Interventions Used by Physical Therapists in Home Care for People After Hip Fracture

Kathleen Kline Mangione, Rosalie B Lopopolo, Nancy P Neff, Rebecca L Craik, Kerstin M Palombaro

Background and Purpose
The majority of older people who survive a hip fracture have residual mobility disabilities. Any attempt to systematically reduce mobility disabilities after hip fracture, however, requires knowledge of the adequacy of current management practices. Therefore, the purpose of this study was to begin to understand the nature of physical therapy home care management by describing “usual care” for people after hip fracture.

Subjects and Methods
In 2003 and 2004, a national survey was conducted of all members of the American Physical Therapy Association who identified home care as their primary practice setting (n=3,130). “Usual care” was operationally defined as when more than 50% of respondents reported that they “always” or “often” use a specific intervention.

Results
Survey questionnaires (1,029) were returned with a response rate of 32.9%. Functional training activities, including bed mobility, transfer and gait training, balance training, safety training, and patient education, were reported very frequently. Active-range-of-motion exercises were performed much more frequently than exercises involving added resistance.

Discussion and Conclusion
This study provides a detailed description of the physical therapy interventions provided in the home care setting for patients after hip fracture. The sample size and national representation increase our confidence that this description accurately depicts physical therapist practice.
Home Care for People After Hip Fracture

There are more than 325,000 hip fractures per year in the United States, with an estimated cost to patients, families, and the health care system of between $14 billion and $20 billion annually. The number of hip fractures is predicted to increase to more than 650,000 per year by 2040.

The majority of people who survive a hip fracture have residual mobility disabilities. For these people, dependency in functional activities of daily living persist after 2 years of recovery, with up to 20% needing help putting on pants, 50% needing assistance to walk, and 90% being dependent in climbing stairs. Between 40% and 60% of older people with hip fracture fail to regain pre-fracture mobility and are unable to return to community activities.

The majority of people who sustain a hip fracture receive some form of physical therapy intervention in inpatient, home care, or outpatient settings or a combination of these settings. Despite physical therapy interventions, however, mobility disabilities and impairments persist long after the healing of the hip fracture itself. Knowledge of the nature of physical therapy interventions after hip fracture is limited, especially interventions that occur in the home care setting. For example, in one of the largest trials of rehabilitation after hip fracture, Tinetti and colleagues reported, “As is typical in home care, the specific contents and duration of the therapy training program was left to the discretion of the individual therapists.” If physical therapists want to systematically reduce mobility disabilities after hip fracture and if they believe that their interventions are important for achieving this goal, then they need to understand the nature of current management practices and determine whether they are adequate to meet this goal.

We believe that physical therapy interventions after hip fracture are similar to those described for stroke rehabilitation, which is referred to as a “black box,” meaning that the content of what occurs during a physical therapy session is undefined. Defining treatment may be difficult because interventions are multifactorial, because substantial clinical variations exist between patients with identical diagnoses, or because clinicians rely on experience rather than evidence or theory for best practice. A clearer understanding of the content of physical therapy interventions may enable a better understanding of the effects of specific treatments on outcomes.

The least-described component of management after hip fracture is the care that occurs in the home. The content provided in the home care setting is important for several reasons. First, because the ultimate goal for most patients is to return home, knowledge of which physical therapy interventions are crucial to ensuring that a patient is able to function effectively in the home environment is needed. Second, providing care in the home has been found to be the most economical way in which to provide care, compared with acute-stage inpatient rehabilitation or nursing home care.

Insight into “best practice” for patients treated in this setting is essential for determining the efficacy of physical therapy interventions. Third, patients who receive home care physical therapy after acute-stage rehabilitation are less likely to be hospitalized and more likely to survive than those who receive acute-stage rehabilitation alone. Finally, home care is associated with greater improvements in functional outcomes than acute care provided in nursing homes.

An understanding of which treatments are associated with good outcomes is needed. However, before these relationships can be identified, the characteristics of care provided in the home care setting need to be elucidated. Therefore, the purpose of this study was to describe physical therapist practice in the home care setting for older people after hip fracture. That is, we describe “usual care” for this patient population across the United States.

Method

We conducted a national survey to describe the nature of usual physical therapy care in the home care setting for older patients (ie, more than 65 years of age) after hip fracture. Home care therapists were asked to participate in the study by completing a self-administered questionnaire. Because this was the first study to describe the nature of home care interventions for hip fracture rehabilitation, a multiphase process was used to develop the questionnaire for this study. Initial focus groups met in spring 2003, and final survey data were collected in spring 2004.

To ensure consistency in the respondents’ consideration of what “usual care” provided to a patient after hip fracture would be, a description of a typical patient was developed and used throughout all phases of the study. This profile of a typical patient was developed from a composite of demographic data collected from several studies. The description provided was as follows: The typical individual sustaining a hip fracture is an 81-year-old, white woman who is cognitively intact and was living at home prior to the fracture. She had 3 comorbidities at the time of the fracture and was taking 3 medications. The fracture was repaired surgically. She was hospitalized for 3 to 4 days and has been through either acute- or subacute-stage inpatient rehabilitation.
Phase 1: Focus Groups for Content Development

Focus groups were used to ascertain the nature of usual care for this patient population. We brought together people experienced in treating the population of interest with a leader who directed the discussion. This strategy assists in the early stages of questionnaire development by identifying lines of questioning not obvious to the researcher. Eight Philadelphia-based physical therapists experienced in the treatment of older patients across multiple settings participated in 1 of 2 focus groups to identify how they managed the treatment of this patient population. The therapists were selected on the basis of years of clinical experience and reputation for professional expertise in treating this population. The participants were, on average, 46 years of age, with 19 years of experience; 89% were women, and 56% had a professional (entry-level) bachelor’s degree. One of the therapists was a Geriatric Clinical Specialist. These characteristics are similar to those of the sample of therapists who responded to the final questionnaire.

The framework for identifying interventions was based on the Guide to Physical Therapist Practice, Musculoskeletal Practice Patterns 4G and 4H: impaired joint mobility, motor function, muscle performance, and range of motion (ROM) associated with fracture (4G) and with joint arthroplasty (4H). The Guide to Physical Therapist Practice describes the following types of interventions for patients after hip fracture: therapeutic exercise, functional training, assistive device prescription and adjustment, home exercise prescription, and physical agents. With open-ended questions, the participants in the focus groups were asked to describe the types of physical therapy interventions that they personally provided to their patients in the target population. In addition, information was collected regarding the time between the fracture and the initiation of home care, the typical number of visits, and the typical initial weight-bearing status. The participants also were asked to describe typical patient goals and how they made clinical decisions regarding choices of interventions, progression of activities, time frames (number of sessions and duration of sessions), and criteria for the termination of physical therapy services.

The focus group sessions were recorded, and the recordings were transcribed to facilitate data analysis. The responses from both focus groups were collated and sorted into categories as defined in the intervention section of the Guide to Physical Therapist Practice. The organized data were then provided to the participants for review and identification of necessary additions, changes, or clarifications. On the basis of their feedback, the categories and data were revised and returned to the participants for final review. This 2-stage review procedure was used to ensure that no information had been lost in the data collection and categorization processes.

Phase 2: Preliminary Questionnaire Testing for Completeness and Clarity

Using the data provided by the focus groups, the research team constructed a preliminary questionnaire. To facilitate survey completion and data analysis, a Likert-type response format was used for all intervention questions. The response format was either a 5-point scale (never, rarely, sometimes, often, always) or a 2-point scale (perform, do not perform). A pilot test of the preliminary questionnaire was conducted to determine whether there were confusing or ambiguous items or omissions. Thirty-five physical therapists from across the United States were asked to participate in this phase of the study. This panel was composed of 19 physical therapists identified as experts by the President of the Home Health Section of the American Physical Therapy Association (APTA) and 16 Geriatric Clinical Specialists nominated by a Geriatric Clinical Specialist who is a member of the APTA Section on Geriatrics and is on the research team. Twenty-six physical therapists, 3 to 7 therapists from each of 4 geographic regions of the United States, participated in this phase of the study; 1 therapist declined to participate, and 8 therapists did not respond. Specialists were specifically targeted for this phase to ensure that all possible elements of practice were included in the final survey. Except for the facts that there was a higher percentage of specialists in this phase (60% versus <5%) and that these physical therapists had more experience (100% with >10 years of experience versus 84% with >10 years of experience), the participants in phase 2 were similar in age, sex, race, and education to the respondents to the final questionnaire.

Using the typical patient profile provided and their own clinical experience, the panel members were asked to complete the questionnaire. Additionally, they were asked to examine the questions and the available responses and provide feedback for each question. Specifically, they were asked to identify any procedural interventions that they believed were missing or should be excluded from the questionnaire and to comment on the appropriateness of the responses for each question.

On the basis of the data provided by the respondents, several questions and the response formats for specific questions were modified. For example, questions were added to address the type of surgical fixation used, patient education, breathing exercises, wound care, discharge planning, and insurance coverage. Several ques-
tions, including initial weight-bearing status, types of positions used for strengthening exercises, and the use of weights or resistive bands, were reworded for clarification. The response formats for several questions were reworded to make the responses mutually exclusive. One question (cardiovascular conditioning) was eliminated because of redundancy. Finally, we added a section for gathering demographic data, such as age, sex, educational level, and specialization of the respondents. The resulting 23-item questionnaire was used as the final survey in phase 3 (Supplemental Appendix, available online only at www.ptjournal.org).

Phase 3: Survey Population for Description of Usual Care

The final questionnaire and a cover letter were mailed to all members of APTA who had designated home care as their primary practice setting (n=3,130). The respondents were asked to use the typical patient profile provided and their own clinical experience to guide their completion of the questionnaire. The respondents were asked to answer the questions on the basis of the usual care that they provided to this typical patient, rather than a rare or unusual patient. The questionnaire was available to be completed either by mail or online with a Web-based program (depending on respondent preference). The wording and instructions in both versions were identical. In both cases, instructions on how to complete the questionnaire were provided.

A nominal incentive (organic tea bag) was included with the mailed questionnaire to facilitate its completion and return. A follow-up postcard was mailed approximately 2 weeks after the initial mailing to maximize the return rate.

Data Analysis

The questionnaire items were coded to facilitate data entry. The data were entered into a Microsoft Excel 2003\(^*\) spreadsheet and analyzed with SPSS version 13.0.\(^\ddagger\) After data entry, the spreadsheet of the results from the mailed survey questionnaires was checked for accuracy. When necessary, corrections to data input were made, and a random sample (10%) of the data was checked again to ensure greater than 95% accuracy. Frequency distributions, expressed as percentages, were used to summarize responses regarding usual care.

Chi-square analyses were performed to determine whether relationships existed on the basis of the type of surgical repair (open reduction-internal fixation [ORIF] versus hemiarthroplasty), weight-bearing status (non–weight bearing or toe-touch, full, partial, or as-tolerated weight bearing), and time of initiation of home physical therapy after the fracture (<2 weeks versus 2 weeks and longer). These analyses were performed to determine whether the type of repair, weight-bearing status, or time after the fracture influenced the usual care provided for this patient population. In addition, to ensure that the data represented practice across the United States, the responses were coded by geographic regions of the country with the coding scheme described by APTA (Tab. 1). Chi-square analyses were performed to determine whether the respondents could be treated as a single sample.

We operationally defined “usual care” as when more than 50% of respondents reported performing the activity for the “yes” (performed)、“no” (not performed) questions.

Results

A total of 1,029 questionnaires were returned (965 via mail and 64 via the Internet), for an overall response rate of 32.9%. The mean (±SD) age of the respondents was 46.6±9.2 years. The majority of the survey respondents were women who had more than 10 years of experience as physical therapists. The majority of the respondents worked as employees of a home care agency (77%), and 81% had treated their last patient with a hip fracture within 3 months of completing the questionnaire. A comparison of the characteristics of the respondents and those of the entire sample from the APTA database showed remarkable similarities (Tab. 1). The APTA sample included 72% of therapists with 11 or more years of experience and another 14% with 6 to 10 years of experience. These data compare favorably with those for our sample, from which 83.9% of therapists reported 10 or more years of experience.

Chi-Square Analyses of Influential Factors

Chi-square analyses were performed for all therapeutic exercises that were defined as usual care and the clinical variables of interest (type of surgical repair, weight-bearing status, and time of initiation of home physical therapy). There were no significant relationships between hemiarthroplasty or ORIF and usual-care therapeutic exercise techniques (Supplemental Table 1, online only at www.ptjournal.org). For weight-bearing status (Supplemental Table 2, online only at www.ptjournal.org), the significant relationship between the use of active assisted exercise and weight-bearing status was the reported use of active assisted exercise.
Table 1. Comparison of American Physical Therapy Association (APTA) Sample of Physical Therapists Who Reported Home Health as Their Primary Practice Setting and Our Survey Respondents

|                        | APTA Sample of Therapists (%) | Our Survey Respondents (%) |
|------------------------|------------------------------|----------------------------|
| Age range (y)          |                              |                            |
| 20–24                  | 0.3                          | 0.2                        |
| 25–29                  | 4.7                          | 3                          |
| 30–34                  | 10.5                         | 8.1                        |
| 35–39                  | 13.8                         | 12.8                       |
| 40–44                  | 13.3                         | 13.8                       |
| 45–49                  | 17.4                         | 21.1                       |
| 50–54                  | 19.2                         | 21.4                       |
| 55–59                  | 11.3                         | 12.4                       |
| 60–64                  | 5.4                          | 5.7                        |
| 65+                    | 4.1                          | 1.5                        |
| Sex                    |                              |                            |
| Women                  | 75.5                         | 79.5                       |
| Men                    | 24.5                         | 20.5                       |
| Race                   |                              |                            |
| American Indian or Alaskan native | 0.3                     | 0.4                        |
| Asian, Pacific Islander, or Hawaiian native | 3.8                     | 2.2                        |
| African American or black | 2.5                        | 1.5                        |
| White                  | 90.0                         | 93.5                       |
| Hispanic/Latino        | 2.3                          | 2.2                        |
| Other                  | 1.1                          | 0.2                        |
| Highest earned degree  |                              |                            |
| Associate              | 0.2                          | NA a                       |
| Baccalaureate          | 59.2                         | 58.6                       |
| Master’s               | 37.8                         | 34.2                       |
| Doctor of Physical Therapy | 1.4                      | 0.8                        |
| Other doctorate        | 0.8                          | 0.7                        |
| Other                  | 0.6                          | NA                         |
| Certificate            | NA                           | 5.7                        |
| Region                 |                              |                            |
| Northeast              | 29.4                         | 29.7                       |
| Midwest                | 19.9                         | 22.7                       |
| South                  | 34.4                         | 30.3                       |
| West                   | 16.3                         | 14.9                       |
| Puerto Rico            | NA                           | 0.2                        |
| Not answered           | NA                           | 2.2                        |

*NA—not asked.
more frequently when the patient was not weight bearing versus when the patient was weight bearing (83% and 79% usual care, respectively). For time of initiation of home therapy, significant relationships were found for isometric exercises and resisted exercises (Supplemental Table 3, online only at www.ptjournal.org). Patients who started home physical therapy within 2 weeks of surgery used isometric exercises more often than those who started home physical therapy after 2 weeks (90.3% and 86.1% usual care, respectively). In contrast, those who started home physical therapy within 2 weeks of surgery were less likely to use resisted exercises than those who started home physical therapy later (59.9% and 66.7% usual care, respectively).

Because weight-bearing status could be related to the time when physical therapy is initiated, additional chi-square analyses were performed to examine this relationship. Weight-bearing status was significantly related to the start and stop times for home physical therapy (Tab. 2), suggesting that physical therapy started and ended later for patients who were not weight bearing than for those who were allowed to bear weight. There was no relationship between weight-bearing status and the total number of visits.

**Regional Analyses**

The percentages of responses from the 4 geographic regions were approximately equal (range = 27%–53%). Chi-square analyses were performed to examine the relationships between geographic regions and usual-care therapeutic exercises. The only type of usual care that showed a significant relationship with region was stretching ($P = .01$), suggesting that respondents in the northeast used stretching exercises more frequently than physical therapists in the other regions. Chi-square analyses demonstrated significant relationships between geographic region and insurance coverage, beginning and ending time frames for physical therapy, and number of visits, suggesting that therapists who practiced in the western region treated a larger percentage of patients with a Medicare health maintenance organization as their primary medical insurance and that

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**Table 2.**
Frequency Distributions and Results of Chi-Square Testing for Relationships Between Temporal Aspects of Care and Number of Visits and Weight-Bearing Status

|                          | Non-Weight Bearing or Toe-Touch Weight Bearing | Full, Partial, or As-Tolerated Weight Bearing | $P$  |
|--------------------------|-----------------------------------------------|----------------------------------------------|------|
| **Weeks after fracture until start time for home physical therapy** | n = 127                                       | n = 893                                      | <.00 |
| <2                       | 44.9%                                         | 47.4%                                        |      |
| 2–3                      | 34.6%                                         | 42.6%                                        |      |
| 4–5                      | 17.3%                                         | 9.4%                                         |      |
| 6–7                      | 0.8%                                          | 0.7%                                         |      |
| >8                       | 2.4%                                          | 0%                                           |      |
| **Weeks after fracture until stop time for home physical therapy** | n = 127                                       | n = 886                                      | <.00 |
| <4                       | 8.7%                                          | 12.4%                                        |      |
| 4–6                      | 46.5%                                         | 55.3%                                        |      |
| 7–9                      | 29.9%                                         | 26.6%                                        |      |
| 10–12                    | 11.0%                                         | 4.9%                                         |      |
| >12                      | 5.9%                                          | 0.8%                                         |      |
| **Total no. of visits**  | n = 127                                       | n = 893                                      | .22  |
| <6                       | 4.7                                           | 7.2                                          |      |
| 6–8                      | 18.9                                          | 26.7                                         |      |
| 9–12                     | 44.1                                          | 38.0                                         |      |
| 12–14                    | 26.0                                          | 23.9                                         |      |
| 15+                      | 6.3                                           | 4.4                                          |      |

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these patients appeared to have fewer physical therapy visits (Tab. 3).

On the basis of the overwhelming similarity among the respondents (ie, the very small number of significant relationships found), we used a single sample to describe usual care. Given the typical patient profile provided, the majority of respondents indicated that the surgical repair for this patient would have been either hemiarthroplasty or ORIF (59%) and that most patients would be allowed to be weight bearing (71%) (Tab. 4). The broad categories of therapeutic exercise techniques that were part of usual care (>50% of respondents reported that they often or always performed the techniques) included ROM, stretching, and isometric, active assisted, active, resisted, and balance exercises (Tab. 5). In terms of ROM and stretching exercises for specific muscle groups and positions, usual care included stretching for the hip flexor, knee flexor, and plantar-flexor muscles. Isometric exercises were used for the gluteal and quadriceps femoris muscle groups.

As shown in Table 6, active exercises were performed much more frequently than exercises involving added resistance. Exercises for multiple muscle groups, including bridging, straight leg raises, and squatting, were performed very frequently.

Although usual care included using resisted exercises as a general category of exercise (64% of therapists; Tab. 5), further questioning revealed

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Table 3.

| Parameter | Percentage of Respondents by Region |
|-----------|-------------------------------------|
| Insurance (P<.001) | N=1,019 n=305 n=233 n=310 n=151 |
| Medicare | 92 90 98 98 76 |
| Medicare health maintenance organization | 7 9 1 2 22 |
| Other | 1 1 1 0 2 |
| Begin physical therapy, wk (P=.036) | N=1,020 n=304 n=233 n=311 n=152 |
| <2 | 47 38 51 49 54 |
| 2-3 | 42 47 37 41 40 |
| 4-5 | 10 14 10 10 5 |
| 6-7 | 1 1 1 0 1 |
| 8+ | 0 0 0 0 0 |
| Total no. of visits (P<.001) | N=1,020 n=304 n=233 n=311 n=152 |
| <6 | 7 6 7 4 14 |
| 6-8 | 26 24 29 18 37 |
| 9-12 | 39 44 34 42 29 |
| 12-14 | 24 21 26 31 16 |
| 15+ | 4 5 4 5 4 |
| End physical therapy, wk (P=.007) | N=1,013 n=303 n=233 n=307 n=151 |
| <4 | 12 8 13 10 21 |
| 4-6 | 54 54 56 53 54 |
| 7-9 | 27 30 23 31 20 |
| 10-12 | 6 8 5 5 4 |
| 12+ | 1 0 3 1 1 |
that only 37.6% of respondents reported using elastic bands and 51.7% reported using weights. For respondents who used resistance, the 0.91-kg (2-lb) weight and the medium-resistance elastic bands were the most frequently reported. Table 7 shows other interventions used in the home. For exercises that promote balance, physical therapists reported that they usually performed weight-shifting exercises, marching, and unilateral stance activities. Activities of daily living that were usually performed included bed mobility, transferring from a sitting position to a standing position, and tub or shower transfers. Gait training occurred on all surfaces, and physical therapists commonly prescribed or adjusted assistive devices.

Usual care also included patient and caregiver education and safety awareness, fall prevention, and home inspections. These activities were reported as being used more than 98% of the time. In addition, unsupervised home exercise programs were reported to be prescribed 100% of the time. For respondents who used home exercise programs, more than 75% reported that they prescribed 5 to 10 exercises, 67% prescribed 10 repetitions per exercise, 54% prescribed 2 or 3 sets of exercises, and 45% prescribed 1 set. Seventy percent of respondents prescribed 2 exercise sessions per day. The majority (68%) of respondents reported that fewer than 25% of their patients would receive outpatient physical therapy after the cessation of home care.

Discussion

The results of this investigation provide a detailed description of usual care provided by home care physical therapists across the United States for patients after hip fracture. What is striking about the results is that physical therapists reported providing very similar care regardless of fracture fixation, weight-bearing status, time when physical therapy started, or geographic location. Functional training, including bed mobility, transfer training, and gait training, was one of the most frequently reported interventions. Most of the joint-specific therapeutic exercises reported (Tab. 6) involved active ROM, with very few therapists reporting that they used any form of resistance (manual, elastic bands, or weights) for a specific exercise. It is interesting that this description of physical therapy home care intervention appears to be very similar

Table 4.
Percentages of Responses for Surgical Repair and Weight-Bearing Status

| Parameter                             | Percentage of Responses |
|---------------------------------------|-------------------------|
| Surgical repair                       |                         |
| Open reduction-internal fixation (ORIF) | 32                      |
| Hemiarthroplasty (hemi)               | 9                       |
| Either ORIF or hemi                   | 59                      |
| Weight-bearing status                 |                         |
| Full or as tolerated                  | 42                      |
| Partial                               | 17                      |
| Full, partial, or as tolerated        | 29                      |
| Toe-touch weight bearing or non-weight bearing | 12              |

Table 5.
Percentages of Respondents Who Reported That They Often or Always Perform Specific Physical Therapy Interventions

| Intervention                                      | Percentage Who Responded “Often” or “Always” |
|---------------------------------------------------|----------------------------------------------|
| Flexibility of lower extremity                    | 92^a                                         |
| Range of motion                                   |                                              |
| Stretching                                         | 55^a                                         |
| Strength, power, and endurance for the lower extremity | 88^a                                      |
| Isometric exercises                               |                                              |
| Active assisted exercises                         | 80^a                                         |
| Active exercises                                  | 100^a                                        |
| Resisted exercises                                | 64^a                                         |
| Other therapeutic exercises                       |                                              |
| Aerobic conditioning                              | 40                                           |
| Balance and coordination training                 | 84^a                                         |
| Breathing exercises                               | 37                                           |
| Body mechanics or postural stabilization          | 26                                           |
| Upper-extremity exercises                         | 43                                           |

^a Usual care, that is, when ≥50% of respondents indicated that they perform this specific intervention.
Table 6.
Percentages of Respondents Who Reported That They Often or Always Perform Specific Therapeutic Exercises

| Exercise| Active Assisted| Active| Resisted, Manual| Resisted, Weights| Resisted, Bands |
|---------|----------------|-------|-----------------|------------------|----------------|
| Hip flexion|                |       |                 |                  |                |
| Supine  | 80\%           | 92\%  | 22              | 20               | 8              |
| Side lying | 12           | 15    | 3               | 2                | 1              |
| Sitting  | 21             | 68\%  | 17              | 22               | 12             |
| Standing | 10             | 93\%  | 5               | 25               | 10             |
| Hip extension|            |       |                 |                  |                |
| Prone    | 13             | 23    | 3               | 4                | 1              |
| Side lying | 19           | 18    | 4               | 1                | 1              |
| Standing | 11             | 94\%  | 7               | 22               | 14             |
| Hip abduction|             |       |                 |                  |                |
| Supine  | 81\%           | 92\%  | 27              | 18               | 15             |
| Side lying | 30           | 49    | 8               | 11               | 3              |
| Sitting  | 12             | 45    | 17              | 5                | 21             |
| Standing | 12             | 94\%  | 8               | 26               | 17             |
| Hip adduction|             |       |                 |                  |                |
| Supine  | 43             | 70\%  | 15              | 9                | 2              |
| Side lying | 3            | 6     | 1               | 1                | 0              |
| Sitting  | 9              | 38    | 16              | 3                | 6              |
| Standing | 5              | 38    | 3               | 9                | 6              |
| Knee flexion|             |       |                 |                  |                |
| Sitting  | 24             | 76\%  | 27              | 18               | 23             |
| Standing | 14             | 87\%  | 7               | 27               | 9              |
| Knee extension|            |       |                 |                  |                |
| Sitting  | 40             | 94\%  | 34              | 47               | 22             |
| Standing | 8              | 54\%  | 6               | 11               | 7              |
| Ankle plantar flexion| |       |                 |                  |                |
| Sitting  | 12             | 84\%  | 16              | 5                | 15             |
| Bilateral standing | 5         | 87\%  | 4               | 5                | 1              |
| Unilateral standing | 4       | 38    | 2               | 3                | 1              |
| Ankle dorsiflexion|            |       |                 |                  |                |
| Sitting  | 18             | 91\%  | 19              | 8                | 14             |
| Standing | 5              | 76\%  | 3               | 3                | 2              |
| Multiple joints|          |       |                 |                  |                |
| Bridging | 16             | 78\%  | 7               | 2                | 0              |
| Straight leg raise | 49         | 79\%  | 8               | 20               | 2              |
| Squats  | 6              | 80\%  | 1               | 2                | 1              |
| Step-ups | 8             | 70\%  | 0               | 2                | 0              |

* Usual care, that is, when ≥50% of respondents indicated that they perform this specific exercise.
to what was reported in the 1980s for both acute-care physical therapy treatment and subacute care provided in nursing care facilities. Jette and colleagues described their interventions as breathing exercises, quad sets (isometric quadriceps femoris muscle exercise), active assisted ROM, and ambulation and transfer training. Barnes and Dunovan reported that a typical treatment included active assisted ROM, active and resisted exercises, transfer and ambulation training, and occasionally physical modality use. However, our results provide a much richer description of the specific interventions that are used today for this population.

Our findings suggest that usual care provided in the home care setting is very different in timing, intensity, and duration from that provided in intervention studies reported in the literature, which demonstrated improvement in impairments and functional limitations in older patients after hip fracture. These reported studies used high-intensity resistance training with specialized equipment after usual care was completed (3 to 6 months after fracture). In these studies, programs lasted for several months, and the total number of sessions ranged from 20 to 60. The results of these investigations suggested that exercise with more resistance over a longer period of time at some point in the recovery process is needed to reduce mobility disabilities after hip fracture. The question of optimal timing for this level of exercise needs to be investigated.

It is possible that one way to reduce persistent mobility disabilities and impairments is for usual care to include some underutilized interventions, such as aerobic conditioning, transfers from the floor to a standing position, picking items off the floor, perturbation training, and the use of high-intensity resistance, which are used by a minority of home care therapists. Elements of these interventions have been used successfully in exercise trials but no study to date has shown a patient to progress from acute-stage recovery to full integration into the community with these types of therapeutic exercises. A combination of functional training, aerobic training, balance training, and strength (force-generating capacity) training may be the comprehensive approach that is missing from current patient management, and the lack of such a comprehensive approach may be contributing to the persistence of

Table 7.
Percentages of Respondents Who Reported That They Often or Always Perform Specific Therapeutic Activities

| Activity                                | Percentage Who Responded “Often” or “Always” |
|-----------------------------------------|----------------------------------------------|
| Balance training                        |                                              |
| Weight shifting                         | 87%                                          |
| Marching                                | 86%                                          |
| Unilateral stance                       | 66%                                          |
| Self-perturbation                       | 45                                           |
| External perturbation                   | 38                                            |
| Picking items off floor                 | 30                                             |
| Activities of daily living training     |                                              |
| Bed mobility                            | 99%                                          |
| Stand from sitting position             | 100%                                         |
| Tub or shower transfers                 | 83%                                          |
| Car transfers                           | 74%                                          |
| Transfer from floor to standing position| 16                                           |
| Gait training                           |                                              |
| Indoor surfaces                         | 100%                                         |
| Outdoor surfaces                        | 96%                                          |
| Curbs                                   | 67%                                          |
| Stairs                                  | 94%                                          |
| Walker to 4-point cane                  | 38                                           |
| Walker to single-point cane             | 73%                                          |
| Walker to crutches                      | 5                                            |
| Walker or cane to no device             | 40                                           |
| Physical agents, manual therapies, and  |                                              |
| wound care                              |                                              |
| Cold packs                              | 32                                           |
| Hot packs                               | 8                                            |
| Soft-tissue massage or mobilization     | 22                                           |
| Wound care, except for scar massage     | 9                                            |
| Scar massage or mobilization            | 28                                           |

* Indicates usual care, that is, when ≥50% of respondents indicated that they perform this specific activity.
mobility disabilities and impairments after the healing of the hip fracture itself. Future research needs to determine whether a specific intervention or a combination of interventions is more effective in improving the function of older people after hip fracture. We believe that our description of current usual care practices can be useful in the design of such intervention studies.

The question that remains is why the care provided in the home care setting is similar to categories of interventions described for acute care and subacute care in the 1980s, that is, less advanced or demanding for the patient. One possible explanation is that physical therapists who work in the home care setting and begin therapy with patients within 21 days of surgery may view the patients as still being in the acute stage of recovery. This explanation is consistent with the finding that the average length of stay in the acute care setting was almost 22 days in the 1980s, whereas it was reported to be only 6.5 days in 2003. Thus, the question remains as to whether patients currently being seen in the home care setting are ready for more intensive treatment.

A second possible explanation is that a reduction in the number of home care visits that have been reported may be contributing to the provision of less therapeutic programming. The mean number of home care visits (all services) for patients after hip fracture in 1996 was 47.8, and that figure decreased to 25.6 visits in 2001. The results of our survey suggest that patients typically are being treated in the home sooner (less than 3 weeks after hip surgery) and are typically receiving between 6 and 12 visits, depending on the geographic region. The majority of patients, therefore, are discharged from home care physical therapy at approximately 6 weeks after surgery. This number of visits is at the shortest end of the expected range of visits listed in the Guide to Physical Therapist Practice Practice Pattern for joint arthroplasty (12–60 visits) and is shorter than the 8 to 12 weeks of treatment previously reported. The clinically relevant question is whether 6 to 12 visits in the 6 weeks after hip fracture surgery provide sufficient therapy to return older patients to their prior level of function.

The chi-square analyses suggested that therapists are providing very similar levels of care across the United States. We hope that the black box of physical therapist practice in the home care setting for hip fracture has been illuminated more by the results of this descriptive study. Although standardization of physical therapist practice is a goal for many aspects of care, it is hoped that the standardization is based on evidence or expert consensus. It is not clear whether current practice, which appears to leave the patient ambulating with a cane and able to perform functional activities in the home, is evidence based. Because so few patients are being referred for outpatient therapy, this minimal level of function is all that many older patients may achieve after hip fracture.

There are several limitations to the present study. First, we sampled only physical therapists who were members of APTA for ease of obtaining a sample of participants who practice in the home care setting. This sampling strategy could have resulted in an underrepresentation of all physical therapists in the United States and does not account for the opinions of those who chose not to respond. However, a comparison of responders and nonresponders suggests that the demographic characteristics of these groups were incredibly similar. Second, although a return rate of 33% would be considered modest for the identification of usual care, a return rate of this magnitude is not uncommon in survey research. We believe that the sample was large enough (n=1,029) and distributed well enough geographically to support the credibility of the findings. Third, the typical patient scenario that was used to focus respondents’ considerations was relatively uncomplicated in clinical presentation. Although the instructions presented asked the respondents to indicate what they would do with the patient presented and not what should be done, we could not prevent the latter from occurring. Clinical scenarios have been shown to be valid measures of what physicians do during clinical encounters; however, we did not test whether what therapists say they do is actually what is performed in the home. In addition, the relative simplicity of the scenario itself may have left room for differences in the interpretation of the patient’s condition or prior level of function by the respondents, which could have produced variability in the responses. Additional research is needed to answer questions that guide clinicians in making decisions about which interventions to choose and at what times these interventions should be used to restore patients to their prior functional levels.

Conclusion

The present study provides a composite description of the physical therapy interventions provided in the home care setting for patients after hip fracture. The sample size and national representation increase our confidence that this description accurately depicts practice. The majority of therapists have patients perform active exercises and basic functional skills, and almost all therapists provide patient and caregiver education and home exercise programs. Our hope is that this research will spur further study into designing in-
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terventions that will achieve the maximum benefit possible for patients after hip fracture.

Dr Mangione, Dr Lopopolo, and Dr Craik provided concept/idea/research design and writing. Dr Neff provided data collection. Dr Mangione, Dr Lopopolo, Dr Neff, and Dr Palombaro provided data analysis. Dr Mangione and Dr Neff provided project management. Dr Mangione, Dr Lopopolo, Dr Neff, and Dr Craik provided fund procurement. All authors provided consultation (including review of manuscript before submission).

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