Published in final edited form as:

Arch Phys Med Rehabil. 2007 December ; 88(12): 1737–1739. doi:10.1016/j.apmr.2007.09.025.

Perspectives on the State-of-the-Science in Rehabilitation Medicine and Its Implications for Medicare Postacute Care Policies

Barbara Gage, PhD, Margaret Stineman, MD, Anne Deutsch, PhD, Trudy Mallinson, PhD, Allen Heinemann, PhD, Shulamit Bernard, PhD, and Roberta Constantine, PhD

Program on Aging, Disability, and Long Term Care and Program on Quality and Outcomes, RTI International, Waltham, MA (Gage, Bernard); University of Pennsylvania, Philadelphia, PA (Stineman); Rehabilitation Institute of Chicago, Chicago, IL (Deutsch, Mallinson, Heinemann); and RTI International, Research Triangle Park, NC (Constantine).

Abstract

Better measurement of the case-mix complexity of patients receiving rehabilitation services is critical to understanding variations in the outcomes achieved by patients treated in different postacute care (PAC) settings. The Medicare program recognized this issue and is undertaking a major initiative to develop a new patient-assessment instrument that would standardize case-mix measurement in inpatient rehabilitation facilities, long-term care hospitals, skilled nursing facilities, and home health agencies. The new instrument, called the Continuity Assessment Record and Evaluation Tool, builds on the scientific advances in measurement to develop standard measures of medical acuity, functional status, cognitive impairment, and social support related to resource need, outcomes, and continuity of care for use in all PAC settings.

Keywords

Health care reform; Medicare; Prospective payment system; Rehabilitation; Treatment outcomes

THE ISSUES DISCUSSED at the State-of-the-Science Symposium held in February 2007 and in the November 2007 issue of *Archives* are key to the development of sound health policy. We lack an instrument that allows us to compare patient outcomes across postacute care (PAC) settings in an evidence-based manner. This instrument is needed to measure the relative value of rehabilitation and medical services delivered by PAC providers, including inpatient rehabilitation facilities (IRFs), skilled nursing facilities (SNFs), long-term care hospitals (LTCHs), home health agencies (HHAs), and outpatient settings. As the differences in staffing and care practices become blurred across the different types of

© 2007 by the American Congress of Rehabilitation Medicine and the American Academy of Physical Medicine and Rehabilitation
Correspondence to Barbara Gage, PhD, Program on Aging, Disability, and Long Term Care and Program on Quality and Outcomes, RTI International, 411 Waverley Oaks Rd, Waltham, MA 02452, bgage@rti.org..

Presented in part to the State-of-the-Science Symposium on Post-Acute Rehabilitation, February 12, 2007, Arlington, VA.

No commercial party having a direct financial interest in the results of the research supporting this article has or will confer a benefit upon the author(s) or upon any organization with which the author(s) is/are associated.

settings, it becomes difficult to argue that one level of care is better than another without scientific evidence regarding differences in patient outcomes.

This symposium was important because it brought together speakers from different areas of practice and research to address these issues in the rehabilitation field. The Medicare program is charged with ensuring that the services it pays for are the most appropriate for each patient.¹ As a steward of taxpayer money, the Medicare program is also responsible for evaluating which services are cost-effective. Previous research has focused on the relative cost of similar patients treated in different types of settings²⁻⁴ and the relative outcomes of different treatment patterns,^{2,5-9} but these studies were limited by their ability to measure and compare patient acuity. In addition, Lin et al¹⁰ showed that PAC utilization patterns shifted when payment reforms were implemented in home health and SNFs, strongly suggesting substitutability between PAC settings.

To date, efforts to measure functional status and medical acuity have used setting-specific items. Investigators are just beginning to develop methods for calibrating functional status by using the different items in the Medicare program¹¹ and in the Veterans Health Administration.¹² Furthermore, medical acuity has consistently been shown to be an important factor affecting rehabilitation outcomes, yet measurement across settings has been limited to diagnosis and comorbidities. Clinicians in some settings collect data on specific medical conditions or treatments that measure acuity variations, but, like the FIM instrument, these measures are setting specific.

In rehabilitation medicine, one of the most useful tools has been the FIM instrument, which was developed in the 1980s as a standard measure of the type and amount of assistance required for a person with disabilities to perform 18 basic life activities.¹³ Its creation was sponsored or endorsed by 12 national organizations with interests in the well-being of people with disabilities. FIM data have been used to predict resource use and outcomes and to develop a variety of quality monitoring and payment system approaches. The prediction models were intended to balance incentives to contain costs with those to enhance patients' functional recoveries through the inpatient rehabilitation process.¹⁴ Although the FIM data collected in IRFs are useful for examining changes in functional outcomes related to inpatient care, they are not widely used in other settings, and, therefore, findings regarding differences in patient outcomes have been primarily limited to analysis of smaller study samples as discussed at the symposium.

The Deficit Reduction Act of 2005 directed the Centers for Medicare & Medicaid Services (CMS) to address these short-comings by developing an instrument that would provide consistent and accurate measures across PAC settings. This instrument will be tested in a payment reform demonstration that examines factors affecting costs and outcomes in 4 PAC settings (IRFs, LTCHs, SNFs, HHAs) as well as across an episode of care. The goal is to develop recommendations for payment reform that will provide consistent incentives across a patient's episode of care.

This work was divided into 3 contracts. Two of those contracts were awarded to RTI International and its team, including members from the Rehabilitation Institute of Chicago,

Evanston Northwestern Hospital, Northwestern University, the University of Pennsylvania, the Visiting Nurse Services of New York, the RAND Corporation, and Case Western Reserve University. The first RTI contract is to develop a standardized assessment tool for use at acute hospital discharge and at admission to and discharge from the 4 PAC settings. RTI was charged with developing a tool that builds on the existing measurement science, addresses issues associated with using the current items across other settings, and incorporates contemporary psychometric approaches and information technology. This approach incorporates item-response theory and allows CMS to use computerized adaptive testing in future versions of the CMS reporting tools. The second contract is to conduct a payment reform demonstration that will collect assessment and cost and resource use data from providers in 10 nationally representative markets. These data will be used to develop recommendations for improving the consistency of incentives across the Medicare PAC payment systems. CMS will report to the U.S. Congress on the results of this demonstration and its recommendations. The third contract is to develop a Web-based data system for providers to submit assessment data to CMS.

The new patient-assessment instrument, called the Continuity Assessment Record and Evaluation (CARE) tool, was developed under the first contract. It is built on contemporary measurement approaches and recent work examining the clinical and social domains common to PAC assessments and includes items considered important to improving continuity of care across settings.¹⁵ RTI was charged with reviewing current assessment tools, both the federally mandated tools, such as the Inpatient Rehabilitation Facility–Patient Assessment Instrument, the FIM instrument, the Minimum Data Set, and the Outcome and Assessment Information Set, and other tools used in these and other settings, such as acute care and LTCHs. Common concepts or items included in the assessment tools led to the identification of items that affect resource, utilization, or outcomes. These domains were used to form clinical workgroups that focused on identifying medical, functional, cognitive, and social support items. Each workgroup included researchers or clinicians concerned with 1 of the 5 settings and were charged with considering the items or measures most appropriate for their population, given past research and current practices.

Recommendations from the clinical workgroup were presented to 2 different technical expert panels. The first panel of clinicians represented providers, associations, and accrediting bodies from each level of care. The technical expert panel was charged with examining the proposed domains and the items within each domain and commenting on the usefulness of these items when examining resource needs, utilization, or outcomes of their respective populations. Their comments were incorporated, and the revised instrument was presented to the second technical expert panel, which was comprised of researchers in each of these fields. Members of the second technical expert panels were asked to review the items from each of their respective backgrounds and to recommend changes that would enable CMS to measure factors that predict resource, utilization, or outcomes.

Two pilot tests were conducted in the Chicago area. First, an early version of the tool (based on the first technical expert panel's comments) was evaluated in 2 acute hospitals and 1 LTCH to test the operational aspects of using a standardized tool in settings that currently use a variety of assessment tools. The results were used to examine the feasibility of

applying the proposed instrument in these settings. In the first pilot test, efforts were aimed at identifying data-collection processes that would be consistent with current practices in these settings and meet the goal of systematic data collection. The second pilot test was conducted in all 5 types of settings: acute care hospitals, LTCHs, IRFs, SNFs, and HHAs. Similarities with current assessment methods were considered to minimize the datacollection burden. In addition to exploring appropriateness of the items, the pilot test also evaluated Web-based data submission. A 1-day training program was provided to the assessors as part of the pilot tests. During the pilot tests, assessors were invited to debriefing sessions that focused on both the content and operations of the pilot test to provide CMS feedback on the applicability of each item to the respective populations. The results of the pilot testing will be used to test the reliability of the items and to develop measures within the domains.

The results of this work will be used in the Post Acute Care Payment Reform Demonstration (PAC PRD), which will be conducted between January 2008 and July 2009. During the demonstration, data will be collected from 150 providers across 10 geographic regions. In addition to the CARE tool, providers will submit data on resource use in each of the participating provider units. The cost and resource use data will document the types of professionals and ancillary resources associated with treating patients in PAC settings. This work will not measure differences in therapy applied as much as differences in the types of therapists and other staff working with these patients. It is not intended to develop practice guidelines but instead to measure resources associated with different patient outcomes.

In addition to receiving input from members of the technical expert panels and the clinicians involved in the pilot testing, CMS held 2 open-door forums (December 2006, July 2007) to invite comments from providers, practitioners, beneficiaries, and others. During the fall of 2007, the RTI team will participate in small group meetings to gain additional input on the items, their use with the different populations, and input regarding the development of various measures, including functional status.

The work of the PAC PRD builds on the same goals as the State-of-the-Science Symposium. It brings together stakeholders, including policy makers, from each type of rehabilitation setting to discuss measurement of resources, utilization, and outcomes for Medicare beneficiaries requiring posthospital medical and rehabilitation services. The current work would not have been possible without the work of many others, some of whom presented at this important meeting.

The PAC PRD's intent is to lead the effort of moving to the next level of conceptualization, which is studying patients' costs and outcomes as they truly are across the set of services provided to address their medical and rehabilitative needs. We hope to receive continued input as we move forward into the demonstration phase of this effort, including comments on the CARE tool, which was published in the July 2007 *Federal Register*,¹⁶ and the cost and resource use tool, which was published in the August 2007 *Federal Register*.¹⁷ CMS desires an inclusive and productive effort that will further Medicare policy and build on scientific knowledge. This symposium provided a good starting point for contributing to these efforts.

References

1. Cotterill PG, Gage BJ. Overview: Medicare post-acute care since the Balanced Budget Act of 1997. *Health Care Financ Rev.* 2002; 24:1–6. [PubMed: 12690691]
2. Gage, B.; Pilkauskas, N.; Dalton, K., et al. Phase II Final report. RTI; Waltham: 2007. Long-term care hospital (LTCH) payment system monitoring and evaluation. Contract no. 500-00-0024
3. Medicare Payment Advisory Commission. Report to the Congress: new approaches in Medicare. MedPAC; Washington DC: 2004.
4. Gage B, Moon M, Chi S. State-level variation in Medicare spending. *Health Care Financ Rev.* 1999; 21:85–98. [PubMed: 11481788]
5. Deutsch A, Granger CV, Heinemann AW, et al. Poststroke rehabilitation: outcomes and reimbursement of inpatient rehabilitation facilities and subacute rehabilitation programs. *Stroke.* 2006; 37:1477–82. [PubMed: 16627797]
6. Deutsch A, Granger CV, Fiedler RC, et al. Outcomes and reimbursement of inpatient rehabilitation facilities and subacute rehabilitation programs for Medicare beneficiaries with hip fracture. *Med Care.* 2005; 43:892–901. [PubMed: 16116354]
7. Gage B. Impact of the BBA on post-acute utilization. *Health Care Financ Rev.* 1999; 20:103–26. [PubMed: 11482117]
8. Kramer AM, Steiner JF, Schlenker RE, et al. Outcomes and costs after hip fracture and stroke. A comparison of rehabilitation settings. *JAMA.* 1997; 277:396–404.
9. Kane RL, Chen Q, Blewett LA, Sangl J. Do rehabilitative nursing homes improve the outcomes of care? *J Am Geriatr Soc.* 1996; 44:545–54. [PubMed: 8617903]
10. Lin WC, Kane RL, Mehr DR, Madsen RW, Petroski GF. Changes in the use of postacute care during the initial Medicare payment reforms. *Health Serv Res.* 2006; 41(4 Pt 1):1338–56. [PubMed: 16899011]
11. Mallinson, T. Equating measures of functional status across postacute care settings. Presented to: State-of-the-science symposium on post-acute rehabilitation: Setting a research agenda and developing an evidence base for practice and public policy; Crystal City (VA). 2007 Feb 12;
12. Velozo C, Byers K, Wang Y, Joseph B. Translating measures across the continuum of care: using Rasch analysis to create a crosswalk between the functional independence measure and the minimum data set. *J Rehabil Res Dev.* 2007; 44:467–78. [PubMed: 18247243]
13. Granger CV, Hamilton BB, Keith RA, Zielezny M, Sherwin F. Advances in functional assessment for medical rehabilitation. *Top Geriatr Rehabil.* 1986; 1:59–74.
14. Stineman MG, Escarce JJ, Goin JE, Hamilton BB, Granger CB, Williams SV. A case-mix classification system for medical rehabilitation. *Med Care.* 1994; 32:366–79. [PubMed: 8139301]
15. Coleman, E.; Holthaus, D.; Kramer, A., et al. Final report. Univ Colorado and Health Sciences Center; Denver: 2006. Uniform patient assessment for post-acute care. Contract no. IFMC 500-02IA03
16. Centers for Medicare & Medicaid Services. Agency information collection activities: proposed collection. Jul 27. 2007 comment request. 72 Federal Register 41328
17. Centers for Medicare & Medicaid Services. Agency information collection activities: proposed collection. Aug 24. 2007 comment request. 72 Federal Register 48645