

# Using Progression of Modified Functional Independent Measure as an Indicator of Readmission Risk to Acute Hospital for Patients at a Skilled Nursing Facility

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## Abstract

We determined whether modified functional independent measure (mFIM) score progression is a useful indicator of risk for readmission to acute hospital in patients at skilled nursing facility. This was a cross-sectional study of 198 patients in consecutive admission over 5 months at a skilled nursing facility. mFIM scores were performed by physical therapist and an occupational therapist on 189 patients. mFIM scores were used to determine patient functional progress in treatment among different disposition groups. The difference between the last and first mFIM compared to the length of stay rates the effectiveness of the rehabilitation. The groups are divided by their destinations of discharge: home (n=123), readmit (n=24), custodial nursing facility (n=18), board and care (n=10), assisted living (n=8), expired (n=3), and elective surgery (n=3). Using ANOVA, with a  $p < 0.001$ , the mean  $\Delta$ mFIM of the readmit group was 0.771 (95% CI, -1.397 – 2.938), while the home group was 5.106 (95% CI, 4.239 – 5.972). The mean length of stay of the readmit group was 8.792 days (95% CI, 6.138 – 11.445) and the home group was 13.894 days (95% CI, 12.743 – 15.046). Comparing the groups, the  $\Delta$ mFIM of the readmit group was significantly less than that of the home group. Slow functional progress in skilled nursing facility is a useful predictor for readmission to acute hospital care. The mFIM score trends require larger sample size to have statistically significant results for the different groups

## Introduction

One of the tasks for post-acute interdisciplinary team (IDT) was the reduction readmission of skilled nursing facility patients to acute hospital. Patient rehabilitation to a stable level of health and independence determines a patient's discharge location. The modified Functional Independent Measure (mFIM) provides a uniform system of measurement for physical assessment on an ordinal scale for 6 different items for personal care (Table 1).

We hypothesize that mFIM scores should vary according to patient destination. The mFIM should be an effective indicator of readmission risk that can prevent rehospitalization.

modified Functional Independent Measure	Bed mobility	Bed to chair transfer	Gait with walker	Upper body dressing	Lower body dressing	Toileting hygiene
Total Assist	1	1	1	1	1	1
Maximal Assist	2	2	2	2	2	2
Moderate Assist	3	3	3	3	3	3
Minimal Assist	4	4	4	4	4	4
Contact Guard	4.5	4.5	4.5	4.5	4.5	4.5
Supervision	5	5	5	5	5	5
Modified Independent	6	6	6	6	6	6
Independent	7	7	7	7	7	7

Table 1. mFIM scoring for 6 categories measured on a nominal scale from 1 to 7

## Method

A retrospective study of functional status and progression in 189 of 198 consecutively admitted patients over a period of 5 months at Grossmont skilled nursing facilities. The 9 patients were excluded because FIM scores were not available or performed at the time of this study. The characteristics of the patients are typical of the post acute care management setting (Table 1). mFIM scores were assessed by a physical therapist and an occupational therapist less than 48 hours after admission. Functional status was monitored at IDT meetings once or twice a week.

Characteristic of Patients		Total n = 189	Percent
Mean Age = 81	<70	29	15.34
	71-80	33	17.46
	81-90	94	49.74
	>90	33	17.46
Gender	Male	69	36.51
	Female	120	63.49
Code Status	DNR	73	38.62
	CPR	116	61.38
Prior Living Situation	Home	175	92.59
	Assist living	11	5.82
	Board & care	2	1.06
	Custodial SNF	1	0.53
Discharge disposition	home / hospice	123	65.08
	ER/readmit	24	12.70
	custodial SNF	18	9.52
	board & care	10	5.29
	assist living	8	4.23
	elective surgery	3	1.59
	expired	3	1.59
Admission diagnosis	Medical conditions	115	60.85
	Surgical procedure	74	39.15
	Orthopedic	51	26.98
	Spine surgery	8	4.23
	General surgery	7	3.70
	Vascular surgery	5	2.65
	Head and neck	2	1.06
	Podiatry surgery	2	1.06
	Urology surgery	1	0.53
	Plastic surgery	1	0.53

Table 2. Patient Characteristics according to age group, gender, code status, prior living situation, discharge disposition, and admission diagnosis.

## Analysis

Depending on discharge disposition, 189 patients were divided into the groups: home (122 patients), readmission (24 patients), custodial nursing facility (18 patients), assisted living (8 patients), board and care (10 patients), elected surgery (3 patients), and expired (3 patients). Analysis of variance (ANOVA) was used to determine the relationship of age, length of stay, first mFIM, last mFIM, and  $\Delta$ mFIM compared to discharge destination. All analyses were conducted using the Statistics Open For All (SOFA Statistics).

## Results

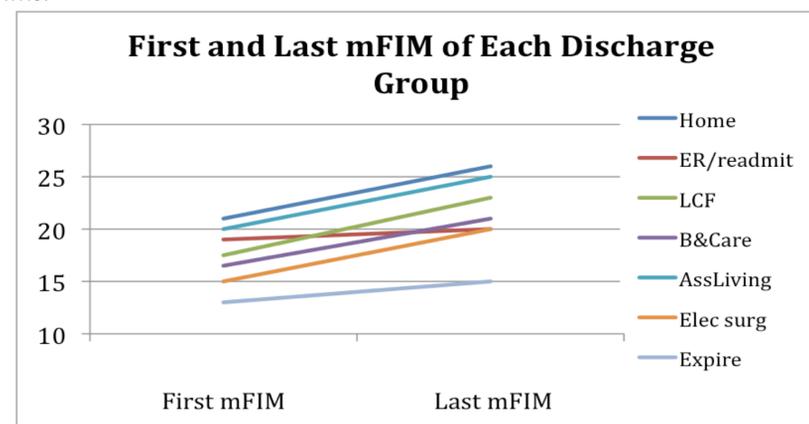
Comparing the various variables to discharge destination, we found that the first FIM, last FIM,  $\Delta$ mFIM, and LOS had significant p-values (Table 3). Our main focus is comparing the home group (65%) and the ER/Readmit group (12.7%). The elective surgery and expired group each had 3 patients, so the populations are not representative.

For the First mFIM, the home group had the highest mean of 21.354, while the ER/Readmit group had the third highest of 19.188. For the Last mFIM, the home group also had the highest mean of 26.459 and the ER/Readmit group was fifth with 20.375. It is most evident in  $\Delta$ mFIM that the ER/Readmit group had the lowest change of 1.188.

Discharge disposition	First mFIM	Last mFIM	$\Delta$ mFIM	LOS
<b>P-value</b>	0.012	<0.001	<0.001	<0.001
Home	21.354	26.459	5.106	14.089
ER/Readmit	19.188	20.375	1.188	8.792
Custodial nursing facility	17.556	23.333	5.778	16.667
Board and care	16.600	21.050	4.450	17.700
Assist living	19.813	25.000	5.188	16.375
Elective surgery	14.833	19.677	4.833	18.667
Expired	13.000	14.677	1.667	15.000

Table 3. Means and P-values for First mFIM, Last mFIM,  $\Delta$ mFIM, and LOS for each discharge group.

In graph 1, the change between the first and last mFIM are most visible. The ER/Readmit and Expire group have the lowest slope. The Home group starts and ends with the highest mean mFIMs.



Graph 1. Comparison of the first and last mFIM for each discharge group

The mean length of stay of the readmit group was 8.792 days compared to the home group's of 14.089 days (Table 3). These results allows us to focus on roughly a week's worth of change in mFIM score. If a patient has not improved from their baseline score, then greater consideration should be placed on their care and condition.

## Discussion

The discharge destinations of home and ER/Readmit had significant differences in mFIM scores and length of stay. Differences in change of mFIM score reflected the improvement in patient health in the rehabilitation setting. These results demonstrates that mFIM is an effective indicator of readmission risk in this retrospective study. We show that the change in mFIM score is most important in the first week of recovery.

Slow progression of functional status in  $\Delta$ mFIM for a week in rehabilitation is a practical predictor of readmission to acute hospital for patients at post-acute care setting in skilled nursing facility. The modified FIM is a strong indicator of physical needs, which is only one aspect of patient outcome. Whereas it may be a useful indicator of disability, a major goal is to use it to provide better medical care and attention to diminish future hospitalization.

## References

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