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Factors in Predicting the Number of Home Care Physical Visits

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FACTORS IN PREDICTING THE NUMBER OF HOME CARE PHYSICAL THERAPY VISITS

By

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A Publishable Paper in Lieu of a Thesis in Partial Fulfillment of the Requirements for the Degree Doctor of Physical Therapy Science

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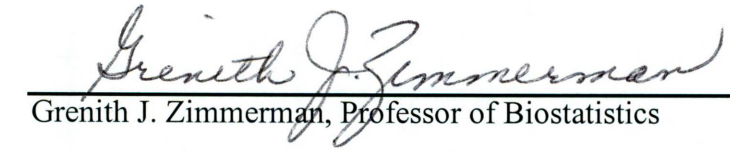

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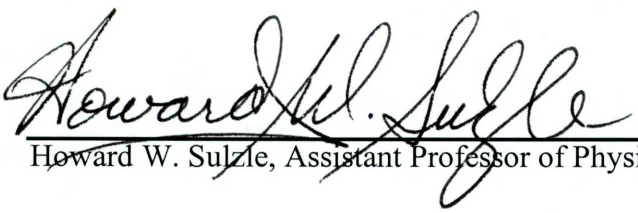

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ABSTRACT

FACTORS IN PREDICTING THE NUMBER OF HOME CARE PHYSICAL THERAPY VISITS

by
Bruce D. Bradley

There has been a significant increase in the utilization of home health care during the past decade. Medicare has attempted to control home care costs by 1) allowing Medicare beneficiaries to join Health Maintenance Organizations, and 2) requiring the use of the Outcome and Assessment Information Set (OASIS) for all patients admitted to home care services. These changes have challenged the home care physical therapist to be a better predictor of the total number of visits needed to complete the rehabilitation process. This was a retrospective study of 335 patients who received home health care physical therapy. The first part of this study determined the effects of admission activities of daily living (ADL) score, number of visits, level of comorbidity, payer class, and caregiver support on discharge ADL score. The second part of the study determined the effects of admission ADL score, level of comorbidity, payer class, and caregiver support on the total number of home care physical therapy visits. ADL scores were calculated using the Barthel Index. The level of comorbidity was calculated using the Charlson comorbidity index. Admission ADL score, number of visits, and level of comorbidity were the strongest predictors of discharge ADL score. Admission ADL score, while the strongest of the variables in the study, was a weak predictor of the

number of visits. Although use of a prediction equation is not warranted by the data, the admission ADL score may provide the physical therapist with useful information when predicting the number of physical therapy visits needed. The Barthel Index is a useful tool to calculate the admission ADL score and can easily be calculated from the OASIS and physical therapy evaluation.

Key words: Barthel index, Comorbidity, Home health, Number of visits, Payer class

There has been a significant increase in the utilization of home health care services during the past decade. From 1990 to 1997, Medicare expenses for home health care rose from $3.7 billion to $16.7 billion. The number of Medicare beneficiaries receiving home health care nearly doubled from 1.9 million to 3.6 million. The total number of home health visits increased from 70 million to 258 million.[1]

Physical therapy utilization in home care has also increased. From 1992 to 1997, the number of physical therapy visits increased from 10.4 million to nearly 20 million. Medicare expenses for home health physical therapy increased from $943 million to $2.3 billion. By 1997, physical therapy accounted for 10% of all home care services. The mean number of physical therapy visits per person in 1997 was 13.[1,2]

The Health Care Financing Administration (HCFA) has attempted to control home care costs by:

1) allowing Medicare beneficiaries to join Health Maintenance Organizations (HMOs), and
2) financing the study of outcome-based quality improvement (OBQI).

The 1982 Tax Equity and Fiscal Responsibility Act (TEFRA) authorized the use of Health Maintenance Organizations to control cost. By 1997, 5.5 million Medicare beneficiaries were covered by an HMO. This accounted for 14.5% of the total number of Medicare enrollees.[3]

The OBQI study resulted in the formation of the Outcome and Assessment Information Set (OASIS).[4] The OASIS is a standardized data set of approximately 80 items including demographic and informational items, living and caregiver arrangements,

review of physical systems, emotional and cognitive status, activities of daily living (ADL), and medication management. Every new patient evaluated for home health care services, regardless of payer class, has an OASIS completed. In the case of Medicare, the OASIS determines the amount of reimbursement the home health care agency will receive. This is the basis for Medicare's Prospective Payment System (PPS) for home health care.

The role of the physical therapist in home health care is to evaluate the safety and mobility of the patient in the home. It is during the initial evaluation, before beginning the treatment program, that the home care physical therapist must determine the number of visits required. HMOs typically require the physical therapist to submit a written request for the total number of visits needed before care can begin. Under Medicare PPS, the therapist must determine if the patient has a high therapy need (10 or more visits).

Traditionally, the home care physical therapist has used a combination of experience and "gut-feeling" to make this determination. Could information obtained from the OASIS dataset at time of admission to home care services be used to predict more scientifically the total number of physical therapy visits needed?

There are several factors the physical therapist must consider when predicting the total number of physical therapy visits needed. The most important factor is the patient's current functional ability. Several studies have shown that the need for assistance in ADLs is the key predictor of home health care use. Greater levels of assistance in performing ADLs result in greater need for home care services.[5,6] Solomon et al[7] determined functional ability was the strongest predictor of home care use. Functional ability is determined by how much assistance the patient needs when performing basic

activities of daily living. The patient who is performing at a very low functional level may require more physical therapy to achieve the optimal level.

In 1965, Mahoney and Barthel[8] formulated the Barthel Index (BI) which measures functional levels of self-care and mobility. The BI gives a global score of functional ability. It has been found to provide useful information in documenting and understanding change in patients undergoing rehabilitation.[9] It has been extensively evaluated for concurrent and predictive validity. The BI is highly correlated with the Katz ADL,[10] the Kenny Self Care evaluation,[10] and the PULSES profile of independence in life functioning.[11] Loewen and Anderson[12] demonstrated the interrater and intrarater reliability of the BI when used for patients with stroke. Shinar et al[13] demonstrated the reliability of the BI using telephone interviews to obtain ADL scores. They concluded that the BI was not only a highly reliable assessment tool, but also valid when obtaining ADL information via either performance observation or interview. The BI can be calculated from information found in the ADL section of the OASIS and the physical therapy evaluation.

Another important factor in predicting the number of visits needed is the severity of the patient's illness. It is hypothesized that patients who are more ill will require more care. One way to determine the severity of illness is to look at comorbid conditions. Comorbidity may obstruct timely progression of rehabilitation. The Charlson comorbidity index was developed and validated in the general population as a way to classify illness.[14] It uses age and multiple comorbid conditions to give a composite score of comorbidity. Deyo et al[15] adapted the Charlson comorbidity index to use with diagnosis codes found in patient medical records. They used the International

Classification of Diseases (ICD-9-CM) diagnosis codes to calculate the comorbidity index and concluded that the index is useful in studies of disease outcome and resource use. Beddhu et al[16] used the Charlson comorbidity index to predict outcomes and cost for dialysis patients. They found that comorbidity scores correlated strongly with hospital admissions, hospital days, and hospital cost for their patients undergoing dialysis.

Another consideration for the physical therapist is the presence of an appropriate caregiver. Solomon et al[7] found that the level of social support, including the presence of a caregiver, strongly predicts the use of home health care services. The patient with less social support will be more likely to utilize formal home health services. Bass and Noelker[17,18] studied the relationship between caregivers and home health services. They found that the presence of a caregiver can influence the use of in-home services. They determined that the caregiver was more likely to initiate the use of formal home health services when the caregiver is experiencing stress. Penrod et al[19] studied the relationship between informal caregivers and functional dependency in older persons. They found that the presence of a caregiver may actually inhibit the older person's ability to improve functionally if the caregiver completes too many of the ADL tasks older persons should be completing for themselves.

Finally, the type of insurance may affect how much therapy the patient receives. There is evidence that HMO Medicare utilizes home care differently than fee-for-service (FFS) Medicare. Shaugnessy et al[20] found that FFS patients were, on average, sicker and more disabled than HMO patients. They also found that HMOs have a more chronic case-mix and FFS patients have, on average, better prognoses. Holtzman et al[21] determined that HMOs are more likely to discharge patients to nursing homes.

Additionally, the home care therapist may be biased by a preconceived idea of how much therapy a particular insurer allows. Battie et al[22] studied the differences among physical therapists in their response to the treatment of three hypothetical cases of low back impairment. They found a significant difference in the length and type of treatment recommended by the therapists. Specifically, therapists in a HMO setting recommended four fewer visits than the therapists in private practice. Jette and Delitto[23] looked at treatment choices made by physical therapists when treating various musculoskeletal impairments. Although they reported no significant difference existed between payer classes overall, they did note a difference between HMO and fee-for-service treatment regimens.

The purpose of this study was to 1) determine the effects of admission ADL score, number of visits, level of comorbidity, payer class, and caregiver support on discharge ADL score, and 2) determine the effects of admission ADL score, level of comorbidity, payer class, and caregiver support on the total number of home care physical therapy visits. The goal was to identify predictors of home care physical therapy use and propose a formula for predicting physical therapy needs following the initial assessment.

Method

Subjects

This was a retrospective study of patients who received physical therapy in the home from a hospital-based home care agency. Consecutive patients admitted to home care services from January 1, 2000 to December 31, 2000 were included if they were 18 years of age or older and were referred for physical therapy with a general medical diagnosis. Subjects were excluded if the nursing staff completed either the admission or discharge OASIS, or if they were hospitalized during the course of therapy and thus no OASIS discharge was completed. Subjects completed a course of physical therapy rehabilitation in the home following the usual guidelines of homebound status established by Medicare.[24] The study was reviewed and approved by the Institutional Review Board of Loma Linda University. Consent was obtained from the Director of Home Care Services and the support of the Supervisor of Therapy Services was established prior to data collection.

Data Collection

Charts were reviewed and the following variables were recorded: age, gender, diagnosis, comorbidity, caregiver involvement, payer class, number of visits, and ADL score at admission and discharge. All information was obtained from the OASIS admission form, the OASIS discharge form, and the physical therapy evaluation and discharge notes.

ADL Score

An ADL score was obtained at admission and discharge. The ADL score was calculated using the Barthel Index (BI)[8] with information obtained from the OASIS and physical therapy evaluation. Information found in the ADL section of the OASIS nearly matches word for word the BI items. The only information needed for the BI not found in the OASIS form was distance of ambulation. This information was obtained from the physical therapy evaluation and discharge note. Table 1 gives the summary of how the OASIS scores were converted to BI scores.

Table 1. ADL Conversion Table

Activity	OASIS Score	Barthel Score
Grooming	0	5
	1-3	0
Dressing	0-1	10
	2	5
	3	0
Bathing	0-1	5
	2-5	0
Toileting	0,3*	10
	1,2	5
	4	0
Transferring	0	15
	1	10
	2-4	5
	5	0
Ambulation	0	15
	1-2	10
	3	5
	4-5	0
Stairs	0	10
	1-2	5
	3-5	0
Feeding	0	10
	1	5
	2-5	0
Incontinence	0	10
	1-5	5

* 3= independent in use of bedpan/urinal

Comorbidity Index

Comorbidity was calculated using the Charlson comorbidity index.[14] This index uses age and multiple comorbid conditions to give a composite score of comorbidity. Diagnoses are weighted according to the severity and likelihood of mortality associated with each disease. Additionally, beginning with age 50, one point is added for each decade of life. The components of the index are shown in Table 2.

Table 2. Comorbidity Index

Comorbidity Score	Condition
1	Coronary artery disease Congestive heart failure Peripheral vascular disease Cerebrovascular disease Dementia Chronic pulmonary disease Connective tissue disorder Peptic ulcer disease Mild liver disease Diabetes
2	Hemiplegia Moderate or severe renal disease Diabetes with end-organ damage Any tumor, leukemia, lymphoma
3	Moderate or severe liver disease
6	AIDS Metastatic solid tumor
+1	Beginning with age 50, one point is added for each decade of life

Caregiver Support

Subjects were coded as having a caregiver if any one of the following items was marked on the OASIS form: ADL support, IADL support, Environmental support, Psychosocial support, Medical care advocate, Financial agent, or Healthcare agent.

Data Analysis

The purpose of this analysis was to determine if admission ADL score, number of visits, comorbidity, payer class, and caregiver support predicted the discharge ADL score. After noting a strong correlation between admission ADL score and discharge ADL score, hierarchical regression analysis was performed to determine how much significance the other variables added to the admission ADL score. A further regression analysis was performed to determine if admission ADL score, comorbidity, payer class, and caregiver support could predict the total number of visits.

In the data analysis, each of the payer classes was coded as a comparison to the HMO group. This was necessary in order to perform the regression analysis. Because of this, HMO is not listed as one of the payer classes in the regression tables.

Results

Of the 336 subjects originally identified as eligible for the study, 335 were admitted to the study. One eligible subject refused service. The mean age of the subjects was 69.3 years. Two hundred nine (62.4%) subjects were female and 126 (37.6%) were male. Caregivers were involved in the care of 316 (94.3%) subjects leaving only 19 (5.7%) subjects without a caregiver.

The mean number of visits was 5.8 (SD=3.8, min/max=1/24). Figure 1 shows the frequency distribution of number of visits.

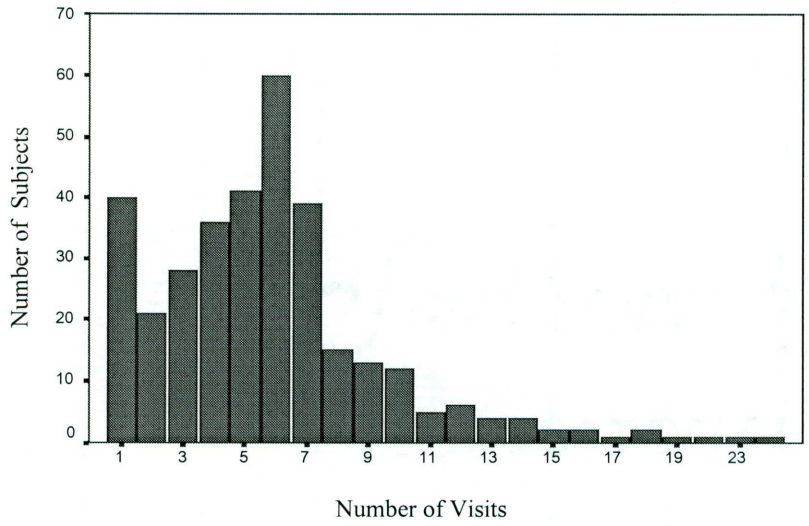

Figure 1. Distribution of number of visits.

The Charlson comorbidity scores ranged from 0 to 11 (mean=4, SD=2.3). Figure 2 shows the frequency distribution for the comorbidity scores.

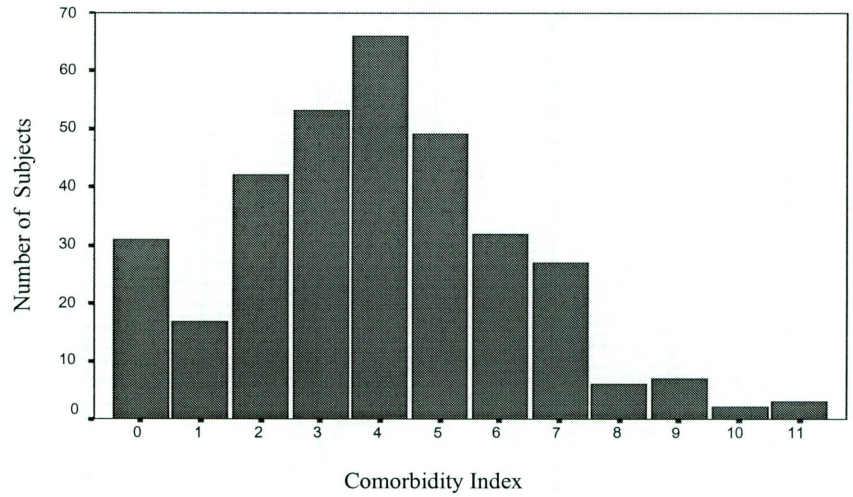

Figure 2. Distribution of comorbidity scores.

The mean admission ADL score was 58.7 (SD=12.7, min/max=10/90). The mean discharge ADL score was 70.8 (SD=16.2, min/max=10/100).

Six groups of payers were identified. HMOs accounted for 169 (50.4%) of the subjects. There were 106 (31.6%) subjects with Medicare, 27 (8.1%) subjects with private insurance, and 22 (6.6%) subjects with Medi-Cal. Veterans Administration (VA) and Workers' Compensation accounted for 6 (1.8%) and 5 (1.5%) subjects respectively. Figure 3 shows the frequency distribution for payer class.

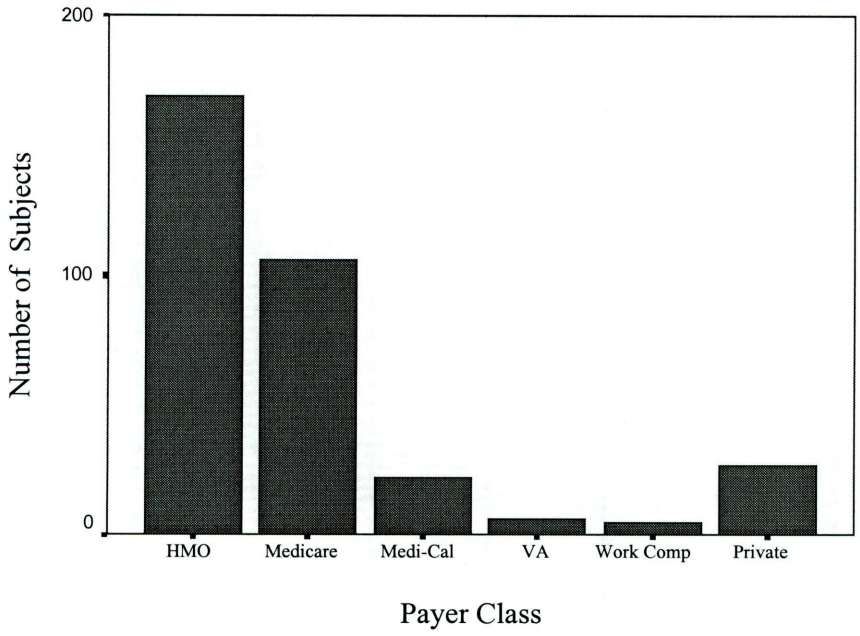

Figure 3. Distribution of payer class.

Table 3 shows means and standard deviations for discharge ADL score by total group, gender, caregiver, payer class, level of comorbidity, and number of visits. The mean discharge ADL score for the total group was 70.8 (SD=16.2, min/max=10/100). Male and female subjects had similar discharge ADL scores (71.4 and 70.5 respectively).

The mean discharge ADL score for subjects with a caregiver was 70.2 (SD=16.4) compared to 80.5(SD=8.9) for subjects without a caregiver. The minimum discharge ADL score for subjects with a caregiver was 10 compared to a minimum discharge ADL score of 70 for subjects without a caregiver. By payer class, Medi-Cal had the lowest mean discharge ADL score with 66.1 (SD=20.1). Private insurance had the highest mean discharge ADL score with 78.3 (SD=12.9). Medi-Cal had a minimum discharge ADL score of 10 compared to private insurance with a minimum discharge ADL score of 55. The mean discharge ADL score by comorbidity ranged from a low of 63.8 for subjects with a comorbidity score of 6, to a high of 75.2 for subjects with a comorbidity score of 2. The mean discharge ADL score by number of visits ranged from a low of 57.5 for subjects with 14 visits, to a high of 75.0 for subjects with 5 visits.

Table 3. Means and Standard Deviations of Discharge ADL Score by Gender, Caregiver, Payer, Comorbidity, and Number of Visits

Group (n)	Mean (SD)	Min/Max
Total Group (335)	70.8 (16.2)	10/100
Gender		
Male (126)	71.4 (17.9)	10/100
Female (209)	70.5 (16.2)	25/100
Caregiver		
Yes (316)	70.2 (16.4)	10/100
No (19)	80.5 (8.9)	70/100
Payer		
HMO (169)	70.7 (16.8)	10/100
Medicare (106)	70.2 (15.2)	20/100
Private (27)	78.3 (12.9)	55/100
Medi-Cal (22)	66.1 (20.1)	10/100
VA (6)	70.0 (16.7)	55/100
Work. Comp. (5)	69.0 (7.4)	60/80
Comorbidity		
0 (31)	71.9 (19.7)	10/100
1 (17)	74.4 (12.9)	40/90
2 (42)	75.2 (16.0)	25/100
3 (53)	74.7 (15.9)	30/100
4 (66)	70.2 (14.5)	30/95
5 (49)	70.7 (16.1)	40/100
6 (32)	63.8 (17.4)	10/100
7 (27)	65.0 (17.2)	20/95
8+ (18)	67.5 (10.3)	50/85
Number of visits		
1 (40)	64.0 (20.5)	10/90
2 (21)	72.1 (17.5)	30/100
3 (28)	64.3 (14.3)	35/100
4 (36)	71.9 (15.9)	20/100
5 (41)	75.0 (15.3)	20/100
6 (60)	73.9 (12.6)	40/100
7 (39)	73.6 (14.8)	45/100
8 (15)	70.3 (14.8)	45/100
9 (13)	70.0 (22.7)	30/100
10 (12)	74.2 (15.9)	45/90
11 (5)	74.0 (17.5)	45/90
12 (6)	67.5 (11.3)	55/85
13 (4)	67.5 (20.6)	40/90
14 (4)	57.5 (12.6)	40/70
15+ (11)	67.7 (14.0)	50/100

Hierarchical regression analysis showed that admission ADL score had the strongest effect on discharge ADL score (R^2= .44). Number of visits, level of comorbidity, and payer class, when added to admission ADL score in the regression analysis, showed further effect on the discharge ADL score (R^2= .52). Table 4 gives the regression coefficients and their significance for these variables.

Table 4. Hierarchical Regression Analysis for Discharge ADL Score

	B	(SE)	p-value
Model 1			
Admission ADL Score	.847	(.05)	.00
Model 2			
Admission ADL Score	.892	(.05)	.00
Number of Visits	.935	(.18)	.00
Comorbidity Index	-1.003	(.29)	.00
Caregiver	-2.066	(2.80)	.46
Private Insurance	5.436	(2.43)	.03
Medi-Cal	-5.269	(2.68)	.05
Medicare	-1.040	(1.44)	.47
Work. Comp.	-3.861	(5.36)	.47
VA	-3.511	(4.80)	.47

Recalculating the regression equation using the variables that had significant regression coefficients gave an R^2= .49 and the following regression equation:

$$Y=16.649 + 0.902X_1 + 0.905X_2 - 1.021X_3$$

where Y=Discharge ADL Score
X_1=Admission ADL score
X_2=Number of visits
X_3=Comorbidity index

Table 5 shows means and standard deviations for number of visits by total group, gender, caregiver, payer class, level of comorbidity, and admission ADL score. The

mean number of visits for the total group was 5.8 (SD=3.8, min/max=1/24). Male and female subjects had a mean number of visits of 5.8. The mean number of visits for subjects with a caregiver was 5.9 (SD=3.8), compared to 4.9 (SD=2.5) for subjects without a caregiver. The maximum number of visits for subjects with a caregiver was 24, compared to 11 for subjects without a caregiver. By payer class, VA had the lowest mean number of visits with 4.3 (SD=2.9), compared to Workers' Compensation with mean number of visits of 6.8 (SD=9.3). VA had a maximum number of visits of 8, compared to 24 for Medi-Cal. Mean number of visits by comorbidity ranged from a low of 4.7 (SD=2.4, min/max=1/8) for a comorbidity score of 1, to a high of 11.0 (SD=2.7, min/max=9/14) for a comorbidity score of 11. Mean number of visits by admission ADL score ranged from a low of 1.0 (SD=.00, min/max=1/1) for subjects with an admission score of 10, to a high of 9.5 (SD=5.6, min/max=3/19) for subjects with an admission score of 35.

Table 5. Means and Standard Deviations of Number of Visits by Gender, Caregiver, Payer, Comorbidity, and Admission ADL Score

Group (n)	Mean (SD)	Min/Max
Total Group (335)	5.8 (3.8)	1/24
Gender		
Male(126)	5.8 (3.7)	1/23
Female (209)	5.8 (3.8)	1/24
Caregiver		
Yes(316)	5.9 (3.8)	1/24
No(19)	4.9 (2.5)	1/11
Payer		
HMO(169)	5.3 (3.4)	1/19
Medicare(106)	6.7 (3.8)	1/20
Private(27)	5.7 (3.0)	1/13
Medi-Cal(22)	5.7 (5.0)	1/24
VA(6)	4.3 (2.9)	1/8
Work. Comp. (5)	6.8 (9.3)	1/23
Comorbidity Index		
0 (31)	5.6 (4.7)	1/23
1 (17)	4.7 (2.4)	1/8
2 (42)	6.3 (3.0)	1/16
3 (53)	5.6 (4.2)	1/24
4 (66)	6.1 (4.0)	1/19
5 (49)	5.4 (2.9)	1/13
6 (32)	5.9 (4.3)	1/20
7 (27)	5.6 (3.4)	1/14
8 (6)	5.2 (3.8)	1/10
9 (7)	5.7 (2.6)	1/9
10 (2)	10.0 (7.1)	5/15
11 (3)	11.0 (2.7)	9/14
Admission ADL Score		
10 (2)	1.0 (.00)	1/1
20 (1)	4.0 (--)	4/4
25 (3)	6.7 (2.1)	5/9
30 (5)	3.6 (2.4)	1/7
35 (8)	9.5 (5.6)	3/19
40 (8)	4.8 (2.4)	1/11
45 (18)	9.2 (5.9)	3/24
50 (56)	7.1 (4.3)	1/18
55 (49)	6.1 (4.3)	1/14
60 (54)	5.7 (3.1)	1/16
65 (56)	5.0 (2.1)	1/12
70 (35)	5.7 (3.7)	1/20
75 (20)	4.5 (2.8)	1/10
80 (10)	2.9 (2.3)	1/6
85 (8)	1.8 (1.8)	1/6
90 (2)	2.0 (1.4)	1/3

Regression analysis using the same independent variables to predict number of visits showed statistical significance. Again, admission ADL score had the strongest effect (R^2=.06). Although statistically significant, only 6% of the variability in number of visits was accounted for by admission ADL. Table 6 gives the regression coefficients and their significance for these variables.

Table 6. Regression Analysis for Number of Visits

	B	(SE)	p-value
Admission ADL Score	-.07	(.02)	.00
Comorbidity Index	.07	(.09)	.46
Caregiver	.14	(.89)	.88
Medicare	1.32	(.45)	.00
Medi-Cal	.44	(.85)	.61
Private	.50	(.77)	.52
VA	-.68	(1.52)	.66
Work. Comp.	1.53	(1.70)	.34

Discussion

The first part of this study determined the effects of admission ADL score, number of visits, level of comorbidity, payer class, and caregiver support on discharge ADL score. The strongest predictor of discharge ADL score was the admission ADL score. Lower admission ADL scores resulted in lower discharge ADL scores indicating these subjects required more assistance in performing ADLs at time of discharge. Conversely, higher admission ADL scores resulted in higher discharge ADL scores indicating these subjects required less assistance in performing ADLs upon discharge.

Level of comorbidity was also a strong predictor of discharge ADL score. Higher levels of comorbidity resulted in lower discharge ADL scores. In other words, the sicker the patients, the lower the discharge ADL scores indicating these subjects required more assistance in ADLs upon discharge.

The data showed that a higher number of visits resulted in higher discharge ADL scores. This is interesting to note in light of the continued push by insurers to limit the number of visits. Further studies are needed, however, to determine the cost/benefit ratio of an increased number of visits.

The effect of payer class on discharge ADL scores was mixed. Discharge ADL scores for subjects with Medicare, VA, and Workers' Compensation did not vary significantly from discharge ADL scores for subjects with HMOs. Subjects with private insurers had significantly better discharge ADL scores than subjects with HMOs. Subjects with Medicaid had significantly worse discharge ADL scores as compared to the subjects with HMOs. The subjects in all of the payer groups had similar admission ADL and comorbidity scores. Finally, the presence of a caregiver did not significantly affect the discharge ADL scores.

The second part of this study determined the effects of admission ADL score, level of comorbidity, payer class, and caregiver support on the number of visits. Admission ADL score was the strongest of the variables studied in predicting the number of visits. It was a weak predictor, however, explaining only 6% of the variability in number of visits ($R^2 = .06$). In general, a lower admission ADL score resulted in higher number of visits.

The effect of payer class on number of visits was mixed. Subjects with Medicaid, VA, and Workers' Compensation did not differ significantly from subjects with HMOs in mean number of visits. Subjects with Medicare, however, received significantly more visits than subjects with HMOs. Although subjects with Medicare received more visits, their discharge scores were not significantly different from subjects with HMOs. The subjects in these two payer groups had similar admission ADL and comorbidity scores.

Unlike the prediction of discharge ADL score, level of comorbidity did not have a significant effect on number of visits. Caregiver support also did not have a significant effect on number of visits. One explanation for this may reside in this study's operational definition of the presence of a caregiver. The subject was noted to have a caregiver if one or more items on the OASIS form were checked for type of caregiver assistance. The responses in this section range from assistance in ADLs to conservator of finance. It is possible that a subject was coded as having a caregiver even though the caregiver was only a financial agent for the subject and not involved in the rehabilitation process. The presence of a caregiver was not sufficient to affect the number of visits in this study. More importantly, it may be the motivation or assistance in complying with the rehabilitation program that determines how the caregiver affects the number of visits. Further studies are needed to measure the effect of the caregiver on motivation and compliance in relation to utilization of home health physical therapy.

When analyzing the data on the total number of visits, it was noted that the largest number of subjects received one or six visits (see Figure 1). In the case of subjects who received one visit, the ADL scores varied from very low to very high. A possible

explanation is that these subjects consisted of two groups. One group was functioning at such a low level, the physical therapist felt there was no potential to continue visits. The other group was functioning at a high enough level to warrant no further visits.

The large number of subjects who received six visits is most likely explained by the way homecare is implemented. Typically, visits are requested by number of weeks, not number of visits. It appears that two weeks of therapy is typical and six visits fit well into two weeks. Further studies are needed, however, to understand how therapy visits are utilized from week to week.

Finally, this study employed the use of the Barthel Index to give global ADL scores for the subjects. The BI has been shown to provide useful information regarding the ADL status of patients who are admitted to home health services. Since most of the information needed to complete the BI can be found in the OASIS assessment which every new patient in home health receives, it is not difficult to convert the OASIS scores to BI scores. The BI can then provide useful information about the anticipated disposition of the patient at time of discharge.

This study was limited by several factors. First, all subjects were taken from a single home health agency; therefore, it may not be possible to generalize these findings to other home health agencies. Second, there were no exclusion criteria for diagnosis. There may be trends in number of visits for specific diagnoses that this study was not able to determine. Finally, as previously stated, the role of the caregiver was operationally defined in a way that made it impossible to distinguish between caregivers who assisted in ADLs and those who may have acted only as financial agents.

A number of questions were raised by this study that warrant further investigation. Increased number of visits resulted in greater independence, but at what point does the cost no longer justify the results? How is home health physical therapy utilized week to week and what is the therapist's rationale for continuing or discontinuing care? What is the role of the caregiver in the motivation/compliance of the patient and how does this affect the role of the home health physical therapist?

Summary

The findings of this study demonstrated that admission ADL score, level of comorbidity and number of visits have the strongest effect on discharge ADL score. Further, admission ADL score, while the strongest predictor of the variables in this study, is a weak predictor of the number of visits utilized in home health physical therapy. Although use of a prediction equation is not warranted by the data, the admission ADL score may provide the physical therapist with useful information when predicting the number of physical therapy visits needed. Finally, the Barthel Index is a useful tool in providing information about a patient's functional status in the home and can easily be calculated using the OASIS assessment and physical therapy evaluation.

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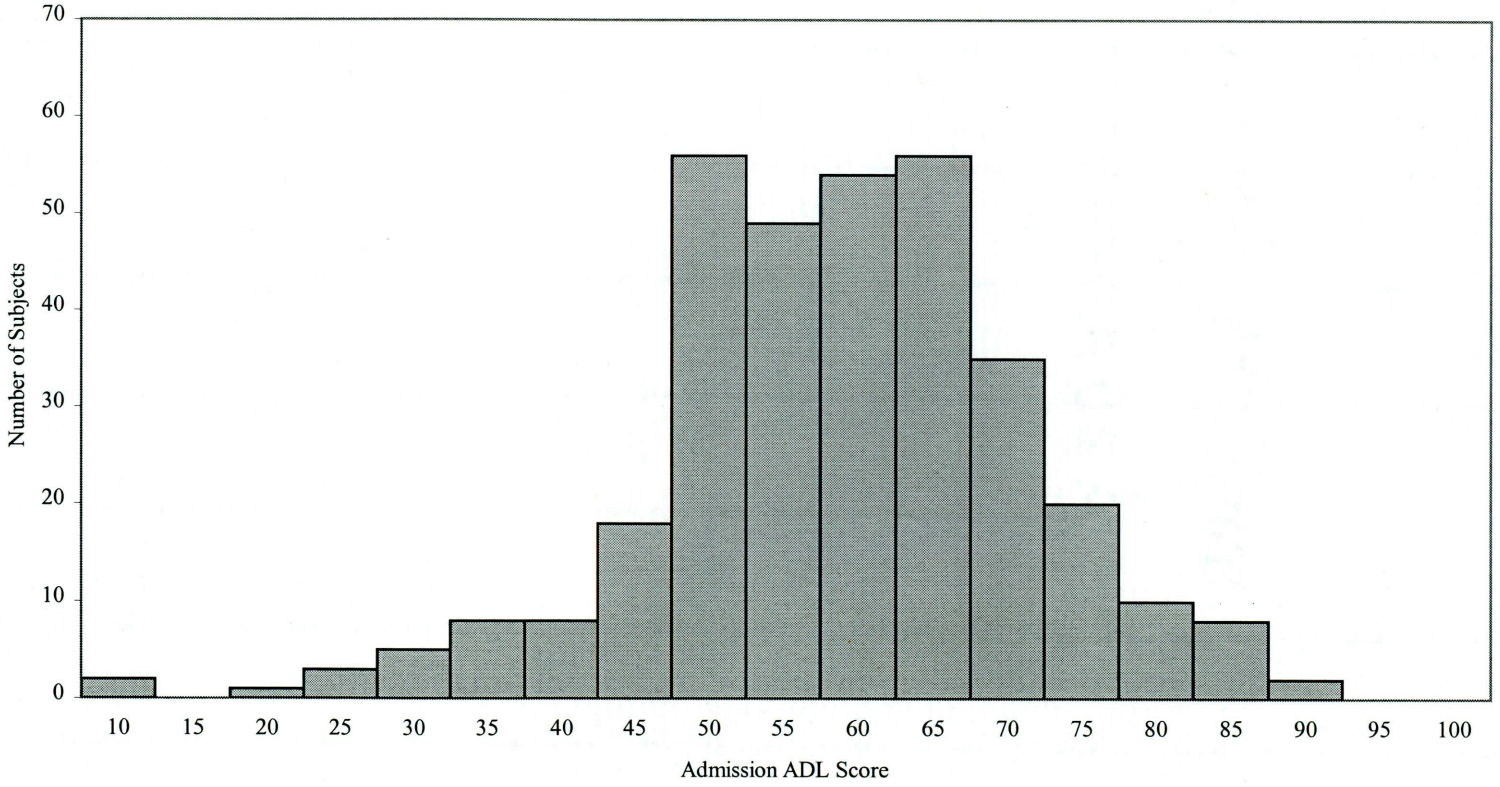
Appendix 1

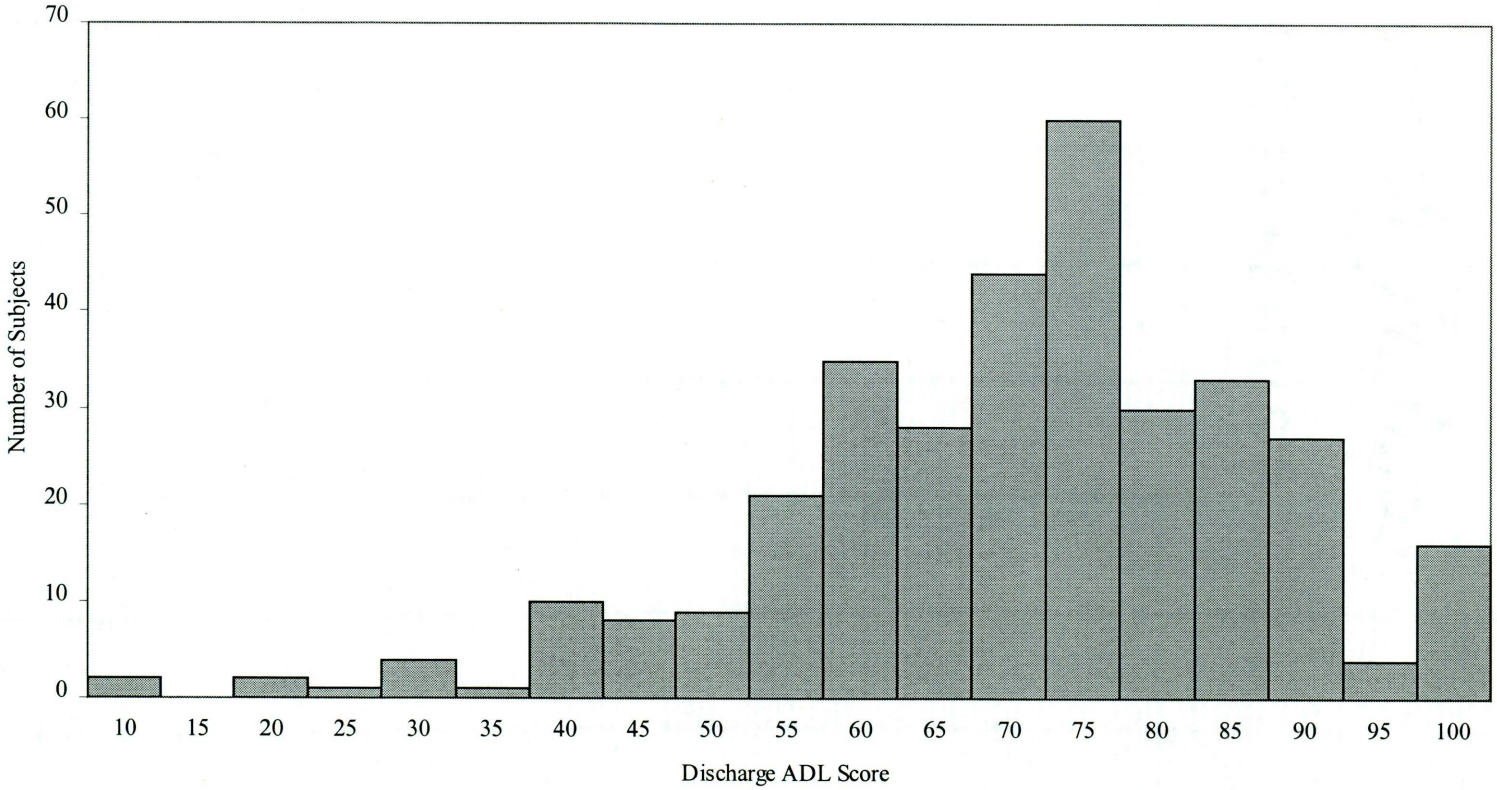
Frequency Distribution Tables

Page

Appendix 1A
ADMISSION ADL SCORES



Appendix 1B
DISCHARGE ADL SCORES



Appendix 2

Barthel Index

Page

Appendix 2
BARTHEL INDEX

		With Help	*Independent*
1.	Feeding (if food needs to be cut up = help)	5	10
2.	Moving from wheelchair to bed and return (includes sitting up in bed)	5-10	15
3.	Personal toilet (wash face, comb hair, shave, clean teeth)	0	5
4.	Getting on and off toilet (handling clothes, clean, flush or ability to use bed pan)	5	10
5.	Bathing self	0	5
6.	Walking on level surface *If unable to walk, propel wheelchair	10 *0	15 *5
7.	Ascend and descend stairs	5	10
8.	Dressing (includes tying shoes, fasteners)	5	10
9.	Controlling bowels	5	10
10.	Controlling bladder	5	10

Appendix 3

Data Collection Tools

Page

Appendix 3A
OASIS ITEMS

MO066	Birth Date
MO069	Gender
MO150	Current Payment Source
MO230	Primary Diagnosis
MO240	Other Diagnoses
MO380	Type of Primary Caregiver Assistance
MO520	Urinary Incontinence
MO540	Bowel Incontinence
MO640	Grooming
MO650	Ability to Dress Upper Body
MO660	Ability to Dress Lower Body
MO670	Bathing
MO680	Toileting
MO690	Transferring
MO700	Ambulation
MO710	Feeding

Appendix 3B
DATA COLLECTION FORM

ID # _____

Age _____

Gender _____

Payer Class _____

Primary Diagnosis _____

Comorbidities _____

Caregiver Assistance _____

Urinary Incontinence _____

Bowel Incontinence _____

Number of visits _____

ADL	Admission	Discharge
Grooming		
Dressing upper body		
Dressing lower body		
Bathing		
Toileting		
Transferring		
Ambulation		
Distance of ambulation		
Feeding		
Barthel Index score		