Lack of activity during hospitalization may contribute to functional decline. The purpose of this study was to determine the frequency of hallway walking by older adults hospitalized for medical illness. The study was an observational time-sampled study, which was conducted in the hallways of 3 medical units of a 485-bed academic health care center. Each unit was observed weekdays for eight 3-hour intervals covering 8 AM to 8 PM. Before each observation, nursing staff were questioned about walking abilities of patients aged ≥55 years. During observation, frequency and minutes of patients’ hallway ambulation were recorded. Of 118 patients considered by nurses as able to walk in the hallways, 18.6% walked once, 5.1% twice, 3.4% more than twice, and 72.9% did not walk at all per 3-hour period. The median minutes for ambulation was 5.5. Frequency of ambulation was as low for patients independent in walking as for those dependent (28% vs 26%, P=.507). Of the 32 patients who walked in the hallways, most did so alone (46.8%, n=15) or with therapy staff (41%, n=13); few walked with nursing staff (9.4%, n=3) or family (18.8%, n=6). In this setting, hallway walking was very low for hospitalized older patients. If this trend of limited walking is found to be prevalent across other settings, then both independent and dependent patients will require additional interventions to improve ambulation during hospitalization. (Geriatr Nurs 2004;25:212-7)
Lack of physical activity in the hospital may contribute to decline in function and loss of walking independence in older patients. One-third of hospitalized older adults deteriorate in their ability to perform activities of daily living, and approximately 1 in 7 becomes newly dependent on others to walk across a small room. Decline in function and mobility predisposes patients to multiple adverse outcomes, including falls, nursing home placement, and persistent functional and walking dependence. The extent to which decline in patient mobility and function is related to underlying illness versus lack of physical activity is not clear. Indirect evidence suggests, however, that bed rest contributes substantially to functional decline. Although studies in humans are lacking, data from animal models suggest that frequent ambulation may help maintain physical performance during periods of extended rest in bed.

There is little research examining the frequency of ambulation and physical activity by hospitalized older adults. Lazarus and colleagues, in a multisite retrospective chart review, found that 24% of patients aged ≥65 in acute medical-surgical units had no nursing-documented ambulation during the first 7 hospital days; only 12% of these patients received physical therapy. It is possible, however, that ambulation took place but was not recorded. Thus, an initial question is to what extent do elderly acute care hospitalized patients ambulate?

The purposes of this observational study were 1) to document the frequency and duration of hallway ambulation by hospitalized older adults on general medicine units of an acute care hospital and 2) to compare the frequency of ambulation for patients able to walk independently and those needing human assistance to do so.

**METHODS**

This study was approved by the Human Subjects Institutional Review Board of the University of Wisconsin. The study was conducted over 5 months in 1998 on 3 medical units of the University of Wisconsin Hospital, a 485-bed academic health care center that provides both community and tertiary care. Unit 1 (27 beds) comprised patients primarily on general medical and renal services; Unit 2 (29 beds) comprised primarily gastrointestinal, pulmonary, and postintensive care patients, including ventilator dependent patients; and Unit 3 (17 beds) comprised geriatric and adult family practice patients.

The design was a time sample. For each unit, the weekday period 8 AM to 8 PM was divided into 4 nonoverlapping 3-hour intervals (8-11 AM, 11 AM-2 PM, 2-5 PM, and 5-8 PM) of observation. Each 3-hour time sample was observed twice by the study investigator, for a total of 8 observation periods per unit over a period of 5 months. Thus, each unit was observed for 24 hours. The total observation for all 3 units combined was 72 hours. Units were observed on a rotating basis, and each unit was observed only once per week.

**Unit Configuration**

Each of the medical units is similar. Four hallways, measuring 8 feet in width, intersect to form the shape of a cross. Each hallway contained 4 to 10 patient rooms. The unit desk was at one corner of the middle section.

**Data Collection from Nursing**

Data were collected on all patients aged ≥55 years, hospitalized on the selected units at the time of observation. Before each observation period, information relating to the patients’ activities in the previous 24 hours was gathered from unit nursing staff members (RNs and LPNs). Nurses were asked the following questions:

- Is the patient able to walk in the hallway?
- If able to walk, does he or she require assistance from a person or an assistive device?
- If unable to walk in the hallway, is the patient able to walk in the room, or transfer but not walk?

**Data Collection from Observation**

After gathering information from nursing staff, the observer sat in a corner of the middle section of the unit where, of necessity, 1 hallway could not be viewed. By chance, however, 1 hallway always existed where no patient was considered able to walk in the halls. This allowed the observer to arrange seating so that all patients who were able to walk could be watched. Activity in patients’ rooms was not observed.

For each patient hallway walk, the observer noted the time and duration, route taken, apparent purpose, and presence of human assistance or assistive device. Purposes for hallway ambulation were based on observer judgment and classified as being for therapy, for a purpose other than therapy, and for exercise. For therapy was defined as observing a patient walking with a nurse or off-unit health professional (physical therapy, exercise physiology, or respiratory care). For a purpose other than therapy was defined as walking that had a definite goal (eg, going to the unit desk, walking to talk with a nurse, getting on a gurney, or walking to the elevator). For exercise was defined as walking alone or with family with no observable goal for ambulation.

For patients who walked off the unit, if it was obvious to the observer that they were walking uninterrupted in a circular route (n=4), their total time ambulating was recorded, including time out of sight. Otherwise (n=3), the...
time walking was estimated at 10 minutes, based on an approximate roundtrip ambulation time for the common off-unit destinations (cafeteria, gift shop).

Sample for Analysis

The sample for analysis consisted of a timed sample of patients aged ≥55 years who were considered by nursing staff as able to walk in the halls, plus any patients who walked even though described as unable to do so. Data from the 24 hours of observation per unit periods were summed to total 72 hours of observation. During the 72 hours of observation, 479 patients were hospitalized on the 3 units; 248 (51.8%) were aged ≥55 years, of whom 117 patients were considered unable to walk to the hallway (38 bed bound, 53 able to transfer but not ambulate, and 26 able to walk in room only). One hundred sixteen patients were considered able to walk in the halls. The nurses were unable to classify 13 patients because of extraneous factors such as isolation to room that precluded their ability to judge. Two patients were considered unable to walk to the hallway but did. These were added to the 116 for a final sample of 118 independent walkers.

Data Analysis

The sample for analysis was walking done by patients. Continuous data were evaluated for normality of distribution. Data that were not normally distributed (patient age, length of stay, numbers of walks, minutes of walks) were summarized by medians and ranges, and comparisons between groups were performed using Mann-Whitney (for 2 groups) or Kruskal-Wallis (for ≥2 groups). Categorical data were compared by Fisher exact test for 2 groups and Pearson chi-square test for more than 2 nonordered groups. All data were tested for across-unit differences. Level of significance was set at .05, and all tests were 2-tailed. Data were analyzed by SPSS (Statistical Package for the Social Science for Windows).

For analysis of frequency of ambulation, the number of patients who were able to walk in any given 3-hour period was small, and therefore data were combined across all observation periods. To calculate total on-unit patient-minutes, off-unit nonwalking minutes were subtracted from the 180 minutes of observation.

Informed consent was not obtained because no data were collected for individuals and no identifying information was obtained.

RESULTS

Characteristics of Patients Able to Walk in the Halls

Table 1 shows demographic characteristics of the 118 patients classified as able to walk in the halls or who were observed to walk and contrasts this with the 117 patients considered unable and who were not observed to walk. Of patients considered able to walk in the halls, 48.3% (n=57) were considered dependent on another person to do so (44 needed standby assistance, 12 hands-on assistance of 1 person, and 1 hands-on assistance of 2 people).

Table 1: Characteristics of Patients Aged ≥ 55 Years (N=235)

<table>
<thead>
<tr>
<th></th>
<th>Able to Walk in Hallway</th>
<th>Unable to Walk in Hallway</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Independent*</td>
<td>Dependent†</td>
</tr>
<tr>
<td></td>
<td>(n=61)</td>
<td>(n=57)</td>
</tr>
<tr>
<td>Median age in years (range)</td>
<td>73 (55-93)</td>
<td>76 (56-102)</td>
</tr>
<tr>
<td>Female, n (%)</td>
<td>30 (49.2)</td>
<td>37 (64.9)</td>
</tr>
<tr>
<td>Length of stay (days), median (range)†</td>
<td>4 (1-30)</td>
<td>5 (1-63)</td>
</tr>
<tr>
<td>Level of mobility, n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walk in room</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfer to chair</td>
<td></td>
<td></td>
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<tr>
<td>Bedbound</td>
<td></td>
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</tr>
</tbody>
</table>

* Independent defined as able to walk in hallway without assistance from another person.
† Dependent defined as needing human assistance. Classification based on nursing judgment.
‡ Refers to length of stay before observation date.

Of the patients considered able to walk in the halls, 48.3% were considered dependent on another person to do so (44 needed standby assistance, 12 hands-on assistance of 1 person, and 1 hands-on assistance of 2 people).
independent did not differ from those considered dependent in either age or length of stay before observation. Patients needing human assistance were significantly more likely to use ambulation aids ($P<.001$), with 36.8% ($n=21$) using a walker and 7.0% ($n=4$) using a cane. Of those not needing human assistance, 9.8% ($n=6$) used a walker, and the remainder used no device.

There were no significant differences across units in the percentage of patients aged $\geq 55$ years who were considered able to walk in the hallways (57% of patients aged $\geq 55$ years on Unit 1, 44% on Unit 2, 50% on Unit 3, $P=.234$). Among patients considered able to walk in the halls, there were no significant across-unit differences in age, gender, hospital length of stay, or frequency of need for human assistance.

**Hallway Ambulation**

In the twenty-four 3-hour observation periods, there were 55 hallway walks by 32 patients, representing 27.1% of the sample. On average in a 3-hour period, 18.6% of patients who were considered able to walk walked once, 5.1% twice, 3.4% 3 or more times, and 72.9% did not walk at all. In 19,363 on-unit patient-minutes, only 318 (1.6%) were used in hallway walking. The median time of walking in a 3-hour period by patients who walked was 5.5 minutes (range 1-36). There were no significant differences in the percentage of patients who walked by unit (31.3%, 16.1%, and 30.8% for units 1, 2, and 3, respectively; $P=.276$). **Figure 1** shows that there was no significant difference in frequency of ambulation comparing those considered able to walk independently ($n=67$) and dependently ($n=57$).

**Characteristics of Patients’ Walks Comparing Walkers from Independent and Dependent Groups**

Seventeen patients from the independent group took 37 walks; 15 patients from the dependent group took 18 walks. As shown in **Table 2**, patients who were considered independent walked for a significantly longer amount of time compared with those considered dependent. Only a small percentage of patients in either group ambulated with nursing staff, and only approximately 20% of patients in each group ambulated with family or friends. Patients who were considered dependent were significantly more likely to walk for the purpose of therapy.

**Time of Walking**

During the daytime, the percentage of patients who walked in each 3-hour interval remained fairly constant, with 30%, 33%, and 30% of patients walking during the intervals 8 to 11 AM, 11 AM to 2 PM, and 2 to 5 PM, respectively. In contrast, from 5 to 8 p.m., only 13.1% of patients walked. These differences were not significant ($P=.313$). The decrease in ambulation frequency from 5 to 8 PM was due to a decline in both staff-assisted and staff-unassisted (ie, patient walked alone or with family) ambulation. Staff-assisted ambulation occurred for 12.9%, 13.9%, and 13.2% of patients during the daytime intervals of 8 to 11 AM, 11 AM to 2 PM, and 2 to 5 PM. Staff-assisted ambulation decreased to 3.3% from 5 to 8 PM. Staff-unassisted ambulation occurred for 17.1%, 19.1%, and 16.8% of patients during the daytime intervals, and decreased to 9.8% from 5 to 8 PM.

**DISCUSSION**

In this study, we observed the frequency and duration of ambulation by patients aged $\geq 55$ years on 3 general medical units of an academic health care center. We found that in any 3-hour period (between 8 AM to 8 PM), few of the patients evaluated by nurses as able to walk, walked in the hospital hallways. The amount of walking was low both for patients considered able to walk independently
so in the hospital: are considered able to ambulate independently do not do. There may be a number of reasons that patients who walking and few data regarding factors that prevent walk-ation by hospitalized patients who are independent in knowledge, there are no previous data quantifying ambu-lation. This highlights the fact that for those requiring human assistance, family aid alone is not adequate. It is startling that so few patients walked with nursing staff. Patient assistance, family aid alone is not adequate. It is startlingly low for patients able to walk independently. To our knowledge, there are no previous data quantifying ambulation by hospitalized patients who are independent in walking and few data regarding factors that prevent walking. There may be a number of reasons that patients who are considered able to ambulate independently do not do so in the hospital:

- Patients may be occupied by diagnostic evaluations or therapies or may be too tired. Even if patients are not occupied, they may avoid activity, fearing it may be detrimental to their condition.
- Patients may feel a loss of mastery. In the community setting, walking behavior is positively related to high mastery. \(^{14}\) Feelings of loss of mastery might be expected to increase during hospitalization.
- Extrinsic factors such as hallway traffic, noise, clutter in the hospital halls, the design of hospital gowns, intravenous and other lines, and lack of mobility aids (e.g., eyeglasses, canes, and walkers) may serve as physical and psychological barriers to hallway ambulation. \(^{15}\)

and for those needing human assistance, with no statistically significant difference between these groups.

For patients who required assistance to walk, most patients who walked did so with a member of hospital staff, particularly therapy staff. Few walked with family members. This highlights the fact that for those requiring human assistance, family aid alone is not adequate. It is startling that so few patients walked with nursing staff. Patient walking may not be a high priority for nursing staff in acute care where patient problems are complex, length of stay is short, and the pace of work fast and technically oriented. Furthermore, nurse staffing levels may be inadequate to provide other than technical monitoring skills in acute care.

Surprisingly, the frequency of hallway walking was equally low for patients able to walk independently. To our knowledge, there are no previous data quantifying ambulation by hospitalized patients who are independent in walking and few data regarding factors that prevent walking. There may be a number of reasons that patients who are considered able to ambulate independently do not do so in the hospital:

- Acute medical illness may affect ambulation.
- Patients may be occupied by diagnostic evaluations or therapies or may be too tired. Even if patients are not occupied, they may avoid activity, fearing it may be detrimental to their condition.
- Patients may feel a loss of mastery. In the community setting, walking behavior is positively related to high mastery. \(^{14}\) Feelings of loss of mastery might be expected to increase during hospitalization.
- Extrinsic factors such as hallway traffic, noise, clutter in the hospital halls, the design of hospital gowns, intravenous and other lines, and lack of mobility aids (e.g., eyeglasses, canes, and walkers) may serve as physical and psychological barriers to hallway ambulation. \(^{15}\)

- Patients may not ambulate because they fear falling. Howland and colleagues found that 55% of older adults had some degree of fear of falling, and 56% curtailed their activities because of this. \(^{16}\) In the hospital, fear of falling may be more prevalent and result in greater activity curtailment.
- An important and potentially remediable reason for insufficient walking may be lack of emphasis on the benefit of ambulation by physicians, administrators, and other hospital staff. Patients may not understand the importance of maintaining ambulation, and physicians and other health professionals may not discuss an appropriate level of activity with patients. In a multisite study, there were no physician orders for activity for 13% of patient hospital days. \(^{12}\) Even when ambulation orders are present, they are often written as “up ad lib”; it is not clear how this is interpreted. Ambulation should be clearly formulated as a goal for acute care. Ample time should be provided for nursing staff to ambulate patients.
- Finally, involving the patient and patient’s family in goal setting may increase the patient’s perceived level of control and adherence with ambulation activities.
- Our study has several limitations. First, it was constrained by observational design. This design did not allow us to collect individual data. We were unable to observe activity in patients’ rooms. Second, we only observed a 3-hour block of time and do not know how often patients ambulated throughout the rest of the day. Third, we only observed units during weekdays. The activity level of patients on weekends may be different. Fourth, we did not assess factors that encourage or impede self-initiated walking; this is an important area for future study. Lastly, this study was limited to 1 academic health care center and may not generalize to other hospitals. It is unknown whether smaller community hospitals, for example, may foster an environment more conducive to ambulation. Given the current pressures to maximize revenues and decrease hospital staffing costs, we suspect that our findings may be similar to those of other hospitals.

In our study, determination of the patient’s ability to ambulate and need for assistance was based on nursing judgment. It is not clear to what extent nursing classification was based on objective assessment of a patient’s mobility or on subjective assumptions. Indeed, we observed 2 patients ambulating in the hallway who had been classified as unable to do so. Thus, nursing language, decision making, and intervention about mobility in acute care is an important area for further study.

**IMPLICATIONS FOR NURSING**

Despite the limitations of this study, there are clear implications for nursing to enhance hallway ambulation in the medical patient population. For patients hospitalized...
for medical conditions, nurses can be taking more responsibility for establishing walking routines for patients. Activity orders, either by nurses or physicians, could be more directive (ie, ambulate once per shift). Patient and family education that stresses the importance of ambulation should be standard for all patients capable of walking with or without assistance. Encouraging the use of comfortable clothing in place of the hospital gown whenever possible is likely to encourage more independent walking. Establishing unit routines to ensure that walking is a routine part of care (in much the same way as postoperative ambulation is routine) would likely result in more time spent in ambulation by both dependent and independent walkers. Utilizing bathrooms over bedside commodes and incorporating a hallway walk with a trip to the bathroom provide for greater ambulation. Nursing is in a key position to ensure that physical therapy is prescribed whenever appropriate. Finally, there are likely some novel approaches that could be taken to improve ambulation of hospitalized medical patients, such as providing an incentive or reward for patients who meet walking goals.

We conclude that hallway ambulation by both hospitalized medical patients who walk independently and those who walk with assistance is low. Interventions are needed to improve ambulation in the hospital setting. For both groups, such interventions must ultimately be tested for their efficacy in improving patients’ balance, gait speed, and endurance, providing greater independence in walking and decreasing the rate of hospital and posthospital falls. Based on our current knowledge of the adverse effects of bed rest, however, efforts to increase ambulation for hospitalized older adults should be a high priority for hospital care.

REFERENCES


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