Predicting Discharge Destination of Stroke Patients in Acute Care Using the AlphaFIM® Instrument

Gary Stillman,* MS, OTR; Paulette Niewczyk, MPH, PhD; Carl V. Granger, MD

University at Buffalo
The State University of New York

Abstract

Stroke is a leading cause of disability in the United States.[1] The use of objective measures to guide clinical decisions in the acute hospital is becoming an important component to the comprehensive management of stroke rehabilitation due to increasing pressure to justify patient access to costly post-acute care services. Unfortunately, little research has investigated the use of objective measures, in part due to the fragmentation of assessments and lack of standardized terms used in the acute care hospital.[2] The study objective was to determine the predictive ability of the AlphaFIM® instrument ("AlphaFIM"); if the AlphaFIM instrument were used in acute care, could it predict post-acute care discharge destination? Post-acute care discharge destination included discharge to inpatient rehabilitation facilities (IRFs), skilled nursing subacute rehabilitation (SAR), long-term acute care (LTAC), or community.

Introduction

- The 18-item FIM® assessment ("FIM") is difficult and time-consuming to perform in the acute care hospital because it requires evaluation by multiple trained and credentialed specialists.[3]
- The AlphaFIM instrument is an abbreviated version of the FIM instrument designed specifically for application in the acute care hospital setting.[4]
- The AlphaFIM instrument allows a single trained and credentialed specialist to quickly assess a patient's independence and dependence in personal care (5–10 minutes).
- The AlphaFIM instrument provides a "link" to the post-acute care continuum.
- The AlphaFIM instrument has four motor and two cognitive items to assess the patient's burden of care (listed below) and is rated on a 7-level ordinal scale, using the same rating categories as the 18-item FIM instrument:
  1. Eating
  2. Grooming
  3. Bowel Management
  4. Transfers: Toilet
  5. Expression
  6. Memory
- The AlphaFIM assessment provides a projected 18-item FIM rating, which is used to assess the patient's burden of care in minutes needed from a caregiver per day. This burden of care rating is used, in part, to determine the patient's post-acute care needs in terms of the most appropriate venue for care.

Design

A cross-sectional sample of stroke patients admitted to an acute care stroke unit in Western New York State.

Methods

- A convenience sample of 620 stroke patients admitted to the acute care unit.
- Participants in the sample underwent computer tomography, magnetic resonance imaging, or magnetic resonance angiography to confirm diagnosis of hemorrhagic or ischemic strokes.
- AlphaFIM ratings were completed within 72 hours of admission to the acute care stroke unit.
- Exclusion criteria were participants:
  - Under the age of 18
  - Length of stay (LOS) of 1 day or less
  - LOS exceeding 30 days
  - Prior history of stroke

Analysis

Data was entered into the Uniform Data System for Medical Rehabilitation (UDSMR) database. SPSS version 17.0 was used to analyze the data. Descriptive and multivariate statistics were conducted; statistical tests included ANOVA, Chi Square, and multiple logistic regression. Statistical significance was set at p<.05 for all analyses. The dependent variable was discharge destination, which was categorized as IRF, SAR, or community. The independent variables were the AlphaFIM projected FIM rating and LOS in acute care. Age of patient, race, sex, and type of stroke (hemorrhagic or ischemic) were controlled for in the analysis.

Results

Demographics of study sample (N=620):

- 47% male, 53% female
- Mean age of participants: 70.5 years (SD +/- 14.4)
- Mean LOS: 8.1 days (SD +/-4.74)
- Mean days between assessment and discharge: 5.65 (SD +/-4.35)

The mean AlphaFIM projected FIM ratings differed significantly among patients discharged to different post-acute care settings: F=129.5 (df=3), p<.01, and eta2=.39. The results appear in table 1.

Table 1: Mean AlphaFIM Projected FIM Ratings and Percentage of Patients Discharged to Post-Acute Care Venues.

Discharge Setting	Number Discharged (Percentage)	Mean (SD) Projected FIM Rating
LTAC	16 (3%)	45.2 (26.4)
SNF	165 (27%)	53.4 (23.6)
IRF	253 (41%)	61.3 (21.3)
Community	186 (30%)	93 (17.1)

Logistic Regression Modeling

Binary logistic regression modeling was performed on the outcome variable, discharge setting, which was dichotomized for each setting and each model (community vs. other, IRF vs. other, SAR vs. other, and LTAC vs. other), and the predictor variables sex, type of stroke, age, LOS in acute care, and the AlphaFIM projected FIM rating. Table 2 provides the results of each model.

Table 2: Logistic Regression Models.

Outcome Variable: Discharge to Community							
Predictor Variables	B	S.E.	Wald	df	p	Exp (B)	C.I. for Exp (B)
Sex	-0.17	0.24	0.51	1	NS	0.85	,53-1.34
Stroke type	3.14	2.23	1.98	1	NS	23.15	,29-1834.74
Age	-0.01	0.01	0.63	1	NS	0.99	,98-1.01
LOS	-0.03	0.04	0.74	1	NS	0.97	,90-1.04
Projected FIM Rating	**0.09**	**0.01**	**119.88**	**1**	**0.00**	**1.1**	**1.08-1.11**
Constant	-10.38	2.79	13.81	1	0.00		
Model Chi-square=301.99 (df=5), p<.01, Cox & Snell=.39, Nagelkerke r2=.55							
Outcome Variable: Discharge to IRF							
Predictor Variables	B	S.E.	Wald	df	p	Exp (B)	C.I. for Exp (B)
Sex	-0.24	0.17	1.97	1	NS	0.78	,56-1.10
Stroke type	0.86	1.64	0.28	1	NS	2.36	,10-58.60
Age	**-0.03**	**0.01**	**22.04**	**1**	**0.00**	**0.97**	**,96-.98**
LOS	**-0.07**	**0.02**	**11.14**	**1**	**0.00**	**0.93**	**,89-.97**
Projected FIM Rating	**-0.03**	**0.00**	**48.71**	**1**	**0.00**	**0.97**	**,96-.98**
Constant	3.64	2.06	3.14	1	0.08		
Model Chi-square=64.05 (df=5), p<.01, Cox & Snell=.10, Nagelkerke r2=.13							
Outcome Variable: Discharge to SAR							
Predictor Variables	B	S.E.	Wald	df	p	Exp (B)	C.I. for Exp (B)
Sex	0.24	0.21	1.3	1	NS	1.27	,84-1.90
Stroke type	-3.83	1.97	3.78	1	NS	0.02	,00-1.03
Age	**0.05**	**0.01**	**34.59**	**1**	**0.00**	**1.06**	**1.04-1.08**
LOS	**0.05**	**0.02**	**5.03**	**1**	**0.03**	**1.05**	**1.01-1.10**
Projected FIM Rating	**-0.02**	**0.01**	**23.08**	**1**	**0.00**	**0.98**	**,97-.99**
Constant	0.02	2.48	0	1	0.96		
Model Chi-square=124.90 (df=5), p<.01, Cox & Snell=.18, Nagelkerke r2=.27							
Outcome Variable: Discharge to LTAC							
Predictor Variables	B	S.E.	Wald	df	p	Exp (B)	C.I. for Exp (B)
Sex	0.52	0.56	0.87	1	NS	1.69	,56-5.04
Stroke type	-1.3	5.12	0.06	1	NS	0.27	,00-6203.10
Age	0.03	0.02	1.38	1	NS	1.03	,98-1.07
LOS	*0.08*	*0.04*	*3.59*	*1*	*0.06*	*1.08*	*1.00-1.18*
Projected FIM Rating	*-0.02*	*0.01*	*3.1*	*1*	*0.08*	*0.98*	*,96-1.00*
Constant	-4.51	6.53	0.48	1	NS		
Model Chi-square=18.18 (df=5), p<.05, Cox & Snell=.03, Nagelkerke r2=.14							

* Variables in **boldface** font are significant predictors of the outcome variable in the model.

** Variables in *italics* indicate a trend. The independent variables may predict the outcome variable if the model had greater statistical power.

Conclusions

- The results of logistic regression modeling indicated that the AlphaFIM projected FIM ratings were significant in predicting discharge to community, IRF, and SAR.
- The AlphaFIM projected FIM rating was the only variable in the dataset that significantly predicted discharge to community.
- Age of patient and LOS in acute care were significant variables, in addition to the AlphaFIM predicted FIM rating, in predicting discharge to inpatient rehabilitation or subacute care.
- The current sample lacked statistical power for patients discharged to long-term acute care (N=16).

Implications for Clinical Practice

- The AlphaFIM instrument can assist the rehabilitation clinician in identifying and "triaging" stroke patients who may require further rehabilitation or who could potentially return back to the community.
- AlphaFIM ratings could be used to satisfy third-party payers' need to justify continued PAC rehabilitation.

References

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