping boundaries and lines of authority. Who can be held responsible for care outcomes? Is it the health plan or the care provider network? This entity must have clear authority over decisions about service distribution and the ability to make resource allocation and other changes to address care delivery issues.

Third, most healthcare organizations have not been set up to “manage a population’s health,” but rather to treat those most in need who show up at their doorstep. Organizations probably do not have the internal structures for tracking and monitoring population health in any real way, nor are individuals trained to think or work toward population health goals. Organizations’ fragmented information systems, existing forms of financing, and internal policies and structures serve as barriers to population-based planning, management, and evaluation.

Fourth, despite interest in following an “evidence-based approach,” it is hard to find scientific research that clearly identifies the best approach to care for much of what is done in healthcare. Many care approaches have not been adequately described and there are few existing studies that scientifically compare one method to another by a controlled method.

Fifth, good, usable, timely data is hard to find, and it is difficult to use what is available. Data definitions are not standardized, making comparisons difficult or meaningless. Information systems may not be collecting the right information, or information is in paper-based form making it cumbersome. Primary data collection is very expensive.

Finally, the difficulty in implementing clinical practice improvements, the existence of political realities, and consumer distrust make improvement and measurement challenging. Research has shown that it is difficult to implement clinical practice improvements because of poor implementation methods or resistance from practitioners. Therefore it would be hard to “require” a specific approach to care, even if we knew what the most effective care was. There is a lack of public policy or policy mandate supporting a population health management approach. People are still concerned about “cookbook medicine” or about being denied access to services. The beneficiary or consumer must be engaged in the process of healthcare improvement—especially those with chronic illness—since the individual’s behavior so clearly impacts outcomes. If the consumer is left out of the picture, “success” will be difficult to achieve or will be defined in a way that is not meaningful to the core user of the healthcare system. The Foundation for Accountability (FAACT) promotes this approach, emphasizing the importance of measuring consumer-focused aspects and outcomes of care.

Case Examples

Intermountain Health Care

Intermountain Health Care (IHC) is a nonprofit, nondenominational integrated health system located in Utah. IHC provides a continuum of care ranging from inpatient hospital care to outpatient and home healthcare services. The system's service areas range from urban to suburban, rural, and frontier. IHC has 400 physicians and 23 hospitals, including small rural facilities as well as metropolitan teaching and research hospitals.

In 1988 LDS Hospital, a division of IHC, implemented a process-of-care approach to the management of infectious disease. With a focus on the complete continuum of care, the program uses a computer-assisted decision support system based on practice guidelines derived from a consensus of local physicians. The guidelines were programmed into a hospital information system as rules, algorithms, and predictive models. The LDS antibiotic management process extends far beyond initial product selection and includes choosing the correct dose and the correct route and timing of the administration for the individual patient. It also takes into account such factors as current physiological functional status, decisions to obtain cell cultures, laboratory tests, and duration of therapy.

LDS Hospital evaluated the effects of this integrated care program seven years after implementation and found that adverse drug events associated with antibiotics were reduced by 30 percent and mortality declined. In addition, expenditures for antibiotics decreased from 25 percent of total costs in 1988 to 13 percent, although the number of patients receiving antibiotics increased from 32 percent to 53 percent. Trend analysis showed that antimicrobial resistance patterns have been stable. Since the trial, IHC has implemented the program in many of its large hospitals, emergency rooms, and outpatient clinics. The anti-infectives program has been a model for disease management applications in other specialties, including diabetes, anticoagulants, congestive heart failure, and coronary artery bypass surgery.

Johns Hopkins Bayview Medical Center

The Division of Care Management and Outcomes Evaluation at Johns Hopkins Bayview Medical Center (JHBMC) in Baltimore has worked to demonstrate value-based results for every performance improvement initiative. As a result of redesigning its performance improvement structure and implementing case management, clinical guidelines, and extended care pathways, JHBMC has measurably improved patient outcomes and satisfaction while reducing length of stay and charges for specific conditions and increasing the volume of business. Specifically, through the use of case managers and clinical guidelines, the division has been able to define standards of care, identify outcomes measures, foster population management, and determine best practices.

JHBMC's Clinical Practice Improvement (CPI) techniques have changed the way care is delivered and evaluated. CPI creates a dynamic environment for improving the process of care, including pharmaceutical care. It involves developing a consensus of practitioners on the process used for treatment of a given disease (for example, drug selection, dosages, timing of administration), measurement of treatment outcomes, and feedback to the practitioners. Outcomes include effectiveness of treatment, complications, long-term medical outcomes, patient functional status, patient satisfaction, and overall treatment costs. A CPI team evaluates this information and makes fact-based recommendations on improvements in the process. The modified process is then implemented, evaluated, and fed back to the practitioners. Continuous quality improvement is possible by repeating this sequence. Physicians respond favorably to this evidence-based, nonjudgmental approach to improving quality of care.

From the experience of JHBMC, the keys to success are:

- Supporting automation, which makes it possible to measure and track outcomes and to aggregate data for population management
- Creating structures for performance improvement accountability
- Encouraging creativity and learning
- Identifying process owners
- Finding resources

Allina Hospitals and Clinics

The following case study was presented in May 2000 by Brian Anderson, M.D., at a meeting of Minnesota Senior Health Options (MSHO) demonstration project participants. Dr. Anderson is Senior Vice President of Allina Hospitals and Clinics and provides direction and consultation around internal care improvement efforts. The following is a summary of his presentation.

In every healthcare transaction where a patient perceives that he or she has a need for care, there will be standard components of that transaction: knowledge, access, assessment, treatment, and continuation. That is, the patient will try to use his or her own knowledge or search out other sources of information about the problem faced. Then the patient will try to access the healthcare system and talk to the right person about the issue. When or if that finally occurs, a professional assessment of the patient's condition will be conducted. A course of treatment will be prescribed or recommended, and then there will be follow-up to determine additional issues or needs.

With regard to quality improvement, we need to ask ourselves the following:

1. What interactions occur at every point on this journey? (That is, how do we educate patients, how easy is it to access the right provider, how well is assessment carried out, how appropriate and effective is treatment, how well do we follow-up?)
2. What infrastructure and support services are required to make these things happen?
3. What handoffs occur at every transaction?

A few years ago we took a look at our patients with congestive heart failure (CHF) because we knew this disease is a huge burden on those who have it, results in high mortality, is expensive, and is prevalent. Nationally, the hospital readmission rate for CHF patients is from 20–30 percent. We looked at our readmission rate, and it was 27 percent. We felt that was too high. In addition, when we dug a little deeper, we found that many of those readmissions came through the Emergency Room—even though only one-third of them ended up in the ICU/CCU. Furthermore, almost everyone was admitted after 5:00 p.m. or on a weekend. Why? We set about to track the process that patients had to follow when they felt that they needed care. We also talked to many CHF patients directly. It became obvious to us that the reason so many readmissions occurred was because the clinic was inaccessible to them when they needed help—especially during the after business hours.

Now that we knew we had a problem and had identified some of the reasons for it, we put together a team of people to help address the issue

and craft a way to change practice and improve our outcomes. This team included a cardiac rehab therapist, several physicians and nurses, a representative from a key payer/insurance plan, a clinic manager, a patient, and a pharmacist.

The team gathered additional information about the current process, identified potential improvements and new methods, and tested the new method on a pilot basis. A couple of key factors emerged. I call them loosening, leadership, communication, and clarity. With regard to loosening, we had to get the payer to suspend some of the rules for payment and utilization. We also had to get the physicians to loosen their control—they did not have to be the point of first contact for every problem that arose. With regard to communication, we needed to be much clearer about how patients can get to us, and we had to develop a system for better and more relevant response. With regard to clarity, we needed to ensure that everyone involved knew who was accountable and for what.

We ended up creating 24-hour-a-day, 7-day-a-week access to our clinic and home care personnel, who were trained on CHF issues and knew how to respond to patients' needs. We created a system that provides for a response to every patient within five minutes of the patient calling us. The nurse and home care personnel have a treatment protocol that was created by our providers and approved by all the cardiologists so that the nurses can do some intervention on their own and notify the physicians following the intervention.

We tested this process improvement and found the following results:

- 77 percent reduction in 30-day hospital readmissions
- 19 percent increase in activity level
- 73 percent increase in exercise minutes by patients
- 23 percent increase in patients' quality of life scores
- 50 percent decrease in diagnostic testing (testing that was considered unnecessary)
- Over the course of one year, a 53 percent decrease in the total cost of care for these patients

This process has been up and running for three years now.

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