
Significance of Functional Status Data for Payment and Quality

Steven B. Clauser, Ph.D., and Arlene S. Bierman, M.D., M.S.

To date, the Medicare Program has used functional status information (FSI) in patient assessment tools, performance assessment, payment mechanisms, and—most recently—in quality measures to inform consumer choice. This article explores the rationale for the collection of functional status data to promote innovative models of care and examines issues related to data collection for quality improvement, performance measurement, and payment. In this issue of the Health Care Financing Review, articles focus on collection and classification of functional status for payment and quality purposes.

INTRODUCTION

This is an opportune time to appraise the value of collecting comparable data on functional status across care settings. Scientific advances in clinical therapeutics, together with innovations in geriatric medicine, are providing new clinical and organizational interventions to improve patient functional health outcomes (Bierman and Spector, 2001). A report by the Institute of Medicine Committee on Quality of Health Care in America (2001) chronicled systemic and pervasive shortcomings in quality of care for the management of chronic illness in the United States. High quality care for chronic conditions entails a focus on optimizing functional status, a prime

concern of patients and families. The report also identified patient-centered care as one of six key elements of quality—patient-centered care being defined as care that is respectful of and responsive to individual patient preferences, needs, and values, and that ensures that patient values guide clinical decisions. Further, functional assessment is an important part of Medicare's payment and quality enhancement programs in post-acute care (PAC) and long-term care (LTC), and more recently in rehabilitation facilities.

Functional status has been defined in a number of ways. A succinct definition is found in this issue of the *Review* in the article by Jette, Haley, and Ni: functional status reflects an individual's ability to carry out activities of daily living (ADLs) and to participate in various life situations and in society. Defined this way, it includes one's abilities in physical, emotional, and cognitive dimensions. Functional assessment, then, refers to the process of identifying and describing where on a continuum an individual's functional status lies.

Unfortunately, there are problems with the current state of functional assessment. First, collection of information is not well coordinated: Medicare beneficiaries obtain services in multiple settings from multiple providers, each with their own records and systems for collecting data (e.g., the minimum data set [MDS] [Howes et al., 1995] for nursing homes, the Standardized Outcome and Assessment Information Set for Home Health, [OASIS] for home care [Shaughnessey, Crisler, and Schlenker, 1997],

Steven B. Clauser is with the National Cancer Institute. Arlene S. Bierman is with the Agency for Healthcare Research and Quality. The views expressed in this article are those of the authors and do not necessarily reflect the views of the National Cancer Institute, the Agency for Healthcare Research and Quality, or the Centers for Medicare & Medicaid Services (CMS).

and the Functional Improvement Measure [Fiedler, Granger, and Russel, 1998] for inpatient rehabilitation hospitals), with few incentives for coordination across settings. Physicians often assess functional status in clinical practice to guide treatment decisions and assess effectiveness of therapy, e.g., difficulty walking due to arthritis, knee pain, or shortness of breath from congestive heart failure. However, in-hospital and ambulatory practice functional assessment is not done routinely, consistently, or comprehensively (Reuben, 2002). Second, these data collection systems are frequently independent of and not integrated with the medical record. Even when functional status is assessed it is commonly not well documented, which may lead to suboptimal care (Bogardus et al., 2001). Third, even when functional status data are collected, it is exceedingly difficult to track outcomes as beneficiaries move from one setting to another (and sometimes back again).

The results of this disjoint approach to functional assessment can often be devastating for both the health care system and the patient. Although models such as the Hospital Elder Life Program are capable of preventing functional decline in at-risk elderly patients during an acute-care hospitalization, and geriatric evaluation and management units have been shown to reduce in-hospital functional decline, they have not been widely implemented (Inouye et al., 2000; Cohen et al., 2002). Failure, e.g., to pay attention to functional status in a chronically ill patient during an acute-hospital stay for pneumonia can erase months of hard work by a home health agency (HHA) or a community-based organization to achieve improvements in mobility and physical functioning after a prior episode of illness.

In this environment, there are calls for an assessment mechanism that crosses boundaries from acute to PAC, chronic care, and the community—that crosses both settings and provider types.

This issue of the *Review* looks at a number of aspects of assessing functional status for quality and payment purposes. Authors review the history of functional assessment, discuss new proposals for classification systems, examine the strengths and weaknesses of existing mechanisms, and propose a way to move from where we are to where we need to be.

FUNCTIONAL ASSESSMENT IN MEDICARE

Performance Measurement and Quality Improvement

Functional assessment has been a part of CMS programs, in one form or another, for many years.¹ The earliest efforts (the MDS) were in the area of patient assessment. Subsequent work (the OASIS) expanded use of functional assessment to performance improvement. Later, functional assessment was incorporated into payment systems. Most recently, the emphasis in consumer-based health care has led to use of functional status data in measurement of health care quality and in information for patient choice.

CMS worked for more than a decade to develop the MDS, a comprehensive functional status data collection and reporting system for nursing homes. As a result of the Omnibus Reconciliation Act of 1987 and subsequent amendments, nursing homes use the MDS as the principle source of FSI for resident assessment and care planning

¹ For example, the Medicare Current Beneficiary Survey has asked questions about ADLs and similar measures of functioning since its inception in 1991 (Adler, 1994).

according to resident assessment protocols. Nursing homes collect and report to CMS more than 400 MDS items measuring a variety of functional, behavioral, social, and clinical aspects of nursing home resident care (Morris et al., 1990). Until recently, the data were used primarily to support the survey and certification process. CMS uses these data to create quality indicators (QI) that enable them to “flag” potential quality problems in specific nursing homes, and then reports to State surveyors who use this information in the survey and certification process (Zimmerman et al., 1995).

Medicare’s interaction with HHAs is an example of the multiple uses of functional status data to influence system performance. HHAs use information about functional status, collected through OASIS, to support clinical decisionmaking, payment formulation, and quality improvement functions. By design, OASIS is limited to those items necessary for measuring and tracking outcomes of care in home settings (with the exception of several data elements to support billing under the new Medicare home health prospective payment system [PPS]) (Shaughnessey et al., 2001). OASIS data are subsets of the information necessary to conduct patient assessment and care planning, and HHAs have considerable flexibility in determining how best to integrate the outcomes data into their assessment and clinical decision support processes. HHAs have been successful in demonstration programs in Medicare and State programs to improve risk-adjusted functional outcomes such as ambulation, stabilization of anxiety, reduced urinary tract infections, and management of oral medications (Shaughnessey et al., 2001; 2002).

Historically, CMS through the quality improvement organizations (QIOs) (formerly peer review organizations) have emphasized measurement and improve-

ment focused on disease-based, clinically oriented priorities (Jencks et al., 2000). In the late 1990s, in their sixth scope of work, QIOs launched several multi-State special projects to learn how to implement functionally oriented quality measurement and improvement programs with nursing homes and HHAs. Recently, in the seventh scope of work, CMS expanded these QIO pilot initiatives to become part of their core work by combining technical assistance for nursing homes with technical assistance to Medicare beneficiaries to better understand how QIs measuring functional status can be used in decisions to select a nursing home or HHA (Harris and Clauser, 2002).

Payment

Functional status data were central to the creation of the PPS for nursing homes, HHAs, and inpatient rehabilitation facilities (IRFs). The systems arose from several pieces of legislation beginning with the Balanced Budget Act of 1997, and are described in more detail in articles by Carter, Relles, Ridgeway, and Rimes and Buchanan, Andres, Haley, Paddock, and Zaslavsky in this issue. They include the use of the MDS for establishing the resource utilization groups version-III (RUGs-III) (Fries and Schnieder, 1995) that support the Medicare skilled nursing facility PPS, use of OASIS to establish home health utilization groups for the Medicare HHA PPS and the IRF—patient assessment instrument data system to support the Medicare IRF PPS. While the types and groupings of indicators that influence payment vary by setting, functional status is an important predictor of resource use in PAC (Phillips, Brown, and Schore, 1992).

There has been less experience integrating functional assessment data into payment mechanisms than is the case for quality

measurement. Functional status is an important predictor of health care costs in community-dwelling elderly individuals (Bierman et al., 1999; Fried et al., 2001). Iezzoni and Greenberg in their article note that efforts to incorporate functional status data into risk-adjustment formulas for capitation in managed care have been mixed. Unfortunately, as Buchanan et al., Carter et al., and Jette et al. note, PPS and other payment systems that include functional status data are in relatively early stages of implementation and operation. Therefore, it may take some time for proper evaluation of these systems in order to fully understand whether and how that data improves payment accuracy, efficiency, and equity for providers and health plans participating in the Medicare Program.

Consumer Choice

Collection of functional outcomes data is underway as part of the Medicare+Choice (M+C) program. Since 1998, M+C plans have participated in the Medicare Health Outcomes Survey (HOS), a National Committee on Quality Assurance Health Plan Employer Data and Information Set measure that incorporates the Medical Outcomes Study Standard Form 36 (SF 36), designed to be publicly reported on a plan specific basis (Stevic et al., 2000). Every 2 years, individuals are resurveyed (if they are still enrolled in the plan) to enable CMS to calculate a measure of whether functional status is improving, staying the same, or getting worse. One potential advantage of the HOS is that it reflects the net outcomes of care over time for multiple conditions across various sites and settings of care (Bierman et al., 2001). CMS is also incorporating the measure into its health plan management system as part of its plan contract monitoring activities. Iezzoni and Greenberg note that there

are several technical challenges with the attribution of functional outcomes to managed care organizations (MCOs). However, 6 QIOs are working with 16 MCOs to test the utility of the HOS for quality improvement projects related to the treatment of depression (Health Services Advisory Group, 2002). These initiatives illustrate the growing recognition of the need for accountability tools utilizing functional status data and measurement to facilitate quality improvement and consumer choice in Medicare.

In November 2002, CMS expanded the QIs to include several outcomes that are publicly reported for all Medicare participating nursing homes (Centers for Medicare & Medicaid Services, 2003a). For each nursing home 10 quality measures are reported, among them is the proportion of short-stay residents whose ability to walk has improved since admission and the proportion of patients with declines in performance of ADLs. Other measures address prevalence of pain, delirium, infection, and pressure ulcers. (The Web site is targeted primarily to Medicare beneficiaries and their families who are selecting nursing homes, but can also be used by nursing homes to benchmark their performance on these measures against other nursing homes in their market area, the State, or the Nation [Harris and Clauser, 2002]).

In May 2003, a similar Web site was unveiled for HHAs (Centers for Medicare & Medicaid Services, 2003b). The 11 quality measures available include 4 related to improvement in getting around, 4 related to meeting the patient's ADLs, 2 related to patient medical emergencies, and 1 related to improvement in mental health. Thus, improvement in or maintenance of functional status is an increasing part of the information available to consumers choosing providers of care.

Integrated Service Delivery Models

Several federally-sponsored demonstrations have tried to create a more patient-centered and coordinated delivery system for the chronically ill and disabled elderly. The most successful demonstration is the Program for the All-Inclusive Care of the Elderly (PACE), a full-risk, staff model, managed care plan that serves community dwelling elderly individuals who meet nursing home admission requirements. Using interdisciplinary care teams, PACE provides a full range of acute and LTC services to meet complex care needs (Zimmerman, Pemberton, and Thomas, 1998; Eng et al., 1997). Several sites have integrated clinical and FSI as part of a comprehensive member record information system. This record information system collects and reports both clinical and functional status data to support the comprehensive assessment and care-planning characteristic of these programs (Master and Eng, 2001).

PACE programs have been very successful in managing institutional expenditures for the frail elderly by achieving a hospital days per thousand rate at the same level as the general Medicare population, even though all PACE enrollees are nursing home certifiable (Wieland et al., 2000). PACE participation has been associated with improvements in several measures of health and functional status, including increased life expectancy, better self-reported health status, higher general satisfaction with life, and a greater satisfaction with overall care arrangements than comparable community-dwelling individuals (Chatterji et al., 1998). These outcomes appear to occur without favorable selection (White, Abel, and Kidder, 2000). PACE programs in their initial year of operation tend to be no more costly than traditional Medicare and Medicaid. PACE was made a

permanent Medicare benefit in the Balanced Budget Act of 1997, but slow growth (at the beginning of 2003 there were approximately 8,100 enrollees in 30 sites) and the narrow eligibility requirements limit its impact and significance in the Medicare Program.

The social health maintenance organization (SHMO) integrates acute and LTC benefits through health maintenance organization enrollment with the potential to reach a larger segment of the Medicare population. The first demonstration (SHMO I) involved four sites and experienced mixed success in the 1980s. SHMO I sites successfully managed the LTC benefit, but, with one possible exception, did not really integrate functional status and clinical data in the management of plan members, had comparable member satisfaction to other local Medicare risk plans, experienced difficulty in reaching enrollment targets, and did not achieve the reductions in hospital and nursing home costs that were expected from effective care integration (Health Care Financing Administration, 2001).

The second generation of the demonstration (SMHO II) was designed to address perceived weaknesses of the initial model. Interdisciplinary care teams were required with the objective of improving the day-to-day coordination between physicians and LTC case managers. The model included the collection of information on the baseline functional status of participants at enrollment, both as a care management tool and as one of several predictors of the plan payment rate. The goal was to encourage SHMO II plans to integrate care at earlier stages of disability (Kane et al., 1997). Unfortunately, although six plans were approved to participate in the demonstration only one plan became operational (Newcomer, Harrington, and Kane, 2000). Findings from the independent evaluation

of this site suggest that the plan did indeed achieve a much greater participation of primary care in the integration of acute and LTC services, but after one year of operation had not consistently improved beneficiary health outcomes. However, the study noted several limitations in their analysis, such as the inability to examine subgroup effects with only one plan, that the 12-month followup may be too soon and too short to detect effects, and that the program was evaluated before many of the SHMO II geriatric programs were fully operational (Health Care Financing Administration, 2001). As of this writing, SHMO was still a Medicare demonstration.

Several States have implemented or begun to design demonstration programs that integrate acute and LTC for the Medicare-Medicaid dually eligible population. These programs involve waivers from Medicare and Medicaid to combine the acute and LTC benefit packages into a unified plan for dually eligible beneficiaries. They vary in utilization management, extent of plan risk for acute and LTC services, and the extent to which nursing home services are covered in the program.

PACE, SHMO, and the State-based integrated care programs are examples of new experimental programs underway to improve functional health outcomes, by coordinating clinical, rehabilitative, and LTC services for elderly individuals with chronic illness and disability. In the case of PACE, the demonstration was successful enough that it became an official part of the Medicare Program. Each of these programs collects and uses functional information on members to target services, promote communication among providers and in some cases, engage interdisciplinary teams to enhance coordination and continuity of care, identify and promote best practices within their provider networks, and monitor quality and outcomes. Different programs

emphasize different features in their structure and management approach, but a common element among the most comprehensive programs is an effective infrastructure to collect, process, and manage functional status and clinical information to support the clinical, administrative, and financial functions in the organization.

CHANGING PARADIGM OF HEALTH AND DISABILITY

As Iezzoni and Greenberg and Üstün, Chatterji, Kostansjek, and Bickenbach point out in their articles, a shift is emerging in the view of disability. Rather than seeing disability as the sequelae of a health event, individuals are seeing a continuum of functioning in three dimensions (the person, the activity, and the environment in which the activity takes place). This new view does not reflect only a philosophical shift: A growing body of evidence shows that improved clinical management of chronic conditions (e.g., heart failure) and common geriatric problems (e.g., falls) can indeed lead to improvement of functional health outcomes. Organizational interventions in ambulatory care, hospital, home care, and community settings have all led to improved functional status in the intervention group. Therefore, a growing proportion of disability resulting from chronic disease and aging is being recognized as preventable. For example, a randomized controlled trial of outpatient comprehensive geriatric assessment coupled with an intervention to promote adherence to recommendations resulted in better SF-36 Physical Component Summary Scale and Mental Component Summary Scale at 15 months in the intervention group (Reuben, 2002). Another randomized controlled trial of outpatient geriatric assessment and management found that individuals in the treatment group were less likely than

those in the control group to lose functional ability (Boult et al., 2001). Randomized experimental participants trials of restorative home care, a home-based program to prevent functional decline, transitional care from hospital to home, and community-based preventive occupational therapy have all been shown to improve functional health outcomes in the frail elderly (Gill et al., 2002; Tinetti et al., 2002; Naylor et al., 1999; Clark et al., 1997). A common theme in these trials is that multi-component interventions are most likely to be effective.

Articles by Üstün and colleagues and by Bickenbach demonstrate this view of health and disability is working its way into health care systems worldwide. In the United States, innovative models of care delivery hold much promise for improving outcomes of care for elderly Medicare beneficiaries (Reuben, 2002). Interest among health care providers in doing so is evidenced by the fact that the chronic care model has been used to implement quality improvement interventions with some success in over a hundred health care organizations (Bodenheimer, Wagner, and Grembach, 2002).

NEW FUNCTIONAL ASSESSMENT MODEL

In a report by the National Committee on Vital and Health Statistics (2001) they urged the development of a functional assessment tool that is capable of being used in any setting and that is routinely used to collect data on functioning. They reported that the World Health Organization's (2001) International Classification of Functioning, Disability, and Health (ICF) currently was the only viable candidate for such a classification schedule.

Given that there is no common metric for functional assessment and that measurement needs may be site- and setting

specific, a classification system like the ICF has the potential to foster communication and coordination across settings. Articles in this issue by Üstün and colleagues, by Bickenbach, and by Harris and colleagues explore this in more detail.

CHALLENGES AS WE MOVE FORWARD

Although the ICF shows promise as a way to think about and categorize functional status, there remains a great deal of work to be done before it—or any such mechanism—can be operationalized. As Harris, Ruggieri, and Chute point out in their article, there are significant steps that must be taken as we move from a conceptual framework to an operational framework; Bickenbach discusses implementation of an ICF-based framework in Canada, and several of the existing assessment tools that are being tested internationally. To date, instruments have been developed for nursing homes, home care, rehabilitation facilities, mental health, and PAC (Hirdes et al., 1999; Granger et al., 1986). The nursing home RUGs-III case-mix system developed in the United States has been validated and/or implemented in numerous countries including Japan, Spain, Sweden, England, Wales, and Finland (Carpenter et al., 1997; Bjorkgren et al., 1999). Üstün and colleagues describe pilot studies of the ICF now underway in clinical settings. But clearly, work is needed to study this process in the context of the Medicare Program and the U.S. health care system.

Research

CMS has long supported research to develop risk-adjustment methodologies for differences in resource use due to health and functional status. The objective is to make payment more equitable and to

reduce financial incentives associated with risk selection. Favorable selection has even been found in demonstration projects designed to attract high-risk patients with LTC benefits, an indicator that risk-adjustment methods have yet to be sufficiently refined to encourage plans to market aggressively to chronically ill and disabled enrollees (Newcomer et al., 1999). The challenge has been (and remains) to develop payment approaches that recognize the legitimately higher costs of caring for this population without creating incentives to manipulate the payment system (e.g., by upcoding impairments) or mitigating improvement by paying more for functional deficits than for functional improvement.

Research is needed to assess the value of functional status data collection for all Medicare beneficiaries. To date, with the exception of SHMO I and II, Medicare Programs including functional assessment have targeted the most seriously disabled in need of nursing home care. Specifically, more experimentation is needed on how to use functional status data and geriatric models of care in integrated systems that target Medicare beneficiaries with less severe functional impairments or who are at risk for functional decline. Work is needed to assess collection of baseline functioning data for the elderly population, and—as Iezzoni and Greenberg point out in their article—we have much to learn about functional assessment for children.

Health risk appraisal is one model that could be tested to enhance the use of functional status data within a comprehensive data infrastructure to move toward a more coordinated and patient-centered health care system for the elderly (Shekelle et al., 2001). An annual health risk appraisal could include key questions on clinical and functional health to create a baseline for outcomes that can be used by clinicians

and patients to inform decision support at the point of service, as well as questions targeted toward evidence-based interventions that improve functioning (e.g., clinical preventive services, smoking cessation, substance abuse counseling) where referrals for appropriate care could be arranged. Different modes of health risk appraisal administration and followup could be tested (e.g., internet, telephone, mail) to learn more about their impact on costs and outcomes. The SHMO II demonstration uses such a model in setting the baseline functional status of their enrollees; data are used both for care planning and setting payment rates (Health Care Financing Administration, 2001).

Another approach is to bundle payments for providers across an episode of care. Current PAC prospective payments are designed to facilitate greater care management flexibility by bundling services within the site of care, on a per case or per diem basis. However, by defining the episode of reimbursement within the single site of care, they may inhibit care coordination across the care continuum. One option is to experiment with payment systems that extend beyond a single site of care, but are not fully integrated health plans. In the late 1980s and early 1990s, Medicare initiated several PAC bundling projects that examined the potential to merge the hospital and PAC benefits into a single benefit plan.

A substantial challenge in any approach to bundle acute and LTC services across providers is how to assure quality of care effectively and efficiently. An observation common to most of the articles in this issue of the *Review* is that there is no standard for functional assessment and measurement across the care continuum. The few attempts to date have involved the creation of yet another set of data collection protocols (Johnson et al., 2001; Wenger et

al., 2001). It may be necessary to re-evaluate these measurement strategies in the context of their potential substitutability for data collection systems already in place.

Policy

Another possibility is to experiment with models that pay for performance. A variety of experimental approaches could be undertaken to effectuate these programs (Institute of Medicine Committee on Quality of Health Care in America, 2001). One example of the possible “business case” for incorporating functional status measures and methods into these experiments is the Medicare home-health quality assurance demonstration, which tested the utility of the outcome-based QI system for home health as a quality improvement tool in the Medicare Program. The demonstration found that the outcome-based QI performance measurement and improvement not only improved functional outcomes among demonstration participants when compared with controls, but also reduced risk-adjusted hospital admissions (Shaughnessey et al., 2001).

CONCLUSION

The movement toward outcomes-oriented data collection and information system support in PAC and toward outcomes assessment in managed care is encouraging, especially the integration of these measures into the key business functions of performance assessment and improvement. However, movement toward patient-centered care is impeded by the use of information systems that differ in each setting and that collect FSI differently. For example, the new inpatient rehabilitation facility patient assessment instrument is distinct from the MDS or OASIS. Until these data collection approaches are stan-

dardized, or at least can be effectively crosswalked across PAC settings, capacity for outcomes assessments across care transitions will be limited.

While many unanswered questions remain about the relative costs and benefits of collecting data on functional status data, as well as how to best standardize and collect these data, availability of meaningful and comparable functional status data may comprise an important component of care systems to meet the needs of 21st century seniors. Available functional status data on all Medicare beneficiaries would serve multiple functions, including provision of critical information about illness burden and health status transitions. At a time when age specific disability rates are declining and there is a growing emphasis on promoting independence, preventing functional decline, and avoiding institutionalization when possible, functional status data on beneficiaries would be of great value. In addition, collection of these data will provide a wealth of information that can be used for clinical and health services research. Inclusion of data on functioning in CMS already rich data sets would foster analyses of the cost effectiveness of clinical and organizational interventions and continue to augment the knowledge base regarding effective interventions to maintain function and independence.

These opportunities are not without challenges; issues of measurement and data burden, provider resistance, and technical issues regarding the effective organization of service delivery, and payment for services, will require continued refinement and evolution of programs and policies over time. Fortunately, there are examples of nascent models developing in each of these areas that offer promise to create this vision. Much more work remains to be done, however, to obtain consensus on and to deploy the measures, to create delivery

models that improve integration of care, and to experiment with new incentive systems that reward performance. Collection and dissemination of functional status data throughout the continuum of care is a necessary (albeit not sufficient) condition to achieve these goals for patients, providers, and purchasers.

ACKNOWLEDGMENTS

The authors wish to thank Carolyn Clancy, M.D., Yen-Pin Chiang, William Lawrence, M.D., Carolyn Rimes, Daniel Waldo, and anonymous referees for their helpful comments and suggestions on earlier drafts of this article.

REFERENCES

- Adler, G.S.: A Profile of the Medicare Current Beneficiary Survey. *Health Care Financing Review* 15(4):153-163, Summer 1994.
- Bierman, A.S., Bubolz, T.A., Fisher, E.S., and Wasson, J.H.: How Well Does a Single Question about Health Predict the Financial Health of Medicare Managed Care Plans? *Effective Clinical Practice* 2(2):56-62, March/April 1999.
- Bierman, A.S., Lawrence, W.F., Haffer, S.C., and Clancy, C.M.: Functional Health Outcomes as a Measure of Health Care Quality for Medicare Beneficiaries. *Health Services Research* 36(6) Part II:90-109, 2001.
- Bierman, A., and Spector, W.: *Improving the Health and Health Care of Older Americans: A Report of the AHRQ Task Force on Aging*. AHRQ Pub. No. 01-0030. Agency for Healthcare Research and Quality. Rockville, MD. 2001.
- Bjorkgren, M.A., Hakkinen, U., Finne-Soveri, U.H., and Fries, B.E.: Validity and Reliability of Resource Utilization Groups (RUG-III) in Finnish Long Term Care Facilities. *Scandinavian Journal of Public Health* 27(3):228-234, 1999.
- Bodenheimer, T., Wagner, E.H., and Grembach, K.: Improving Primary Care for Patients with Chronic Illness. *Journal of the American Medical Association* 288(14):1775-1779, 2002.
- Bogardus, S.T., Towle, V., Williams, C.S., et al.: What Does the Medical Record Reveal about Functional Status? A Comparison of Medical Record and Interview Data. *Journal of General Internal Medicine* 16(11):728-736, 2001.
- Boult, C., Boult, L.B., Morishita, L., et al.: A Randomized Clinical Trial of Outpatient Geriatric Evaluation and Management. *Journal of American Geriatric Society* 49(4): 351-359, 2001.
- Carpenter, G.I., Ikegami, N., Ljunggren, G., et al.: RUG-III and Resource Allocation: Comparing the Relationship of Direct Care Time with Patient Characteristics in Five Countries. *Ageing* 26:(Suppl 2)61-65, 1997.
- Centers for Medicare & Medicaid Services: Nursing Home Compare. Internet address: <http://www.medicare.gov/NHCompare/Home.asp>. (Accessed 2003a.)
- Centers for Medicare & Medicaid Services: Home Health Compare. Internet address: <http://www.medicare.gov/HHCompare/Home.asp>. (Accessed 2003b.)
- Chatterji, P., Burstein, N.R., Kidder, D., and White, A.J.: *Evaluation of the Program for the All-Inclusive Care of the Elderly (PACE)*. Abt Associates. Cambridge, MA. 1998.
- Clark, F., Azen, S.P., Zemke, et al.: Occupational Therapy for Independent-Living Older Adults. A Randomized Controlled Trial. *Journal of the American Medical Association* 278(16):1321-1326, 1997.
- Cohen, H.J., Feussner, J.R., Weinberger, M., et al.: A Controlled Trial of Inpatient and Outpatient Geriatric Evaluation and Management. *New England Journal of Medicine* 346(12):905-912, 2002.
- Eng, C., Pedulla, J., Eleazer, G.P., et al.: Program for All-Inclusive Care of the Elderly (PACE): An Innovative Model of Integrated Geriatric Care and Financing. *Journal of the American Geriatrics Society* 45(2):223-232, 1997.
- Fiedler, R.C., Granger, C.V., and Russel, C.F.: Uniform Data System for Medical Rehabilitation. *American Journal of Physical and Medical Rehabilitation* 77(5):444-450, September/October 1998.
- Fried, T.R., Bradley, E.H., Williams, C.S., and Tinetti, M.E.: Functional Disability and Health Care Expenditures for Older Persons. *Archives of Internal Medicine* 161(21):2602-2607, 2001.

- Fries, B., and Schnieder, D.: Refining a Case-Mix Measure for Nursing Homes: Resource Utilization Groups (RUG-III). *Medical Care* 32(7):668-685, 1995.
- Gill, T.M., Baker, D.I., Gottschalk, M., et al.: A Program to Prevent Functional Decline in Physically Frail, Elderly Persons Who Live at Home. *New England Journal of Medicine* 347(14):1068-1074, 2002.
- Granger, C.V., Hamilton, B.B., Keith, R.A., et al.: Advances in Functional Assessment for Medical Rehabilitation. *Topics in Geriatric Rehabilitation* 1:59, 1986.
- Harris, Y., and Clauser, S.: Achieving Improvement Through Nursing Home Quality Measurement. *Health Care Financing Review* 23(4):5-18, Summer 2002.
- Hawes, C., Morris, J.N., Phillips, C.D., et al.: Reliability Estimates for the Minimum Data Set for Nursing Home Resident Assessment Care Screening. *The Gerontologist* 35(2):172-178, April 1995.
- Health Care Financing Administration: *Social Health Maintenance Organizations: Transition Into Medicare+Choice: Report to Congress*. Baltimore, MD. February 2001.
- Health Services Advisory Group. *Using the Medicare Health Outcomes Survey To Manage Depression In Primary Care: A Guide for Medicare + Choice Organizations*. Report to the Centers for Medicare & Medicaid Services. August 15, 2002.
- Hirdes, J.P., Fries, B.E., Morris, J.N., et al.: Integrated Healthy Information Systems on the RAI/MDS Series of Instruments. *Health Care Management Forum* 12(4):30-40, 1999.
- Inouye, S.K., Bogardus, S.T. Jr., Baker, et al.: The Hospital Elder Life Program: A Model of Care to Prevent Cognitive and Functional Decline in Older Hospitalized Patients. Hospital Elder Life Program. *Journal of the American Geriatrics Society* 48(12):1697-1706, 2000.
- Institute of Medicine Committee on Quality of Health Care in America: *Crossing the Quality Chasm: A New Health System for the 21st Century*. National Academy Press. Washington, DC. 2001.
- Jencks, S.F., Cuerdon, T., Burwen, D.R., et al.: Quality of Medical Care Delivered to Medicare Beneficiaries: A Profile at State and National Levels. *Journal of the American Medical Association* 284(13):1670-1676, 2000.
- Johnson, M., Holtaus, D., Harvell, J., et al.: *Medicare Post-Acute Care: Quality Measurement. Final Report*. Center on Aging Research Section, University of Colorado Health Sciences Center, Denver Colorado. Contract #HHS-97-0010. Office of the Assistant Secretary for Planning and Evaluation, Department of Health and Human Services. March 29, 2001.
- Kane, R.L., Kane, R.A., Finch, M., et al.: S/MHOs, the Second Generation: Building on the Experience of the First Social Health Maintenance Organization Demonstration. *Journal of the American Geriatrics Society* 45(1):101-107, 1997.
- Master, R.J., and Eng, C.: Integrating Acute and Long Term Care for High Cost Populations: An In-depth Look into Two Successful Models and the Impediments to their Experience. *Health Affairs* 20(6):161-172, November/December 2001.
- Morris, J.N., Hawes, C., Fries, B.E., et al.: Designing the National Resident Assessment Instrument for Nursing Homes. *The Gerontologist* 30(3):293-307, June 1990.
- National Committee on Vital and Health Statistics: *Classifying and Reporting Functional Status*. National Center for Health Statistics. Hyattsville, MD. 2001.
- Naylor, M.D., Brooten, D., Campbell, R., et al.: Comprehensive Discharge Planning and Home Follow-Up of Hospitalized Elders: A Randomized Clinical Trial. *Journal of the American Medical Association* 281(7):613-620, 1999.
- Newcomer, R., Harrington, C., and Kane, R.: Implementing the Second Generation Social Health Maintenance Organization. *Journal of the American Geriatrics Society* 48(7):829-834, 2000.
- Newcomer, R., Harrington, C., Lawrence, C., and Kane, R.: *Implementation of the Social Health Maintenance Organization: A Case Study of the Health Plan of Nevada: 1996-1999*. Report to the Health Care Financing Administration. University of California, San Francisco. July 1999.
- Phillips, B.R., Brown, R.S., and Schore, J.L.: *Case Mix Analysis Using Demonstration Data: Home Health Prospective Payment Demonstration*. Mathematica Policy Research Inc. Princeton, NJ. December 1992.
- Reuben, D.B.: Organizational Interventions to Improve Health Outcomes of Older Persons. *Medical Care* 40(9):16-428, 2002.

- Shaughnessey, P.W., Hittle, D.F., Crisler, K.S., and Powell, M.C.: *OASIS and Outcome-Based Quality Improvement in Home Health Care. Volume 2: Research and Technical Overview*. Center for Health Services Research. University of Colorado. Denver CO. November, 2001.
- Shaughnessey, P.W., Crisler, K. and Schlenker, R.: *Medicare's Oasis: Standardized Outcome and Assessment Information Set for Home Health Care; OASIS-B*. Center for Health Services and Policy Research. Denver, CO. 1997.
- Shaughnessey, P.W., Hittle, D.F., Crisler, K.S., et al.: Findings from Two Demonstration Trials of Outcome-Based Quality Improvement. *Journal of the American Geriatrics Society* 50(8): 1354-1364, 2002.
- Shekelle, P.G., Maclean, C.H., Morton, S.C., Wenger, N.S.: ACOVE Quality Indicators. *Annals of Internal Medicine* 135(8 Pt. 2): 653-667, 2001.
- Shekelle, P.G., Tucker, J., Maglione, M., and Morton, S.: *Health Risk Appraisals and Medicare. Evidence Report and Evidence-Based Recommendations from the Southern California Evidence-Based Practice Center*. RAND. Report to the Centers for Medicare & Medicaid. Contract No. 500-98-0281. June, 2001.
- Stevic, M., Haffer, S.C., Cooper, J.K., et al.: How Healthy Are Our Seniors? Baseline Results from the Medicare Health Outcomes Survey. *Journal of Clinical Outcomes Management* 7(8):39-42, 2000.
- Tinetti, M.E., Baker D., Gallo W.T., et al.: Evaluation of Restorative Care vs. Usual Care for Older Adults Receiving an Acute Episode of Home Care. *Journal of the American Medical Association* 287(16):2098-2105, 2002.
- White, A.J., Abel, Y., and Kidder, D.: *Evaluation of the Program for the All-Inclusive Care for the Elderly Demonstration: A Comparison of the PACE Capitation Rates to Projected Costs in the First Year of Enrollment*. Final Report Prepared for the Health Care Financing Administration. Contract No. 500-01-0027, October 27, 2000.
- Wieland, D., Lamb, V.L., Sutton, S.R., et al.: Hospitalization in the Program for All-Inclusive Care for the Elderly (PACE): Rates, Concomitants, and Predictors. *Journal of the American Geriatrics Society* 48(11):1373-1380, 2000.
- World Health Organization: *International Classification of Functioning, Disability, and Health*. World Health Organization. Geneva, Switzerland. 2001.
- Zimmerman, D.R., Karon, S.L., Arby, G., et al.: Development and Testing of Nursing Home Quality Indicators. *Health Care Financing Review* 16(4):107-127, Summer 1995.
- Zimmerman, Y., Pemberton, D., and Thomas, L.: *Evaluation of the Program for the All-Inclusive Care of the Elderly (PACE) Demonstration: Factors Contributing to Care Management and Decision-making in the PACE Model*. Final report to the Health Care Financing Administration. HCFA Contract No. 500-96-0003/I04. April 10, 1998.

Reprint Requests: Steven B. Clauser, Ph.D., National Cancer Institute, Division of Cancer Control and Population Sciences, 6130 Executive Boulevard, MSC 7344, EPN Room 4005, Bethesda, MD 20892-7344. E-mail: clausers@mail.nih.gov