



## Introduction

The Georgia Health Policy Center at the Andrew Young School of Policy Studies, Georgia State University, was engaged by the Shepherd Spinal Center in Atlanta, Georgia to assist in validating an assessment instrument (the Personal Care Attendant Hour Allotment Worksheet or PCA-HAW) designed to predict the number of hours of paid direct care required by patients enrolled in Shepherd Care - the Georgia Medicaid community-based demonstration waiver program designed to assist individuals with brain and spinal cord injuries.

Georgia has never had available an assessment instrument that is both highly predictive of the care required by home bound brain and spinal cord injured patients and that is easily administered by care coordination staff. Shepherd Care staff hypothesized that if the PCA-HAW was proven to be a reliable predictor of paid direct care hours, its use could be adopted for approximately 800 Independent Care Waiver Program (ICWP) patients statewide. This paper describes the methods and results of this validation study.

## Background

The Shepherd Care program was created from the ICWP in 1997 and incorporates enhanced care management through the use of advanced practice nurses to coordinate medical care for severely disabled clients. Its objectives include reducing emergency room use or hospitalizations and nursing facility placement while providing appropriate medical and supported living services in the community. The program currently serves approximately 100 clients in 20 Georgia counties. The differences in services offered by Shepherd Care and ICWP are outlined in Table 1.

**Table 1: ICWP and Shepherd Care Services**

	ICWP	Shepherd Care
Case Management	•	•
Personal Support Services	•	•
Specialized Medical Equipment and Supplies	•	•
Occupational Therapy	•	•
Respite Care Services	•	•
Counseling	•	•
Environment Modification	•	•
Personal Emergency Response Services	•	•
Adult Day Services	•	
Behavior Management	•	
Speech Therapy	•	
Physical Therapy	•	
Skilled Nursing	•	•

A 2004 study by the Georgia Health Policy Center demonstrated that Shepherd Care participants had risk scores<sup>1</sup> that significantly exceeded those of participants in ICWP - 6.51 versus 5.65 in

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<sup>1</sup> Risk scores were calculated using the Diagnostic Cost Grouping (DCG) system, using both Medicare and Medicaid data.

FY01 and 7.3 versus 5.39 in FY02. In spite of those differences, adjusted cost<sup>2</sup> for Shepherd Care clients in FY02 was \$3,867 per month, while ICWP client cost was \$4,008 per month. The study's authors theorized that management practices were exerted on the Shepherd Care population to effect lower adjusted costs and similar outcomes compared with the ICTF population and in spite of higher risk scores. Program managers speculated that if the PCA-HAW played a role in effective cost management, then perhaps the same controls could be put into place with a larger population (ICWP).

All Shepherd Care clients are assessed with at least two instruments - the PCA-HAW and the Functional Independence Measure (FIM). The FIM is widely used to assess disabled individuals and has been validated in the peer-reviewed literature as a reliable estimate of caregiver support needed by clients (Heinemann, et al. 1997, Hamilton, et al. 1999, Forrest, et al. 2002). Forrest found that total FIM-18<sup>3</sup> scores explained 31 percent of the variance in hours of help. Hamilton found that FIM-18 scores explained 85 percent of the variance in minutes of assistance per day, and Heinemann supported the validity of the FIM by demonstrating strong relationships (*r* values between .40 and .60) between FIM motor scores and burden of care. Heinemann did not show a strong relationship between FIM cognitive scores and total contact time. It should be noted that Forrest's sample included diagnoses ranging from orthopedic to cardiac, while Hamilton studied those with spinal cord injuries, and Heinemann examined those with traumatic brain and spinal cord injuries.

Ideally, correlation between PCA-HAW predicted hours of attendant care would be established in comparison with actual hours of care consumed. However, due to operational constraints, it was decided that because the FIM is established as a strong predictor of attendant care need, FIM would serve as a proxy in establishing a relationship between PCA-HAW predicted paid hours of attendant care and actual hours of attendant care.

## **Methods and Results**

In the spring of 2004, Shepherd Care staff collected FIM scores from 95 patients enrolled in the Shepherd Care program. PCA-HAW scores had been previously collected on all participants as part of their enrollment into the Shepherd Care program. Forty-one individuals were diagnosed with spinal cord injury, 21 were diagnosed with multiple sclerosis, 11 were diagnosed as "dual", three were diagnosed as ABI, and 19 were diagnosed as "other". Twenty-four clients lived alone and 71 did not.

Statistical analyses were first performed using the Pearson Correlation Coefficient test to measure relationships between FIM measures and paid hours of attendant care need as measured by the PCA-HAW. An "assessor" variable was also added to test for inter-rater reliability. The results of those tests are shown in Table 2.

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<sup>2</sup> Costs were adjusted using DCG scores, race, rural or urban status, rehabilitation status, dual eligibility, and mortality status in a regression equation. Unadjusted costs were \$4,227 and \$4,045 respectively for Shepherd Care and ICWP.

<sup>3</sup> The Functional Independence Measure is an 18-point instrument designed to measure severity of disability and is divided into Motor and Cognitive dimensions. FIM-18 refers to a comparison to the full instrument.

**Table 2: Correlations between FIM Measures and PCA-HAW Scores**

Measure	r Value
FIM -18	-.1716
FIM Motor	-.1768
FIM Cognitive	-.0451
Assessor	-.2154

The correlations observed here are not as strong as those reported in previous studies, although the FIM cognitive correlation is within the bounds of those previously reported by Heinemann in patients with spinal cord injuries. The variable most highly correlated with PCA-HAW scores is "assessor". On further investigation, the researchers learned that individuals administering the PCA-HAW also administered the FIM to the same clients.

The researchers next ran a regression model with "attendant care hours per week" (PCA-HAW) as the dependent variable. The independent variables and their related R<sup>2</sup> values are displayed in Table 3.

**Table 3: Linear Regression of FIM Measures and Attendant Care Hours per Week (PCA-HAW)**

Measure	Partial R <sup>2</sup>	Model R <sup>2</sup>
FIM-2 Grooming	.0749	.0749
Assessor	.0563	.1312
FIM-6 Toileting	.0172	.1484
FIM-5 Dressing	.0177	.1661
FIM-15 Express	.0143	.1803
FIM-12 Locomotion	.0060	.1863
FIM-16 Social Interaction	.0101	.1964
FIM-4 Dressing	.0056	.2020
FIM-9 Transfer B/C/WC	.0087	.2107
FIM-14 Comp	.0069	.2176
FIM-11 Transfer T/S	.0044	.2220

As shown in Table 3, the full model<sup>4</sup> can explain only 22.2 percent of the variance between FIM measures and PCA-HAW; whereas the studies previously cited showed substantially more explanatory power between FIM and hours of attendant care.

### Limitations

The greatest constraint on this limited study is that PCA-HAW was created to estimate paid hours of caregiver support, while the FIM has been highly correlated with total hours of caregiver support. Shepherd Care program managers should not abandon the PCA-HAW until it

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<sup>4</sup> No other variable within the FIM-18 met the 0.5000 significance level for inclusion in the model and were not included in Table 3.

can be conclusively determined that the instrument is not a reliable predictor of *paid* caregiver support.

## References

Cooney, J., Landers, G., Rein, D., Bae, J., and Curry, R., "Comparative Assessment of Cost and Care Outcomes among Georgia's Community-based and Facility-based Long-term Care Programs": Atlanta, GA, June 22, 2004.

Hamilton, B., Deutsch, A., Russell, C., Fiedler, R., and Granger, C., "Relation of Disability Costs to Function: Spinal Cord Injury": *Archives of Physical Medicine and Rehabilitation*: 80:385-91; 1999.

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