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Assisted Early Mobility for Hospitalized Older Veterans: Preliminary Data from the STRIDE Program

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Abstract

An important contributor to hospital-associated disability is immobility during hospitalization. Preliminary results from STRIDE, a clinical demonstration program of supervised walking for older adults admitted to the hospital with medical illness, are reported. The STRIDE program consisted of a targeted gait and balance assessment by a physical therapist, followed by daily walks supervised by a recreation therapy assistant for the duration of the hospital stay. To examine program effectiveness, STRIDE participants ($n = 92$) were compared with individuals referred but not enrolled (because of refusal or because program was at capacity, $n = 35$). Median length of stay was 4.7 days for STRIDE participants and 5.7 days for individuals receiving usual care ($P = .31$). There was one inpatient fall in each group (not associated with a STRIDE walk). Overall, 92% of STRIDE participants were discharged to home (rather than a skilled nursing facility (SNF)) compared to 74% of individuals receiving usual care ($P = .007$). Thirty-day emergency department visit rates and readmission rates were not significantly different between the two groups. STRIDE, a supervised walking program for hospitalized older adults, was feasible and safe, and program participants were less likely to be discharged to a SNF than a demographically similar comparison group. STRIDE is a promising interdisciplinary approach to promoting mobility and improving outcomes in hospitalized older adults.

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Keywords

mobility; acute care; models of care

More than one-third of adults aged 70 and older are discharged from the hospital diagnosed with a major, new disability that was not present before the onset of acute illness.¹ At least half of the time the associated illness is not a clearly disabling condition such as hip fracture or stroke but rather a medical condition such as pneumonia or heart failure (HF).¹ Moreover, 1 year after discharge, fewer than half of older adults with hospital-associated disability have recovered to their preillness functional status, and rates of nursing home placement and death are high.² Loss of functional ability has a major negative effect on quality of life for individuals and their caregivers and is a significant factor in acute and postacute care costs.

An important contributor to hospital-associated disability is immobility during hospitalization.³ Hospitalized older adults spend only 3% of their time standing or walking, despite the fact that fewer than 5% of individuals have physician orders for bed rest.⁴ Immobility leads to loss of muscle mass, deconditioning, and overall weakness. Resultant poor physical functional status is a risk factor for a variety of inpatient complications, including falls, delirium, prolonged hospital stays, and higher rates of discharge to skilled nursing facilities (SNFs).⁵ The negative effects of weakness and deconditioning also extend beyond the index hospitalization. In the 2 weeks after discharge, older adults hospitalized with medical illness are at high risk for falls; this accounts for up to 15% of all readmissions in some settings.⁶

Given the prevalence of immobility in the hospital and its resultant negative consequences, there is an urgent need for programs to promote early, safe mobility in hospitalized individuals. STRIDE [assiSTed eaRly mobility for hospitalizeD older vEterans] is an innovative clinical demonstration program designed to increase mobility in individuals in Veterans Affairs Medical Centers (VAMCs). The overall goals of this article are to describe the STRIDE program and to compare outcomes of individuals enrolled in STRIDE with those of a prospectively identified comparison group.

PROGRAM DESCRIPTION

Program Goals

STRIDE is a supervised walking program for older veterans admitted to the hospital with medical illness. The specific goal of STRIDE is to optimize the physical function of older veterans by increasing the amount of time spent out of bed walking during their hospitalization. There are three important features of STRIDE: early assessment, within 24 hours of admission; supervised ambulation, for safety and to ensure adequate uptake of program activities; and education about the importance of daily ambulation for veterans and their family members.

Eligibility

Veterans were eligible for STRIDE if they were aged 65 and older, admitted to the General Medicine Service of the Durham VAMC, and referred to the program by their treating physician. The Durham VAMC is a 271-bed tertiary care facility affiliated with Duke University Medical Center. Eligibility and screening procedures are displayed in Figure 1. Veterans with admitting conditions that may have limited their ability to ambulate safely (e.g., angina pectoris, new neurological deficit, unable to follow one-step commands) were excluded. Additional exclusion criteria are listed in Figure 1.

Staff Roles and Program Activities

The STRIDE intervention consisted of a targeted gait and balance assessment by a physical therapist (PT), followed by daily walks supervised by a recreation therapy assistant (hereafter referred to as walk assistant) for the duration of the hospital stay. A PT performed a gait and balance assessment on hospital day #1 or as soon as possible after the referral was received for all veterans whose treating physician referred them to STRIDE. The PT also reviewed the importance of daily ambulation, provided the veteran with ambulatory assistive devices if needed, and gave the walk assistant safety recommendations for veterans according to their individual needs and abilities.

STRIDE participants began supervised walks on the day after their assessment and continued for each subsequent business day of their hospitalization. The goal was for all veterans who participated in STRIDE to walk up to 20 minutes daily beginning as soon as possible after admission to the general medical ward. This ambulation prescription was based on randomized clinical trial data demonstrating better outcomes in individuals who achieved this activity level.⁷ STRIDE walk assistants followed established protocols for offering rest breaks as needed and monitoring vital signs. The walk assistant worked closely with each participant's nurse to determine the best timing for the walk. Another vital role of the walk assistant was to educate veterans and family members about the importance of out-of-bed activities, to review activity goals, to provide motivation and encouragement, and to contextualize walking as a normal activity.

This was a clinical demonstration program that the Veterans Health Affairs Office of Geriatrics and Extended Care deemed to be an operational activity and thus not subject to institutional review board review.

PROGRAM EVALUATION

The main goals of the evaluation were to determine characteristics of program participants and to compare outcomes of individuals enrolled in STRIDE with those of a prospectively identified comparison group. Program referrals were tracked through electronic consultations in the Department of Veterans Affairs (VA) Computerized Patient Record System. STRIDE clinical staff entered data into the system using standardized progress note templates, and trained research assistants abstracted data from it and entered them into a database for analyses.

To examine program effectiveness, STRIDE participants were compared with individuals referred but not enrolled (because of refusal or because the program was at capacity). Demographic and clinical variables examined in both groups included age, sex, race, discharge diagnoses, and probability of readmission as calculated using a 30-day readmission risk calculator developed by the VA Inpatient Evaluation Center developed (available on the VA intranet). The calculator generates a probability of readmission based on factors including demographic characteristics, hospitalization information, previous admissions, medication, laboratory results, and diagnoses and has been shown to be predictive of actual readmissions.⁸ Outcomes assessed were length of hospital stay, inpatient falls, discharge destination, and emergency department (ED) visits and readmissions within 30 days of discharge. Bivariate comparisons were conducted using the chi-square or Fisher exact test for categorical variables and the t-test or the nonparametric Wilcoxon rank-sum test for continuous variables, as appropriate. For individuals referred to the program more than once, data are presented on their first referral only. Significance was set at $P < .05$. All analyses were performed using SAS version 9.3 (SAS Institute, Inc., Cary, NC).

RESULTS

Program Uptake

One hundred eighty-six veterans were referred to the program between February 1, 2012, and July 10, 2012, of whom 18 were discharged before screening. Of 168 veterans screened, 127 met all inclusion criteria, and 92 of these were enrolled, 25 were placed on a waitlist because the program was at capacity (no staff available to perform the assessment), and 10 declined to participate. Overall, 62% of STRIDE referrals occurred within one business day of hospital admission, and 74% of assessments were performed within 1 day of referral.

Characteristics of STRIDE Participants

Demographic characteristics of STRIDE participants are listed in Table 1. The median age was 74, and 97% were male. A significant proportion of STRIDE participants had functional deficits at baseline; 63% reported at least some difficulty walking two to three blocks or that they were unable to do it, 50% used an assistive device for ambulation, and 45% reported at least one fall in the past 3 months. At the initial inpatient assessment, mean gait speed was 0.48 ± 0.24 m/s, and mean 2-minute walk distance was 186 ± 93 feet. Overall, 76% of participants completed walks on at least half of their hospital days, and 66% of these walked every eligible hospital day.

Outcomes

To examine program effectiveness, STRIDE participants ($n = 92$) were compared with individuals referred but not enrolled (because program was at capacity or they refused, $n = 35$; Table 1). STRIDE and individuals receiving usual care were similar according to all demographic and clinical characteristics examined (Table 1). Median length of stay was 4.7 days for STRIDE participants and 5.7 days for individuals receiving usual care ($P = .31$). There was one inpatient fall in each group (not associated with a STRIDE walk). Overall, 92% of STRIDE participants and 74% of those receiving usual care were discharged to

home ($P = .007$). Thirty-day ED visit and readmission rates were not significantly different between the two groups.

DISCUSSION

This article describes the STRIDE program, an innovative approach to address the important clinical problem of immobility in hospitalized older adults. STRIDE was developed collaboratively with input from multiple disciplines including physical therapy, recreation therapy, nursing, medicine, and exercise physiology. The multidisciplinary approach to its development resulted in several features that, taken together, make STRIDE different from other hospital mobility programs. First, a STRIDE walk assistant supervised all walks, which addressed a limitation of previous studies with low uptake of program activities. (Participants did not actually walk or exercise the recommended amount.)⁹ Having a dedicated staff member other than the bedside nurse supervise walking was also consistent with data demonstrating that competing demands on nurses' time often prevent them from assisting individuals with ambulation.^{10,11} In addition, use of a recreation therapy assistant as the walk assistant helped to normalize the walking, even in the context of an acute hospitalization, and took advantage of motivational approaches used in recreation therapy. Second, having a PT provide an initial gait assessment enabled STRIDE to reach individuals with functional limitations, who are often excluded from volunteer-based programs but who may stand to benefit the most from the program.¹² Finally, the collaborative approach allowed STRIDE to be offered to individuals with a broad range of medical conditions, rather than restricting it to those with a single diagnosis.^{7,13,14}

Preliminary evaluation suggests that STRIDE may reduce the need for postacute care in a SNF setting. SNF admissions and spending on postacute care services have increased dramatically in the past decade in the United States.¹⁵ Programs that preserve or improve functional status, allowing individuals to be discharged home rather than to a SNF, may lead to substantial cost savings. Although the 1-day shorter length of stay in the STRIDE group was not statistically significantly different, a similar reduction in length of stay was observed in a randomized clinical trial of a supervised walking program in individuals with community-acquired pneumonia.⁷ The current study findings are also consistent with those found in comprehensive models of care for elderly inpatients such as Acute Care for the Elderly Units and the Hospital Elder Life Program.^{16,17} Although both of these models consist of multiple interventions, each emphasizes promotion of mobility and optimization of functional status.

Lessons Learned

A significant portion of patients missed some days of walking because they were off the floor for tests or procedures, and few veterans could tolerate walking for 20 minutes in one session. To address these issues, the program was expanded to offer two 10-minute walking sessions daily. At the request of referring providers, mostly internal medicine residents, the age cutoff was lowered to 60 so that more veterans would be eligible for the program. Staff also began to provide information about STRIDE to all residents at the beginning of their VA general medicine rotation to increase awareness of the program and help promote earlier

referrals. Finally, a number of barriers to mobility outside of supervised episodes of walking were observed. Consistent with reports from other studies, these included meals served in bed, mixed messages to veterans from staff about whether they should get out of bed, and lack of destinations of interest that encourage people to venture outside their rooms.^{4,16} Supervised walking programs like STRIDE may be more effective combined with changes in the cultural and physical environment of the hospital or with nurse-driven protocols to promote functional mobility in all inpatients.¹⁸

LIMITATIONS

A number of limitations merit acknowledgment. Individuals were not randomly allocated to receive STRIDE, so there may be unmeasured differences between individuals who were enrolled and those who were wait-listed or refused. The probability-of-readmission score was based on a comprehensive set of demographic and clinical variables, but this tool has not been validated with other comorbidity indices and may not account for all clinical differences between the two groups. STRIDE was not a blinded research study, and providers were aware that their patients were receiving this service. Thus, it is not clear whether the difference in discharge destination was due to better physical performance or an effect on provider behavior; this is an important area for future study. Finally, it is possible that small differences in outcomes such as readmissions were not detected because of the modest sample size.

CONCLUSIONS

In summary, STRIDE, a supervised walking program for hospitalized older adults, was feasible and safe, and program participants were less likely to be discharged to a SNF than a demographically and clinically similar comparison group. STRIDE could be readily adapted for use in other hospital systems and warrants further evaluation as a potential new tool for improving outcomes for hospitalized elderly adults.

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Figure 1.

Recruitment and enrollment for the assiSTed eaRly mobility for hospitalizeD older vEterans (STRIDE) program to promote mobility in hospitalized older veterans.

Table 1

Characteristics and Outcomes of assiSTed eaRly mobility for hospitalized older vEterans (STRIDE) Participants and Individuals Receiving Usual Care

Characteristic	STRIDE, n = 92	Usual Care, n = 35	P-Value
Baseline characteristic			
Age, median (IQR)	74 (66–80)	75 (67–83)	.62
Male, n (%)	89 (96.7)	35 (100)	.56
Black, n (%)	25 (27.2)	10 (28.6)	.88
Calculated probability of readmission risk score, % mean $\pm$ standard deviation	21.7 $\pm$ 8.6	18.9 $\pm$ 6.1	.1
Discharge diagnosis ^a			
Heart failure, n (%)	19 (20.7)	5 (14.3)	.41
Kidney failure, n (%)	17 (18.5)	10 (28.6)	.21
Other infection (nonskin, nonurinary), n (%)	14 (15.2)	2 (5.7)	.23
Urinary tract infection, n (%)	13 (14.3)	5 (14.3)	.9
Pneumonia, n (%)	8 (8.7)	2 (5.7)	.58
Cancer evaluation or treatment, n (%)	8 (8.7)	6 (17.1)	.21
Chronic obstructive pulmonary disease, n (%)	7 (7.6)	1 (2.9)	.44
Skin infection, n (%)	5 (5.4)	0	.3
Arrhythmia, n (%)	2 (2.2)	2 (5.7)	.3
Other, n (%)	51 (55.4)	25 (71)	.11
Outcome			
Inpatient fall, n (%)	1 (1.1)	1 (2.9)	.48
Overall length of stay, days, median (IQR)	4.7 (2.6–8.9)	5.7 (3–8.5)	.31
Discharge home, n (%)	84 (92.3)	26 (74.3)	.007
30-day emergency department visit, n (%)	21 (23.1)	7 (20)	.71
30-day readmission, n (%)	16 (17.6)	5 (14.3)	.66
30-day death, n (%)	4 (4.4)	2 (5.7)	.67

IQR = interquartile range.

^aListed in the discharge summary as a main diagnosis; up to three coded for each individual.