Continuum of Care

Measuring Medical Rehabilitation Outcomes

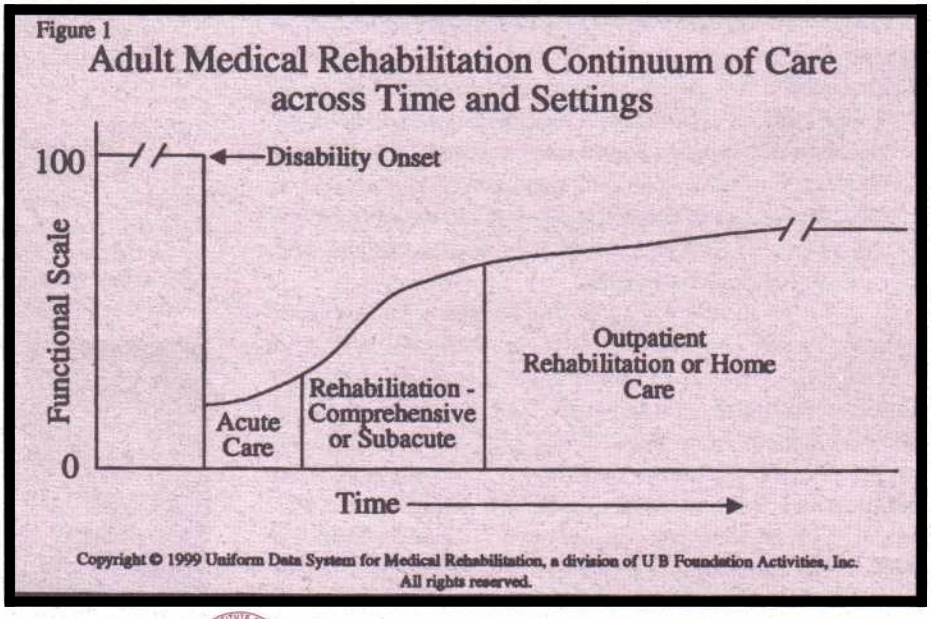
Carl V. Granger, M.D.

Health care is delivered in an array of settings. Patients start in acute care hospitals then may further recuperate through a continuum of care. This is especially true for patients requiring medical rehabilitation services because of an acquired disability such as stroke, spinal cord injury, or orthopedic surgery. The increased quality of medical technology stabilizes more patients after medical crises. But they may be left with deficits in activities of daily living, such as walking, eating, dressing, or communicating. Restorative patients have the potential to improve and, therefore, may benefit from post-acute therapies to regain lost function. The goal is for these patients to attain a level of independence that enables them to return to their former lives. Under the direction of a rehabilitation medicine physician, they may receive physical, occupational, vocational, speech, and recreation therapies. The therapeutic settings that comprise the continuum of care are changing dramatically. Restorative patients may move from acute care hospitalization to comprehensive medical rehabilitation units within hospitals or to freestanding rehabilitation hospitals. Or they may move to subacute care in a rehabilitation facility, hospital, or skilled nursing facility. Or they may receive outpatient care, or home care, or adult day care. Restorative patients take different paths to recovery. All services, regardless of setting, should be interrelated and coordinated. These services and settings should be seamless, with no overlaps or gaps. This is the ideal of a continuum of care. (See Figure 1.)

To realize this ideal, we need the ability to measure and manage outcomes and predict which types of patients will benefit most in which settings, at which times during their illness, the duration of services, and costs. Managed care capitation is forcing health care institutions to learn how to achieve cost-effective outcomes. These outcomes are determined by measuring patient improvement, length of stay, patient satisfaction, and costs.

Measuring medical rehabilitation outcomes has been the mission since 1987 of the Uniform Data System for Medical Rehabilitation (UDSMR), located in the School of Medicine and Biomedical Sciences at the State University of New York at Buffalo. UDSMR has developed a family of outcomes measurement tools that the rehabilitation industry uses on a daily basis. Measuring outcomes across the continuum of care — time and settings — is a major UDSMR goal. UDSMR intends to maintain beginning-to-end care information on patients, which will enhance predictability of outcomes along the various rehabilitation paths. All UDSMR instruments are modeled on the Functional Independence Measure (FIM instrument) developed by UDSMR, and used internationally in medical rehabilitation and subacute care settings. The FIM instrument is an 18-item, seven-level scale assessing the functional status of patients with disability. Trained staff administers the instrument. Patients are observed before, during, and after their therapy regimens and rated, performing 18 motor and cognitive activities of daily living. Ratings for each item range from total assistance needed, represented by one, to complete inde-

Figure 1



REHAB MEASUREMENT

Figure 2

FIM™ instrument

FIM items

Motor Items

Self-care
A. Eating
B. Grooming
C. Bathing
D. Dressing - Upper Body
E. Dressing - Lower Body
F. Toileting

Sphincter Control
G. Bladder Management
H. Bowel Management

Transfers
I. Bed/Chair/Wheelchair
J. Toilet
K. Tub/Shower

Locomotion
L. Walk/Wheelchair
M. Stairs

Cognitive Items

Communication
N. Comprehension
O. Expression

Social Cognition
P. Social Interaction
Q. Problem Solving
R. Memory

FIM levels

No Helper
7 Complete Independence (Timely, Safely)
6 Modified Independence (Device)

Helper
Modified Dependence
5 Supervision (Subject = 100%)
4 Minimal Assist (Subject = 75%+)
3 Moderate Assist (Subject = 50%+)
Complete Dependence
2 Maximal Assist (Subject = 25%+)
1 Total Assist (Subject = less than 25%)

pendence, represented by seven. Ratings in between represent levels of assistance needed by the patient, provided by a helper or assistive devices. (See **Figure 2.**) The goal is to bring patients to independence, so that the burden of care on family and society is minimized. Higher ratings represent less severity of disability and less burden of care. Lower ratings represent more severity and more burden of care. Patients are rated at admission to a rehabilitation program, during rehabilitation, at discharge, and follow-up. Functional improvement is analyzed in the context of time spent in each setting, resources expended, patients' ages, and classification and severity of impairments (called Function Related Groups, or FRGs, developed with the University of Pennsylvania). FIM-FRGs make predictions about time and resource utilization. Subscribers to The FIM SystemSM send data to UDSMR and receive reports on their program and an aggregate comparison report that includes other programs in the region and around the country.

The Alpha FIM instrument, a six-item abbreviated version of the FIM instrument, measures a patient's functional status during the first 72 hours of acute care hospitalization. Its greatest value is in triage: determining the patient's next appropriate care setting and pinpointing the earliest opportunity for entering that setting. The Alpha FIM instrument measures eating, grooming, bowel management, toilet transfer, expression, and memory.

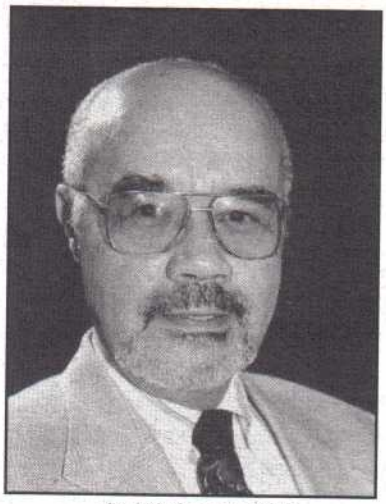
The LIFEware System℠ measures the functional status of individuals who receive outpatient rehabilitation services. Two major impairment groups are addressed: musculoskeletal conditions and neurological conditions. Outpatient status is assessed in the domains of physical functioning, affective well-being, cognitive functioning, and pain experience. Some FIM instrument items appear in the LIFEware survey instrument, but unlike the FIM instrument, which is administered by trained clinicians, LIFEware is usually self-administered in the outpatient setting. LIFEware is Internet-driven. Continuum of Care Reports are available to LIFEware subscribers, linking U.S.-based inpatients and outpatients by their social security numbers, showing number of outpatient visits for any series of treatments. Though designed for adults, LIFEware may also be useful for children seven years and older. However, organizations serving pediatric populations are better served by UDSMR's pediatric instrument, the WeeFIM™ instrument. The WeeFIM System℠ assesses children and young adults, 6 months to 21 years old, in three domains: self-care, mobility, and cognition, and is adjusted for age. It is useful for children with acquired disability, congenital disability, and developmental delay. Like the FIM System, the WeeFIM System has a national database. For children the setting continuum is different because most pediatric disabilities are congenital, so children with disabilities seldom begin rehabilitation in an acute care hospital.

The HomeFIM instrument measures the functional status of patients receiving rehabilitation intervention in their homes. This system contains items from the FIM and LIFEware instruments that measure function levels, units of service, and patient satisfaction.

The FIM System, HomeFIM, and the WeeFIM System are used for accreditation purposes with the Joint Commission on Accreditation of Healthcare Organizations.

In addition to serving its subscribers with data analysis and reporting, UDSMR maintains a national data repository for research purposes of three million case records from 1,400 facilities around the world, 1,200 of which are in the United States. There is no recognized prototype for a continuum of services system in medical rehabilitation. UDSMR research is synthesizing clinical and administrative knowledge. For the restorative patient, this could result in better rehabilitation care,

a quicker return to the community, and improved quality of daily living. An important feature in feedback reporting reflecting a patient is status at each assessment encounter and cumulative scores on a quarterly basis. An ongoing database enables periodic exploration for factors that contribute to best practices and predict the likelihood of future events. UDSMR offers medical rehabilitation measurement instruments from youth to old age, across the continuum of care. We are concerned with methods that are feasible in multiple clinical settings, which provide relevant feedback to providers, and which are compatible with principles of measurement that support meaningful interpretation of data.



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Carl V. Granger, M.D. is Professor and Chairman of the Department of Rehabilitation Medicine and Director of the Center for Functional Assessment Research at the State University of New York at Buffalo. Dr. Granger is a graduate of Dartmouth College and New York University School of Medicine. He is certified in Physical Medicine and Rehabilitation and Electrodiagnostic Medicine.

Dr. Granger is past president of the American Academy of Physical Medicine and Rehabilitation and of the International Federation of Physical Medicine and Rehabilitation. He served on the Advisory Committee of the National Center for Medical Rehabilitation Research, NICHD, NIH.

Dr. Granger has over 150 publications. His interests and research are in the development and use of measures of disablement and quality of daily living. This includes physical, mental/emotional, and social functioning in order to evaluate outcomes of medical rehabilitation. He is one of the developers of the Functional Independence Measure (FIM) instrument and the Uniform Data System for Medical Rehabilitation (UDSMR).

Dr. Granger was awarded the Krusen Award from the Academy of Physical Medicine and Rehabilitation and was its 30th Annual Walter J. Zeiter Lecturer. He received the Elizabeth and Sidney Licht Award for Excellence in Scientific Writing and is Fellow (Honoris Causa) in the Australian Faculty of Rehabilitation Medicine of the Royal Australian College of Physicians. Dr. Granger is a member of the executive committee of the RRTC on Functional Assessment and Evaluation of Rehabilitation Outcomes. He is active with Habitat for Humanity. He can be reached at granger@acsu.buffalo.edu.