Relationship Between Functional Level and Cost of Care of Nursing Home Residents as Measured by the Functional Component of the Minimum Data Set and the Breines Functional Assessment Scale

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RELATIONSHIP BETWEEN FUNCTIONAL LEVEL AND COST OF CARE OF NURSING HOME RESIDENTS AS MEASURED BY THE FUNCTIONAL COMPONENT OF THE MINIMUM DATA SET AND THE BREINES FUNCTIONAL ASSESSMENT SCALE

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ABSTRACT

Statement of the Problem: No simple instrument exits to measure function and estimate cost of care in a nursing home population, in order to assess the effectiveness of rehabilitation and nursing, and to contribute to cost containment in nursing homes. This study attempts to determine if the Breines Functional Assessment Scale, a simple scale, can also be used to estimate and monitor cost of care.

Methods: In a retrospective study, the charts of 103 Medicare-certified patients, admitted to a long term care (LTC) facility subacute unit for rehabilitation services, were reviewed. The functional level of each subject was obtained form the Minimum Data Set (MDS) entrees of days 5, 14, 30, and 60. At each interval, the Resource Utilization Group (RUG) category under the Prospective Payment System (PPS) was computed. RUG levels were assigned numerical dollar values representing the actual per diem reimbursement to the facility, based on the cost of services to the Medicare program. At days 5, 14, 30, and 60 days, each subject was also assigned a level on the Functional Assessment Scale (FAS), a ten-level ordinal scale with each level determined by one or more units of skill. For each subject, the FAS levels and reimbursement dollar amounts for day 5, 14, 30, and 60 were examined for statistical correlations using SPSS version 9.0. The Spearman Rank Correlation Coefficient (nonparametric test) was used to examine the relationship between FAS level as the independent variable X (functional performance), and the RUG category as the dependent variable Y (from which the cost
of services is derived). A linear regression model was used to predict cost of care outcomes. A scatter plot was used to examine the relationship between the FAS, or predictor variable, and the reimbursement cost derived from the RUG category.

Results: FAS levels at Day 5, Day 14, and Day 30 were closely related with correlations ranging from .82 to .91 (p < .01). Reimbursement at Day 5, Day 14, and Day 30 were also closely related with correlations ranging from .67 to .91 (p < .01). There was an inverse relationship between change in FAS level from Day 5 to Day 14, and patient's change in reimbursement from Day 5 to Day 14 (r = -.75, p < .01). Also, there was an inverse relationship between the patient's change in FAS level and change in reimbursement from Day 14 to Day 30 (r = -.68, p < .01). The scatter plot illustrated an inverse relationship of reimbursement and FAS level by reimbursement at Days 5, 14, and 30, such that higher functional levels were associated with lower reimbursement. The regression line displayed a negative relationship.

Conclusion: There was a significant inverse relationship between higher FAS levels and lower reimbursement. The significant correlation between FAS level and cost of care of nursing home residents provides further evidence of the construct validity of the FAS, and supports the benefit of rehabilitative therapy, which increased functional performance, resulting in decreased cost of care. The Breines FAS, a simple functional assessment tool, can be used to predict the cost of care of nursing home residents, and enable nursing, therapy, and administrative staffs to allocate resources more effectively on a daily basis.
Chapter I

INTRODUCTION

Overview

In spite of nursing and other health staff shortages, an increased number of patients with multiple diseases, unpredictable regulatory changes, and limited reimbursement, nursing home professionals continue to serve the chronically ill and functionally disabled. Long term care is a labor-intensive industry, with services provided around the clock by a limited number of personnel. The population served has recently become better informed about health services resulting in a greater demand for quality care. Long term care facilities depend on insufficient federal and state funding and are subject to frequently changing federal and state regulations (Centers for Medicare and Medicaid Services, 2003). Under these circumstances, cost containment is essential.

During the last decade, the economic evaluation of health care interventions has become increasingly important due to rising costs, as well as limited human and financial resources. While many nursing homes declared bankruptcy, others consolidated or eliminated services that were not cost effective (Centers for Medicare and Medicaid Services, 2003).

In the quest for new ways to control cost while maintaining quality of care, an effective predictor of the cost of care is warranted. Breines (1983), an occupational
therapist, created the Functional Assessment Scale (FAS) to examine whether the
correlation of occupational therapy services would improve patient functional abilities.
Breines anticipated that this tool would be used not only to identify measurable
functional improvements, but to demonstrate reductions in health care cost. To date,
the effectiveness of the FAS in measuring functional improvements has been reported
(Breines, 1988). Hence, this study was initiated to examine the relationship between
functional level, as measured by the FAS, and cost of care of nursing home residents.
**Background of the Problem**

**Understaffing**

In a recent book, *Off With Their Heads, Traitors, Crooks and Obstructionists in American Politics, Media & Business*, political analyst and consultant Dick Morris (2003) devoted one of nine chapters to the patterns of understaffing and abuse in the nursing home industry. He noted, “Even when nursing homes are not abusive they are typically understaffed. Most homes are operating at well below the minimum staff level at which good care is possible” (Morris, 2003, p. 266). Understaffing is a problem that has also been confirmed in a recent report by the American Health Care Association (2003, p.12).

Some of the understaffing in nursing homes may be due to the deliberate trimming of costs. Whether this is to maximize profits or to conform to limited reimbursement, nursing homes are hiring fewer nurses. In addition, there is a real shortage of qualified nurses available to hire (American Health Care Association, 2003). For example, more RNs with good critical thinking skills (e.g., understanding the ramifications of abnormal laboratory values and taking appropriate intervention to ensure a positive outcome are needed), yet the number of nurses entering the field is decreasing (U.S. Department of Health and Human Services, 2002, p.6). Recruiting for nursing positions is very competitive. Job fairs, sign-up bonuses, and finder payments are a common necessity.
Work Environment

Understaffing problems in long term care are due to the work environment, which has become increasingly difficult. When the families of nursing home residents read sensational disclosures in books, watch sensational exposés on prime-time television, or read of nursing home deficiencies and bankruptcies in the press, their eroded confidence leads them to suspicious and demanding behaviors toward the nursing home staff and administration. Frequently, their unrealistic expectations of the nursing staff hinder appropriate nursing care. For example, 24 hour care for the resident with nurses at the bedside at all times is unrealistic. These relatives may file a complaint with the state regulatory agency (New Jersey Department of Health and Senior Services, 2004). Consequently, state surveyors become more aggressive in their search for deficiencies in facility annual surveys, necessitating extensive documentation. This may include detailed nursing notes, or interdisciplinary progress notes, of each patient’s daily status provided by nursing care or therapy. Dedicated nurses and therapists, who are already overworked in the delivery of care, often work overtime in order to complete the essential documentation.

Long Term Staff Turnover

In February of 2003, the American Health Care Association (AHCA) published the results of their 2002 survey of nursing staff vacancies and turnover rates in nursing homes. Questionnaires were sent to all 16,317 eligible nursing homes in the United
States, of which 6,155 (37.7 percent) replied. In the executive summary of their findings (p.3), they reported:

In 2002, nursing homes had numerous nursing staff related vacancies. Overall, nearly 96,000 full-time equivalent health care professional [sic] were needed to fill vacant nursing positions at nursing homes across the United States. The majority of the vacancies were for Certified Nurse Assistant positions. Overall, nearly 52,000 CNA positions were estimated to be vacant. In addition, 13,900 Staff RN and 25,100 LPN positions were estimated to be vacant (AHCA, 2003. p.ii).

In this report (American Health Care Association, 2003), the annual turnover rate for staff Registered Nurses (RNs), Licensed Practical Nurses (LPNs), and Directors of Nursing (DONs) was found to be about fifty percent. The turnover rate for Certified Nursing Assistants (CNAs) was seventy-one percent. CNAs deliver most of the daily care, wash, feed, lift, and turn those who are too debilitated to do for themselves, change the diapers of the incontinent to keep them clean and dry, provide the fluids to prevent dehydration, and change the position of the bedridden to prevent pressure sores. They provide the most necessary and difficult services for the least compensation. The same AHCA report noted:

Nationally, CNA turnover was estimated at 71 percent in 2002. The turnover rate was consistently high across the country ... CNA turnover rates exceed 60% in 65 percent of states, exceeded 80% in 37 percent of states, and were above 100% in 20 percent of states (AHCA, 2003, p. ii).

In addition to a high staff turnover rate, administrators are also affected by job insecurity. They are frequently terminated or forced to resign because they are unable to achieve profit levels to meet corporation demands, which triggers nursing staff resignations due to lack of consistent leadership. Through an on-line survey in 1999,
Castile (2001) studied the association of turnover rates of nursing home administrators with five quality of care outcomes in 420 nursing homes. He found that the average annual turnover rate of administrators was 43 percent in both the nonprofit and profit sectors. Facilities with higher administrative turnover rates also had a higher incidence of residents who were restrained, catheterized, had pressure ulcers, and were given psychoactive drugs" (p. 757). These findings might offer support for the hypothesis that increases in administrative turnover rates have a negative effect on quality of care in nursing homes.

Reimbursement Uncertainties

Vacancy and turnover statistics indicate only one part of the crisis in nursing homes today. There are other systemic problems, such as insufficient reimbursement for the care of Medicaid patients, the rising cost of liability insurance and settlement payments, and the cost of compliance with unfunded mandates by regulatory agencies.

In 2003, major Wall Street investment firms analyzed and summarized nursing home industry reports creating the Health Care Industry Market Update report for the Centers for Medicare and Medicaid Services (CMS) Office of Research, Development, and Information (ORDI). The analysts were generally concerned about the "uncertain government payment environment" (p.26) and its effect on all providers, but especially those nursing homes which recently emerged from bankruptcy. It was noted that "very high liability expense levels will continue to stress nursing home operator cash flows and operating margins for the next year or two at least and in some cases forcing firms into bankruptcy reorganization when liability costs are added to Medicare and potential
Medicaid cuts” (p. 4). They were also concerned about “the skilled nursing sector’s ability to forecast and manage finances, which in turn reduces access to capital” (p. 14). This was due to “the possibility of legislation that may affect Medicare rates, threats to Medicaid rates, and skyrocketing liability insurance costs” (p. 14). Finally, because of state level financial problems, they were concerned that “states will freeze or cut Medicaid payments to nursing facility providers” (p. 4). Since more than half of the funding of nursing homes comes from federal (Medicare) and federal/state (Medicaid) programs, government reimbursement can be reduced whenever there is budgetary pressure for government spending reductions.

In this report, it was also noted that Medicare pays for 10-15% of nursing home patients, while Medicaid pays for 65-70% (p. 3). The average daily Medicaid rate of reimbursement per nursing home bed was $115.00 in 2000, which fell short of daily costs per bed by $9.78. The average reimbursement per bed was $113.50 in 2001 (p. 11). This decrease in reimbursement rate indicates that nursing homes did not meet their cost to run the facility per day. The figures for Medicaid reimbursement in New Jersey in 2002, in an audit commissioned by the American Health Care Association (BDO Seidman, 2003), disclosed the following: reimbursement rate $138.79, cost $165.74, shortfall $26.95.

A major cause of these financial losses is the Prospective Payment System (PPS), which eliminated a “loophole” that allowed facilities to profit generously from rehabilitation services. Currently this payment system applies only to Medicare, which covers 10-15% of nursing home residents. Unfortunately, it does not apply to Medicaid.
which reimburses 65-70% of residents. As a result, Medicare and private-pay patients often subsidize Medicaid; however, this results in a very low profit margin for most nursing homes. According to General Accounting Office (GAC) figures cited in the report of the Centers for Medicare and Medicaid Services (2003), there was an average profit margin of 0.3% for nonprofits and 2.2% for for-profits in the year 2000. Profit margins of nursing facility companies continue to decline from 2.8% in the first quarter of 2002 to 1.1% in the first quarter of 2003 (CMS, 2003, p. 4). These are averages, and there are many nursing homes, particularly nonprofits, that show negative profit margins. The operators of nonprofit facilities often use other funds, such as donations, to cover the difference. This option is not available to for-profit facilities. Corporate chains compensate by closing nursing facilities in states where Medicaid reimbursement is particularly low or litigation costs particularly high; or they may expand into other areas of care, such as pharmacy services (Centers for Medicare and Medicaid Services, 2003).

**Rising Costs**

While healthcare reimbursements to nursing homes have remained relatively constant, most healthcare costs, especially nursing, have risen. This is primarily related to the nursing shortage. Many nursing homes must use agency or per diem nurses to supplement their regular staff, at substantially higher hourly rates. In addition, of greater concern is the rising cost of liability insurance and settlement payments. The cost of liability grew at an average rate of 24% per year since 1991. The size of the average claim, as well as the number of claims per 1,000 beds, tripled in the past ten years.
(Centers for Medicare and Medicaid Services, 2003). These increases could potentially rise even further and surpass the increased cost for nursing care.

Bankruptcies

In the 1990s, five of the eight largest nursing home corporations in the nation filed for Chapter 11 bankruptcy. In testimony before the Senate Special Committee on Aging, September 5, 2000, Steven Pelovitz, Director of the Survey and Certification Group of the Health Care Financing Administration, said that approximately 1,600 nursing homes were under Chapter 11 bankruptcy at that time (Pelovitz, 2000). He blamed the bankruptcies on the rapid expansion and aggressive acquisition policies of certain corporations, which left them with high debt-to-equity ratios and the inability to cope with the changes that subsequently occurred with the implementation of the Prospective Payment System (Pelovitz, 2000, p.2).

In Business Week of July 5, 1999 (Sparks, 1999), the causes of these bankruptcies were discussed:

In the early 1990s, this least glamorous of industries, which represents 8% of the health-care industry, stumbled on what Wall Street saw as a bonanza. As cash-strapped hospitals began sending their sicker patients to nursing homes, operators of those facilities turned to a Medicare loophole unique to nursing homes. In effect, there were no reimbursement caps on treatments such as respiratory, physical, and occupational therapies. So when it was discovered that "rehab" or "ancillary" services could produce 30% margins, Wall Street jumped on the sector, producing a spate of initial public offerings. In 1993, right-out-of-the-box offerings were quickly trading at 20 times earnings. In that lush environment, says Daniel E. Straus, former CEO of Multicare Cos., a chain of nursing homes sold to Genesis Health Ventures at the industry's peak, "a lot of nursing homes bet the ranch by leveraging up." Lured by the rich margins, nursing homes became hot properties. But the timing couldn't have been worse. To cut soaring cost, Medicare instituted a new policy consisting of a daily price cap that in one fell swoop wiped out rehab margins by at least 50%. The blow to
the public nursing home companies was catastrophic. "I've never seen an industry hit the wall so quickly," says Straus (p.1).

Today, the nursing home industry is still in trouble. There has been no relief from litigation costs, except in those few states that have legislated caps on liability judgments. The shortage of nurses and CNAs continues. In 2000 and 2001, health care employment continued to increase, while employment in the overall economy decreased (Centers for Medicare and Medicaid Services, 2002). When jobs were scarce, the arduous and low-paying job of CNA became more attractive. But, even that trend did not alleviate the shortage, and currently an increase in employment opportunities in other industries hinders the recruitment of CNAs.

Unfunded Mandates

Another reason for the continued increased cost of nursing and rehabilitative services is the recent implementation of the Health Insurance Portability and Accountability Act (HIPAA). It has resulted in the added cost of compliance with mandated privacy standards, as well as the expensive restructuring of information technology (IT) systems to accommodate new uniform standards for the electronic transmission of billing information. It often becomes the responsibility of the nurse or rehabilitation staff to enforce HIPAA regulations, or a full-time Privacy Officer and/or a compliance staff is employed. HIPAA is an unfunded mandate resulting in increased healthcare cost.

In addition to HIPAA, the process of implementing the Prospective Payment System results in significant additional cost to the nursing home. Time is spent by
nurses, social workers, and therapists to provide data to complete the Minimum Data Set (MDS), which is a required evaluative tool. Most nursing homes must employ an MDS coordinator, who is an RN at an administrative salary level, often with an assistant, to organize the data. PPS implementation, like HIPAA, is an unfunded mandate. Consequently, nursing and rehabilitative therapy staff spend time complying with 'HIPPA regulations and PPS, as opposed to performing their nursing and rehabilitative responsibilities.

**Statement of the Problem**

Cost containment and accurate resource allocation due to shortage of nursing staff, dependence on inadequate and uncertain governmental funding, high liability insurance and settlement costs, and compliance with unfunded legislative and regulatory mandates are significant problems in long term care. These are industry-wide problems, which require fiscal restraint at all organizational levels. No simple instrument exists to assess the effectiveness of rehabilitation and nursing objectively and economically, and to contribute to cost containment in nursing homes (Breines, 1988).

A simple instrument to estimate projected costs in a given unit on a daily basis, and for monitoring those costs is essential. The use of such an instrument can prevent resource overutilization, decrease the cost of care, and prevent underutilization, all integral to improve the quality of care. Currently, a complex instrument, the Minimum Data Set (MDS), is widely used in the government-funded Medicare programs to
measure function and to determine cost. It has also been used for resource allocation (Carpenter, Ikemami, Ljunggren, Carrillo, and Fries, 1997).

As required by law, a full-time registered nurse is for the position of MDS coordinator, and is responsible for implementing the MDS at designated intervals. The recipients are about 10-15% of a nursing home population that is certified under Medicare Part A. In addition, staff members of every department must participate in providing data for the MDS. The time and labor-intensive aspect of the MDS makes this tool impractical for more frequent application.

Thus, there is a need for a simpler instrument to measure function and to estimate cost of care in a nursing home population. This study attempts to determine if the Breines Functional Assessment Scale (Breines, 1983), a simpler scale, can also be used to estimate and monitor cost of care. The purpose of this study is to determine if a simple functional assessment tool, the Breines FAS (1983), can be used to predict the cost of care of nursing home residents, and ultimately, enable nursing, therapy and administrative staff to allocate resources more effectively on a daily basis.

Hypothesis

The cost of care of nursing home residents, as determined by the MDS and RUG category, is inversely related to the functional performance of the residents, as measured by Breines Functional Assessment scale.
Chapter II

REVIEW OF RELATED LITERATURE

Cost/Outcome Studies in Rehabilitation

The American Academy of Physical Medicine and Rehabilitation (AAPMR) commissioned the University of Missouri to do a search of articles related to cost/outcome studies in rehabilitation (AAPMR, 2003). This search yielded a total of 371 studies or reviews, with 132 meeting the following eligibility criteria: “the research design was a meta-analysis, randomized clinical trial, prospective cohort study, case control, or descriptive; the study addressed physical medicine and rehabilitation; and the study examined cost-effectiveness, cost-minimization analyses (CMA), cost-utility analyses (CUA), and cost-benefit analyses (CBA). There is an analysis of both costs and outcomes. Also included were studies that may not have compared a treatment to the standard of care but to any alternative treatment” (p.2).

The number of total studies in the area of cost and outcome in rehabilitation is few. Studies related to the cost-effectiveness of rehabilitation, in general, (as applied to a broad range of diseases or disabilities) are even less (AAPMR, 2003). Most of the cited studies were disease-specific.

Several studies compared the cost-effectiveness of rehabilitation in different types of facilities. For example, rehabilitation hospitals were compared with subacute and traditional nursing home units (Kramer et al., 1997); an acute unit was compared with a subacute unit (Keith, Wilson, and Gutierrez, 1995), and a stroke unit with a
general medical ward (Kalra, Dale, and Crome, 1993). Their findings did not show any conclusive benefit of cost-containment when comparing one type of rehabilitation facility over another. A larger multicenter study (Kramer et al. 1997) conducted over a six month period with a stratified random sample of 92 sites, compared outcomes and costs in rehabilitation hospitals, nursing home subacute units, and nursing homes. There were 518 patients with hip fractures, and 485 patients with strokes, all of whom were followed prospectively over six month periods during the years 1991-1994. Patients either returned to the community, or returned to premorbid levels of functioning in five activities of daily living (ADL’s), including bathing, dressing, transferring, walking 20 feet, and toileting. These five activities were adjusted for "premorbid residence and function, caregiver availability, comorbid illness, admission function, cognition, depression, sensory deficits, and mobility impairments" (p. 399). Costs were determined from Medicare reimbursements and the number of visits by therapists and physicians.

Rehabilitation hospitals were found to cost more than other types of facilities and resulted in enhanced outcomes for patients with stroke, but not for those with hip fracture. Contributing to cost factors were the Medicare regulations requiring three hours each day of therapy in acute rehabilitation units, the greater volume and variety of therapy services, and the greater number of physician visits because of the presence of physicians on site. Kramer et al. (1997) felt that this level of intensity was not necessary for persons with hip fractures, and they recommended admission of these patients to skilled nursing homes over acute rehabilitation facilities. This study was reported in February 1997, when subacute units were significantly different from current subacute
units in nursing facilities. Kramer et al (1997) stated "Services provided to stroke patients admitted to RFs in our study that were rarely provided in SNFs included recreational therapy, psychological services, and psychiatry, in addition to more attending physician visits and physical, occupational, and speech therapy" (p.403). The modern subacute unit does provide all of the above, thus blurring the distinction between the two types of units. However, the intensity of physical therapy is much greater in the rehabilitation hospital than it is in the subacute unit, resulting in increased cost in the rehabilitation hospital.

Another study (Keith, Wilson, and Gutierrez, 1995) retrospectively compared the results of stroke rehabilitation in a comprehensive inpatient acute rehabilitation service from 1991–1992 with the rehabilitation provided in a subacute unit in a skilled nursing facility. There were 331 acute patients and 97 subacute patients. Cost was determined from billing records, and function was measured by the Functional Impairment [sic] Measure (FIM). Outcome was measured by gain in FIM scores, and by the proportion of patients discharged to the community. They found that the acute patients had greater gains in FIM scores, which was attributed to the fact that the patients had twice the daily treatment hours and twice the average charge per day, when compared to those in subacute centers. However, the rates of community discharge were the same for the two groups. The cost per unit gain in the FIM scale was substantisly higher for the acute unit. They concluded that overall subacute rehabilitation was more cost-effective than rehabilitation in an acute setting for this population (Keith, Wilson, and Gutierrez, 1995, p. 498). The validity of this study, done
in 1991-1992, is questionable today because subacute units currently provide a greater number of services when compared to the 1961-1992 time frame (such as physical therapy, occupational therapy, and speech therapy), thereby potentially increasing cost. This study is in general agreement with the findings of the previously discussed study of Kramer et al (1997) that supported positive outcomes (return to community or premorbid levels of activities of daily living) for elderly patients with stroke treated in rehabilitation hospitals but not for patients with hip fractures.

Kalra, Dale, and Crome (1993), in a randomized prospective controlled trial, compared the results of rehabilitation provided in a specialized stroke unit to rehabilitation provided on a general medical floor. There were 245 stroke patients, stratified into three groups by prognosis; 124 were randomly allocated to the stroke unit, and 121 to the medical ward. Outcome was measured by rate of discharge to home, functional condition at discharge, and length of stay. In this British study, the patients in both units received the same amount of occupational therapy, but, paradoxically, those on the medical ward received more physical therapy. Patients on the stroke unit, however, received more individualized therapy. Outcomes were the same in both units for patients with a good prognosis, but significantly better in the stroke unit for those with an intermediate prognosis. Those of poor prognosis had a higher mortality rate and longer length of stay on the medical unit, but they presented with comparable functional levels upon discharge. Cost was calculated based upon number of hours of individualized therapy and length of hospital stay. It was found that the stroke units
reduced hospital stay without increasing the therapy time. This study emphasized the importance of individualized care for those with intermediate prognosis.

In a study of the cost-effectiveness of the Medicare three-hour regulation, Johnston and Miller (1986) further showed the importance of individualized care. In September 1982, the Health Care Financing Administration published a new regulation concerning patients in acute rehabilitation hospital units, requiring that a minimum of three hours a day of physical and/or occupational therapy be provided. In this study, 934 patients were assigned to two groups, 413 from 1982 (pre-three-hour regulation), and 482 from 1983, (post-three-hour regulation). The number of therapy hours in each group was determined by the individual need of the patient in the 1982 group, and by conformity to the three-hour regulation in the 1983 group. Functional improvement was measured, using a generic scale of four levels and three intermediate levels, with level 1.0 indicating total in ability, 2.0 moderate physical assistance, 3.0 stand-by assistance, 4.0 independence, and with intermediate levels of 1.5, 2.5, and 3.5. Mobility was measured by averaging five items, and independence in self-care was measured by averaging the scores of nine items of activities of daily living. The validity of the scale was not specified. Outcomes were also measured by discharge destination, mortality, program interruptions, and patient complaints of overwork and fatigue. There was no significant benefit in function or other outcomes following the institution of the three-hour regulation, despite an increase of physical and occupational therapy of 0.55 hours per patient day, adding $408,000 in additional charges annually in a forty-two bed unit. The
effectiveness of the therapy may have been limited by individual patient tolerance and fatigue.

Several other studies, all randomized clinical trials, related cost and outcome to rehabilitative services. Bakker, Hidding, van der Linden, and van Doorslaer (1994) compared supervised group physical therapy with unsupervised exercise at home in a group of 144 patients with ankylosing spondylitis. The measured outcomes consisted of spinal mobility by thoracolumbar flexion and extension, and fitness by ergometry, versus direct medical costs. This study, which took place in the Netherlands, demonstrated the benefits of physical therapy at an acceptable cost as compared to the outcomes. They found that the additional benefits of group therapy cost $531 per patient per year, with a decrease of direct medical costs of $122 per patient per year, resulting in a net cost of $409 per patient per year. This demonstrated the cost effectiveness of group physical therapy.

In a similar investigation in Australia, Cameron, Lyle and Quine (1994) studied 252 elderly patients with proximal fracture of the femur, comparing an accelerated rehabilitation program with a conventional program. The accelerated program involved, “early mobilization after surgery, participation in a comprehensive rehabilitation program, liaison with the identified care-giver, early discharge from hospital continuing community-based rehabilitation until stabilization of mobility and other activities of daily living occur” (p.1397). The control group was comprised of those who received conventional therapy upon discharge to home or nursing home, based on prognosis. Outcome was evaluated by the patient’s ability to return to semi-independence or
premorbid level of function, cost by actual costs of hospital treatment and all subsequent care for four months afterwards. Costs in the accelerated treatment group were significantly less than in the conventional treatment group while all patients return to semi independence or premorbid level of physical independence.

In the Netherlands, Severens et al. (1999) attempted to determine the cost-effectiveness of physical therapy and occupational therapy in reflex sympathetic dystrophy. Patients with this disease were assigned randomly to one of three groups. One group received physical therapy, another group received occupational therapy, and the third was a control group receiving social services only. They found that physical therapy resulted in clinically relevant improvement, and it was more effective and less costly than occupational therapy. However, in this study there was no occupational therapy given to any of the research participants. The approach consisted of didactic teaching and direct experience with a broad range of activities which were not specified. There was an active control group in which the subjects participated in a variety of activities, such as outings, games, dances, supervised by nonprofessionals. A passive control group did not participate in either the lectures or supervised activities. The major criticism of this study was that they compared patients who received actual physical therapy with patients who received occupational therapy in the form of teaching only. This leads us to question the quality, type and depth of all PT and OT protocols of therapy, as to date there is no standard practice of care, only guidelines.

Hay et al. (2002) studied the cost-effectiveness of preventive occupational therapy on 163 elderly apartment dwellers. They divided the subjects into an
occupational therapy group, a social activity group (active control), and a nontreatment group (passive control). Data for an index called QALY (quality-adjusted life years) was obtained by telephone interview. Costs were calculated based on actual healthcare expenditures expressed as cost per QALY. The cost per QALY was highest for the passive control group, least for the social activity group, and intermediate for the OT group.

Przybylski et al. (1996) randomly allocated 115 nursing home residents to one of two groups. An “enhanced group” was assigned one physiotherapist and one occupational therapist per 50 beds, and a “control group” was assigned one physiotherapist and one occupational therapist per 200 beds. The patients were followed for two years, and outcomes were measured using three scales: Functional Independence Measure (FIM), Functional Assessment Measure (FAM), and Clinical Outcome Variables (COVS). Although the number of patients in each group was small, and the total number was reduced by attrition to only 63 patients in the course of two years, the researchers were able to apply statistical methods to reach the conclusion that residents in the enhanced group scored higher in multiple categories of all three functional scales. Since this was a Canadian study, they used the RCS (Resident Classification System) – analogous to the Minimum Data Set (MDS) – to assign each resident to one of seven resource use measures. This was then used to calculate the facility’s case mix measure (CMM), from which was derived a case mix index (CMI). This was a comparative inter-facility measure of “heaviness of care,” which was used to compute direct care nursing (DCN) funding, based on 30 beds for each group. The final
result was a savings of $283 per bed per year for the enhanced group, attributed to the lower need for nursing care among more highly functioning patients in that group. This was the result of more rehabilitation services in the enhanced group versus the control group, since the subjects were selected randomly and were of equal functional ability. This represented a cost savings of 1%, despite the greater cost of the rehabilitation services provided. This is an important study because it clearly demonstrates that enhanced therapy services result in lower overall cost of care because of the benefits of functional improvement.

The Minimum Data Set (MDS) as a Research Tool

The MDS was designed for use in the evaluation of skilled nursing inpatients certified by Medicare Part A under the Prospective Payment System (Gallagher, 2000). It has since become widely used as a research tool in other settings, and even in other countries, both as a measure of function and as a tool in the determination of cost (Carpenter, Ixegami, Ljunggren, Carrillo, & Fries, 1997).

Several studies using MDS data were done at the Research and Training Institute of the Hebrew Rehabilitation Center for Aged in Boston, a Harvard Medical School affiliate. Morris, Fries, and Morris (1999) used the MDS to create three ADL self-performance scales based on seven ADL variables. Kiely (2000) used the MDS to study the association of resident characteristics and wandering behavior. They found that wandering behavior was associated with memory problems, pneumonia, the asking of repetitive questions, dementia, constipation, the expression of sadness or pain, and antipsychotic drug use. Robson, Kiely, and Lembo (2000), of the HRCA and the Beth
Israel Deaconess Medical Center, used the MDS to study the prevalence of constipation and risk factors for the development of constipation in a population of 2,627 patients. They found that factors associated with constipation were decreased fluid intake, pneumonia, Parkinson's disease, and allergies. Vap and Dunaye (2000) compared the MDS with the Braden Scale as predictors of developing pressure ulcers (PUs). In a population of 555 long term care patients, 66 developed pressure ulcers. They found that “the MDS identified 311 individuals at risk, resulting in accurate prediction of 62 of 66 PUs, while the BS found 172 at risk and predicted only 46 PUs accurately” (p.39). This study showed that the MDS is a better predictor than the Braden Scale for pressure ulcers in long-term care patients. These studies demonstrate the variety of uses to which MDS data can be applied and used to predict individuals’ risk levels.

Ahronheim, Mulvihill, Sieger, Park, and Fries (2001) used an interstate MDS data bank to study regional prevalence and practice patterns in a population of 57,029 nursing home patients with severe cognitive impairment. They found that the prevalence of tube feeding varied from state to state and ranged from 7.5% in Maine to 40.1% in Mississippi, possibly related to sociodemographic factors. At the University of Kansas Medical Center, Gessert, Mosier, Brown, and Frey (2000) used MDS data to study tube feedings in a population of 4,997 patients with severe cognitive impairment in nursing homes in urban and rural Kansas. They found that feeding tubes were correlated with swallowing problems, stroke, absence of dementia, urban location, and non-white race. Berlowitz, Bezerra, Brandeis, Kader, and Anderson (2000) used the MDS to study risk-adjusted rates of pressure ulcer development in 30,510 residents at
107 nursing homes from 1991 to 1995. They found a significant decline of more than 25% of the development of pressure ulcers. This was attributed to improved pressure ulcer preventive care. A Canadian study (Richardson, Bedard, and Weaver, 2001) used the MDS to study changes in physical functioning in 138 institutionalized older adults. They found that gender, balance while standing, joint range of motion, change in depression scores, and weight loss were strong independent predictors of change in ADL.

At the University of Michigan, Fries, Mehr, Schneider, Foley, and Burke (1993) used MDS data from 6,663 nursing home patients to study nursing staff resource use in patients with dementia, depression, and delirium. They found that depression and delirium were associated with higher resource use. In a later MDS study of 7,858 patients (Fries et al., 1994), they expanded their identification of criteria important in staffing level determination and quality assurance by the RUG category for identification of patients with multiple needs of activities of daily living. A similar study (Ikegam, Fries, Takagi, Ikeda, and Ibe, 1994) at Keio University in Tokyo, Japan, found a reliable correlation of Resource Utilization Group (RUG) and wage-weighted staff time (cost), and similar patterns of Japanese and U.S. costs in relation to RUG category. At the University of Kent in the United Kingdom, Carpenter, Main, and Turner (1995) used the MDS and RUG to differentiate between nursing home residents receiving low, standard, and enhanced registered nurse care time, as the basis for a nursing care reimbursement system. In another study of RUG and resource allocation, Carpenter, Ikegami, Ljunggren, Carrillo, and Fries (1997) compared the relationship of direct
nursing care time with patient characteristics in five countries (Japan, Spain, Sweden, England, and Wales), and concluded that the “RUG system appears robust in a wide variety of settings and countries” (p.65). A similar study in the Czech Republic (Topinkova, Neuwirth, Melianova, Stankova and Haas, 2000) found the RUG to "represent a suitable case-mix system for nonacute institutional care in the Czech health care" (p.44).

**Overview of MDS Research**

These studies show the wide acceptance and international use of the MDS and RUG systems in studies investigating resource allocation and nurse staffing in diverse areas. While these studies indicate that the MDS provides accurate objective data, the time and cost of administering the tool limits its more widespread application for use on a daily basis. Completing the MDS takes approximately one and a half hours (L. Breslin, personal communication, October 19, 2004). It requires the services of a specially trained nurse, usually designated as the MDS coordinator, to insure the proper completion of its many components, and data enter into a computer database, from which RUGs are derived and then reimbursement is obtained based on cost of care. Hence the need for a simpler, more clinically practical tool exists.

**The Breines Functional Assessment Scale (FAS)**

The Breines Functional Assessment Scale was designed in 1983 by Dr. Estelle Breines, an occupational therapist who had been contracting therapy services to nursing homes in New Jersey since the 1970’s. The tool was designed to accurately report the status and changes in levels of performance of elderly nursing home
residents who had sustained a wide variety of medical conditions of which necessitated institutionalization. Due to its ease of use it was adopted by nursing home directors of nursing for use in developing discharge plans (Breines, personal communication, November 18, 2004).

Breines established the validity of the FAS in the following manner, as she described in a paper published in 1988:

Since this tool records observations of functional performance, not abstract theoretical concepts, content validity and not construct validity was at issue. Since the items in the scale were functional in nature (e.g. bringing spoon to mouth, pushing wheel chair), face validity was inherent. To establish content validity a comprehensive battery of items were developed. These items were reviewed by a panel of experts, including occupational therapists, occupational therapy assistants, and nurses. Items were added, modified, deleted and moved from Level to Level at the direction of the panel. The resultant copy was modified and field tested several times until all reviewers were satisfied that the tool would accurately measure changes in function, thus ascribing consensual validity to the tool (Breines, 1988, p.136).

The interrater reliability of the FAS was also determined, as described by Breines (1996). A random sample of twenty-five patients were independently assessed by two occupational therapists or by a therapist and therapist assistant, on the same day or on sequential days. “Raters’ responses were compared to determine the degree of agreement in their observations. Non-parametric statistical analysis revealed a reliability of .93 for Levels and .95 for items” (p.17). Breines concluded that, “Because of its high interrater reliability and its face validity, indicating differences in the character of the items between the Levels, the tool is sensitive to differences in performance, allowing changes in performance to be monitored and reported” (p.17). Subsequent to establishing the interrater reliability of the FAS, Breines and staff obtained data from
234 patients in 10 facilities over a 2 year period of time, demonstrating the capacity of this tool to effectively capture data on the effects of occupational therapy treatment in improving function in a population of nursing home residents.

Breines's intent was to develop a functional scale which would accurately record status and changes in levels of performance of elderly nursing home residents needing inpatient care. Documenting changes in functional performance using the FAS would support the theory that therapy improves function, with the expectation that improved function would result in reduced cost of care. Furthermore, this would demonstrate to consumers the benefit of therapy in improving functional performance, as well as reduced cost of care. Such a study has never been implemented to date.

To date the FAS has not been widely used for research; however, due to its high interrater reliability and its validity the potential for its successful usage in research is plausible. The FAS has been used in the teaching of occupational therapy (Breines, Krasner, Neuman & Torcivia, 1998), and has gained acceptance in Israel. It has been translated into Hebrew, further attesting to the recognition of its validity (Neuman & Breines, 1999). The FAS has been cited in doctoral studies, presented at The American Occupational Therapy Association, Inc. (AOTA) annual conferences, and at a two-day workshop at Haifa University in Haifa, Israel (E. Breines, personal communication, February 23, 2005).
A Comparison of the MDS and the Breines FAS

Nursing homes use the MDS instrument to collect information regarding each resident for the purposes of assessment and care screening, in accordance with Medicare and Medicaid requirements. The information is used to ensure appropriateness and quality of care. It is also the basis for payment of federal funds to the nursing home facility. However, multiple concerns exist when this form is used.

The most serious flaw of the MDS is its complexity to read and use (Appendix A). The standard MDS form, which nurses must complete, consists of ten pages of fine print, so small that it is difficult to read. The print is black on a white background for the most part, with a confusing system of color-coding of two shades of grey, a light pink, and a bright red. Different colored boxes and diamonds, combinations of bold and regular print, and alphanumeric designations of levels add to the distraction and confusion as if it were designed to prevent easy understanding and utilization. In addition, filling in the small boxes accurately is very difficult due to the numerous listed criteria in each section. The form is further complicated by definitions that are frequently unclear. For example, page 4, section G, #1, letter a., discusses bed mobility. It says, "How resident moves to and from lying position, turns side to side, and positions body while in bed." The person filling out the MDS form has to calculate where on the "A" and "B" scale the patient fits. The definition of bed mobility is vague, unclear, and limited. The scale goes from zero to eight and lacks specific definitions. There is an A scale which measures the ADL self performance in relation to physical functioning and structural problems. Definitions of adequate specificity are not included
on the form, which makes it more difficult to understand and complete accurately, yet those filling out the form inaccurately can be prosecuted criminally and civilly according to #9 on page 1 of 10 of MDS version 2.0.

An additional problem with the MDS form is its lack of flexibility. Each patient is different, so a plan of care must be individualized to reflect differences in nursing and therapy interventions appropriate to each patient. On the MDS form, there is no room to record the patient’s uniqueness. The MDS only takes into account whether or not a task is accomplished. There is no place to record how the task is accomplished, such as with or without the use of aids or assistive devices. One example would be under section G, #1, letter g., dressing task: “How resident puts on, fastens, and takes off all items of street clothing including donning/removing prosthesis.” This does not consider someone able to complete the task independently if their clothing is fastened with velcro rather than buttons or zippers. Such a person can be independent if all of their clothing utilizes velcro, but dependent if the clothing does not utilize velcro.

Conversely, the FAS is significantly easier to use than the MDS. Although the novice individual completing the form must refer to the protocol for criteria used to define the skill, once accustomed to the form, users are able to readily and accurately complete the form without further reference (Breines, personal communication, November 18, 2004). Only 23 tasks are listed and further grouped into ten functional levels. The form is also organized to provide space for repeated measures over time (Appendix B). The form is one page long and easy to read.
The FAS criteria for each level are clearly defined in each protocol. For example, level 3 describes, "brings spoon or cup to mouth when spoon is paced in hand" (pg.16). All of Breines's levels are clear and specific. Completing the FAS takes five to fifteen minutes, which is far less time than the one and a half hours required to complete an MDS. Thus, the nurse completing the form may also have time for clinical nursing. This means more time is available for patient services, at a lower total cost of care.

This investigation attempted to determine the relationship between FAS levels and RUG levels in a population receiving rehabilitation services, in which the cost of those services was a part of the total cost of care. This study attempts to determine whether cost changes with functional improvement, as the patient moves into a RUG category of lower intensity rehabilitation services. If the functional level of the patient, determined by the FAS, shows a correlation with actual cost-related reimbursement, as computed from the MDS-derived RUG, then the FAS will qualify as a simple and practical tool for the estimation of cost.
Chapter III

METHODS

Subjects and Procedure

In a retrospective study, the charts of Medicare-certified patients admitted to a long term care (LTC) facility for rehabilitation services were reviewed. The sample of convenience consisted of 103 patients, male or female, age ranging from 65-100 years, who were admitted for subacute rehabilitation services to the Franciscan Home and Rehabilitation Center, Jersey City, New Jersey. Residents who qualified for rehabilitation services were in the study from January 2004 to November 30, 2004.

Data from patients with terminal malignancy, severe refractory congestive heart failure, severe impairment of consciousness, such as stupor or coma, patients who were medically unstable, and patients who required hospitalization and were readmitted during the study period were not included.

The functional level of each patient, as well as diagnostic data, were obtained from the Minimum Data Set (MDS) entries of days 5, 14, 30, and 60. At each interval, the patient was assigned to a Resource Utilization Group (RUG) category and the corresponding reimbursement rate under the Prospective Payment System (PPS) was computed, using the standard computer program for such determination. RUG levels were assigned numerical dollar values representing the actual per diem reimbursement to the facility, which is the cost of services to the Medicare program. On the fifth day after admission, and at intervals of 14, 30, and 60 days, each rehabilitative patient was
also assigned a level on the Functional Assessment Scale (FAS). This is a ten-level ordinal scale, with each level determined by one or more units of skill.

For each subject, the FAS level, and reimbursement dollar amount for day 5, day 14, day 30, and day 60 were entered on a data sheet (Appendix C).

Statistical Analysis

All statistical analyses were performed using SPSS version 9.0. The Spearman Rank Correlation Coefficient (nonparametric test) was used to examine the relationship between the FAS level, which is the independent variable X (functional performance), and the RUG category, which is the dependent variable Y (from which the cost of services is derived).

A linear regression model was used to predict outcomes for effective decision making, such as the cost of care. A scatter plot was used to examine the FAS (X axis) or predictor variable, and the RUG category (Y axis) for 103 nursing home residents.
Chapter IV

RESULTS

All subjects (n=103) were studied at Days 5 and 14. Because these were subacute patients, many required less than 60 days of rehabilitation. At Day 30, the number of subjects had decreased to 73. At Day 60, the number of subjects had decreased to 5. Since there were so few subjects remaining at Day 60, analyses included data only up to Day 30.

Table 1
Descriptive Statistical Analysis

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum FAS Level</th>
<th>Maximum FAS Level</th>
<th>Mean FAS Level</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAS Day 5</td>
<td>103</td>
<td>4</td>
<td>8</td>
<td>5.39</td>
<td>.99</td>
</tr>
<tr>
<td>FAS Day 14</td>
<td>103</td>
<td>4</td>
<td>8</td>
<td>5.56</td>
<td>.36</td>
</tr>
<tr>
<td>FAS Day 30</td>
<td>73</td>
<td>4</td>
<td>8</td>
<td>5.68</td>
<td>.91</td>
</tr>
<tr>
<td>FAS Day 60</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>5.80</td>
<td>.45</td>
</tr>
<tr>
<td>Reimbursement Day 5*</td>
<td>103</td>
<td>186.83</td>
<td>397.69</td>
<td>344.10</td>
<td>47.62</td>
</tr>
<tr>
<td>Reimbursement Day 14*</td>
<td>103</td>
<td>186.83</td>
<td>397.69</td>
<td>330.62</td>
<td>50.25</td>
</tr>
<tr>
<td>Reimbursement Day 30*</td>
<td>75</td>
<td>186.83</td>
<td>397.69</td>
<td>327.19</td>
<td>46.26</td>
</tr>
</tbody>
</table>

*Reimbursement is measured in dollars

Table 1 shows that on Day 5, the 103 subjects studied had a minimum FAS Level of 4, a maximum FAS level of 8, a mean FAS level of 5.39, with a SD of .99. On Day 14, 103 subjects had a minimum FAS Level of 4, a maximum FAS level of 8, a mean FAS level of 5.56, with a SD of .96. On Day 30, 73 subjects had a minimum FAS Level of 4, a maximum FAS level of 8, a mean FAS level of 5.68, with a SD of .91. On
Day 60, 5 subjects had a minimum FAS Level of 5, a maximum FAS level of 6, a mean FAS level of 5.80, with a SD of .45.

Table 1 also shows that reimbursement on Day 5, 103 subjects had a minimum reimbursement of $186.83, and a maximum reimbursement of $397.69, a mean reimbursement of $344.10, with a SD of 47.62. Reimbursement on Day 14, 103 subjects had a minimum reimbursement of $186.83, and a maximum reimbursement of $397.69, a mean reimbursement of $330.62, with a SD of 50.25. Reimbursement on Day 30, 73 subjects had a minimum reimbursement of $186.83, and a maximum reimbursement of $397.69, a mean reimbursement of $327.19, with a SD of 46.26. Table 1 demonstrates that the mean reimbursement decreases (cost of care) as the mean FAS level increases (improved functional performance).
Table 2
Correlations of FAS Levels and Reimbursement Rates

<table>
<thead>
<tr>
<th></th>
<th>FAS Day 5</th>
<th>FAS Day 14</th>
<th>FAS Day 30</th>
<th>Reimbursement Day 5</th>
<th>Reimbursement Day 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAS Day 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FAS Day 14</td>
<td>.86**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FAS Day 30</td>
<td>.82**</td>
<td>.91**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reimbursement Day 5</td>
<td></td>
<td></td>
<td></td>
<td>-.61**</td>
<td>-.31**</td>
</tr>
<tr>
<td>Reimbursement Day 14</td>
<td>-.48**</td>
<td>.55**</td>
<td>-.35**</td>
<td>.80**</td>
<td></td>
</tr>
<tr>
<td>Reimbursement Day 30</td>
<td>-.27*</td>
<td>.35**</td>
<td>-.32**</td>
<td>.67**</td>
<td>.91**</td>
</tr>
</tbody>
</table>

**p<.01 and *p<.05

Table 2 shows that the FAS levels at Days 5, 14, and 30 showed significant correlations ranging from 0.82 to .91 (p < .01). Reimbursements at Days 5, 14, and 30 showed significant correlations ranging from 0.67 to .91 (p < .01). There was an inverse relationship between FAS levels and reimbursement, such that higher FAS levels were associated with lower reimbursement. This relationship existed between FAS levels and reimbursement at Days 5, 14, and 30 respectively.
Table 3

FAS Change Scores for Day 5 and Day 14

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>90</td>
<td>87.4</td>
<td>87.4</td>
<td>87.4</td>
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<tr>
<td>1.00</td>
<td>8</td>
<td>7.8</td>
<td>7.8</td>
<td>95.1</td>
</tr>
<tr>
<td>2.00</td>
<td>5</td>
<td>4.9</td>
<td>4.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 shows a frequency variable analysis indicating that eighty-seven percent (87%) of patients had the same FAS level at Day 5 and Day 14.
Table 4
FAS Change Scores for Day 14 and Day 30

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid .00</td>
<td>67</td>
<td>65.0</td>
<td>91.8</td>
</tr>
<tr>
<td>1.00</td>
<td>4</td>
<td>3.9</td>
<td>5.5</td>
</tr>
<tr>
<td>2.00</td>
<td>2</td>
<td>1.9</td>
<td>2.7</td>
</tr>
<tr>
<td>Total</td>
<td>73</td>
<td>70.9</td>
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</tr>
<tr>
<td>Missing System</td>
<td>30</td>
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</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 4 shows a frequency variable analysis indicating that ninety-two (92%) of patients had the same FAS level on Day 14 and Day 30.
Table 5

Reimbursement Change Scores for Day 5 and Day 14

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-155.50</td>
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<td>1.9</td>
<td>1.9</td>
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<tr>
<td>-120.42</td>
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<td>1.0</td>
</tr>
<tr>
<td>-111.28</td>
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<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>-100.01</td>
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<td>1.0</td>
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<td>-65.40</td>
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<td>-65.78</td>
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<tr>
<td>-65.66</td>
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<td>1.0</td>
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<td>-35.02</td>
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<tr>
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<tr>
<td>-20.34</td>
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<td>1.0</td>
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<tr>
<td>-10.42</td>
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<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>.00</td>
<td>80</td>
<td>77.7</td>
<td>77.7</td>
</tr>
<tr>
<td>Total</td>
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<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 5 shows a frequency variable analysis indicating that seventy-eight percent (78%) of patients had the same reimbursement on Day 5 and Day 14.
Table 6
Reimbursement Change Scores for Day 14 and Day 30

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>-93.03</td>
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<td>1.0</td>
<td>1.4</td>
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<td></td>
<td>-53.67</td>
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<td>1.9</td>
<td>2.7</td>
</tr>
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<td></td>
<td>-48.56</td>
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<td>1.0</td>
<td>1.4</td>
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<td></td>
<td>-4.51</td>
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<td>1.0</td>
<td>1.4</td>
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<tr>
<td></td>
<td>0.00</td>
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<td>65.0</td>
<td>91.8</td>
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<td>Total</td>
<td>103</td>
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Table 6 shows a frequency variable analysis indicating that ninety-two percent (92%) of patients had the same reimbursement rate on Day 14 and Day 30.
Table 7
Spearman’s rho Correlation Coefficient

<table>
<thead>
<tr>
<th></th>
<th>FASDIF1</th>
<th>FASDIF2</th>
<th>REIMDF1</th>
<th>REIMDF2</th>
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<tbody>
<tr>
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<td>Day 5</td>
<td>Day 14</td>
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<td>Day 14</td>
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<td></td>
<td>Day 14</td>
<td>Day 30</td>
<td>Day 14</td>
<td>Day 30</td>
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<tr>
<td>FASDIF1</td>
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<tr>
<td>Correlation Coefficient</td>
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<td>- .086</td>
<td>-.745**</td>
<td>.080</td>
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<td>Sig. (2-tailed)</td>
<td>103</td>
<td>.452</td>
<td>.800</td>
<td>.617</td>
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<td>73</td>
<td>103</td>
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<tr>
<td>Correlation Coefficient</td>
<td>-.069</td>
<td>1.000</td>
<td>.132</td>
<td>-.675**</td>
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<tr>
<td>Sig. (2-tailed)</td>
<td>.452</td>
<td>.73</td>
<td>.266</td>
<td>.000</td>
</tr>
<tr>
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<td>.73</td>
<td>.73</td>
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<tr>
<td>Correlation Coefficient</td>
<td>-.745**</td>
<td>.132</td>
<td>1.000</td>
<td>-.088</td>
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<tr>
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<td>.800</td>
<td>.460</td>
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<td>103</td>
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<td>73</td>
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<tr>
<td>REIMDF2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correlation Coefficient</td>
<td>.060</td>
<td>-.675**</td>
<td>-.088</td>
<td>1.000</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.617</td>
<td>.000</td>
<td>.460</td>
<td>73</td>
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<tr>
<td>N</td>
<td>73</td>
<td>73</td>
<td>73</td>
<td>73</td>
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</table>

**. Correlation is significant at the 0.01 level (2-tailed)

The Spearman’s rho correlation coefficient shows that there is an inverse relationship between patients’ change in FAS level from Day 5 to Day 14 and patients’ change in reimbursement from Day 5 to Day 14 (r = -.75, p < .01). Also, there is an inverse relationship between patients’ change in FAS level and change in reimbursement from Day 14 to Day 30 (r = -.68, p < .01).
The scatter plot illustrated an inverse relationship of reimbursement and FAS level (X axis) by reimbursement (y axis) at Day 5, Day 14, and Day 30 (Appendix D). The regression line shows a negative relationship. These diagrams support that the cost of care of nursing home residents, is inversely related to the functional performance of the residents, as measured by the FAS.
Chapter V

DISCUSSION

The present study explored the relationship between functional level and cost of care of nursing home residents, as measured by the RUGs and the Breines Functional Assessment Scale (obtained by the functional components of the MDS), respectively. The results indicate a correlation between FAS level and cost of care of nursing home residents, and provide further evidence of the construct validity of the FAS as demonstrated by Breines (1988). The findings support the benefit of rehabilitative therapy, which increases functional performance, resulting in decreased cost of care, as described in previous studies (Bakker, Hidding, van der Linden, and van Doorslaer, 1994; Cameron, Lyle and Quine, 1994).

Due to its ease of use, the FAS was found to have several advantages over the MDS, which increase with wider use as a practical working tool. The FAS can be completed in a few minutes by a single person, while the MDS can take more than an hour to complete with input from several departments. As demonstrated by the present data, the FAS is faster, simpler, and easier to administer than the MDS, and requires little training. The FAS accurately reports current functional status and changes in levels of performance of nursing home residents, as previously described by Breines (1988), thus providing an alternative to the MDS as an objective measuring tool for functional assessment in nursing homes.
Another potential application for the FAS, which requires further investigation, is the documentation of functional performance level at the time of discharge from a health care facility, in order to assist in determining the level of post-discharge services, such as outpatient rehabilitation, visiting nurse services, and home health care. As this time, no other simple tool exists for providing quantitative functional information to post-discharge care providers.

In addition, further studies are indicated of the potential use of the FAS in the retrospective chart audits of subacute patients, to determine if they are being discharged from rehabilitation after an appropriate length of stay, or whether they are being discharged too early or too late; and whether they are being discharged to an appropriate level of care. By applying this type of audit to inpatients still receiving rehabilitation, the FAS can be used as a tool to assist in the determination of the need for continued rehabilitation services, and for continued care in a special rehabilitation or subacute unit. Furthermore, FAS can be used by third-party payors in the control of costs by assuring appropriate levels of care. It can also potentially be used by government inspectors of fraud and abuse, as an independent assessment of functional level, as compared to those levels reported by a facility in the functional component of the MDS as part of the reimbursement process.
Chapter IV

SUMMARY AND CONCLUSIONS

A significant correlation exists between cost of care and the improved functional performance of nursing home residents who received rehabilitation services, as measured by the Breines Functional Assessment Scale. The routine use of the FAS for nursing home patients in rehabilitation was emphasized for reasons of speed, simplicity, and accuracy. The FAS was found to be a useful tool, with clearly defined separation between functional levels of performance. It demonstrated the benefits of measuring functional status and changes of functional performance levels and cost of care.

These findings support the implementation of the FAS as a suitable instrument for measuring changes in levels of function of nursing home residents after receiving rehabilitation services, and for demonstrating that rehabilitative therapy improves function. It correlates with the functional component of the MDS, which is the primary instrument used in the determination of cost of care in most nursing home residents. Due to the relationship, the FAS provides nursing, therapy, and administrative staff a means of efficiently estimating the cost of services rendered to individual patients, which can then be applied to staffing and resource allocation. The FAS accurately reports current functional status and changes in levels of performance of nursing home residents; it provides an alternative to the MDS as an objective measuring tool for functional assessment in nursing homes.
References


APPENDIX A
MIMIMUM DATA SET
**MINIMUM DATA SET (MDS) – VERSION 2.0**
FOR NURSING HOME RESIDENT ASSESSMENT AND CARE SCREENING

**BASIC ASSESSMENT TRACKING FORM**

<table>
<thead>
<tr>
<th>SECTION AA: IDENTIFICATION INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. RESIDENT NUMBER: (Exactly as appears on Medicare Card)</td>
</tr>
<tr>
<td>a. Prefix:</td>
</tr>
<tr>
<td>2. GENDER: Male</td>
</tr>
<tr>
<td>3. BIRTHDATE: (Month/Day/Year)</td>
</tr>
<tr>
<td>4. RACE/ETHNICITY:</td>
</tr>
<tr>
<td>a. American Indian/Alaskan Native</td>
</tr>
<tr>
<td>b. Black, not of Hispanic origin</td>
</tr>
<tr>
<td>c. White, not of Hispanic origin</td>
</tr>
</tbody>
</table>

| 5. SOCIAL SECURITY NUMBER: |
| a. Social Security Number |

| 6. FACILITY PROVIDER NO.: |
| a. State No.: (Facility Medicare Provider number) |
| b. Federal No.: (Facility Medicare Provider number) |

| 7. MEDICAID NO.: (If applicable) |
| a. State ID No.: (If applicable) |
| b. Federal ID No.: (If applicable) |

| 8. REASONS FOR ASSESSMENT: |
| a. Other codes do not apply to this form |
| b. Admission assessment (required by day 15) |
| c. Annual assessment |
| d. Significant change in status assessment (may be completed on any day) |
| e. Request assessment from provider |
| f. Significant change in condition assessment |
| g. Other required assessment |

| 9. SIGNATURE OF PERSONS WHO COMPLETED PORTION OF ACCOMPANYING ASSESSMENT OR TRACKING FORM |
| Signature and Title: |

| GENERAL INSTRUCTIONS |
| Complete this information for submission with all full and quarterly assessments (Admissions, Annually, Significant Change, State or Medicare required assessments, or Quarterly Reviews, etc.). |

| MDS RUG III CASE MIX GROUPS |
| a. Rehabilitation Ultra High (EUR) |
| b. Rehabilitation Very High (ERH) |
| c. Rehabilitation High (ERG) |
| d. Rehabilitation Medium (ERF) |
| e. Rehabilitation Low (ERL) |
| f. Extended Services (ERS) |
| g. Special Care (ESC) |

| TRIGGERS LEGEND |
| 1. Behavior |
| 2. Cognitive Limitations |
| 3. Vital Function |
| 4. Communication |
| 5. Falls |
| 6. Incontinence |
| 7. Psychotropic Drug Use |
| 8. Behavioral Symptom |

| QI LEGEND |
| a. Incidence of cognitive impairment |
| b. Prevalence of bladder or bowel incontinence |
| c. Prevalence of risk factors for falls |
| d. Prevalence of depression or its symptoms |
| e. Prevalence of diabetes mellitus |

For additional information on MDS required schedule and documentation to justify skilled care, see page II.

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Copyright limited to addition of trigger, coding and GI recognition systems.

MOS 2.0 September 2000
### MINIMUM DATA SET (MDS) – VERSION 2.0

**FOR NURSING HOME RESIDENT ASSESSMENT AND CARE SCREENING**

**BACKGROUND (FACE SHEET) INFORMATION AT ADMISSION**

#### SECTION A: DEMOGRAPHIC INFORMATION

<table>
<thead>
<tr>
<th>Date of Birth</th>
<th>Month</th>
<th>Day</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### SECTION B: ADMITTED (AT ENTRY)

1. **Pharmacotherapy**
   - No medication
   - No behavioral or cognitive medications

2. **Knowledge of Nursing Home**
   - No knowledge

#### SECTION C: LUPA APNEA (PRIORITY TO ENTRY)

- No

#### SECTION D: ZIP CODE OF PRIOR RESIDENCE

- None

#### SECTION E: RESIDENTIAL HISTORY 5 YEARS PRECEDING ENTRY

- None

#### SECTION F: LIFETIME OCCUPATIONAL HISTORIES

- None

#### SECTION G: EDUCATIONAL PAST AND CURRENT

- None

#### SECTION H: LANGUAGE

- English

#### SECTION I: MENTAL HEALTH HISTORY

- None

#### SECTION J: CONDITIONS RELATED TO MEDICAL STATUS

- None

#### SECTION K: GOVERNMENT-RECORDED CONSENT

- None

---

**NOTE:** Normally, the MDS Face Sheet is completed once, when an individual first enters the facility. However, the face sheet is also required if the person is readmitted to the facility after a discharge where return had not previously been expected. It is not completed following temporary discharges to hospitals or other therapeutic facilities/home visits.

---

**END**
## SECTION 6. MEDICATIONS

### 6.1. NUMBERS OF MEDICATIONS

Record the number of different medications used in the last 7 days and any that were missed during the last 7 days.

<table>
<thead>
<tr>
<th>Date</th>
<th>Medications Used</th>
<th>Missed 7 Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>03/24/2023</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>03/25/2023</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>03/26/2023</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

### 6.2. PRESCRIPTION MEDICATIONS

- **Antihypertensive medicines**
  - **Diuretics:** Hydrochlorothiazide 50 mg daily.
  - **Calcium Channel Blockers:** Amlodipine 5 mg daily.
  - **Beta-Blockers:** Metoprolol 50 mg twice a day.
- **Antidiabetic medicines**
  - **Insulin:** Regular 10 units before dinner.
- **Antipsychotic medicines**
  - **Atypical Antipsychotics:** Clozapine 250 mg daily.
- **Anxiolytic medicines**
  - **Benzodiazepines:** Alprazolam 0.5 mg daily.
- **Antidepressant medicines**
  - **Selective Serotonin Reuptake Inhibitors (SSRIs):** Escitalopram 10 mg daily.

### 6.3. HANDHELD TECHNICAL DEVICES

- **Glucose Monitoring Device:** Use a LifeScan UltraLink system.
- **Blood Pressure Monitor:** Use a Omron HEM-7320.

### 6.4. DEVICES AND RESTRAINTS

- **Use of a lift chair:** Yes, for transfers.
- **Use of a walker:** No.
- **Use of a cane:** Yes, for walking.
- **Use of a gait belt:** Yes, for transfers.
- **Use of a bed alarm:** Yes.
- **Use of a urinary incontinence alarm:** Yes.
- **Use of a_pts_lock:** Yes.
- **Use of a restraints:** No.
- **Use of a pdp:** No.
- **Use of a ts:** No.
- **Use of a ab:** No.
- **Use of a pd:** No.
- **Use of a pdp:** No.
- **Use of a bp:** No.
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- **Use of a pdp:** No.
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- **Use of a pdp:** No.
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- **Use of a pd:** No.
- **Use of a ts:** No.
- **Use of a ab:** No.
- **Use of a pdp:** No.
- **Use of a bp:** No.
- **Use of a pd:** No.
- **Use of a ts:** No.
- **Use of a ab:** No.
- **Use of a pdp:** No.
1. SPECIAL TREATMENTS AND DURATIONS

a. RECOVERY TREATMENT—Enter number of days and total minutes of treatment therapy administered (at least 15 minutes a day) in box last 7 days (Enter 0 if none)

   (A) 4 or more days administered for
   (B) total of 48 or more minutes provided in

2. WALKING WHEN MOST SELF-SUFFICIENT

   Complete item 2/A, D, E, F, G, H AND at least one of the following periods present:

   a. Resident received physical therapy involving gait training (PT.A)
   b. Physical therapy was ordered for the resident involved gait training (C.T.A)
   c. Resident received nursing rehabilitation for walking (IP.T.B)
   d. Physical therapy involving walking has been discontinued within the past 90 days

3. CASE MIX GROUP

   Table: Medicare State
Required for Comprehensive Assessments

SECTION V. RESIDENT ASSESSMENT PROTOCOL SUMMARY

Resident's Name: ___________________________ Medical Record No.: ___________________________

1. Check if RAP is triggered.
2. For each triggered RAP, use the RAP guidelines to identify areas needing further assessment. Document relevant assessment information regarding the resident's status.
   - Describe:
     - Nature of the condition (may include presence or lack of objective data and subjective complaints).
     - Complications and risk factors that affect your decision to proceed to care planning.
     - Factors that must be considered in developing individualized care plan interventions.
     - Need for referrals/further evaluation by appropriate health professionals.
   - Documentation should support your decision-making regarding whether to proceed with a care plan for a triggered RAP and the type(s) of care plan interventions that are appropriate for a particular resident.
   - Documentation may appear anywhere in the clinical record (e.g., progress notes, consults, flowsheets, etc.).
3. Indicate under the Location of RAP Assessment Documentation column where information related to the RAP assessment can be found.
4. For each triggered RAP, indicate whether a new care plan, care plan revision, or continuation of current care plan is necessary to address the problem(s) identified in your assessment. The Care Planning Decision column must be completed within 7 days of completing the RAI (MDS and RAPs).

### A. RAP Problem Area

<table>
<thead>
<tr>
<th>(a) Check if Triggered</th>
<th>Location and Date of RAP Assessment Documentation</th>
<th>(b) Care Planning Decision-check if addressed in care plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. DELIRIUM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. COGNITIVE LOSS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. VISUAL FUNCTION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. COMMUNICATION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. ADL FUNCTIONAL/REHABILITATION POTENTIAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. URINARY INCONTINENCE AND INDWELLING CATHERET</td>
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<td></td>
</tr>
<tr>
<td>7. PSYCHOSOCIAL WELL-BEING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. MOOD STATE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. BEHAVIORAL SYMPTOMS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. ACTIVITIES</td>
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<tr>
<td>11. FALLS</td>
<td></td>
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</tr>
<tr>
<td>12. NUTRITIONAL STATUS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. FEEDING TUBES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. DEHYDRATION/FLUID MAINTENANCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. ORAL/DENTAL CARE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. PRESSURE ULCERS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. PSYCHOTROPIC DRUG USE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. PHYSICAL RESTRAINTS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### B.

1. Signature of RN Coordinator for RAP Assessment Process

2. [Month] [Day] [Year]

3. Signature of Person Completing Care Planning Decision

4. [Month] [Day] [Year]
### OVERVIEW QUALITY MEASURES

#### Chronic Care (CG) OM

<table>
<thead>
<tr>
<th>Percent of residents with worsening (increasing) form score on Late-Loss ADR self-performance at target relative to prior assessment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residents meet the definition of Late-Loss ADR worsening when at least two of the following are true:</td>
</tr>
<tr>
<td>1. G (AH(NI) - G (AH(NI) - 1) - 0, or</td>
</tr>
<tr>
<td>2. G (AH(NI) - G (AH(NI) - 1) - 0, or</td>
</tr>
<tr>
<td>3. G (AH(NI) - G (AH(NI) - 1) - 0, or</td>
</tr>
<tr>
<td>4. G (AH(NI) - G (AH(NI) - 1) - 0,</td>
</tr>
<tr>
<td>Off at least one of the following is true:</td>
</tr>
<tr>
<td>1. G (AH(NI) - G (AH(NI) - 1) - 1, or</td>
</tr>
<tr>
<td>2. G (AH(NI) - G (AH(NI) - 1) - 1, or</td>
</tr>
<tr>
<td>3. G (AH(NI) - G (AH(NI) - 1) - 1, or</td>
</tr>
<tr>
<td>4. G (AH(NI) - G (AH(NI) - 1) - 1,</td>
</tr>
<tr>
<td>Note: Late-Loss ADR form values of 8 are rounded to 4 for evaluation of change.</td>
</tr>
</tbody>
</table>

#### Post Acute Care (PAC) OM

<table>
<thead>
<tr>
<th>Percent of short-stay residents with fall(s).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients at SNP PPS 14-day assessment with at least one symptom of delirium that represents a departure from usual functioning (at least one hit through 650 - 3).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent of short-stay residents who were hospitalized (FAP-adjusted).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients at SNP PPS 14-day assessment with at least one symptom of delirium that represents a departure from usual functioning (at least one hit through 650 - 3).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent of short-stay residents with pain.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients at SNP PPS 14-day assessment with moderate pain at least one day (2=0 and 2=0) OR; before/after nursing care at any frequency L2=0.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent of short-stay residents who were at the SNP PPS 14-day assessment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients at SNP PPS 14-day assessment with moderate pain at least one day (2=0 and 2=0) OR; before/after nursing care at any frequency L2=0.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SRF PPS patients who satisfy either of the following conditions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. independence in walking is maintained from the SNP PPS 5-year assessment to the SNP PPS 14-day assessment;</td>
</tr>
<tr>
<td>2. independence in walking ability from the SNP PPS 14-day assessment by the SNP PPS 14-day assessment;</td>
</tr>
<tr>
<td>3. independence in walking ability from the SNP PPS 14-day assessment by the SNP PPS 14-day assessment.</td>
</tr>
<tr>
<td>Note: Convert it's activity did not occur to a's (final) dependence on G (AH(NI)) and G (AH(NI)) for this comparison.</td>
</tr>
</tbody>
</table>

#### Percent of residents with infections

<table>
<thead>
<tr>
<th>Residents with any of the following infections or health conditions noted on the target or most recent full assessment (1-3) or target assessment (L0-6) and all assessment (L0-6) and all assessment (L0-6).</th>
</tr>
</thead>
<tbody>
<tr>
<td>if the most recent full assessment is a non-admission assessment with AH = (0, 0, 0), or</td>
</tr>
<tr>
<td>Respiratory infection (07-checked) on the target assessment or most recent full assessment (if the most recent full assessment is a non-admission assessment).</td>
</tr>
<tr>
<td>2. Urinary tract infection (07-checked) on the target assessment or most recent full assessment (if the most recent full assessment is a non-admission assessment).</td>
</tr>
</tbody>
</table>

#### Percent of residents with pain

<table>
<thead>
<tr>
<th>Residents with moderate pain at Center for Epidemiologic Studies Depression (CES-D) at target assessment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residents with pressure ulcers (Stage 1-4) on target assessment.</td>
</tr>
<tr>
<td>Residents with pressure ulcers at target assessment (L0-6) OR (L0-6).</td>
</tr>
</tbody>
</table>

#### Percent of residents with physical restraints

| Residents who were physically restrained daily (IP/PA or PA/P at 2) on target assessment. |

---

*Form 1738184H © 1999 Briggs Corporation, Box 5499, IA 50210 (NEW 247-2343) Copyrighted limited to addition of trigger coding and QI recognition system.*

MDS 2.0 September 2000

10 of 10
APPENDIX B

FUNCTIONAL ASSESSMENT SCALE
## Functional Assessment Scale

**Name:** [Name]

**Diagnosis:** [Diagnosis]

**Location:** [Location]

**Gender:** [Gender]

**Age:** [Age]

**Therapist:** [Therapist]

**Type:** [Type]

### Levels:

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Total care</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Swallows</td>
<td>5/9</td>
</tr>
<tr>
<td></td>
<td>Fed by aide</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Brings washcloth to face</td>
<td>5/9</td>
</tr>
<tr>
<td></td>
<td>Brings spoon to mouth</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Feeds self when set up</td>
<td>6/1</td>
</tr>
<tr>
<td></td>
<td>Rolls in bed assisted</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recognizes familiar objects</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Follows one step directives</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Pushes wheelchair</td>
<td>5/23</td>
</tr>
<tr>
<td></td>
<td>Performs basic ADLs at sink</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Removes clothes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continent when toileted</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Pushes wheelchair to destination</td>
<td>6/1</td>
</tr>
<tr>
<td></td>
<td>Follows safety precautions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Uses call system appropriately</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Rises to stand independently</td>
<td>9/11</td>
</tr>
<tr>
<td></td>
<td>Transfers with supervision</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dresses with assist</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self motivated continency</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Ambulates</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Independent in self care</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Prepared to live with others</td>
<td>9/11</td>
</tr>
<tr>
<td>10</td>
<td>Prepared to live independently</td>
<td></td>
</tr>
</tbody>
</table>

### Instructions:

On initial assessment, using the first column, place a check next to each item the patient can perform. On subsequent assessments, using the next column in sequence for each reassessment, indicate by check each item the patient can perform. Schedule reassessments at regular intervals; i.e., weekly, bi-weekly, monthly, quarterly.

Refer to Protocol for criteria used to define items.

Indicate date in Level column only when all items within that Level have been accomplished.

R.E. Broden, 1963

Published by succeeding, Inc. Lebanon, NJ (1963)
FUNCTIONAL ASSESSMENT SCALE CRITERIA

Level 1

TOTAL CARE

Patient is incontinent; fed by nasogastric tube. Check this item for all patients.

Level 2

SWALLOWS

Do not score this item if patient is receiving dysphagia training and swallows only when therapist has elicited a swallowing response by the use of facilitation techniques.

Do not score this item if patient continues to require occasional facilitation.

FED BY AIDE

Patient can be fed by nonprofessional staff to whom responsibility for feeding would ordinarily be assigned. A patient at this level would be considered safe, not apt to aspirate under ordinary circumstances. No specialized professional nursing care is required for feeding. This item should be checked if patient functions at this level or higher.
Level 3

BRINGS WASHCLOTH TO FACE AND CHEST WHEN PLACED IN HAND

BRINGS SPOON OR CUP TO MOUTH WHEN SPOON IS PLACED IN HAND
Patient functions according to primitive reflexes, bringing limbs toward midline. This patient is performing automatically and is not expected to fully comprehend actions. Check this item if patient functions at this level or higher.

Level 4

FEEDS SELF WHEN SET UP
Check this item if patient can eat without assistance and needs only general supervision or no supervision. Patient may require frequent reminders to continue eating.

ROLLS IN BED ASSISTED
Patient attempts to roll when being turned.

RECOGNIZES FAMILIAR OBJECTS
Check this item if patient names objects correctly or demonstrates their appropriate usage. i.e. spoon to mouth, comb to hair.

FOLLOWS ONE STEP DIRECTIVES
PUSHES WHEELCHAIR
Check this item if:
Patient can push wheelchair when instructed; patient may require hands to be placed appropriately.
Patient sustains the activity for a period sufficient to propel the wheelchair five feet or further with encouragement.

PERFORMS BASIC ADLS WHEN GET UP AT SINK
Patient may be assisted to the sink. Combs hair, brushes teeth, washes hands and face.

UNDOING SWEATER, SHIRT OR NIGHTCLOTHES
Patient should not be expected to stand, therefore removal of sweater, nightclothes, undershirt would be adequate performance. Patient does not have to be able to remove all clothing.

CONTINENT WHEN TOILETED REGULARLY
Incontinency due to possible staff neglect should not be considered an error of patient performance.
Level 6

PUSHES WHEELCHAIR TO DESTINATION

Destinations may be nurse's station, patient's room, recreation areas, dining room or other definable location.

FOLLOWS SAFETY PRECAUTIONS

Patient remembers not to stand after having been advised not to stand without supervision.

Patient remembers weight bearing precautions after having been advised.

Patient remembers to lock wheelchair brakes and to place footpedals out of the way when rising or sitting.

Patient does not enter areas which have been indicated as out of limits.

USES CALL SYSTEM APPROPRIATELY

If use of the call system is inappropriate, equivalent skills may be substituted.
RISES TO STAND INDEPENDENTLY
Check this item if the patient is permanently wheelchair bound by diagnosis.

TRANSFERS WITH SUPERVISION
Supervision is defined as no hands on assist.

DRESSES WITH ASSIST FOR SPECIAL PROBLEMS ONLY
Patient takes responsibility for aspects of dressing of which s/he is capable.
May require assist with shoe on side of fractured hip.
May require assist with surgical hose.
May require assist with unique problem.

SELF MOTIVATED CONTINENCY WITH ASSIST TO TRANSFER TO TOILET

Level 8

AMBULATES
Patient may use equipment such as walker, cane, etc. and is capable of short distances of independent ambulation. Patient may continue to use the wheelchair for most functional mobility.
Check if patient will permanently require a wheelchair but is independent in its use.
INDIPENDENT IN SELF CARE

Patient performs all dressing, toileting, transfers, AM and PM self care tasks without assist.

Level 9

PREPARED TO LIVE WITH OTHERS (FAMILY) ON WHOM PATIENT IS DEPENDENT FOR CARE.

Patient is instructed to toilet, dress, bathe in tub/shower with assist; may participate in homemaking. Patient and family have been instructed in techniques and in use of adaptive aids. Home has been evaluated by on site visit or through family conference. Patient may function at Level 7, but will be scored at Level 9 if family is trained in all support necessary to assist and maintain patient at home.

Level 10

PREPARED TO LIVE INDEPENDENTLY

Patient is instructed to bathe, shop, order provisions, care for or be responsible for care of home, preparation of meals.

Home has been evaluated by on site visit or through patient conference.
APPENDIX C
DATA SHEET
<table>
<thead>
<tr>
<th>Subject ID</th>
<th>FAS Level</th>
<th>Reimbursement</th>
<th>Day 5</th>
<th>14</th>
<th>30</th>
<th>60</th>
<th>90</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>
APPENDIX D

SCATTER PLOT DIAGRAMS
Difference in FA0 Level by Difference in Reimbursement

Day 30 versus Day 14

[Graph showing the relationship between difference in FA0 level and difference in reimbursement]

- Difference in FA0 Level
- Difference in Reimbursement
APPENDIX E
DEFINITIONS
Activities of Daily Living (ADL): Daily personal care activities used to measure the ability to function. These include eating, bathing, dressing, moving about (mobility), transferring (for instance, from a bed to a chair), using the toilet, and maintaining bladder and bowel continence.

Centers for Medicare & Medicaid Services (CMS): A Federal agency within the U.S. Department of Health and Human Services, with responsibility for Medicare, Medicaid, the State Children's Health Insurance Program (SCHIP), the Health Insurance Portability and Accountability Act (HIPAA), and the Clinical Laboratory Improvement Amendments (CLIA).

Certified Nursing Assistant (CNA): A nursing assistant, also known as a nursing aide, who is trained and certified in the performance of routine nursing care tasks under the supervision of nursing staff.

Bergner Functional Assessment Scale (FAS): An ordinal scale used to measure functional progress during rehabilitation, in which patients are assigned to Levels ranging from 1 to 10 based on functional criteria called Units of skill.

Functional Independence Measure (FIM): An 18-item ordinal scale, widely used to measure functional progress during inpatient rehabilitation.

Health Care Financing Administration (HCFA): An agency created in 1977 under the Department of Health, Education and Welfare (HEW) to manage reimbursement for Medicare and Medicaid. In 2001, it was renamed the Centers for Medicare & Medicaid Services (CMS). It is now under the Department of Health and Human Services (HHS).

Health Insurance Portability and Accountability Act of 1996 (HIPAA): A law for Health Insurance Reform passed in 1996 and implemented in 2003. Its Title I protects health insurance coverage for workers and their families when they change or lose their jobs. Its Title II, known as the Administrative Simplification provisions, requires national standards for electronic health care transactions and national identifiers for providers, health plans, and employers. It also addresses the security and privacy of health data.

Long Term Care (LTC): Medical, nursing, and support services, provided over an extended period of time, to people with chronic health conditions or physical disabilities who are unable to care for themselves.

Long Term Care Facility (LTCF): An inpatient facility in which long term care is provided. Generally synonymous with nursing home.

Medicaid: A program financed by federal and state funds and administered by each state to provide health care for eligible low-income individuals.
Medicare: A federal government health insurance program to assist those age 65 and over.

Minimum Data Set (MDS): A uniform set of elements detailing resident assessment and care information extracted from the Resident Assessment Instrument (RAI). Its completion and transmission to a state agency is required for participation in the Medicare and Medicaid programs.

Nursing Home (NH): A facility that provides nursing, medical care, rehabilitation, personal care, and room and board.

Prospective Payment System (PPS): A method of paying health care providers for services to Medicare beneficiaries according to a schedule of predetermined rates.

Resident Assessment Instrument (RAI): A uniform patient assessment instrument used as a standardized tool for assessing the function of residents in long-term care facilities. It includes the Minimum Data Set (MDS) and the Resident Assessment Protocols (RAPs). The RAI contains specific MDS trigger elements that prompt RAPs for further assessment.

Resource Utilization Group (RUG): One of 44 mutually exclusive categories based on clinical condition, need for services, and functional status, used to determine a facility's all-inclusive PPS per diem rate for each patient.

Skilled Nursing (SN): Nursing and rehabilitative care which can be provided only by or under the supervision of licensed nursing personnel under the general direction of a physician.

Skilled Nursing Facility (SNF): A state-licensed and Medicare-approved institution that provides primarily inpatient non-acute skilled nursing care and rehabilitative services.

Subacute Care: An intermediate level of skilled nursing and rehabilitation, requiring services that are of lower intensity and greater duration than acute care, and higher intensity and lesser duration than long term care.

Subacute Unit: A specialized unit for subacute care, which may be based in a hospital or in a long-term care facility.