STEP UP: STudy of the Effectiveness of A Patient AmbUlation Protocol

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INTRODUCTION

Immobility in hospitalized patients, particularly the elderly, can lead to serious untoward events, such as hospital-acquired pneumonia, deep vein thrombosis, pressure ulcers, and loss of functional mobility. Prior studies have found ambulation to prevent or decrease a number of the untoward events associated with immobility, confirming that getting patients out of bed and walking as soon as possible is an important aspect of nursing care for hospitalized patients. Unfortunately, most of these studies included ambulation interventions which were very labor-intensive (i.e., dedicated physical therapists providing daily ambulation assistance), with implementation routines which would be unrealistic for most institutions to implement and sustain.

PURPOSE OF STUDY

The purpose of this study, called the STEP UP ambulation program, was to determine if an easy-to-implement, formalized ambulation program would improve ambulation in hospitalized patients. The ambulation program was compared to usual care for inpatients on a medical surgical unit.

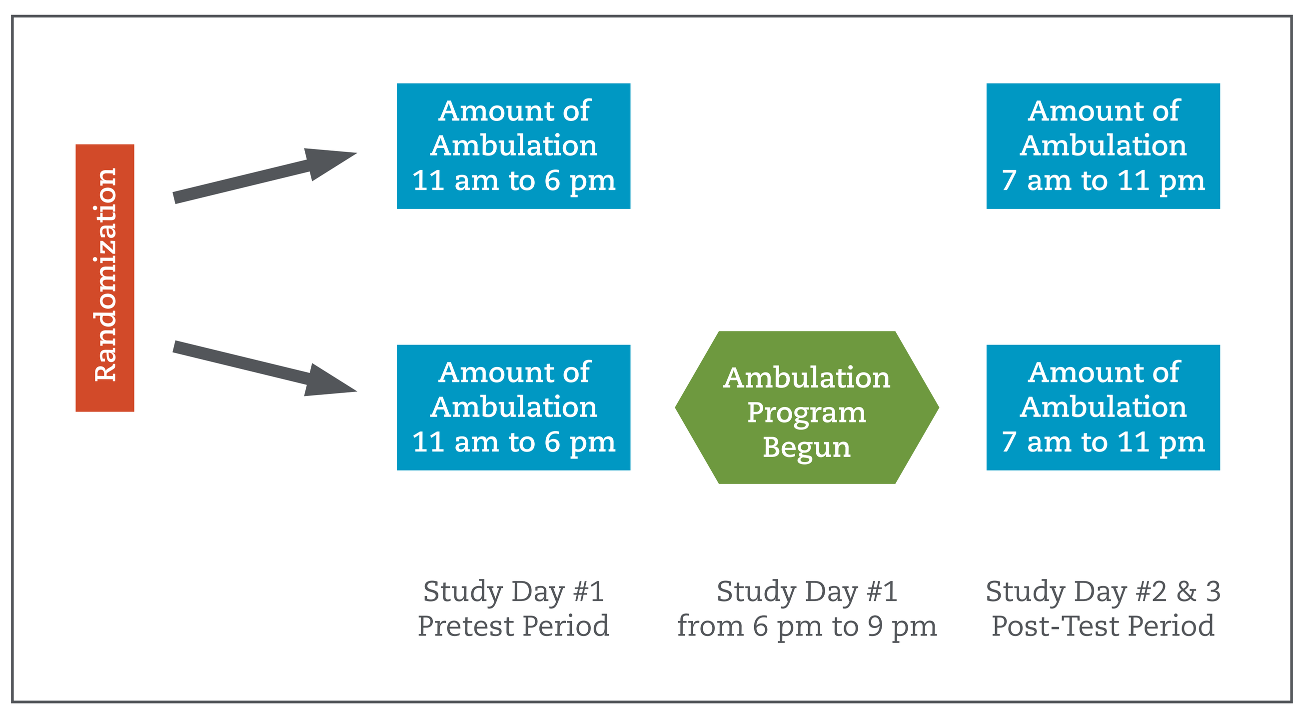

FIGURE 1: Schematic of the study design for a pretest, post-test, randomized, controlled trial of an ambulation program compared to usual care in medical surgical inpatients over a three-day study period.

Patient and family members, if applicable, watch a 2.5-minute educational videotape about the importance of walking which:	Explains the physiological consequences of not ambulating while in hospital (muscle mass loss; balance disturbances; pneumonia; pressure sores)
	Describes research on how infrequently hospitalized patients ambulate
	Lists what you as a patient can do to help prevent complications while in the hospital: 1) Get out of bed several times a day and walk around 2) Don't just walk in your room – get out and tour around the unit! 3) Set a goal for walking each day, increasing the amount you walk – think about doubling the distance you walked yesterday
	Reminds patients to make sure pain is controlled in order to facilitate daily walking
	Urges patients to call staff to help you walk around the unit – we'll help steady you and also organize and move all the medical equipment attached to you. Don't try and do it on your own!
Daily walking distance goals written on the patient's white board:	Reminds patients to make sure pain is controlled in order to facilitate daily walking
	Urges patients to call staff to help you walk around the unit – we'll help steady you and also organize and move all the medical equipment attached to you. Don't try and do it on your own!

TABLE 1: Components of the STEP UP ambulation program for inpatients.

METHODS

Study Design. A pretest / post-test, randomized, experimental design was used to compare a planned ambulation program to usual care during three sequential days on an inpatient, medical surgical unit (Figure 1). The ambulation program was composed of three activities: 1) patient and family, if applicable, viewing of a short educational videotape about the importance of ambulation; 2) setting daily goals for ambulation; and 3) strategically-placed reminders in the patient's room about the importance of ambulation (Table 1). The primary outcome variable was the amount of patient ambulation as measured in steps / hr with an exercise pedometer (ShrinQ, Model 304, Sportline, Hazleton, PA). Random assignment to treatment groups (ambulation program; usual care) was determined by a computer randomization program following pretest measurement of patient ambulation during a 7-hour period on Study Day #1.

Study Participants. Participants for this study were a convenience sample of patients admitted to an inpatient medical surgical unit. Study inclusion criteria were: anticipated length of stay of at least 3 days; medical order for ambulation; no requirement to stay within the hospital room; and ability to ambulate with the assistance of two or less persons. A minimum sample size of 46 participants was determined a priori based on power analysis to detect at least a 133% increase in ambulation with the ambulation program compared to usual care.

Study Procedures. On Day #1 of the study (pretest period), all consenting patients had a pedometer device attached to their hospital gown at 11 am by a study investigator (Figure 2). Aside from telling the patient to wear the pedometer device throughout the day on their gown, no other special instructions were given relating to ambulation. The pedometer device was removed at 6 pm on the same day by a study investigator, and the amount of steps ambulated was recorded for the 7-hour pretest period. The pedometer memory was then cleared. Participants were then randomized to the ambulation program intervention or usual care groups (Figure 1).

After completion of the pretest ambulation tracking on Study Day #1, between 6 pm and 9 pm, participants assigned to the ambulation program group watched a 2.5-minute videotape on the importance of ambulation, and the study investigator discussed ambulation goals to be achieved over the next two days. An ambulation reminder card was placed on the patient's over-bed table, and a magnetic footprint placed on the door to the patient's room, encouraging the ambulation group to "STEP UP".

On Study Day #2, ambulation goals were set for the intervention group by having the patient estimate the distance he/she could walk outside their room on that day, and the goal written on the patient's white board. On Study Day #3, ambulation goals for the intervention group were set by doubling the participant's ambulation goal from Study Day #2, and again written on the white board.

On Study Days #2 and #3, participants in both the usual care and ambulation program groups had the pedometer attached to their gown each day at 7 am by one of the study investigators. The pedometer was removed at 11 pm each day by a study investigator, who then recorded the amount of ambulation for the 16-hour post-test period and cleared the pedometer memory.

Data Analysis. Data were summarized using descriptive statistics. Analysis of variance was used to determine if there were differences in the amount of ambulation between the ambulation program and usual care groups. Student's t-test and Chi square analysis were used to compare demographic and patient characteristic data between the two groups. The level of significance for all tests was $p < 0.05$.

RESULTS

A total of 48 patients were studied, with N = 22 assigned to receive the ambulation program and N = 26 assigned to usual care. Ages of patients ranged from 22 to 91 years, averaging 63.2 ± 15.9 years. The majority of patients were female (58%). Patients were admitted for a variety of medical and surgical conditions, with 40% admitted for post-operative care. The amount of ambulation recorded for the baseline, pretest period (7 hours) ranged from 40.1 to 839.4 steps / hour, with an average of 241.3 ± 214.1 steps / hour. No differences were found between the ambulation program and usual care groups for age, sex, reason for admission, and/or pretest amount of ambulation ($p > 0.05$).

The amount of ambulation for the intervention group increased from Study Day #1 pretest values (244.1 ± 228.9 steps / hour) to 279.5 ± 214.2 steps / hour and 290.6 ± 238.7 steps / hour on post-test Study Days #2 and #3, respectively (Figure 3). The amount of ambulation for the usual care group decreased from Study Day #1 pretest values (238.8 ± 205.2 steps / hour) to 203.9 ± 155.4 steps / hour and 155.5 ± 103.3 steps / hour on post-test Study Days #2 and #3, respectively. Analysis of variance found a significant difference between the amount of ambulation for the two groups on post-test Study Day #3 ($F_{1,46} = 6.84$, $p = 0.012$) but not for post-test Study Day #2 ($p = 0.164$).

CONCLUSION

Patients participating in the STEP UP ambulation intervention had significantly higher amounts of ambulation within two days as compared to patients receiving usual care. The STEP UP ambulation intervention, which consisted of viewing a brief educational videotape encouraging ambulation, setting of ambulation goals, and providing ambulation reminders, required little extra staff time to implement. No prior studies have evaluated an ambulation program with components which could be easily incorporated into the day-to-day practice routines of busy inpatient clinicians. While dedicated ambulation teams have been shown to be beneficial, the requirement for additional staff has limited their implementation. The STEP UP ambulation program demonstrated that an ambulation program which did not require specialized personnel or large amounts of staff time was effective in improving ambulation in medical surgical inpatients.

FIGURE 2: Placement of a pedometer on the patient's hospital gown for tracking of the amount of ambulation during the study periods.

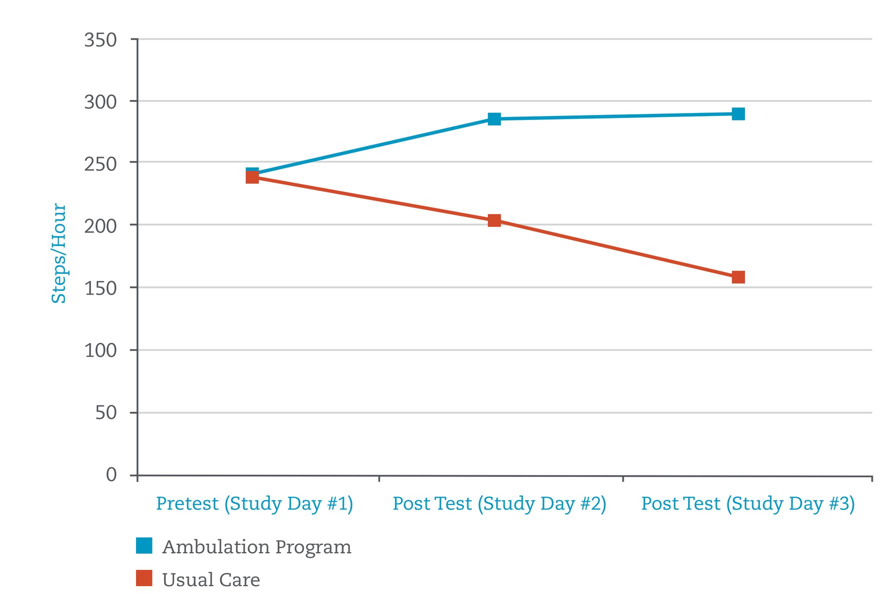

FIGURE 3: Amount of ambulation before (pretest Study Day #1) and after (post-test Study Days #2 and #3) for 48 medical surgical patients assigned to receive an ambulation program (N = 22) or usual care (N = 26).

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