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POST-SNF 30-DAYS READMISSION

Predictors of Hospital Readmission for Patients Post-SNF discharged to Homes and Residential Care Facilities in a Post-Acute Care Setting

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1. Introduction and Objectives

Hospital readmissions put patients at risk for complication and are expensive. In a skilled nursing facility (SNF) 30-day potentially preventable readmission measure, the readmission may occur after the patient is discharged from the SNF. Majority of patients at post-acute care setting are disposed to homes and residential care facilities which include assisted living, and board and care.

The objectives of this study are as follows: 1) Which patient characteristics are better indicators of hospital readmissions for patients post-SNF discharged? 2) Whether the disposition to residential care facilities increases risk of hospital readmissions? 3) What is the likelihood of hospital readmissions for patients who are disposed to homes vs residential care facilities?

2. Methods

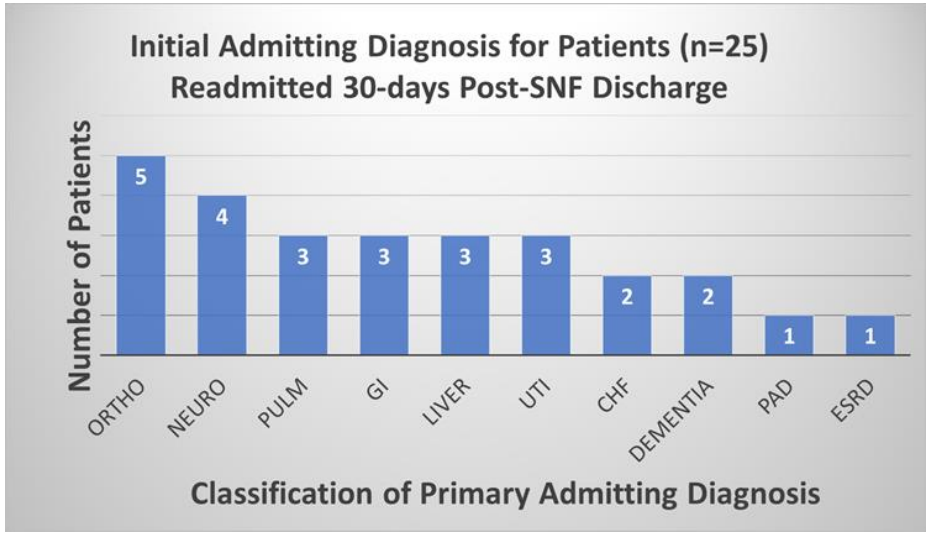
A cross-sectional study was conducted on 212 patients who were discharged home (n=159) or to residential care facilities (n=53) after post-acute care rehabilitation between January 1, 2016 and November 30, 2016. Patients admitted for IV antibiotic therapy or stayed at SNF 6 days or less were excluded from the study (Figure 1). Patient characteristics (Table 1) included age, gender, Allen Cognitive Levels placemat test (ACL), body mass index (BMI), functional independent measures prior to discharge (FIM) (Table 2), length of stay (LOS), Saint Louis University Mental Status (SLUMS) and Initial Admitting Diagnosis (Graph1).

Characteristics of 212 patients	Mean	Range
Female, total number (%)	147 (69%)	
Male, total number (%)	65 (31%)	
Age, years old	82.5	40-98
Allen Cognitive Level Placemat Test (ACL)	3.8	0-4.6
Body Mass Index (BMI)	25.1	15-55
Functional Independent Measure (FIM)	25.6	8-35
Length of Stay (LOS), day	16.2	7-40
St. Louis University Mental Status (SLUMS)	17.3	0-30

Table 1. Characteristics of 212 patients in the study

FIM Table	Bed mobility	Gait with walker	Grooming	Upper body dressing	Lower body dressing	Toilet transfer
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 2. Six categories of functional independent measure.



Graph 1. Classification of initial admitting diagnosis for 25 patients readmitted 30-days Post-SNF Discharge

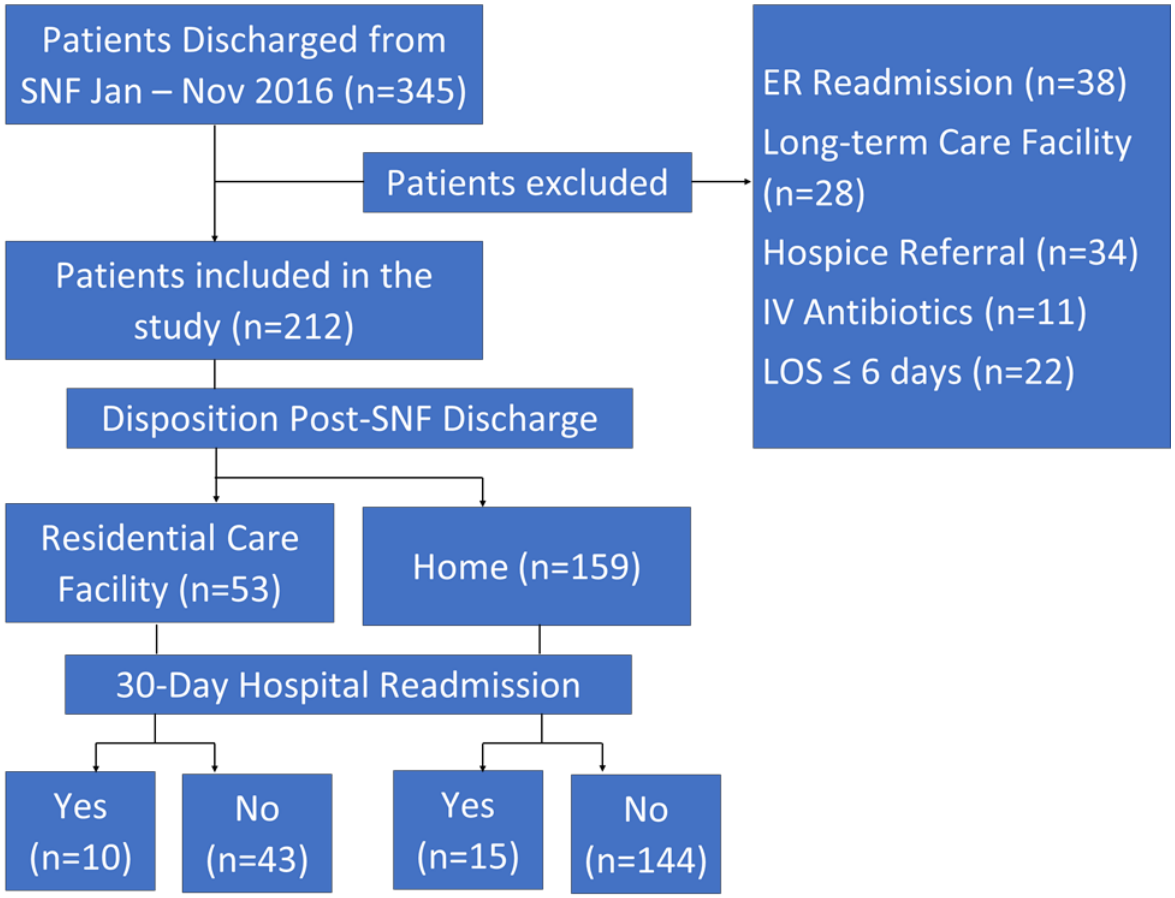


Figure 1. Flowchart of patient selection for this study

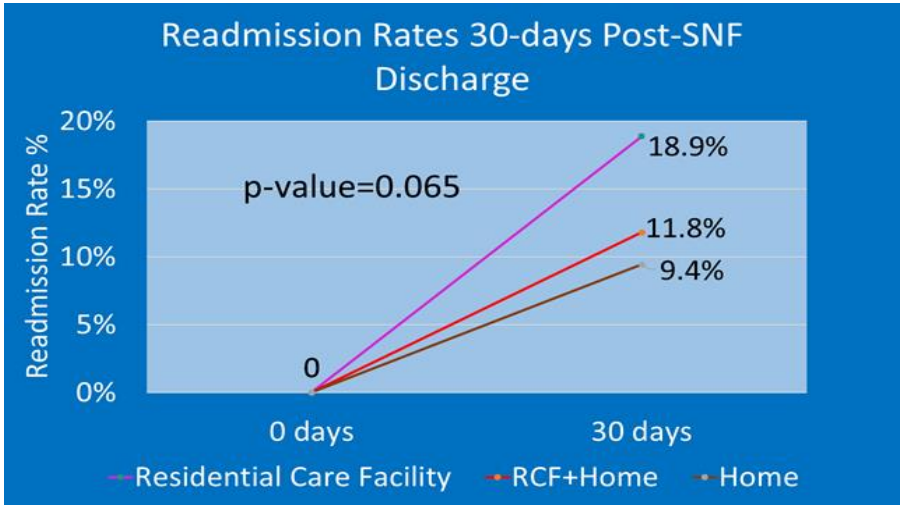
3. Results

1) Overall 30-days hospital readmission rate was 11.8% (25/212) in this study. Disposition to residential care facilities (RCF) increased the risk of readmissions to 18.9% (10/53), vs home 9.4% (15/159) (p= 0.065). (Graph 2)

2) Comparing readmitted patients (n= 25) to non-readmitted patients (n= 187), male gender increased readmissions from 31% (65/212) to 44% (11/25) (p= 0.124), ACL 3.69 (CI* 3.112-4.264) vs 4.03 (CI 3.866-4.191) (p= 0.172), LOS 16.7 days (CI 14.8-18.64) vs 15.4 days (CI 14.57-16.16) (p= 0.246). * 95% CI
3) ACL of RCF patients (n=53) vs ACL of home patients (n=159) was 3.73 (CI 3.397-4.052) vs 4.08 (CI 3.898-4.258) (p=0.057). In RCF group, ACL of readmitted patients (n=10) vs ACL of non-readmitted patients (n=43) was 3.34 (CI 2.214-4.466) vs 3.81 (CI 3.504-4.124) (p=0.271). (Table 3)

	H+RCF (212 patients)			RCF (53 patients)			Home (159 patients)		
Readmission	Yes n= 25	No n=187	P-value	Yes n=10	No n=43	P-value	Yes n=15	No n=144	P-value
Female	14 (56%)	133 (71%)	0.124*	5 (50%)	35 (81%)	0.143*	9 (60%)	98 (68%)	0.143*
Male	11 (44%)	54 (29%)		5 (50%)	8 (19%)		6 (40%)	46 (32%)	
ACL	3.69	4.03	0.172ǂ	3.34	3.81	0.271ǂ	3.92	4.1	0.575
LOS	16.7	15.4	0.246ǂ	17.2	16.1	0.57	16.4	15.1	0.4
BMI	25.52	25.46	0.963	24.88	23.36	0.374	26	26.1	0.945
AGE	81	80.95	0.815	84.9	86.7	0.491	79.2	79.23	0.992
FIM	25.72	26.16	0.652	24.6	24.7	0.966	26.5	26.6	0.908
SLUMS	17.88	17.85	0.986	16.4	15	0.634	18.9	18.7	0.95

Table 3. Predictors of 30-Day Readmission for patients discharged Home (H) or to Residential Care Facilities (RCF). * Chi Square test. ǂ Independent t-test.



Graph 2. Readmission rates 30-days post-SNF discharge for patients discharged home or to residential care facilities.

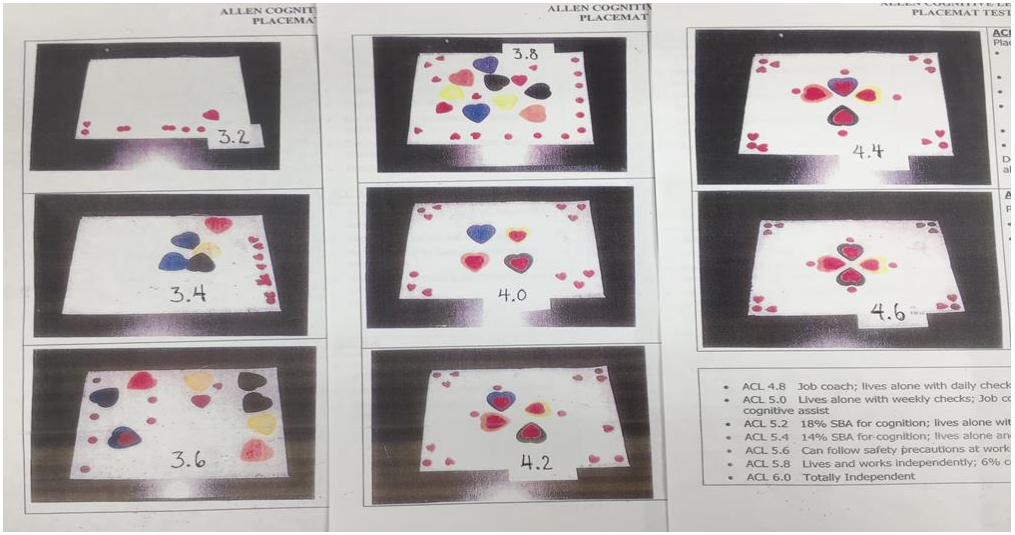


Image 1. Examples of Allen Cognitive Level placemat test scoring (3.2-4.6)

4. Discussion and Conclusions

1) Male patients are more prone to hospital readmission post-SNF discharge than female patients, probably because of more comorbidity and need of more care.
2) Allen Cognitive Level (ACL) placemat test (Image 1) is a standardized measurement of visual cognitive functioning used by occupational therapy. It is a useful tool to stratify risks of hospital readmission as shown in this study. ACL caregiver guides facilitate the best ability of cognitively impaired patients at different levels in aspects of medication supervision, safety recommendations, eating, dressing and hygiene, toileting use, mobility and positioning, and daily activities. (Ref. 1)
3) Patients placed at residential care facilities have more ADL disability and tend to be readmitted to the hospital post-SNF rehabilitation.
4) Studies have shown that living situation, marriage status, social support, wealth and race are associated with hospital readmission. Providing patients with enhanced post-discharge instructions and/or support is the most commonly endorsed preventive strategies. Multifaceted broadly applied interventions may be more successful than those that rely on individual providers choosing specific services based on perceived risk factors. (Ref. 2, 3)

5. Summary

Post-SNF 30-days hospital readmissions are more likely to occur in male, cognitively impaired, lower functioning patients. Allen Cognitive Level placemat test is a useful tool to stratify patients of higher risk for readmission. Caregiver guides for patients at different impaired levels can facilitate home health care in various aspects of activities of daily living. Further testing is required to validate the effect.

6. References

1) Champagne, Tina. "Allen Cognitive Level Caregiver Guides." www.ot-innovations.com/clinical-practice/cognition-2/the-allen-cognitive-level-battery
2) Baier, Rosa R., and Amal N. Trivedi. "For Hospital Readmissions, Hindsight Is Not 20/20." Journal of General Internal Medicine 2016 Nov; 31(11): 1270-1271.
3) Herzig, Shoshana J., and Schnipper Jeffrey L. "Physician Perspectives on Factors Contributing to Readmissions and Potential Prevention Strategies: A Multicenter Survey." Journal of General Internal Medicine 2016 Nov; 31(11): 1287-1293.