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Original Research

Activity Measure for Post-Acute Care "6-Clicks" Basic Mobility Scores Predict Discharge Destination After Acute Care Hospitalization in Select Patient Groups: A Retrospective, Observational Study

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KEYWORDS
Outcome assessment, health care 2;
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Abstract *Objectives:* To establish cutoff scores for the Activity Measure for Post-Acute Care "6-Clicks" standardized Basic Mobility scores (sBMSs) for predicting discharge destination after acute care hospitalization for diagnostic subgroups within an acute care population and to evaluate the need for a second score to improve predictive ability.
Design: Retrospective, observational design.
Setting: Major medical center in metropolitan area.
Participants: Electronic medical records of 1696 adult patients (>18 years) admitted to acute care from January to October 2018. Records were stratified by orthopedic, cardiac, pulmonary, stroke, and other neurological diagnoses (N=1696). ***Interventions:*** None
Main Outcome Measure: Physical therapists scored patients' sBMSs after referral for physical therapy and prior to discharge. Receiver operating characteristic curves delineated sBMS cutoff scores distinguishing various pairings of home, home with services, inpatient rehabilitation, or skilled nursing facility discharges. First and second sBMSs were compared with percentage change of the area under the curve and inferential statistics.
Results: Home vs institution cutoff score was 42.88 for combined sample, pulmonary and neurological cases. The cutoff score for orthopedic diagnoses score was 41.46. Cardiac and stroke model quality invalidated cutoff scores. Home without services vs skilled nursing discharges and home with services vs skilled nursing discharges were predicted with varying cutoff scores per

List of abbreviations: AM-PAC, Activity Measure for Post-Acute Care; AUC, area under curve; IRF, inpatient rehabilitation facility; ROC, receiver operating characteristic; sBMS, AM-PAC "6-Clicks" standardized Basic Mobility scores; SNF, skilled nursing facility.
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diagnosis. sBMS cutoff scores collected closer to discharge were either the same or higher than first cutoffs, with varying effects on predictive ability.
Conclusions: sBMSs can help decide institution vs home discharge and finer distinctions among discharge settings for some diagnostic groups. A single sBMS may provide sufficient assistance with discharge destination decisions but timing of scoring and diagnostic group may influence cutoff score selection.

The Activity Measure for Post-Acute Care (AM-PAC) tracks patient functional status across care settings.[1,2] The AM-PAC "6-Clicks" version is the latest iteration of the tool consisting of Basic Mobility and Daily Activity domains. These tools document degree of difficulty or assistance needed for functional tasks[3] with strong validity,[3,4] interrater reliability,[4-7] and sensitivity to change over time.[8,9] Recent research confirmed that the "6-Clicks" tools may play an important role in predicting discharge destination in acute care[6,10-16] and other inpatient[17-19] and outpatient settings.[20-23] Clinicians may use Basic Mobility and/or the Daily Activities "6-Clicks" scores along with factors such as patients' personal circumstances in deciding whether discharge to home, with or without services, or an institution (skilled nursing facility [SNF] or inpatient rehabilitation facility [IRF]) best meets patients' needs. Selecting the appropriate discharge destination helps to ensure the appropriate continuum of care while working toward rehabilitation goals, thus optimizing overall health care costs.[19,24,25]

Standardized cutoff scores for basic mobility predicted home vs institution discharge after acute care, with higher scores indicating return to home.[10] Though home vs institution cutoff scores are well established,[10,12,14,15,19,26] few researchers[15,16,19] have examined finer distinctions in placement, such as home vs home with services or SNF vs IRF. Using a sample from a tertiary care academic hospital that treats complicated diagnoses, Warren et al[19] determined that standardized Basic Mobility scores (sBMSs) can help predict finer distinctions among discharge settings. Some studies examined specific segments of acute care populations to determine whether unique cutoff scores existed for diagnostic groups.[11,13,15,26-28] Harry et al[16] found that discharge from acute care to home or to an SNF could be predicted with sBMSs of patients with trauma, elective joint replacement or reattachment, and spinal fusion (excluding cervical). They used the sBMS cutoff score of 42.9 suggested by Jette et al[10] but found that a higher Basic Mobility score of 44.5 improved sensitivity with slight reduction in specificity of the prediction model.[16] A cutoff score of 33.99 helped predict discharge to inpatient rehabilitation for patients with stroke.[13] Older adults with cardiovascular disease showed a greater referral to further inpatient care if sBMS was 44.5 using a discharge score.[14] These examples demonstrate that the diagnostic reason for the acute care admission may influence appropriate cutoff scores for discharge decisions. In addition, cutoff scores may vary if scoring is completed upon referral for therapy or prior to discharge from acute care.[14]

We explored whether the current guidance for home vs institution discharge decisions offered by Jette et al[10] in a general acute care setting may need to be modified to make finer distinctions among discharge destinations for 5 diagnostic groups common to acute care and inpatient rehabilitation units (orthopedic, cardiac, pulmonary, stroke, and other neurological conditions). Understanding whether inpatient rehabilitation, skilled nursing placement, or home discharge (with or without services) provides the best care for patients may be greatly facilitated with guidance from sBMS cutoff scores for patients with these diagnoses. We also explored the relative value of cutoff scores derived from scoring upon referral for therapy or scoring closer to discharge.

The objectives of our study were to establish cutoff scores for the AM-PAC "6-Clicks" sBMSs for predicting discharge destination after acute care hospitalization for diagnostic subgroups within an acute care population and whether timing of scoring relative to acute care admission affected predictive ability.

We hypothesized similar cutoff scores predicting home vs institution compared to prior studies but that cutoff scores would vary by diagnostic groups and the paired discharge comparisons. For example, the physical status of a patient with a cardiac diagnosis may necessitate different cutoff scores for discharge options than for someone with an orthopedic diagnosis. Lastly, we hypothesized that first and second sBMS cutoff scores would be similar regardless of the relative timing of the scoring. We chose this null hypothesis because few studies have examined the effect of relative timing of scoring on cutoff scores.

Methods

Data source

Data for this retrospective, observational study were derived from electronic medical records of patients admitted for acute care in 3 hospitals in the Montefiore Health System, Bronx, New York, between January 1, 2018, and October 30, 2018.

Inclusion criteria were as follows: 18 years of age or older, diagnosis and discharge destination on record, and at least 2 AM-PAC "6-Clicks" Basic Mobility scores on file. Additional inclusion criteria were based on our a priori decision to include patients with diagnoses that may be referred for inpatient rehabilitation or post-acute SNF or to home with or without home care. Subjects were excluded from the study if they were admitted to the Children's Hospital at Montefiore, if they were younger than 18 years, or if they

had an unknown diagnosis or unknown discharge destination. Diagnostic groups with small representation in the main database were excluded even if these patients might be referred to inpatient rehabilitation. Persons with general medical and surgical admissions were excluded because of difficulty in classifying them into diagnostic groups. The Institutional Review Boards of Albert Einstein College of Medicine and Hunter College of the City University of New York gave ethics approval. Informed consent was not necessary because of the nature of the study.

Data extraction, synthesis, and analysis

Trained physical therapists recorded raw Basic Mobility scores during their evaluation of patients soon after physician referral for therapy (first scores). Basic mobility was assessed using either direct observation or caregiver interview.[3] A 1 to 4 score was documented for bed mobility, transfers, ambulation, and stair negotiation indicating level of difficulty/help needed for each item, with lower scores indicating poorer function, through a score range of 6-24.[3] Physical therapists then scored basic mobility prior to discharge from acute care (second score). We were not able to extract exact day postadmission on which scoring occurred.

Physical therapists entered the raw scores for the Basic Mobility "6-Clicks" into the electronic medical recorded and researchers later extracted these for research purposes. We followed the guidance of the original researchers to convert the raw scores to standardized scores.[3] Jette et al based standardization of "6-Clicks" Basic Mobility on the full AM-PAC item bank and converted raw scores to standardized Basic Mobility scores based on the T score scale (mean=50; standard deviation=10; minimum=23.55; maximum=61.14).[3] Researchers also extracted patients' age, sex, admission diagnosis, and discharge destination from the electronic medical record. Discharge destination was coded on the medical record as home without services (no home care), home with services (home care), or name of a specific institution. Researchers recoded the specific institutions as skilled nursing facility or inpatient rehabilitation facility. A diagnostic category for each patient's admitting diagnosis was determined by consensus of the research team. Orthopedic, cardiac, pulmonary, stroke, and other neurological groups were chosen for this study because these patients often require post-acute services after discharge and their group sample sizes were adequate for statistical purposes (>100). Descriptive statistics were generated for the entire sample and for 5 diagnostic categories.

Receiver operating characteristic (ROC) curves delineated the cutoff score of the sBMSs, which distinguished one discharge destination from the other. Comparisons of cutoff scores, area under the curve (AUC), and overall model quality from ROC analyses was applied to binary comparisons among the discharge destinations (home or home with services vs inpatient care, home vs home with services, home vs SNF, home with services vs SNF, IRF vs SNF). Area under the curve of the ROC determined the fit of each model with AUC of 0.7-0.8 considered acceptable, 0.8-0.9 considered excellent, and >0.9 regarded as outstanding.[29,30] We considered models with an AUC of at least 0.7 to be robust. Overall model quality, which is the lowest limit of the 95% confidence interval for the AUC, was used to compare models using an a priori limit of 0.7.[30] The formula of Schneeweiss et al[31] compared AUC between first and second sBMSs.[11] For this formula, the amount that each AUC exceeds a null model (0.50) is calculated and then subtracted from each other and divided by the second AUC−0.50:

Absolute change in predictive power

$$= [(AUC_2 - 0.50) - (AUC_1 - 0.50)]/(AUC_2 - 0.50) * 100.$$

Separate logistic regressions were performed for all of the binary comparisons using the first and second sBMSs. Fifty percent of the predicted probabilities distribution was used to set a cut-point for the logistic regressions. This procedure yielded contingency tables of predicted and actual frequencies, which were used to calculate sensitivity and specificity and their respective 95% confidence intervals.[10,16,19] Positive and negative predictive values (PPVs and NPVs, respectively) were also generated from the contingency table values. Hosmer and Lemeshow tests with $P>.05$ indicated goodness of fit of the logistic regression model. Odds ratios were generated for the logistic regression models.[16]

Paired *t* tests compared first and second sBMS scores for the combined sample and for diagnostic groups. The direction of the change (improved, no change, declined) from the first to the second scoring was assessed for the combined sample and for diagnostic groups with frequency and chi-square analyses. IBM SPSS Statistics for Windows v27.0 (IBM Corp., Armonk, NY) was used to conduct all analyses with a *P* value set at .05.

Results

The initial consecutive data set had 4355 entries. After following inclusion and exclusion criteria, 1846 were classified into 1 of the 5 diagnostic categories—orthopedic, cardiac, pulmonary, stroke, or other neurological conditions—by consensus of the research team. The final sample had 1696 subjects who had 2 Basic Mobility scores on record (figure 1). Table 1 describes the combined sample from all 5 groups and diagnostic group frequency distributions of age, sex, and discharge destination. Table 2 presents mean±SD sBMSs based on discharge destination of the combined sample and stratified by diagnosis.

Table 3 presents ROC cutoff scores from the first and second sBMSs for home (with or without services) vs institution (SNF or IRF) as well as home vs SNF and home with services vs SNF. The raw "6-Clicks" Basic Mobility scores are listed with the cutoff scores in table 3. The dashed lines in table 3 demarcate group comparisons where model quality did not meet our a priori criteria of 0.7. Comparisons for home vs home with services and IRF vs SNF failed the a priori criterion for robustness and are not presented in table 3.

Table 4 presents the combined sample and diagnostic group predictive utility for home vs institution and other discharge comparisons. Sensitivity was good and specificity was moderate for the home vs institution comparisons. Home vs SNF and home with services vs SNF yielded moderate to good sensitivity and specificity. Moderate sensitivity and good specificity for the home vs home with services comparison indicated that the model was better at predicting discharge to home with services. The IRF vs SNF discharge

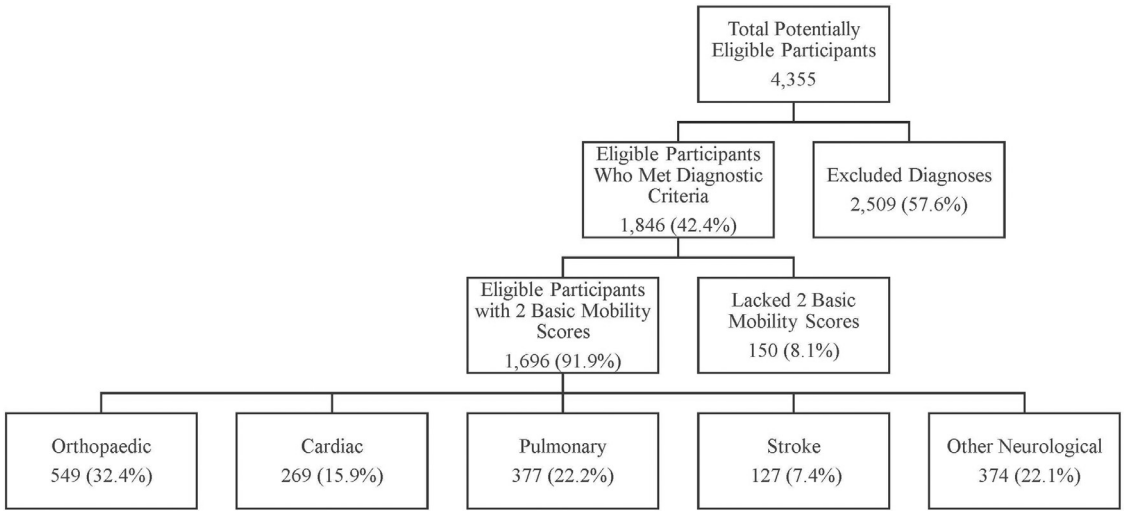

Fig 1 Standards for reporting of diagnostic accuracy flow diagram.

predictions had good to strong specificity but low sensitivity with the exception of the stroke group. The model was better at predicting discharge to inpatient rehabilitation for patients with stroke.

Our second objective was to determine whether the effect of early vs later scoring on cutoff scores. Scores taken upon referral to therapy (first scores) were compared to those closer to discharge (second scores). Paired *t* tests indicated that second sBMSs were higher than the first (t=−15.93, df=1695, P<.001) for the combined sample. Figure 2 illustrates the frequency analyses of the direction of the change (declined, stayed the same, improved) for all diagnostic groups. The distributions were similar across diagnostic groups, with approximately 70% of patients having the same first and second sBMSs, less than 10% declining, and approximately 20% improving. The exception to this trend was with the orthopedic group, where 42.1% of patients stayed the same, 50.3% improved, and 7.3% declined on their second score. Chi-square analysis confirmed these group differences (χ^2=160.8, df=8, P<.001).

Table 3 illustrates that the change in AUC from the first to second scorings with sBMS was less than 9% for the home vs institution combined sample and diagnostic group scores. Those for the home vs SNF analyses were less than 5% with the exception of the cardiac group, which was 19%. The home with services vs SNF comparison showed that improvements with second AUC were 20% or less.

Discussion

Cutoff scores for predicting discharge to home vs institution

In the combined sample, the standardized Basic Mobility cutoff score for predicting discharge to home (with and without services) vs institution (SNF or IRF) was 42.88 (PPV=0.84-0.87). In our stratified analysis, pulmonary and other neurological diagnoses also had first sBMS cutoff scores of 42.88 to predict home vs institution discharge, each with PPV above

Table 1 Frequency distributions of age group, sex, and discharge destination for the full sample and by diagnostic category

	Full Sample, n (%)	Orthopedic, n (%)	Cardiac, n (%)	Pulmonary, n (%)	Stroke, n (%)	Other Neurological, n (%)
Total	1696 (100)	549 (32.4)	269 (15.8)	377 (22.2)	127 (7.5)	374 (22.1)
Age group						
18-39 y	82 (4.8)	29 (5.3)	8 (2.9)	12 (3.2)	6 (4.7)	27 (7.2)
40-64 y	637 (37.6)	260 (47.4)	76 (28.3)	117 (31.0)	50 (39.4)	134 (35.8)
65-84 y	767 (45.2)	216 (39.3)	143 (53.2)	190 (50.4)	58 (45.7)	160 (42.8)
85+ y	210 (12.4)	44 (8.0)	42 (15.6)	58 (15.4)	13 (10.2)	53 (14.2)
Sex						
Male	739 (43.6)	207 (37.7)	131 (48.7)	165 (43.8)	59 (46.5)	177 (47.3)
Female	957 (56.4)	342 (62.3)	138 (51.3)	212 (56.2)	68 (53.5)	197 (52.7)
Discharge destination						
Home	425 (25.0)	102 (18.6)	56 (20.8)	121 (32.1)	35 (27.6)	111 (29.7)
Home with services	733 (43.2)	282 (51.3)	153 (56.9)	147 (39.0)	37 (29.1)	114 (30.5)
Skilled nursing facility	398 (23.5)	151 (27.5)	47 (17.5)	91 (24.1)	17 (13.4)	92 (24.6)
Inpatient rehab facility	140 (8.3)	14 (2.6)	13 (4.8)	18 (4.8)	38 (29.9)	57 (15.2)

Table 2 Mean±SD and 95% confidence intervals of standardized "6-Clicks" scores by discharge destination and diagnostic group

Diagnostic Group	Discharge Destination	Home				Home With Services				Inpatient Rehabilitation Facility				Skilled Nursing Facility			
	Standardized Basic Mobility "6-Clicks" Score	N	Mean±SD	95% CI		N	Mean (SD)	95% CI		N	Mean (SD)	95% CI		N	Mean (SD)	95% CI	
				Lower	Upper			Lower	Upper			Lower	Upper			Lower	Upper
Cardiac	1	56	45.4 9.3	42.9	47.8	153	47.2 8.4	45.8	48.5	13	38.6 6.7	34.6	42.7	47	40.0 8.0	37.7	42.4
	2	56	46.4 9.4	43.9	49.0	153	48.6 7.9	47.3	49.8	13	45.4 9.0	39.9	50.8	47	40.1 6.7	38.1	42.1
Other neurological	1	111	47.7 11.5	45.5	49.9	114	44.6 10.4	42.6	46.5	57	38.2 8.4	36.0	40.4	92	35.0 8.4	33.2	36.7
	2	111	48.8 11.2	46.7	50.9	114	45.4 10.0	43.5	47.2	57	41.1 6.9	39.2	42.9	92	36.7 7.9	35.0	38.3
Orthopedic	1	102	48.4 9.3	46.5	50.2	282	43.3 5.1	42.7	43.9	14	38.3 3.9	36.1	40.6	151	38.2 6.8	37.1	39.3
	2	102	50.2 9.3	48.4	52.1	282	49.1 7.4	48.2	49.9	14	40.5 5.4	37.4	43.7	151	40.6 7.7	39.4	41.9
Pulmonary	1	121	48.8 10.8	46.9	50.8	147	46.4 8.2	45.0	47.7	18	37.5 9.3	32.8	42.1	91	38.9 8.3	37.1	40.6
	2	121	49.1 11.0	47.1	51.1	147	47.5 8.2	46.1	48.8	18	41.9 9.9	37.0	46.8	91	39.8 8.4	38.0	41.5
Stroke	1	35	46.6 11.5	42.7	50.6	37	43.2 11.5	39.4	47.0	38	39.3 8.5	36.5	42.1	17	30.8 7.5	27.0	34.7
	2	35	48.5 11.5	44.5	52.4	37	44.6 11.3	40.8	48.3	38	41.1 8.5	38.3	43.9	17	31.7 7.6	27.8	35.5
All categories	1	425	47.8; 10.5	46.8	48.8	733	44.9 8.0	44.3	45.5	140	38.5 8.0	37.1	39.8	398	37.5 8.0	36.7	38.3
	2	425	48.9; 10.5	47.9	49.9	733	47.8 8.4	47.2	48.5	140	41.5 7.9	40.2	42.9	398	39.1 8.1	38.3	39.9

Abbreviation: CI, confidence interval.

Table 3 First and second Basic Mobility cutoff scores, area under the curve, and overall model quality for various discharge setting comparisons

	Home (With or Without Services) vs Institution (Inpatient Rehabilitation or Skilled Nursing Facilities									
	Basic Mobility Score	Home With or Without Services n	Institution n	Cutoff	Raw Score[3]	AUC	95% CI		Overall Model Quality	%
							Lower Bound	Upper Bound		
All	1	1158	538	42.88	17.5	0.758	0.734	0.782	0.73	3.7
	2	1158	538	42.88	17.5	0.768	0.744	0.791	0.74	
Orthopedic	1	384	165	41.46	16.5	0.778	0.734	0.821	0.73	8.9
	2	384	165	42.88[a]	17.5	0.805	0.765	0.846	0.77	
Pulmonary	1	268	109	42.88	17.5	0.765	0.714	0.815	0.71	−6.9
	2	268	109	42.88	17.5	0.748	0.696	0.801	0.7	
Other neurological	1	225	149	42.88	17.5	0.762	0.714	0.809	0.71	−4.8
	2	225	149	46.56[a]	19.5	0.75	0.701	0.799	0.7	
Cardiac	1	209	60	46.56	19.5	0.718	0.647	0.789	0.65	2.7
	2	209	60	44.54[b]	18.5	0.724	0.653	0.796	0.65	
Stroke	1	72	55	46.56	19.5	0.719	0.62	0.799	0.62	2.2
	2	72	55	46.56	19.5	0.724	0.636	0.813	0.64	

	Home vs Skilled Nursing Facility									
	Basic Mobility Score	Home n	SNF N	Cutoff	Raw Score	AUC	95% CI		Overall Model Quality	%
							Lower Bound	Upper Bound		
All	1	425	398	42.88	17.5	0.782	0.751	0.814	0.75	−2.6
	2	425	398	46.55*	19.5	0.775	0.743	0.807	0.74	
Stroke	1	35	17	39.44	15.0	0.862	0.762	0.962	0.76	4.0
	2	35	17	41.45*	16.5	0.877	0.783	0.972	0.78	
Orthopedic	1	102	151	42.88	17.5	0.812	0.757	0.868	0.76	−5.4
	2	102	151	44.54*	18.5	0.796	0.737	0.855	0.74	
Neurological	1	111	92	46.56	19.5	0.808	0.749	0.867	0.75	0.00
	2	111	92	44.54†	18.5	0.808	0.749	0.868	0.75	
Pulmonary	1	121	91	46.56	19.5	0.775	0.713	0.838	0.71	−4.2
	2	121	91	46.56	19.5	0.764	0.7	0.828	0.7	
Cardiac	1	56	47	39.44	15.0	0.651	0.545	0.756	0.55	19.2
	2	56	47	46.55*	19.5	0.687	0.586	0.788	0.59	

Home With Services vs Skilled Nursing Facility										
					Raw Score	AUC	95% CI			%
	Basic Mobility Score	Home With Services n	SNF n	Cutoff			Lower Bound	Upper Bound	Overall Model Quality	
All	1	733	398	41.46	16.5	0.753	0.724	0.783	0.72	10.6
	2	733	398	42.88*	17.5	0.783	0.755	0.811	0.76	
Orthopedic	1	282	151	41.46	16.5	0.76	0.709	0.81	0.71	13.9
	2	282	151	42.88*	17.5	0.802	0.758	0.847	0.76	
Neurological	1	114	92	42.88	17.5	0.765	0.701	0.829	0.7	−2.3
	2	114	92	42.88	17.5	0.759	0.694	0.824	0.69	
Stroke	1	37	17	38.78	14.5	0.806	0.69	0.922	0.69	7.0
	2	37	17	44.54*	18.5	0.829	0.72	0.935	0.72	
Pulmonary	1	147	91	42.88	17.5	0.748	0.685	0.811	0.68	2.4
	2	147	91	42.88	17.5	0.754	0.691	0.817	0.69	
Cardiac	1	153	47	38.78	14.5	0.724	0.641	0.808	0.64	20.3
	2	153	47	41.46*	16.5	0.781	0.708	0.855	0.7	

NOTE. Raw score, "6-Clicks" Basic Mobility score prior to standardization; %, absolute change in predictive power. Absolute change in predictive power=$[(AUC_2-0.50)-(AUC_1-0.50)]$/absolute change in predictive power=$[(AUC_2-0.50)-(AUC_1-0.50)]/(AUC_2-0.50)*100$.[31] Items below the dashed lines did not meet our a priori criteria of ≥0.70 to be considered robust using the first standardized Basic Mobility scores. Note 2 cases in the home with services and SNF comparison (stroke and cardiac) where the second standardized Basic Mobility score met the a priori criteria.

Abbreviation: CI, confidence interval.

* Second standardized Basic Mobility cutoff score higher than first.

† First standardized Basic Mobility cutoff score higher than second.

Table 4 Predictive utility of first and second Basic Mobility scores for the whole sample and for diagnostic categories examining dichotomous pairings of discharge destinations

Home (With/Without Services) vs Institution (Inpatient Rehabilitation or Skilled Nursing Facility)															
Group	Basic Mobility Score	n	Sensitivity	Sensitivity 95% CI		Specificity	Specificity 95% CI		PPV	NPV	Nagelkerke R^2	Hosmer & Lemeshow χ^2 (df)	*P*	Odds Ratio	95% CI Odds Ratio
				Lower	Upper		Lower	Upper							
All	1	1696	0.785	0.784	0.785	0.593	0.591	0.595	0.839	0.504	0.23	28.1 (7)	<.001	1.12	1.11-1.13
	2	1696	0.769	0.769	0.770	0.608	0.606	0.610	0.869	0.439	0.23	41.77 (8)	<.001	1.1	1.10-1.13
Cardiac	1	269	0.816	0.813	0.820	0.486	0.466	0.505	0.914	0.283	0.17	5.93 (8)	.656	1.11	1.07-1.16
	2	269	0.825	0.822	0.828	0.543	0.522	0.563	0.923	0.317	0.17	2.11 (7)	.953	1.12	1.07-1.17
Neurology	1	374	0.772	0.768	0.775	0.607	0.603	0.612	0.707	0.685	0.25	15.58 (8)	.049	1.1	1.07-1.12
	2	374	0.779	0.775	0.782	0.600	0.596	0.604	0.689	0.705	0.22	21.03 (8)	.007	1.1	1.07-1.12
Orthopedic	1	549	0.798	0.796	0.800	0.625	0.619	0.631	0.875	0.485	0.25	17.22 (7)	.016	1.19	1.14-1.24
	2	549	0.802	0.801	0.804	0.693	0.686	0.700	0.909	0.479	0.30	17.93 (6)	.006	1.16	1.13-1.20
Pulmonary	1	377	0.779	0.777	0.782	0.517	0.509	0.525	0.843	0.413	0.22	10.30 (8)	.245	1.11	1.08-1.14
	2	377	0.764	0.762	0.767	0.514	0.504	0.524	0.869	0.339	0.19	11.15 (7)	.132	1.09	1.06-1.12
Stroke	1	127	0.724	0.711	0.734	0.565	0.555	0.576	0.583	0.709	0.17	15.503 (7)	.03	1.08	1.04-1.12
	2	127	0.816	0.802	0.826	0.590	0.580	0.599	0.556	0.836	0.18	10.50 (8)	.231	1.08	1.04-1.12
Home vs Home with Services															
All	1	1158	0.466	0.465	0.467	0.716	0.715	0.717	0.579	0.615	0.03	66.66 (8)	<.001	1.04	1.02-1.05
	2	1158	0.359	0.358	0.360	0.609	0.606	0.612	0.734	0.240	0.00	58.87 (8)	<.001	1.01	0.99-1.03
Cardiac	1	209	0.375	0.357	0.385	0.751	0.747	0.756	0.214	0.869	0.01	7.82 (7)	.349	0.98	0.94-1.01
	2	209	0.359	0.351	0.369	0.772	0.767	0.777	0.411	0.732	0.02	7.5 (7)	.378	0.97	0.93-1.00
Neurology	1	225	0.600	0.593	0.607	0.600	0.594	0.606	0.568	0.632	0.03	8.96 (7)	.256	1.03	1.00-1.05
	2	225	0.682	0.673	0.689	0.592	0.587	0.598	0.523	0.740	0.04	8.7 (6)	.191	1.03	1.00-1.06
Orthopedic	1	384	0.568	0.560	0.575	0.824	0.822	0.827	0.490	0.865	0.14	55.15 (6)	<.001	1.11	1.08-1.15
	2	384	0.426	0.417	0.433	0.769	0.767	0.771	0.284	0.862	0.01	33.05 (7)	<.001	1.02	0.99-1.05
Pulmonary	1	268	0.545	0.540	0.551	0.640	0.634	0.645	0.595	0.592	0.02	12.99 (8)	.112	1.03	1.00-1.06
	2	268	0.528	0.523	0.534	0.614	0.609	0.619	0.537	0.605	0.01	20.23 (8)	.01	1.02	0.99-1.05
Stroke	1	72	0.547	0.534	0.568	0.684	0.645	0.724	0.829	0.351	0.03	10.83 (8)	.212	1.027	0.985-1.07
	2	72	0.547	0.534	0.568	0.684	0.645	0.724	0.829	0.351	0.04	97.66 (7)	.05	1.03	0.99-1.08
Home vs Skilled Nursing Facilities															
All	1	823	0.692	0.691	0.694	0.715	0.713	0.718	0.762	0.638	0.30	44.7 (8)	<.001	1.12	1.1-1.14
	2	823	0.716	0.714	0.717	0.708	0.706	0.710	0.734	0.688	0.28	46.7 (8)	<.001	1.11	1.09-1.13
Cardiac	1	103	0.638	0.627	0.651	0.647	0.625	0.669	0.786	0.468	0.12	10.77 (8)	.215	1.07	1.02-1.13
	2	103	0.629	0.617	0.642	0.585	0.567	0.603	0.696	0.511	0.17	7.29 (8)	.508	1.1	1.04-1.16
Neurology	1	203	0.719	0.713	0.726	0.707	0.698	0.716	0.784	0.630	0.36	14.34 (7)	.045	1.12	1.08-1.16
	2	203	0.737	0.731	0.744	0.718	0.709	0.726	0.784	0.663	0.36	16.93 (7)	.018	1.13	1.09-1.17
Orthopedic	1	253	0.811	0.801	0.818	0.765	0.761	0.769	0.588	0.907	0.38	13.65 (8)	.091	1.17	1.12-1.23
	2	253	0.766	0.757	0.773	0.756	0.752	0.760	0.578	0.881	0.32	22.34 (8)	.004	1.14	1.10-1.18
Pulmonary	1	212	0.703	0.697	0.709	0.676	0.665	0.686	0.802	0.549	0.27	24.22 (8)	.002	1.11	1.07-1.14
	2	212	0.700	0.695	0.706	0.681	0.670	0.691	0.810	0.538	0.23	20.72 (8)	.008	1.1	1.06-1.13

(*continued*)

Table 4 (*Continued*)

Home (With/Without Services) vs Institution (Inpatient Rehabilitation or Skilled Nursing Facility)															
Group	Basic Mobility Score	n	Sensitivity	Sensitivity 95% CI		Specificity	Specificity 95% CI		PPV	NPV	Nagelkerke R^2	Hosmer & Lemeshow χ^2 (df)	*P*	Odds Ratio	95% CI Odds Ratio
				Lower	Upper		Lower	Upper							
Stroke	1	52	0.750	0.732	0.771	0.583	0.522	0.645	0.857	0.412	0.47	4.53 (6)	.605	1.1	1.07-1.25
	2	52	0.861	0.844	0.879	0.750	0.704	0.796	0.886	0.706	0.49	6.6 (6)	.36	1.16	1.07-1.25
Home with Services vs Skilled Nursing Facilities															
All	1	1131	0.766	0.765	0.767	0.631	0.629	0.633	0.831	0.533	0.23	21.61 (8)	.006	1.13	1.11-1.15
	2	1131	0.778	0.777	0.779	0.672	0.669	0.674	0.854	0.550	0.28	23.63 (8)	.003	1.14	1.12-1.16
Cardiac	1	200	0.842	0.838	0.846	0.524	0.507	0.541	0.869	0.468	0.19	6.98 (8)	.539	1.12	1.07-1.18
	2	200	0.852	0.847	0.856	0.533	0.517	0.549	0.863	0.511	0.30	3.7 (7)	.814	1.19	1.12-1.27
Neurology	1	206	0.755	0.748	0.761	0.644	0.637	0.651	0.675	0.728	0.27	6.71 (8)	.569	1.11	1.07-1.15
	2	206	0.776	0.768	0.782	0.648	0.641	0.655	0.667	0.761	0.25	14.02 (7)	.051	1.11	1.07-1.15
Orthopedic	1	433	0.775	0.773	0.777	0.664	0.658	0.670	0.855	0.536	0.22	39.66 (6)	<.001	1.19	1.13-1.25
	2	433	0.818	0.816	0.820	0.690	0.685	0.695	0.844	0.649	0.32	20.4 (6)	.002	1.18	1.13-1.22
Pulmonary	1	238	0.739	0.734	0.744	0.617	0.608	0.627	0.789	0.549	0.22	5.18 (8)	.738	1.12	1.08-1.16
	2	238	0.784	0.779	0.789	0.616	0.609	0.624	0.741	0.670	0.23	7.63 (8)	.471	1.12	1.08-1.16
Stroke	1	54	0.806	0.786	0.824	0.556	0.515	0.596	0.784	0.588	0.35	5.64 (7)	.582	1.13	1.05-1.22
	2	54	0.848	0.829	0.866	0.571	0.537	0.606	0.757	0.706	0.37	3.77 (8)	.877	1.14	1.05-1.23
Skilled Nursing Facility vs Inpatient Rehabilitation Facility															
All	1	538	0.238	0.228	0.241	0.738	0.736	0.739	0.071	0.920	0.00	7.83 (7)	.348	1.02	0.99-1.04
	2	538	0.303	0.301	0.307	0.761	0.759	0.763	0.386	0.688	0.03	9.64 (7)	.21	1.04	1.01-1.07
Cardiac	1	60	0.256	0.245	0.290	0.857	0.827	0.887	0.769	0.383	0.01	9.40 (7)	.225	0.98	0.90-1.06
	2	60	0.303	0.288	0.341	0.889	0.867	0.910	0.769	0.511	0.13	7.94 (6)	.243	1.1	1.01-1.2
Neurology	1	149	0.484	0.462	0.496	0.644	0.638	0.650	0.263	0.826	0.05	1.07 (7)	.994	1.05	1.01-1.09
	2	149	0.500	0.484	0.512	0.667	0.659	0.674	0.386	0.761	0.10	6.24 (7)	.512	1.08	1.03-1.14
Orthopedic	1	165	n/a	n/a	n/a	0.915	0.912	0.918	0.000	1.000	0.00	6.289 (7)	.506	1	0.92-1.09
	2	165	n/a	n/a	n/a	0.915	0.912	0.918	0.000	1.000	0.00	9.36 (7)	.228	0.99	0.93-1.07
Pulmonary	1	109	0.170	0.167	0.187	0.857	0.827	0.887	0.833	0.198	0.01	4.82 (7)	.682	0.98	0.92-1.04
	2	109	0.173	0.169	0.192	0.879	0.861	0.897	0.765	0.319	0.02	4.3 (8)	.828	1.03	0.97-1.09
Stroke	1	55	0.806	0.786	0.824	0.526	0.489	0.564	0.763	0.588	0.28	8.98 (7)	.254	1.15	1.05-1.26
	2	55	0.865	0.848	0.881	0.667	0.625	0.709	0.842	0.706	0.33	2.54 (7)	.924	1.17	1.06-1.28

Abbreviations: CI, confidence interval; n/a, not able to be analyzed: too few subjects discharged to inpatient rehabilitation.

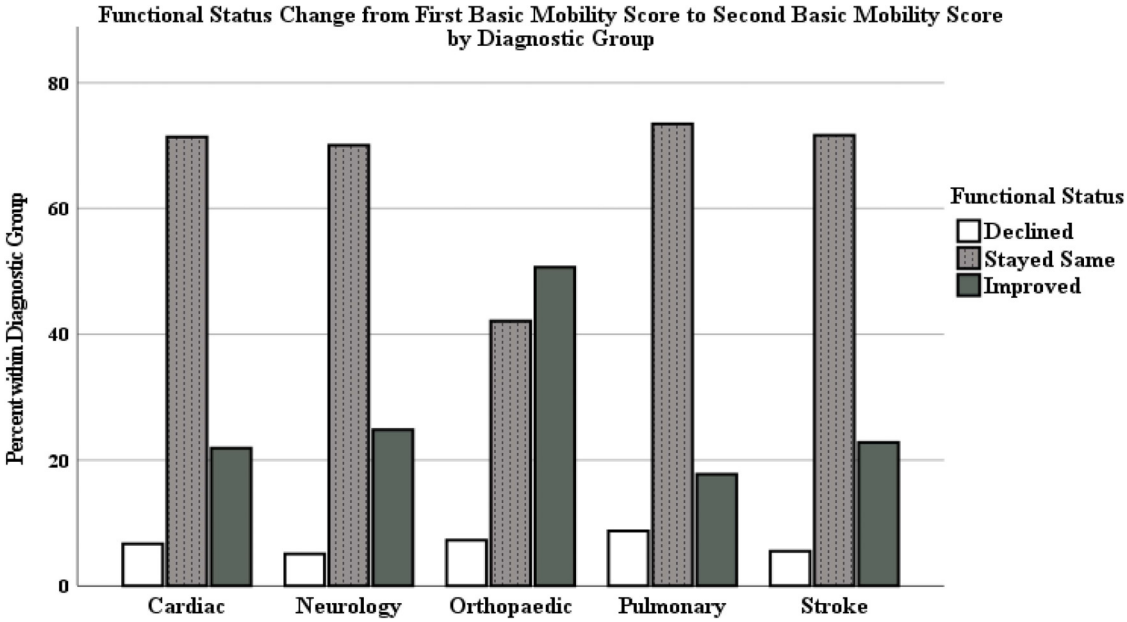

Fig 2 Frequency (percent within each group) distribution for functional status change from first to second Basic Mobility score.

0.70 (table 3). These findings align well with those of Jette et al[10] showing standardized Basic Mobility cutoff scores of 42.9 (PPV=0.75) predicting home vs institution discharge. Orthopedic diagnoses had a slightly lower first cutoff score of 41.46 (PPV=0.88) in the current study. Warren et al found that a lower Basic Mobility standardized score of 40.78 at initial evaluation predicted discharge from tertiary care to community vs institution.[19]

We were not able to establish standardized Basic Mobility cutoff scores taken upon a patient's referral for physical therapy for predicting home vs institution discharge disposition for cardiac and stroke diagnoses because these groups failed the a priori 0.7 threshold for overall model quality and AUC using the ROC. Similarly, Fernandez et al[14] determined that an sBMS at initial evaluation of patients with cardiovascular disease did not have adequate model quality when predicting home discharge, in contrast to scoring done at discharge from acute care physical therapy. Chang et al used sBMS scores from 3 days post-acute care admission and suggested that an sBMS cutoff score of 33.9 was highly predictive of admission to IRF vs discharge to home (AUC of 0.99, 95% confidence interval, 0.98-1.0) for patients with stroke.[13] Almost 60% of patients in the Chang et al study (n=500) were referred to inpatient rehabilitation because skilled nursing placement was not an option in Taiwan.[13] In the current study, 30% of patients with stroke went to inpatient rehabilitation. This difference in discharge referral rate along with smaller sample sizes may have accounted for our inability to derive comparable home vs institution discharge cutoffs for the stroke (n=127) or cardiac (n=269) groups. Future research with a larger and more heterogeneous sample is suggested.

Finer distinctions among discharge destinations

We sought to determine whether sBMS could go beyond predicting the home vs institution dichotomy. As noted in table 3, first and second sBMSs could establish cutoff scores for the combined sample and for the orthopedic and neurology groups when considering home vs SNF and home with services vs SNF. In addition, home vs SNF could be predicted for the pulmonary and stroke groups with adequate model quality. Finer comparisons among the cardiac group did not meet our a priori criteria for overall model quality when first scores were used. For patients with stroke, Covert et al[15] categorized the first raw "6-Clicks" mobility scores, assessed after acute care admission, and found them highly predictive of home vs SNF discharge destinations. As with the first sBMS in the current study, models predicting IRF vs SNF were not highly predictive. They suggested adding age, sex, race, insurance status, and National Institutes of Health Stroke Scale scores when deciding IRF vs SNF discharge using first scores.[15] The failure of sBMS to predict home vs home with services and IRF vs SNF decisions was consistent with a study by Warren et al[19] where a cutoff point of 40.78 was established but model quality was not acceptable for discharge prediction from a tertiary hospital. The latter study corrected for demographic and clinical characteristics of the patients in their predictive model. These studies[15,19] indicated that home vs home with services and IRF vs SNF discharge decisions may not rely on sBMS alone. Modeling sBMS along with demographic and unique aspects of patients' medical status and personal circumstance to improve distinction of home vs home with services and IRF vs SNF for the diagnostic groups included in this study warrants further research.

First vs second Basic Mobility score for predicting post-acute care discharge

Mean second sBMS trended higher than first scores (table 2) but the cutoff scores for discharge destination prediction were often the same for first and second analyses (table 3). Combined sample and pulmonary (42.88) and stroke (46.56) diagnoses had the same first and second cutoff scores for the

home vs institution dichotomy. Compared to first scores, higher second Basic Mobility cutoff scores were noted for the other neurological group (46.56; PPV=0.69) and a lower second cutoff existed for the cardiac group (44.54, PPV=.94). The first cutoff score for the orthopedic group was 41.46 and the second was 42.88 for home vs institution and the home with services vs SNF decisions. Comparing frequency of direction of change from first to second scoring, we observed that the orthopedic group had a different trend than the combined sample or other groups because more patients showed improvement (50%) and 42% stayed the same. Clinicians' perceived potential for functional improvement during an acute care stay or the perception that the orthopedic group had fewer impairments than other groups may have influenced why a lower first cutoff score for discharge decisions was observed for the orthopedic group. The lower initial cutoff score may reflect the rapid recovery process after elective joint procedures and pain conditions, which is generally more predictable than for more chronic cardiac, pulmonary, and neurologic conditions. These suppositions are supported by the orthopedic group demonstrating the largest average improvement of sBMS from first to second assessment (table 2) compared to that of other groups. Several studies including patients with elective lower extremity joint replacements[11,16,28] did not report unique cutoff scores for discharge decisions but used preset cutoffs for their multifactorial analyses. These preset cutoffs were generally higher than the initial cutoff found in the current study. The current study makes a valuable contribution to this literature by establishing a standardized Basic Mobility cutoff score for patients with a mix of orthopedic diagnoses and suggesting that these patients could possibly be discharged to home with slightly lower initial Basic Mobility scores when compared to other diagnostic groups. More study is required to determine why greater functional ability exhibited closer to discharge drives higher cutoffs for home vs institution, home with services vs SNF, and home without services vs SNF decisions for the orthopedic group. These important decisions may be age dependent, insurance related, or driven by medical or personal circumstances of the patients.

Fernandez et al[14] determined that sBMS scored near discharge from acute care for older adults with cardiovascular disease had a cutoff score of 44.5 and much stronger model quality when compared to initial assessments. This is consistent with our findings where cardiac group first scores did not meet our a priori criteria for model quality but second scores cutoff of 44.5 met the criteria in the home vs institution comparison. Our model did not control for age, length of stay, or insurance type as did Fernandez et al.[14]

When second scores were used in the ROC analysis, home with services vs SNF could be predicted for both the cardiac (cutoff score=41.46; 20% improvement in AUC) and stroke (cutoff score=44.54; 7% improvement of AUC) groups with adequate model quality. Clinically, these findings may imply that later scoring, after the patient has presumably stabilized from the event necessitating acute hospitalization, may improve effectiveness of using these scores for finer distinctions among discharge settings for patients with cardiac diagnoses[14] or stroke.

A single sBMS appears sufficient in making discharge decisions with cutoffs varying by diagnostic group. The combined sample had cutoff scores consistent with the seminal study by Jette et al,[10] but sorting patients into diagnostic groups revealed that not all groups conformed to the 42.9 cutoff of the combined sample. In addition, timing of the scoring relative to admission to acute care influenced cutoff scores for orthopedic, other neurological, and cardiac groups. Cutoff scores taken closer to admission for orthopedic and other neurological groups may be lower than those taken closer to discharge. This trend was reversed for the cardiac group. These findings suggest that future research may be directed toward understanding whether a second or a single, later sBMS better predicts discharge destination than single scores documented at admission, especially when trying to make finer distinctions among discharge settings. Perhaps later scores would obviate the need to add other patient factors to predictive modeling for finer discharge distinctions.

We acknowledge that discharge decisions cannot simply be based on "6-Clicks" scores but that these serve as a guide with other data available for individual patients.[11,14,15,19,32] Regional differences in referral patterns[13] and insurance approval for extended care may be reflected in the comparisons to existing studies. Prediction of discharge destination may improve with inclusion of age,[14,19] number and type of comorbidities,[11,19] degree of assistance available at home, acceptance criteria at institutions, and personal circumstances. Evidence also exists that discharging patients to an SNF may be considered a "safety net,"[25(p2466)] regardless of patients' diagnoses, that is easier to arrange than other options.[25] Future research may focus on the value of later scoring or on finding unique patient factors for diagnostic groups may improve prediction of discharge destination when used along with Basic Mobility "6-Clicks" scores.

Study limitations

Our sample reflected realistic clinical data collection from a large, urban health system. The fact that not all patients had all scores reflected some systematic barriers to completing the "6-Clicks" in the busy hospital setting. The original database was robust; however, our decision to look at only 5 diagnostic groups and patients who had at least 2 Basic Mobility scores reduced the overall sample size. Sample sizes varied by diagnostic category. Our data did not include the length of stay or the number of days relative to admission when Basic Mobility "6-Clicks" was scored. This information could have helped us better decipher the possible explanations for differences between the first and second Basic Mobility scores. Finally, our study yielded conclusions based on a specific population in the New York metropolitan area that may not be applicable to other geographic areas.

Although they may be discharged to inpatient rehabilitation, patients with amputations and spinal cord pathologies were excluded because of small samples. Persons with integumentary conditions were well represented in the original database but were excluded because they are not typically referred for inpatient rehabilitation. General medical and general surgical cases were also well represented in the original database but they were excluded because of the vast diversity of the underlying conditions. Future study with these groups may be warranted.

Conclusions

Some clinical recommendations arise from this research. A standardized Basic Mobility score of 42.88 and above for recommendations for home (with and without services) vs institution (SNF or IRF) is supported by the current study and previous research[10] within a general acute care population. A cutoff score of 41.46 may be realistic for patients with orthopedic diagnoses if scoring is done closer to admission; otherwise, 42.88 would be a better predictor of home vs institution. Making more specific distinctions among discharge placement options may be possible for home vs SNF and home with services vs SNF using first and second sBMSs that vary by diagnostic group. Unfortunately, clinically important decisions about home vs home with services or IRF vs SNF did not pass the a priori criterion for robustness using the current sample.

Using one score to help with discharge decisions is feasible for the home vs institution and the home vs SNF or home with services vs SNF decisions but the cutoff score should be selected based on whether the scoring occurs closer to admission[12,19] or to discharge from acute hospitalization.

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References

1. Jette A, Haley SM, Ni P. Comparison of functional status tools used in post-acute care. Health Care Financ Rev 2003;24:13–24.
2. Haley SM, Coster WJ, Andres PL, et al. Activity outcome measurement for postacute care. Med Care 2004;42(Suppl):I49–61.
3. Jette DU, Stilphen M, Ranganathan VK, Passek SD, Frost FS, Jette AM. Validity of the AM-PAC "6-Clicks" inpatient Daily Activity and Basic Mobility short forms. Phys Ther 2014;94:379–91.
4. Pieber K, Herceg M, Paternostro-Sluga T, et al. Reliability, validity, sensitivity and internal consistency of the ICF based Basic Mobility Scale for measuring the mobility of patients with musculoskeletal problems in the acute hospital setting: a prospective study. BMC Musculoskelet Disord 2015;16:187.
5. Jette DU, Stilphen M, Ranganathan VK, Passek S, Frost FS, Jette AM. Interrater reliability of AM-PAC "6-Clicks" Basic Mobility and Daily Activity short forms. Phys Ther 2015;95:758–66.
6. Hiser S, Toonstra A, Friedman LA, Colantuoni E, Needham DM. Inter-rater reliability of activity measure for post-acute care "6-Clicks" inpatient mobility short form in the intensive care unit. Physiother Res Int 2020;25:e1849.
7. Hoyer EH, Young DL, Klein LM, et al. Toward a common language for measuring patient mobility in the hospital: reliability and construct validity of interprofessional mobility measures. Phys Ther 2018;98:133–42.
8. O'Dell MW, Jaywant A, Frantz M, et al. Changes in the Activity Measure for Post-Acute Care domains in persons with stroke during the first year after discharge from inpatient rehabilitation. Arch Phys Med Rehabil 2021;102:645–55.
9. Coster WJ, Haley SM, Jette AM. Measuring patient-reported outcomes after discharge from inpatient rehabilitation settings. J Rehabil Med 2006;38:237–42.
10. Jette DU, Stilphen M, Ranganathan VK, Passek SD, Frost FS, Jette AM. AM-PAC "6-Clicks" functional assessment scores predict acute care hospital discharge destination. Phys Ther 2014;94:1252–61.
11. Menendez ME, Schumacher CS, Ring D, Freiberg AA, Rubash HE, Kwon YM. Does "6-Clicks" day 1 postoperative mobility score predict discharge disposition after total hip and knee arthroplasties? J Arthroplasty 2016;31:1916–20.
12. Pfoh ER, Hamilton A, Hu B, Stilphen M, Rothberg MB. The Six-Clicks Mobility Measure: a useful tool for predicting discharge disposition. Arch Phys Med Rehabil 2020;101:1199–203.
13. Chang FH, Lin YN, Liou TH, Lin JC, Yang CH, Cheng HL. Predicting admission to post-acute inpatient rehabilitation in patients with acute stroke. J Rehabil Med 2020;52:jrm00105.
14. Fernandez N, Gore S, Benson S, Blackwood J. Use of AM-PAC "6 Click" scores to predict discharge location posthospitalization in adults with cardiovascular disease: a retrospective cohort study. Cardiopulm Phys Ther J 2020;31:152–8.
15. Covert S, Johnson JK, Stilphen M, Passek S, Thompson NR, Katzan I. Use of the Activity Measure for Post-Acute Care "6 Clicks" Basic Mobility Inpatient Short Form and National Institutes of Health Stroke Scale to predict hospital discharge disposition after stroke. Phys Ther 2020;100:1423–33.
16. Harry M, Woehrle T, Renier C, Furcht M, Enockson M. Predictive utility of the Activity Measure for Post-Acute Care "6-Clicks" short forms on discharge disposition and effect on readmissions: a retrospective observational cohort study. BMJ Open 2021;11:e044278.
17. Consult QD. From floor to SNF with 6-Clicks. Cleveland, OH: Cleveland Clinic. Available at: https://consultqd.clevelandclinic.org/from-floor-to-snf-with-6-clicks/. Accessed October 8, 2018.
18. Johnson JK, Fritz JM, Brooke BS, et al. Physical function in the hospital is associated with patient-centered outcomes in an inpatient rehabilitation facility. Phys Ther 2020;100:1237–48.
19. Warren M, Knecht J, Verheijde J, Tompkins J. Association of AM-PAC "6-Clicks" Basic Mobility and Daily Activity scores with discharge destination. Phys Ther 2021;101:pzab043.
20. Haley SM, Coster WJ, Andres PL, Kosinski M, Ni P. Score comparability of short forms and computerized adaptive testing: simulation study with the Activity Measure for Post-Acute Care. Arch Phys Med Rehabil 2004;85:661–6.
21. Jette AM, Haley SM, Tao W, et al. Prospective evaluation of the AM-PAC-CAT in outpatient rehabilitation settings. Phys Ther 2007;87:385–98.
22. Jette AM, Haley SM, Ni P, Moed R. Adaptive short forms for outpatient rehabilitation outcome assessment. Am J Phys Med Rehabil 2008;87:842–52.
23. Thackeray A, Hanmer J, Yu L, McCracken P, Marcus R. Linking AM-PAC Mobility and Daily Activity to the PROMIS Physical Function Metric. Phys Ther 2021;101:pzab084.
24. Ayele R, Jones J, Ladebue A, et al. Perceived costs of care influence post-acute care choices by clinicians, patients, and caregivers. J Am Geriatr Soc 2019;67:703–10.
25. Burke RE, Lawrence E, Ladebue A, et al. How hospital clinicians select patients for skilled nursing facilities. J Am Geriatr Soc 2017;65:2466–72.
26. M. Hernandez, Predicting discharge dispositions with the Boston University AM-PAC "6-Clicks" short forms in post-acute stroke patients [dissertation]. Ann Arbor: Azusa Pacific University; 2017.
27. Thorpe ER, Garrett KB, Smith AM, Reneker JC, Phillips RS. Outcome measure scores predict discharge destination in patients with acute and subacute stroke: a systematic review and series of meta-analyses. J Neurol Phys Ther 2018;42:2–11.

28. Hadad MJ, Orr MN, Emara AK, et al. PLAN and AM-PAC “6-Clicks” scores to predict discharge disposition after primary total hip and knee arthroplasty. J Bone Joint Surg Am 2022;104:326–35.
29. Mandrekar JN. Receiver operating characteristic curve in diagnostic test assessment. J Thorac Oncol 2010;5:1315–6.
30. Hosmer DW, Lemeshow S, Sturdivant RX. Assessing the fit of the model. Applied Logistic Regression. p 153, 3rd ed. Hoboken: John Wiley & Sons; 2013. p. 153–225.
31. Schneeweiss S, Wang PS, Avorn J, Glynn RJ. Improved comorbidity adjustment for predicting mortality in Medicare populations. Health Serv Res 2003;38:1103–20.
32. Li C-Y, Karmarkar A, Kuo Y-F, Haas A, Ottenbacher KJ. Impact of self-care and mobility on one or more post-acute care transitions. J Aging Health 2020;32:1325–34.