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## Hospitalized Adult Patient Characteristics Associated with Participation in a Volunteer- Assisted Mobility Program (VAMP): A Feasibility Study

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### Background

Physical inactivity during hospitalization commonly results in functional decline. Structured multidisciplinary programs/approaches may be useful to promote mobility in hospitalized adults.

### Purpose

Determine if a Volunteer-Assisted Mobility Program (VAMP) is feasible to improve the ambulation of hospitalized patients and examine the characteristics of patients associated with willingness to participate in the program.

### Methods

A prospective descriptive correlation study conducted in two acute care units. Implementation of a volunteer-staffed program with the aim of improving the ambulation of hospitalized patients.

### Results

Hospitalized patients (N=490) were approached, with 39.2% ( $n = 192$ ) agreeing to ambulate an average of 109.7 m ( $IQR = 51.45 - 172.2$  m). Patients with a low clinical frailty score, a high body mass index, or a physical therapy order were more likely to participate in VAMP.

## **Conclusions**

The findings suggest that a volunteer-assisted interdisciplinary program is a feasible way to promote the ambulation of some patients.

Hospitalized patients, especially older adults, are at greater risk for functional decline and frailty due to comorbidities, chronic illness, and insufficient physical mobility/activity.<sup>1-5</sup> Physical inactivity during and after hospitalization contributes to 34%-50% functional decline due to muscle atrophy and muscle weakness, which increases the risk for frailty.<sup>4-7</sup> Functional decline and frailty negatively impact the quality of life and place a financial burden on the patient/family and health care systems.<sup>7-10</sup> Usual hospital-based care includes promoting the physical mobility needs of patients;<sup>11</sup> however, studies confirm that insufficient physical activity is common<sup>6</sup> and patients are not sufficiently involved in the care processes to become physically active during and after hospitalization.<sup>7,8</sup>

Promoting physical mobility has been defined as getting patients out of bed, including sitting in a chair, toileting at bedside or bathroom, standing, and ambulating.<sup>12</sup> While it is well known that it is important to prevent functional decline and frailty, the promotion of physical mobility is challenging for nurses and the interprofessional team.<sup>13,14</sup> Studies suggest that nurse workload, staffing-related issues, and having conflicting nursing priorities could interfere with the promotion of physical mobility in hospitalized patients. Less is known about how patient characteristics and their preferences to be physically active during hospitalization impacts whether nurses' promote physical mobility.<sup>15,16</sup>

Due to the complexities inherent in hospital units, barriers to promoting physical mobility will exist for the foreseeable future. Studies show that structured multidisciplinary programs/approaches may be useful to promote regular, basic mobility such as ambulation in hospitalized adults and older adults.<sup>17,18</sup> However, implementing patient-centered programs to improve physical mobility often requires additional staffing, which can be a barrier for some organizations to implementing mobility programs.

Volunteers may be able to overcome the staffing barrier in implementing programs to promote physical mobility in certain hospitalized patients. Formal volunteer programs and informal volunteering by patients' family members is common in hospitals in many nations.<sup>19</sup> Some studies have included volunteers in programs to improve physical mobility.<sup>20,21</sup> However, more scientific knowledge is needed to understand the contributions trained volunteers could make to improve the physical mobility of hospitalized adults.

Accordingly, the purpose of this study was to 1) determine if a Volunteer-Assisted Mobility Program (VAMP) that used trained volunteers was feasible to improve the ambulation of hospitalized patients; 2) Examine the characteristics of patients associated with willingness to participate in the program, and potential reasons for refusal; and 3) Determine the perceptions of the usefulness and feasibility of VAMP among physical therapists (PTs) and registered nurses (RNs) working on the 2 units.

## **METHODS**

### **Study design, setting and sample**

A prospective, descriptive correlation study was conducted. Patients were recruited to participate in VAMP from 2 units (a 40-bed cardiac unit and 40-bed oncology unit) of a midsized hospital in the Pacific Northwest US. Over a 6-month study period, data were collected about participants in the ambulation program (VAMP) as well as patients declining to participate (usual care) that were hospitalized during the same time period. This study underwent a full review and was approved by the Institutional Review Board (IRB) affiliated with the hospital where the study was conducted.

## **VAMP**

VAMP was adapted from the “Mobility is Medicine” program.<sup>22</sup> To become a VAMP staff member, volunteers applied through the hospital’s volunteer office. Volunteers were on-boarded and then received extensive training from a physical therapist on safe ambulation and transferring. To accommodate volunteers’ availability to some extent, the volunteers typically started as early as 9AM and finished the day by 6 PM. Volunteers were scheduled 7 days per week, and shifts were between 2 and 4 hours long. A PT-led hands-on training that lasted about 120 minutes including having the volunteer introducing him/her/self to the patient, adjusting the bed, turning on/off alarms, helping the patient get in/out of bed, using a gait belt, walking the halls with walkers and IV poles, and practicing safe falls. Each volunteer took a turn at being the patient and the volunteer. Following training with PT, the volunteer worked with the nurse until the volunteer felt comfortable, and the items were checked off. Unit staff provided training on a variety of competencies that were seen as important for the volunteer role (Supplemental Digital Content, Table). While the focus of the training was on offering ambulation, volunteers were also trained to solve other patient request/needs within their scope. For example, a finished meal tray may need to be removed to make space to get out of bed, or a patient may have other simple requests that the volunteers could address before or after ambulation.

### ***Patient criteria for ambulation***

Patients had to meet criteria to be ambulated by a volunteer, including the presence of a physical mobility assessment by a PT or RN. Patients with disorientation but able to walk well, or slightly unsteady as determined by a PT or RN, were also eligible to be ambulated by a volunteer. Patients under contact enteric or airborne isolation were excluded. To be eligible to be ambulated by a volunteer the patient had to have a frailty score of  $\leq 6$  on the visual Clinical Frailty Scale© (CFS) (see Study Measures).<sup>23</sup> Frailty has been described as a geriatric syndrome associated with adverse health outcomes and mortality.<sup>24</sup>

### ***Unit-based staff responsibilities***

Unit-based charge nurses used the visual CFS to determine if the patient was appropriate to be ambulated by a volunteer. Patient scored as severely frail, very severely frail, and terminally ill on the CFS were excluded from the VAMP. The nurse informed the volunteers of specific patient requirements including such as the approximate distance that a patient was capable of ambulating, gait-belt or assistive-device required. If oxygen was required, the RN, PT, or respiratory therapist arranged for a portable oxygen tank and transferred the tubing.

### ***Volunteer responsibilities***

On arrival to the unit, volunteers checked in with the unit charge nurse to obtain the list of patients eligible for ambulation. The volunteer also followed-up with the patient's primary nurse to ensure that there was no change in the patient's physical status. Scripting was used to encourage patients to ambulate: "Hello, my name is... I volunteer on this unit to help patients go for a walk in the hall..." If the patient agreed to go for a walk, ambulation goals were discussed with patient and mutually agreed on before ambulation, and then updated on the whiteboard in the patient's room.

If a patient refused ambulation, volunteers informed the nurse and documented the reasons for refusal.

### **Measures**

#### ***Visual clinical frailty scale***

The 9-point validated CFS was used for this present study and scored as: 1=very fit; 2=well; 3=managing well; 4=vulnerable; 5=mildly frail; 6=moderately frail; 7=severely frail; 8=very severely frail; 9=and terminally ill.<sup>23</sup> Nurses were trained how to use the scale during a 1-hour session.

#### ***Distance ambulated***

While nursing staff anecdotally had some distance estimates of the halls, the team thought it would be beneficial if patients and volunteers could visualize distance ambulated. Accordingly, a medium sized print out of a sport shoe was laminated and placed at waist level in 5-meter increments on the walls of the units where the program was implemented. Volunteers and nursing staff were educated how to use these markers to capture the approximate distance ambulated by the patient, and to document on the whiteboard. Nurses were encouraged to document the distance ambulated in the patients electronic health care record.

#### ***Mobility log***

Volunteers used Research Electronic Data Capture (REDCap), hosted at the hospital where this study was undertaken, to document the distance ambulated by patients or reasons for refusal. REDCap is a secure, web-based application designed to support data capture for research studies.<sup>25</sup> Volunteers documented refusal using a drop down list of potential reasons such as feeling tired, having visitors, or feeling pain. The charge nurse documented the level of assistance needed, assistive devices, and frailty score in the electronic health record.

#### ***Demographics and physical mobility assessment***

A retrospective chart review was conducted to capture demographics, Body Mass Index (BMI)<sup>7</sup>, the physician's activity and physical therapy order, fall risk using the Morse Fall Scale,<sup>26</sup> mobility level, home-use of assistive device, and ambulation distance.

#### ***Staff survey***

Staff's perceptions of the usefulness and feasibility of VAMP from a clinical perspective were assessed. PTs and RNs working on the 2 units were sent a 10-question

survey to their email using REDCap. Eight questions used a 5-point Likert Scale (1=strongly disagree to 5=strongly agree), and 2 questions asked staff to describe any barriers and share other insights.

## **Analysis**

Statistical significance testing was conducted with SPSS Version 25 (Armonk, NY: IBM Corp) and was 2-sided at the .05 level. Prior to conducting all analyses, the influence of missing data was assessed. Little's Missing Completely at Random (MCAR) test was not significant suggesting values were missing at random. Descriptive statistics were used to summarize the demographic and mobility characteristics of patients who were approached and agreed to participate or who refused to participate in VAMP. Continuous data are summarized as medians and the interquartile range (mdn, IQR), and categorical data were summarized as frequencies (percentages). Distance ambulated was highly skewed and therefore not normally distributed, hence non-parametric analysis was performed. The Mann-Whitney U test and Kruskal-Wallis test was used to examine the association between distance ambulated and the demographic and mobility characteristics. Logistic regression was used to examine demographic and mobility characteristics associated with participation in VAMP. The odds ratio (OR), 95% confidence interval (95% CI) and the p-value from the model chi-square are reported. For the useability and feasibility questions included in the staff survey, responses were categorized as disagree (strongly disagree or disagree), neutral, or agree (agree or strongly agree), with the frequency and percentage of staff reported.

## **RESULTS**

During the 6-month study period, 27 volunteers approached a total of 490 patients to participate in VAMP. Thirty-nine percent (n=192) agreed to participate, leaving 298 patients available for usual care. The volunteers spent 559 hours walking the participants. The average age of patients approached was 62.8 (SD = 16.97) years, with an even proportion of females and males. Seventy-seven percent (n=69) of the 90 patients < 65 years of age were overweight/obese, and 23% (n=21) were their ideal weight or below. Among the 101 patients 65 years and older, 47% (n=47) were overweight while 53% (n=54) were at or below their ideal weight. More than half (56%, n=106) of the patients were classified as vulnerable or mildly frail according to the visual CFS, and most patients were a medium or high fall risk (86%, n=164). Less than half had a physical therapy order noted (41%, n=78). Given the small percentage of missing data (1.5% of all data), imputation of missing values was not used.

### **Patient characteristics associated with participation in VAMP**

#### ***Demographic characteristics***

No association was found between age of the patient ( $\geq 65$  years,  $< 65$  years), sex (female, male), and participation in VAMP (Table). Among patients younger than 65 years, the odds of agreeing to ambulate was 1.95 times greater for overweight/obese patients compared to patients with ideal weight or below (41% versus 27%; OR=1.95, 95% CI=(1.08,3.50);  $p=.023$ ). No association was found between BMI in older adults and participation in VAMP ( $p > .05$ ).

#### ***Mobility characteristics***

Fewer of the frail (23%, n=13) and vulnerable (39%, n=106) patients were willing to participate in VAMP compared to patients classified as not frail (46%, n=70). The odds of a frail patient agreeing to ambulate was 0.35 times less than a patient designated as not frail (OR=0.35, 95% CI=(0.17,0.69), and the odds of a patient classified as vulnerable was 0.74 times less than a patient identified as not frail (OR=0.74, 95% CI=(0.49,1.10); p=.007). A higher percentage of patients with a physical therapy order agreed to participate in VAMP (46% versus 36%). The odds of a patient agreeing to be in the walking group was 1.52 times greater for patients who had a physical therapy order compared to patients without a physical therapy order (OR=1.52, 95% CI=(1.04,2.22); p=.030). Fall risk was not associated with participation in VAMP (p=.208).

### ***Reasons patients cited for not participating in VAMP***

Among the 298 patients declining to participate in VAMP, several reasons were cited (Supplemental Digital Content, Figure). The most common reason for patients not participating was tiredness, with 45.8% of patients reporting this as a reason for refusal to ambulate. Fifteen percent of the patients said they were experiencing pain or discomfort.

### ***VAMP participants' characteristics associated with distance ambulated***

Among the 192 patients who participated in VAMP, the median distance ambulated was 109.7 m. Differences in the distance ambulated by age and sex of the participants were found (Table 1). Younger participants (< 65 years old) ambulated significantly farther than participants aged  $\geq 65$  years. Male participants ambulated significantly farther than female participants. On average, patients with higher fall risks or those classified as vulnerable or mildly frail walked shorter distances. Participants with a low fall risk ambulated an average of 144.0 m compared to participants with a medium or high fall risk who ambulated 102.1 m. Participants with a frailty score categorized as not frail ambulated an average of 91.4 m more than vulnerable or mildly frail participants ( $p < .001$ ). Patients who did not have an order for physical therapy ambulated significantly farther (than participants with a physical therapy order).

### **Staff perceptions**

A total of 25 (28% response rate) staff members (RNs, n=21; PTs, n=4) completed the survey on the usefulness and feasibility of VAMP. Collectively, 96% of the staff agreed or strongly agreed that they felt comfortable having a trained volunteer ambulate a patient in their care, and most (92%) agreed or strongly agreed that the volunteer walking program should continue (Supplemental Digital Content, Table 2).

## **DISCUSSION**

Through the implementation of VAMP, 39% of patients were ambulated by volunteers under the direction of nursing staff. While the promotion of ambulation in hospitalized patients is often overlooked,<sup>17,27</sup> This study revealed several important factors about the characteristics of patients who agreed to participate in VAMP, which could have an impact on the development of future programs to promote physical mobility. In this study, participants who had a physical therapist were 1.5 times more likely to ambulate. One explanation for this may be that physical therapists support nurses in helping patients to recognise the importance of ambulation. Patients without a physical therapy order ambulated significantly farther than patients with an order. Presumably, these patients may

have been in a better physical functional state compared to patients who had a PT on the care team. Participation in mobility programs may be impacted by frailty and multi-morbidities, and increased limitations may have begun well before hospitalization. This study found that patients categorized as frail and vulnerable were less likely to agree to ambulate compared to non-frail patients. A tailored volunteer-based mobility program coupled with greater encouragement to participate is needed.

Patients in this study had a variety of reasons for refusing to ambulate. Feeling tired was the most frequent reason for refusal to ambulate, followed by being busy or unavailable, and having and pain/discomfort. Ensuring that patients can get proper rest is important for engagement in mobility programs. In addition as sick patients, especially older adults, may tire by mid-afternoon, it is important to consider the timing of the volunteer-based mobility activity. This can be challenging as volunteers' availability may not be congruent with the optimal times that mobility activities should occur.

Patients under 65 categorized as overweight/obese (41%) were nearly 2 times more likely to ambulate compared to patients of their age group with normal weight (27%). This is an interesting finding, as studies have described that people with a BMI of  $\geq 30$ /Kg combined with high levels of fatigue may have less functional mobility, which could be due to a greater sedentary lifestyle.<sup>28</sup> This finding suggests that it is important not to focus only on promoting mobility in patients based on their "apparent" need for mobility.

In this study, patients with a low fall risk, ambulated significantly farther than patients with a medium or high fall risk. Presumably a low fall risk factor may indicate that the patient is more physically able and has the endurance to ambulate a greater distance. In this study, the fact that a patient was categorized as at risk for falls was not significantly associated with agreeing to ambulate. This is an interesting finding as it has been reported that the emphasis of preventing falls in hospitalized patients may lead to a decreased promotion of physical activity so as to keep the patients safe.<sup>29</sup> It could be that in the process of the implementation of the program, staff may have learned that ambulation is important for all patients including patients at risk for falls. While the level of frailty was used as a way to determine which patients were appropriate for volunteer-based mobilization, the level of fall risk was not considered a deterrent to the promotion of ambulation.

The staff worked together to develop the program and train the volunteers. As such, this collaboration may have increased staff confidence in volunteers' ability to ambulate patients. Importantly, the program helped to emphasize the importance of ambulation for hospitalized patients. While it was not a focus of this study, anecdotal reports from the volunteers were overwhelmingly positive about their experience as a "walking volunteer."

### **Limitations**

Although the electronic health care record has cells to document both distance and frequency of ambulation, we found that nurses did not consistently document ambulation distances into their patients' charts. As such, we were not able to collect data about distance ambulated for patients who may have ambulated with the nurse but refused to ambulate with a volunteer. Another limitation is that we used environmental markers to

measure distance ambulated, which have the potential for over- or underestimation of the ambulation distance. We also did not collect data about the patient's severity of illness, disease processes, or comorbidities, all of which could have influenced the extent to which ambulation was promoted. The sample was from one geographic region so the findings may not be generalizable.

## CONCLUSIONS

While the hazards of immobility remain, purposeful tailored programs and approaches to promote physical activity/mobility are needed in the hospital setting. While funding and extra staffing for a specialty program may not be attainable to improve the physical activity of patients, this study found that a volunteer-assisted interdisciplinary walking program is a feasible way to promote the ambulation of some patients.

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