



Original Research

# Prediction of Discharge Destination After Inpatient Rehabilitation for Stroke Using Mobility and Self-Care Assessment in Section GG of the Inpatient Rehabilitation Facility – Patient Assessment Instrument



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## KEYWORDS

Activities of daily living;  
Continuity of patient care;  
Inpatients;  
Rehabilitation;  
Retrospective study;  
Stroke rehabilitation

**Abstract Objective:** To determine the ability of Section GG of the Inpatient Rehabilitation Facility – Patient Assessment Inventory (Section GG)'s quantification of mobility and self-care to predict discharge destination for persons with stroke after inpatient rehabilitation.

**Design:** Retrospective, observational cohort study.

**Setting:** 150-bed inpatient rehabilitation facility within a metropolitan health system.

**Participants:** Consecutive sample of adults and older adults with stroke admitted for inpatient rehabilitation from January 2020 to June 2021 (N=1051). Subjects were excluded for discharge to acute care or hospice or if they had COVID-19.

**Intervention:** None.

**Main Outcome Measures:** Section GG self-care and mobility scores used in reimbursement formulation by Centers for Medicare and Medicaid at admission to inpatient rehabilitation; age; sex; prior living situation; discharge setting. Logistic regression examined binary comparisons of discharge destinations. Receiver operating characteristic (ROC) curves determined cut-off admission Section GG scores for binary comparisons.

**List of abbreviations:** 95% CI, 95% confidence interval; AUC, area under the (receiver operating characteristic) curve; CMS, Centers for Medicare and Medicaid Services; IRF, inpatient rehabilitation facility; OP, outpatient services; OR, odds ratio; ROC, receiver operating characteristic curve; Section GG, Section GG of the Inpatient Rehabilitation Facility – Patient Assessment Inventory; SNF, skilled nursing facility. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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**Results:** Logistic regression demonstrated that presence of a caregiver in the home was consistently the strongest predictor ( $P < .001$ ) and admission Section GG scores were significant secondary factors in determining the discharge destination. An admission Section GG cut-off score of 33.5 determined home with homecare vs skilled nursing facility and a cut-off of 36.5 determined discharge to home with outpatient care vs skilled nursing facility.

**Conclusion:** Clinicians responsible for discharge decisions for patients with stroke after inpatient rehabilitation might start by determining the presence of a caregiver in the home and then use Section GG cut-off scores to guide decisions about home (with or without homecare) vs SNF destinations. Such guidance is not advised for the home with outpatient services vs home with homecare decision; clinical judgment is needed to determine the best discharge plan because this ROC had a less robust area under the curve. Sex and race/ethnicity were not determining factors for binary choices of discharge destinations.

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Post-acute rehabilitation and subsequent discharge plans help determine the future health of patients with stroke. Variability in post-acute rehabilitation placement after stroke exists even though about one-third of those admitted to a hospital following stroke are, at least to some extent, functionally dependent or dead at 3 months post-stroke.<sup>1,2</sup> The typical discharge options for patients immediately after acute care include inpatient rehabilitation facility (IRF), skilled nursing facility (SNF), or home with homecare, and home with outpatient services (OP). Discharge decisions after IRF admission determine the mode of delivery of continued therapy (SNF or home with services) or the discontinuation of therapy.<sup>3</sup> Factors influencing discharge decisions should be supported by objective clinical measures. Various statistical models assist with discharge decision-making for the immediate post-acute decision<sup>4</sup> but a recent change in functional assessment during inpatient rehabilitation necessitates re-examination of post-IRF discharge prediction.

The Functional Independence Measure (FIM)<sup>5</sup> was the criterion standard for functional assessment and prediction of discharge destination.<sup>6</sup> In October 2019, the Centers for Medicare and Medicaid Services (CMS) replaced the FIM with Section GG of the Inpatient Rehabilitation Facility – Patient Assessment Inventory (Section GG)<sup>7</sup> to assess function. According to the Improving Post-Acute Care Transformation Act, all post-acute settings must use Section GG to assess self-care and mobility to improve assessment consistency across multiple types of institutions.<sup>8</sup> Section GG scoring was designed to eliminate the floor and ceiling effect of the FIM because it consists of more examination items.<sup>9</sup> Section GG comprises 22 items on a 6-level rating scale to reflect patients' functional abilities based on the type and amount of assistance required. Unlike the FIM, Section GG scoring does not incorporate the use of an assistive device in the scoring criteria. Construct and content validity of the Section GG self-care and mobility items has been established with a large sample of Medicare beneficiaries undergoing inpatient rehabilitation, including those with stroke.<sup>10</sup> Predictive modeling for discharge destination after inpatient rehabilitation needs updating with the use of Section GG scoring because prior studies used FIM.

Assessment of functional status at admission to inpatient rehabilitation assists clinicians in searching for the best discharge destination to continue functional recovery. Deutsch

et al showed an association of higher scores on Section GG with community discharge as part of their validation study with a mixed group of patients discharged from inpatient rehabilitation.<sup>10</sup>

Admittedly, other factors enter into the decision such as age, presence of incontinence, living situation, geographic proximity to SNF, and health insurance coverage.<sup>11-13</sup> An interaction exists between intensity of rehabilitation and discharge destination which influences patients' functional recovery.<sup>14</sup> Selecting the optimal environment to support functional gains after inpatient rehabilitation requires careful decision-making early in the inpatient rehabilitation phase. More specific information about admission Section GG cut-off scores to assist with discharge placement decisions and modeling with other factors known to affect discharge decisions appear indicated.

The purpose of this study was to determine if the admission Section GG scores, used by CMS to calculate the case-based reimbursement, predict discharge destinations for patients with stroke after inpatient rehabilitation. We expected a relation between admission function and discharge destination but its relative value with other predictive factors was unknown.

## Methods

### Research design

This retrospective study used binary logistic regression and receiver operating characteristic analyses to examine the predictive ability of admission Section GG scoring of self-care and mobility to predict discharge destination of persons with stroke after inpatient rehabilitation. The study was approved by the Institutional Review Board of Albert Einstein College of Medicine. Consent was waived because of the retrospective nature of the study. Data were anonymized prior to analysis.

### Subjects and setting

Inclusion criteria were (1) consecutive patients with a diagnosis of stroke discharged from the 150-bed IRF (Burke

Rehabilitation Hospital, Montefiore Health System, White Plains, New York, USA) between January 1, 2020, and June 30, 2021; (2) patients were 21 years and older. Patients were excluded if they had been diagnosed with the COVID-19 virus because of its potential effect on rehabilitation. Patients transferred to acute care hospitals were excluded from the study because they usually have a short IRF length of stay which could skew the data.<sup>15</sup> Lastly, persons were excluded because they were discharged to hospice care, indicating a poor medical status. A sample size calculation with G\*Power (version 3.1)<sup>a</sup> for logistic regression with  $\alpha=.05$  and  $1-\beta=.80$  yielded estimated total sample sizes between 88 (for a robust odds ratio [OR] of 2.0) and 568 (for modest OR of 1.3).

## Procedures

The patients followed their standard inpatient rehabilitation program. Clinicians trained in the scoring system evaluated admission, weekly and discharge status as part of routine care. Risk of bias was eliminated because clinicians were unaware that patient assessments would be used for this retrospective study. The data retrieved included sex, age, race/ethnicity, length of stay, with whom they lived prior to stroke, and admission and discharge Section GG scores. The patients were discharged from inpatient rehabilitation to a post-rehabilitation discharge destination: home with outpatient therapy, home with homecare services, or SNF.

We operationally defined Section GG scores as the total scores for all self-care items plus mobility items that CMS use to calculate case mix group and, ultimately, case reimbursement (table 1), with the exception bowel and bladder care. Minimum scores of 16 and maximum scores of 96 were possible. Clinician scored items from 1 (Dependent) to 6 (Independent). Per CMS directive, “activity not attempted” reasons (07=patient refused; 09=not applicable (patient did

not perform the task prior to stroke); 10=not attempted because of environmental limitations; 88=not attempted because of medical condition or safety concerns) were scored “1”.<sup>16</sup>

## Data analysis

Descriptive statistics examined sex, age, race/ethnicity, and length of stay, and caregiver present. Chi-square tests compared frequency distribution of nominal variables across discharge destinations. One-way ANOVA compared distributions for age, length of stay, and Section GG scores across discharge destinations. *Post hoc t* tests with the Bonferroni correction for multiple comparisons examined specific comparisons when ANOVA identified differences. A univariate ANOVA compared distributions for admission Section GG scores across discharge destination (as a random factor) and caregiver present (as a fixed factor).

We performed a series of binary logistic regressions for pairs of discharge destinations: home (with or without services) vs SNF; home with OP therapy vs SNF; home with homecare services vs SNF; home with homecare vs home with OP. *A priori* correlation analyses were conducted to determine collinearity of factors. If any predictor variables were closely correlated, for example, if age correlated with admission Section GG score, decisions would need to be made about whether an interaction of these variables should be included in the logistical regression.<sup>17</sup> Factors included in the final analysis were admission Section GG scores, age, sex, and caregiver present. Odds ratios (ORs) in logistic regression convert the  $\beta$  coefficients from logits to probabilities.<sup>17</sup> In the current study, the OR represented the change in odds of having the least dependent discharge destination given a 1-unit change in a predictor variable. For example, a 1-unit increase in admission Section GG score, multiplies the odds of moving from the most dependent discharge destination in the comparison (labeled “0” in our analysis) to the least dependent discharge destination (labeled “1”) by the calculated OR. The 95% confidence interval (95% CI) represents the interval whereby the true population OR exists.<sup>17</sup>

Receiver operating characteristic (ROC) curves analyzed the area under the curve to understand the relation between the clinical sensitivity and specificity of admission Section GG scores. In addition, ROC values were used to identify possible cut-off scores for prediction of discharge destination.<sup>18</sup> ROC analyses were evaluated using an *a priori* criteria of 0.7 to determine an acceptable model quality.<sup>19</sup> IBM-SPSS Version 27<sup>b</sup> analyzed statistics with alpha level set at .05 for all analyses.

## Results

Of 1257 patients with stroke discharged during the specified time interval, 2 people were excluded because they were less than 21 years old, 201 were discharged to an acute care hospital and 3 were discharged to hospice care. Our final sample (n=1051) included 567 men (53.8%) and 484 women (46.2%). Table 2 illustrates frequency distributions of sex, race/ethnicity, and living situation (with or without caregiver) for the aggregate sample and for each discharge

**Table 1** Items that Centers for Medicare and Medicaid Services used to calculate case mix group and ultimately case reimbursement, excluding bowel and bladder items

GG Code	Item Descriptor
GG0130A1	Eating
GG0130B1	Oral hygiene
GG0130C1	Toileting hygiene
GG0130E1	Shower/bathe self
GG0130F1	Upper body dressing
GG0130G1	Lower body dressing
GG0130H1	Putting on/taking off footwear
GG0170B1	Sit to lying
GG0170C1	Lying to sitting on side of bed
GG0170D1	Sit to stand
GG0170E1	Chair/bed to chair transfer
GG0170F1	Toilet transfer
GG0170I1	Walk 10 feet
GG0170J1	Walk 50 feet with 2 turns
GG0170K1	Walk 150 feet
GG0170M1	One step curb

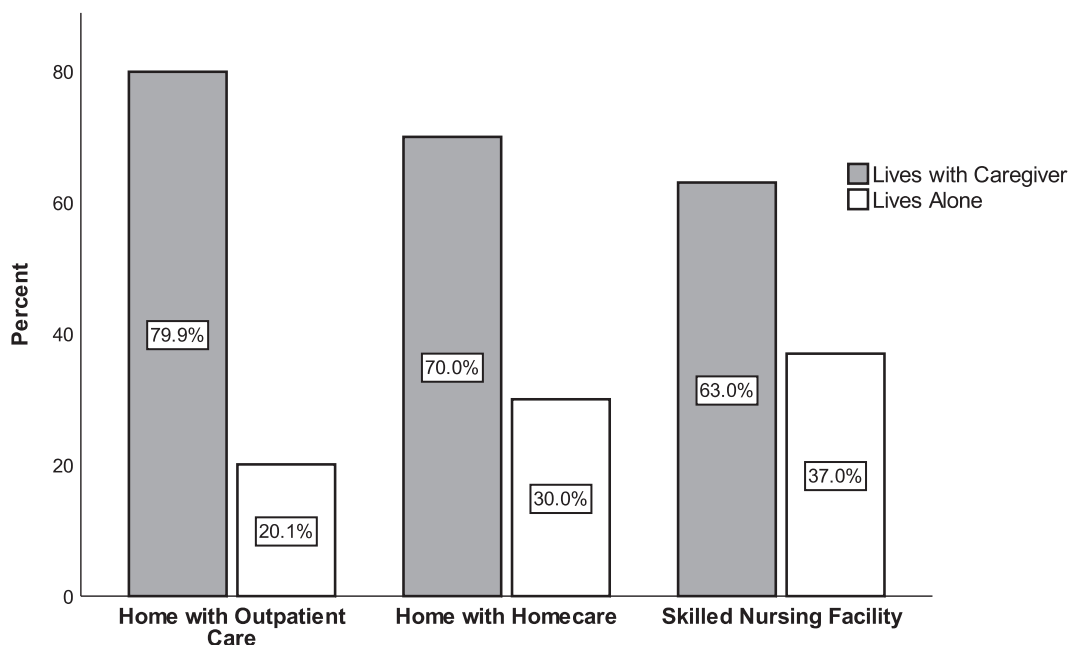
**Table 2** Sex and ethnicity distributions and living situation for aggregate sample and for discharge destinations of persons with stroke

	Aggregate Sample (n=1051)	Home With Outpatient Services (n=249)	Home With Homecare (n=480)	SNF (n=322)
<b>Sex</b>				
Men	567 (53.9%)	141 (56.6%)	244 (50.8%)	182 (56.5%)
Women	484 (46.1%)	108 (43.4%)	236 (49.2%)	140 (43.5%)
<b>Race/Ethnicity</b>				
Asian	54 (5.1%)	10 (4.0%)	15 (4.7%)	29 (6.0%)
White	458 (43.6%)	118 (47.4%)	138 (42.9%)	202 (42.1%)
Hispanic/Latino	187 (17.8%)	40 (18.5%)	48 (14.9%)	93 (19.4%)
Black/African American	345 (32.8%)	74 (29.7%)	120 (37.3%)	151 (31.5%)
American Indian/Alaska Native	3 (0.3%)	0 (0.0%)	1 (0.3%)	2 (0.4%)
Native Hawaiian/Other Pacific Islander	4 (0.4%)	1 (0.4%)	0 (0.0%)	3 (0.6%)
<b>Living Situation</b>				
Lives with Caregiver	738 (70.2%)	199 (79.9%)	336 (70.0%)	203 (63.0%)
Lives Alone	313 (29.8%)	50 (20.1%)	144 (30.0%)	119 (37.0%)

destination. Chi-square analyses showed that distribution of sex was similar for all discharge destinations (Chi-square=3.45,  $df=2$ ,  $P=.178$ ). Race and ethnicity were similar across discharge destinations (Chi-square=10.8,  $df=2$ ,  $P=.373$ ). Frequency distributions for living situation yielded a significant Chi-square (Chi-square=19.1,  $df=2$ ,  $P<.001$ ). Figure 1 illustrates that a higher percentage for caregiver presence existed among all discharge destinations but the proportions of people living alone compared with living with a caregiver differed by discharge destination. Home with OP showed the most variability in caregiver presence with the fewest people living alone. As the discharge destination became more dependent (requiring more support for the patient), the percentage of those living alone increased.

Table 3 illustrates mean  $\pm$  SD age, length of inpatient rehabilitation hospitalization, and admission and discharge Section GG scores. One-way ANOVA revealed that age varied by discharge destination ( $P<.001$ ). *Post hoc t* tests revealed that people discharged to home with OP were younger than those receiving homecare or going to SNF ( $P<.001$ ). Inpatient rehabilitation length of stay was longest for those going to SNF ( $P<.001$ ). Admission and discharge Section GG scores were lower for SNF discharges ( $P<.001$ ).

A univariate ANOVA compared admission Section GG score distributions across discharge destinations (as a random factor) and caregiver present (as a fixed factor). The ANOVA showed a significant interaction of discharge destination by caregiver present ( $F_{(2,1045)}=3.68$ ,  $P=.025$ ) and a significant

**Fig 1** Distribution of living situation (percent) by discharge destination for persons with stroke discharged from inpatient rehabilitation.

**Table 3** Mean ± SD and range for age (y), length of inpatient rehabilitation stay (d), and admission and discharge motor GG Scores

		Aggregate Sample (n=1051)	Home With Outpatient Services (n=249)	Home With Homecare (n=480)	SNF (n=322)
<b>Age (y)</b>	Mean (SD)	67.9 (13.6)	61.8* (13.6)	69.9* (13.3)	69.6* (12.6)
	Range	22-101	22-93	25-101	32-95
<b>Length of stay (d)</b>	Mean (SD)	21.1 (9.2)	16.4† (7.3)	20.5† (9.2)	25.5† (8.6)
	Range	2-105	2-42	5-105	8-92
<b>Admission Section GG Score</b>	Mean (SD)	36.6 (12.7)	45.4† (10.7)	38.6† (11.1)	27.0† (9.7)
	Range	16-67	16-67	16-65	16-63
<b>Discharge Section GG Score</b>	Mean (SD)	67.1 (21.3)	82.5† (14.7)	73.3† (16.7)	46.1† (14.9)
	Range	16-96	20-96	19-96	16-90

\* Home with outpatient services was statistically different from Home with Homecare and SNF,  $P < .001$ .

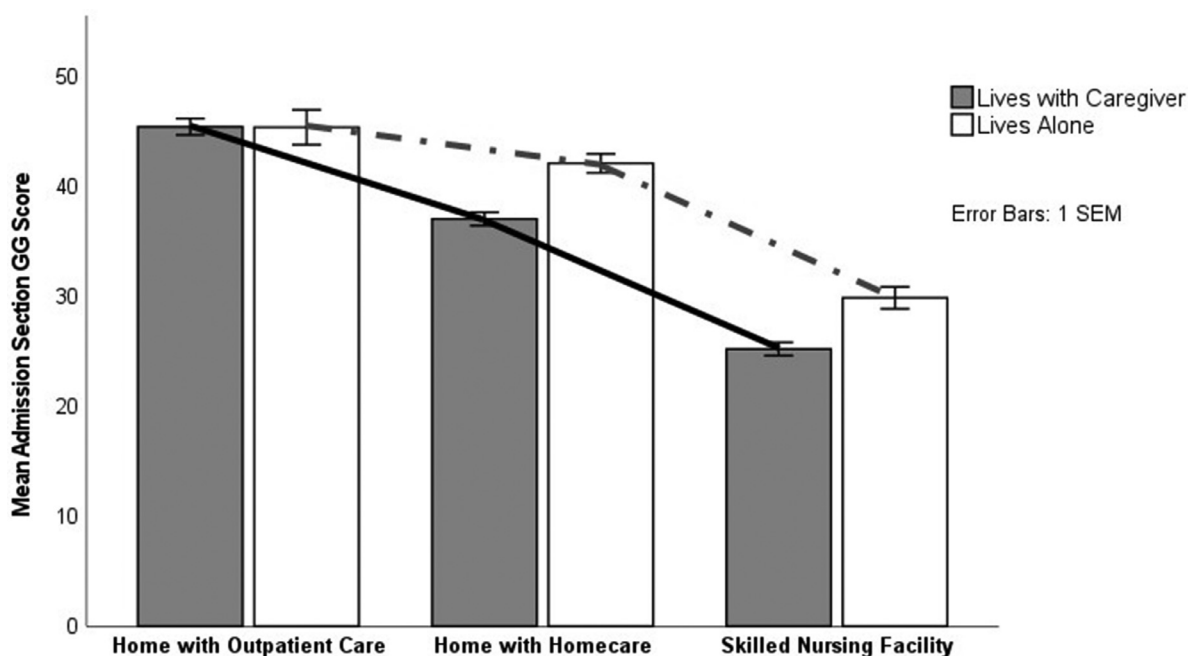
† All groups had statistically significant differences from each other,  $P < .001$ .

main effect for discharge destination (regardless of caregiver present status) ( $F_{(2,2)}=50.8, P=.019$ ). The main effect for discharge destination showed that admission Section GG scores trend down as the discharge setting became more dependent, regardless of the presence of a caregiver. The interaction of discharge destination and caregiver present indicates that, as the admission Section GG scores trend down, the scores for people living alone trend down less steeply for the home with OP and home with homecare comparison (fig 2).

Logistic regression findings were significant for all comparisons. Table 4 shows that caregiver present is the most significant factor influencing discharge destination selection among all comparisons, with an OR highest among home with OP vs SNF (OR=3.71; 95% CI=2.12 – 6.50). Admission Section GG scores contributed to the decision

to a lesser extent among all comparisons. Sex had an OR of 1.40 (95% CI=1.02 – 1.93), which was higher than admission Section GG scores for home (with or without homecare) vs SNF. The younger age of persons discharged to home with OP resulted in significant ORs that were less than 1.0 (OR=0.96; 95% CI=0.94 – 0.98) in the logistic regressions for home with OP vs home with homecare and home with OP vs SNF.

Figure 3 shows that ROC analysis had higher areas under the (receiver operating characteristic) curve (AUC) for home (with or without homecare) vs SNF and home with OP vs SNF. In addition, ROC showed cut-off scores of 33.5 and 36.5 for home with homecare vs SNF, and home with OP vs SNF, respectively. The cut-off score for home with OP vs home with homecare was 43.5 but this model failed to meet our *a priori* criterion for overall model quality.



**Fig 2** Mean (SEM) Admission Section GG Scores by discharge destination by living situation for persons with stroke discharged from inpatient rehabilitation. Trends show that persons with stroke who live alone had higher mean admission Section GG scores, regardless of discharge destination.



**Table 4** Logistic regression comparisons of discharge destinations with significant prediction variables and model assessment

	Variable	Odds Ratio (95% CI)	Nagelkerke $R^2$	Hosmer & Lemeshow ( $P$ )	Overall Accuracy of the Model	Percent Correctly Predicted
<b>Home with or without Homecare vs SNF*</b>	Admission Section GG	1.13 (1.12-1.15)	0.40	.25	78.4%	87.5% (Home) 57.8% (SNF)
	Caregiver Present	2.68 (1.87-3.83)				
	Sex	1.40 (1.02-1.93)				
<b>Home with OP* vs Home with Homecare</b>	Admission Section GG	1.06 (1.05-1.08)	0.21	.15	72.6%	41.8% (Home with OP) 89.2% (Home with Homecare)
	Caregiver Present	1.67 (1.12-2.51)				
	Age	0.96 (0.95-0.97)				
<b>Home with Homecare vs SNF*</b>	Admission Section GG	1.12 (1.10-1.14)	0.34	.77	74.6%	80.6% (Home with Homecare) 65.5% (SNF)
	Caregiver Present	2.58 (1.78-3.76)				
<b>Home with OP vs SNF*</b>	Admission Section GG	1.17 (1.14-1.20)	0.62	.29	84.2%	79.5% (Home with OP) 87.9% (SNF)
	Caregiver Present	3.71 (2.12-6.50)				
	Age	0.96 (0.94-0.98)				

\*  $P < .001$  for logistic regression.

## Discussion

The decision tree about discharge destination after inpatient rehabilitation for stroke starts with deciding whether to discharge a patient to their home (with or without homecare) vs SNF. The presence of a caregiver at home proved paramount in the current study, with admission Section GG scores and sex of the individual contributing to lesser, but meaningful, degrees (table 4).

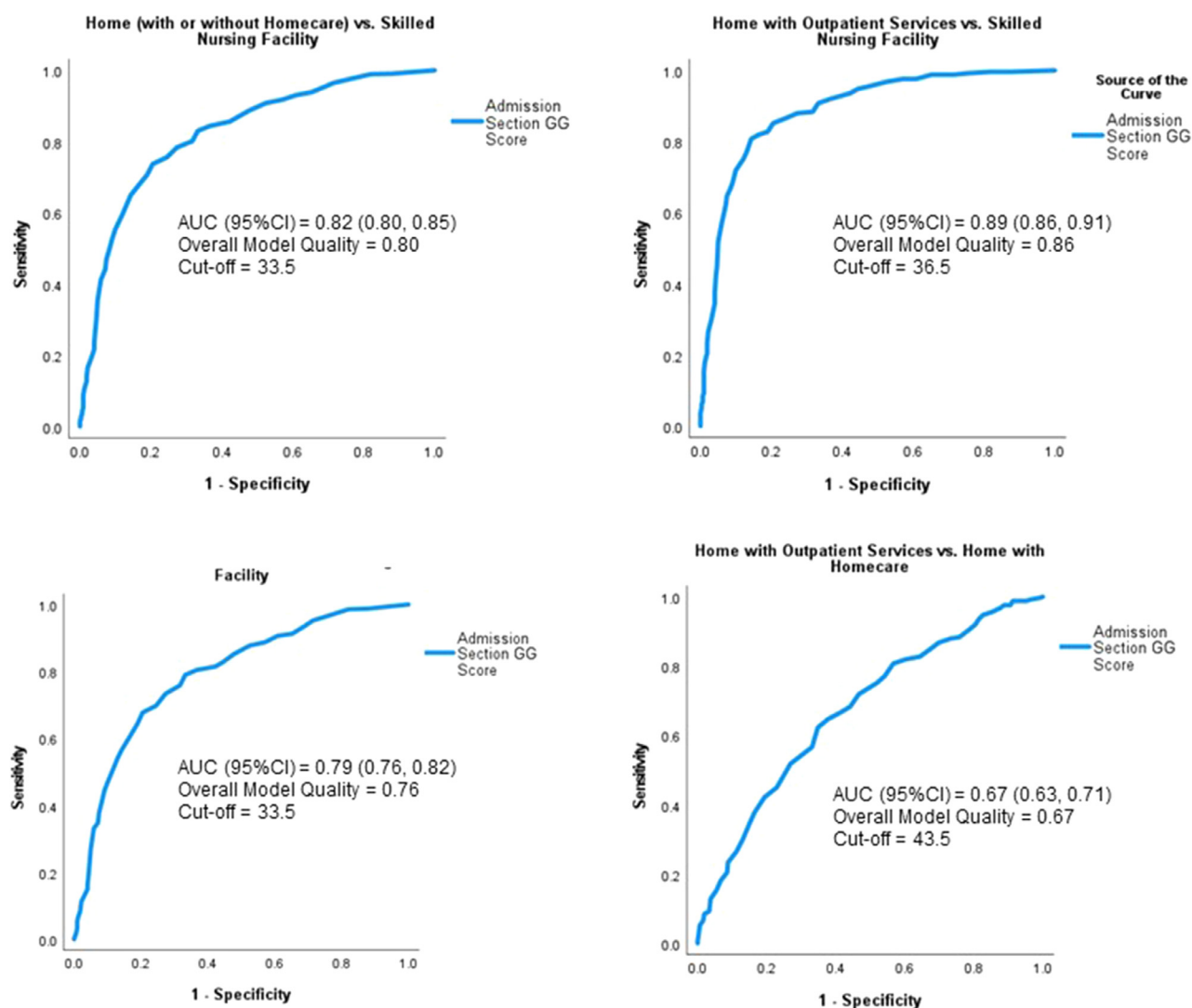
If the decision is between home with homecare and home with OP, caregiver presence had less of an effect (lower OR) than seen with other binary destination comparisons (table 4). Lower admission Section GG scores and older age and appeared to favor home with homecare vs home with OP.

At times, the decision is between home with homecare and SNF. The presence of a caregiver will favor discharge to home with homecare and the person with a lower admission Section GG score will tend to go to a SNF, especially if the patient is older (table 4). When making the decision between home with OP vs SNF, presence of a caregiver at home again dominates the home with OP choice. The comparison of discharge to home with OP ( $n=249$ ) vs SNF ( $n=322$ ) strongly favors caregiver presence. Only 50 people (20.1%) who went home with OP lived alone as opposed to 119 people (37%) who went to SNF. This proportional difference likely drove the higher OR and wider confidence interval (3.71; 95% CI=2.12 – 6.50) for this factor compared with other binary logistic regression comparisons. Interpreting this in practical terms, a 1-unit change for caregiver presence would mean that a change from living alone (coded as “0”) to living with a caregiver (coded as “1”) would increase the odds of being discharged to home with outpatient care by 3.71 with the actual OR somewhere between 2.12 and 6.50.

Several systemic reviews demonstrated significant utility of considering patient living situation in determining discharge destination.<sup>4,20,21</sup> Thorpe et al concluded that discharge destination should be made with consideration for patient biopsychosocial factors that may supersede outcome

measures solely as a predictive factor.<sup>20</sup> Chevalley et al found statistical significance using meta-analyses from 14 studies for living with others (pooled OR: 2.60; 95% CI=1.84 – 3.68) and having support at home (6 studies; pooled OR: 11.48; 95% CI=6.52 – 20.21) as well as living at home before stroke (4 studies; pooled OR: 31.01; 7.38 – 130.18) in predicting discharge destination after IRF stay.<sup>21</sup> The large pooled ORs for their inverse variance calculation with random-effect model were attributed to large differences in the frequency distributions of patients in pre-stroke settings or for caregiver availability. For example, Chevalley et al noted a large frequency difference in the pre-stroke living arrangement between those who were previously living at home and those who were previously living at SNF.<sup>21</sup> These studies<sup>4,20,21</sup> reviewed articles with various functional outcome measures, including FIM and National Institutes of Health Stroke Scale. The current study supplements this body of literature about discharge prediction because it uses admission Section GG scoring and logistic regression analyses.

We determined that sex was only a significant predictive factor for the home (with or without homecare) vs SNF decision where the OR value was between that of caregiver present and admission Section GG score (table 4). Sex had an OR of 1.40 (95% CI=1.02 – 1.93) favoring discharge to home (with or without homecare) for women vs discharge to SNF. Both sexes tended to go home (with or without homecare; 69.4%) while only 30.6% of the sample went to SNF. The distribution for women showed that 71.1% went home and 28.9% went to SNF whereas for men 67.9% went home and 32.1% went to SNF. Even though Chi-square tests failed to show statistically significant differences in the distributions, this very slight distribution difference across sex was enough to drive the logistic regression when Section GG scores and caregiver presence were also considered. In a systematic review, Mees et al found that sex was a controversial factor among different studies to determine discharge destination after inpatient rehabilitation.<sup>4</sup> In addition, they stated that sex was not statistically significant in smaller sample-sized



**Fig 3** ROC curves for Admission Section GG Score for binary comparisons of discharge destinations for persons with stroke discharged from inpatient rehabilitation. AUC, overall model quality, and cut-off scores are designated. Persons with Admission Section GG Scores greater than the cut-off score went to the more independent discharge destination within each comparison.

studies, while other studies found statistical significance with larger sample size where women tended not to be discharged to home. The current study had smaller samples for the binary comparisons, therefore, our findings are consistent with Mees et al.<sup>4</sup> Similarly, we found that when home with outpatient care and home with homecare cases were collapsed, thus increasing the sample size, women were more often discharged to home.<sup>4</sup>

A greater percentage of persons who live alone will go to SNF vs to home (with or without services) (fig 1). With all destinations, persons living alone tended to have slightly higher admission Section GG scores than those who lived with caregivers (fig 2).

Although admission Section GG scores were not the most prominent predictor of discharge destination, they have value in making the decisions. The ROC analyses (fig 3) offer cut-off scores to further guide clinicians' decision-making using admission Section GG scores. When deciding between home with homecare vs SNF, the clinician can use a score of 33.5 or above to recommend home discharge. In addition, when

deciding between home with OP vs SNF, a 36.5 cut-off score or above can be used to decide on home with OP. We obtained a cut-off score of 43.5 for discharge between home with OP vs home with homecare, but our model was less robust (0.63 model quality) compared with our *a priori* criterion of 0.70. Further study is required to guide this discharge decision.

Our algorithms are stronger than for previous studies using FIM. A study showed an AUC of 0.65 for FIM total and FIM motor for community vs institution discharge, which is much less predictive compared with our AUC (0.82) for home (with or without care) vs SNF.<sup>22</sup> In addition, the same study examined using both the Simplified Stroke Rehabilitation Assessment of Movement (S-STREAM) and the FIM to predict discharge destination in patients with stroke.<sup>22</sup> Using both tools predicted community discharge at 76%, which is lower than our model of home (with or without homecare) vs SNF that gave 87.5% predictability to discharge home. This means admission Section GG scores used by CMS for reimbursement purposes appear to outperform the FIM or FIM plus S-STREAM in predicting discharge destination.

Rescoring “activity not attempted” reasons as “1” appeared to have minimal effect on admission self-care Section GG scores (most frequent “activity not attempted” scoring was in Eating (n=55; 5.5% of the sample). For Section GG motor scores, non-ambulatory patients were most often scored “88” at admission with One Step Curb being most frequently scored as 07 (n=8; 0.8%), 09 (n=1; 0.1%), or 88 (n=838; 79.7%). Although we report these details, we feel that the standardized, admission Section GG scoring, as mandated by CMS, is useful to clinicians as a secondary predictor variable for discharge destination. Otherwise persons with “activity not attempted” items would not be able to be judged against peers with full scoring.

### Study limitations

Generalizability is limited because data were collected from a single IRF located in a metropolitan area outside of New York City. In addition, our sample included only patients with stroke. We were not able to discern with certainty whether the presence of a caregiver in the home at the time of inpatient rehabilitation admission meant that these same people were assigned the caregiving role upon discharge of the patient.

One notes that Section GG codes do not examine patients’ cognitive status. A systematic review found the main factors significantly associated with other than home discharge is not only functional dependence/comorbidities, and previous living circumstances/marital status but also neurocognitive dysfunction.<sup>4</sup> In addition, Ding et al found that 53.1% of patients with stroke develop a post-stroke cognitive impairments.<sup>23</sup> Perhaps adding a cognitive scale to the logistic regression analyses would have changed findings in the current study. As noted previously, socioeconomic factors and bowel or bladder incontinence may have a role in discharge decisions.<sup>11-13</sup> Socioeconomic status was not available to us and our primary focus was Section GG scores rather than Section H (Bowel and Bladder) of the IRF-PAI. Future work might explore if these variables, along with Section GG scores, affect discharge destinations after inpatient rehabilitation.

Future research should look at the predictive value of Section GG scores in other inpatient rehabilitation facilities serving patients with stroke, especially if larger sample sizes are available to determine the role of sex on discharge decisions. Future research should attempt to determine the predictive role of admission Section GG scores for patients with other diagnoses requiring inpatient rehabilitation.

### Conclusions

Section GG scoring of self-care and mobility, as required by CMS for calculating case mix group and reimbursement, was a secondary predictor of discharge destination after inpatient rehabilitation for stroke. Presence of a caregiver in the home was the primary predictor. Admission Section GG scores above 33.5 can predict home with homecare vs SNF discharge. A score of 36.5 can predict home with OP vs SNF discharge. The decision between home with OP and home with homecare requires further study.

### Suppliers

- a. *G\*Power Version 3.1.9.6*. Universität Kiel.
- b. IBM SPSS Statistics for Windows, Version 27.0; IBM Corp.

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