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Omission of Physical Therapy Recommendations for High-Risk Patients Transitioning from the Hospital to Sub-Acute Care Facilities

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Abstract

Objective—To assess the quality and explore the potential impact of the communication of physical therapy (PT) recommendations in hospital discharge summaries/orders for high-risk sub-acute care populations, specifically targeting recommendations for (1) maintaining patient safety, (2) assistance required for mobility, and (3) use of assistive devices. Prior research suggests that sub-acute care nurses perceive hospital-to-sub-acute care communication of these items to be poor, but this perception has not been verified via direct quality assessment.

Design—Medical record abstraction of retrospective cohort comparing discharge recommendations made by inpatient PT to orders included in written hospital discharge summaries/orders, the primary form of hospital-to-sub-acute care communication. Data were linked to Medicare outcomes from corresponding years for all Medicare beneficiaries in the cohort.

Setting—Academic hospital

Participants—All hospitalized patients (N=613 overall) 18 years and older with primary diagnoses of stroke or hip fracture, with an inpatient PT consultation and discharged to sub-acute care, 2006–2008; 366 of these were Medicare beneficiaries.

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Main Outcome Measure(s)—Combined rehospitalization, emergency room visit and/or death within 30 days of discharge

Results—Omission of recommendations for patient safety restrictions/precautions occurred in 54% (316/584) of patients; for level of assistance with sitting to standing in ~100% (535/537); and for medical assistive devices in 77% (409/532). As compared to those without patient safety restriction/precaution omissions, Medicare beneficiaries with such omissions demonstrated a trend towards more negative 30-day outcomes (26% versus 18%, p-value = 0.10). Similar, albeit non-significant, outcome trends were observed in the other omission categories.

Conclusion—PT recommendations made during a hospital stay in high-risk patients are routinely omitted from hospital discharge communications to sub-acute care facilities. Interventions to reliably improve this communication are needed.

Keywords

Activity Orders; Communication; Physical Therapy; Discharge Summary; Transitions of Care; Sub-Acute Care; Patient Safety; Rehospitalization

Although hospital care is delivered in a multidisciplinary fashion, hospital discharge communication typically involves only the physician members of the care team. Yet, such communication is critical for developing the post-hospital plan of care, especially for patients discharging to sub-acute care facilities (i.e., skilled nursing, long-term care and inpatient rehabilitation facilities).^{1–3} Experts recommend that physical therapy (PT) recommendations, including recommendations for maintaining patient safety (e.g., fall risk), assistance required for mobility (e.g., up with two), and use of assistive devices (e.g., walker), be included in discharge summaries/orders.^{4–6} However, while physical therapists primarily generate these recommendations they usually do not participate in the creation of the discharge summary/orders nor do they typically accompany the patient to the next setting of care.^{7,8} Physical therapists make recommendations which improve important/key care outcomes, including ability to transfer, activities of daily living, overall physical activity and quality of life.⁹ Yet, if these plans are not fully communicated to the next setting of care, critical care steps might be delayed and/or omitted.^{1,10,11}

Patients who have a hip fracture or have suffered a stroke often require intensive rehabilitation and are the largest population of patients discharged to the sub-acute care setting.^{9,12–14} These patients are particularly vulnerable to the consequences of physical inactivity, such as decreased pulmonary and mental capacity, increased functional decline, physical disability, and poor quality of life.^{15–18} Care plans to encourage activity are developed and tailored to each patient's specific strengths and limitations within the hospital by physical therapists. These tailored plans inform a broad spectrum of care delivery in sub-acute care facilities including directing basic restorative and nursing care as well as physical/occupational therapy interventions and must be communicated accurately to sub-acute care staff to ensure that appropriate care continues in the post-hospital setting.

However, sub-acute care nurses in focus groups report that PT recommendations are routinely omitted in the discharge communication they receive from the hospital.¹ They perceive that these omissions contribute to patient care delays, patient safety issues,

increased rehospitalization risk and patient/family dissatisfaction.^{1,19–21} For example, if a patient is identified as a fall risk in the hospital, the sub-acute care facility may choose to place the patient closer to the nurses' station or on a ward with an alarm or tracking system to ensure the patient's safety. Omission of this information in discharge communications limit the facility's ability to plan appropriately, and may contribute to the occurrence of potentially avoidable events, like falls.^{1,19–21}

Although sub-acute care nurses perceive poor hospital discharge communication as a problem, it is not known how often PT recommendations are omitted from hospital discharge summaries/orders. The objective of this study was to assess the quality of communication of PT recommendations in hospital discharge summaries/orders for high-risk sub-acute care populations, specifically targeting recommendations for (1) maintaining patient safety, (2) assistance required for mobility, and (3) use of assistive devices. This is accomplished by comparing the PT recommendations found within the PT consultation note created closest to the date of discharge to the discharge summary/orders sent to the sub-acute care facilities. Based on previous qualitative research,¹ we hypothesized that PT recommendations would be missing from the majority of discharge summaries. Furthermore, we conducted an exploration of the association between these omissions and a combined 30-day post-hospital outcome of rehospitalization, emergency room visit and/or death as derived from Medicare data. We offer these results below.

Methods

Study Sample

We identified all patients who were 18 years and older with a primary diagnosis of stroke (n=302) or pelvis/hip/femur fracture (n=315) discharged from a large academic hospital to a sub-acute care facility and who had a discharge summary/orders during the years 2006–2008. The primary diagnosis was established using the International Classification of Diseases, 9th edition (ICD-9) diagnosis code located in the first position from the index hospitalization discharge diagnosis list. ICD-9 codes of 431, 432, 434, and 436 were used to identify patients who have suffered a stroke,^{22,23} and 805.6, 805.7, 806.6, 806.7, 808, 820 were used to identify patients who have pelvis/hip/femur fractures collectively categorized as the group 'hip fracture'.²⁴ Discharges to sub-acute care facilities were identified using administrative data that is mandatorily compiled by hospital case managers, and were verified during medical record abstraction for this study. Inpatient PT consultations were identified by manually examining each patient's medical record over the index hospitalization period. Patients who did not receive an inpatient PT consultation were excluded (n=4). The final sample size was 613.²⁵ For those patients who were Medicare beneficiaries (n = 366), we also examined their 30-day Medicare outcomes.

Categorization of PT Recommendations

There is no gold standard to inform the assessment of PT recommendation communication in discharge documents. As such, we convened a panel of seven clinicians including physical therapists, nurses, a physician, and a medical student from the hospital and sub-acute care settings to identify, discuss and categorize PT recommendations in the areas of

(1) maintaining patient safety, (2) assistance required for mobility, and (3) use of assistive devices. These overarching areas were drawn from prior research on discharge communication quality with sub-acute care nurses,¹ informal polling of clinical physical therapists and agreed upon by the multidisciplinary panel. The panel participated in a modified Delphi process²⁶ to define and operationalize categories and specific items within each targeted area, and to increase validity of the abstraction approach. A complete list of specific items and the categorization scheme can be found in Table 1, with detailed definitions and examples provided in Supplemental Table 1.

Data Collection

Abstraction methods specific to written communication were used in order to ensure a high level of reliability.²⁷ Briefly, this method consists of a phase-based approach to retrospective medical record abstraction that includes construction of a research team, piloting abstraction tools, documenting and addressing challenges inherent to the electronic medical record and data, developing decision support algorithms for abstractors, and regular inter-rater reliability assessments after every 100 patients including a 10% random re-abstraction.²⁷ PT consultation notes and discharge summaries/orders were abstracted independently and by different abstractors who were blinded to the others work.

PT recommendations were abstracted from the last PT consultation note containing specific therapy recommendations prior to discharge within the electronic medical record for each patient. If this note did not contain specific recommendations then the next chronologically earlier PT consultation note containing specific PT recommendations was abstracted. Using this method, 95% of PT consultation notes used for data abstraction were written within 48 hours of patient discharge. If more than one PT recommendation was encountered within a category, (e.g., ‘walker’ and ‘wheelchair’ for assistive devices), each was abstracted and counted as present. Therefore, patients may have more than one specific item in each category. Discharge summaries/orders were abstracted by a second abstraction team using an identical approach. This abstraction approach resulted in a Cohen’s Kappa of > 0.75 and a percent agreement of > 94% for all specific items abstracted in both types of notes.

Medicare Data

For those study participants who also were Medicare beneficiaries, we linked their abstraction data to previously purchased Medicare data from the same timeframe (2006–2008) to explore for an early association between PT recommendation omissions and a combined 30-day post-hospital outcome of rehospitalization, emergency room visit and/or death. These data were linked to subject data using combination of Medicare identification number, study hospital discharge/admission dates, age and gender. Outcomes of interest were derived from Medicare claims (rehospitalizations and emergency room visits) and the Medicare denominator file (death).

Data Analysis

Data analysis was performed using STATA version 10.1.²⁸ The inclusion of PT recommendations within the final PT consultation note and within the discharge summary/orders were calculated independently. Next, the specific PT recommendations abstracted

from the PT consultation note were compared to the specific orders abstracted from the discharge summary/orders for each patient. Using the PT recommendations as a gold standard, omissions within the discharge summary/orders were identified. These were then assessed patient-by-patient to determine whether each patient's PT recommendations were completely omitted (i.e., all PT recommendations found within the PT consultation note were omitted in discharge summary/orders), partially omitted (i.e., at least one specific PT recommendation from the PT consultation note (e.g., walker) was omitted from the discharge summary/orders) or not omitted (i.e., all PT recommendations in PT consultation note were present in discharge summary/orders) within each pre-defined category and overall. Omission rates were then calculated for the overall sample. Frequencies of 30-day outcomes (rehospitalizations, emergency room visits, or death) by omission status are reported, with between-group differences assessed via the Chi-squared test,²⁹ with significance noted at $p\text{-value} < 0.05$.

Results

Omission of PT Recommendations within the Discharge Summaries/Orders

Overall, discharge summaries/orders contained many fewer PT recommendations when compared to the PT consultations (Figure 1). The vast majority of this difference in prevalence between the two document types could be attributed to omissions.

Discharge summaries/orders for patients with PT recommendations, omitted those recommendations at very high rates (see Table 2). Only 3 discharge summaries/orders of the 611 examined had no omissions of PT recommendations (i.e., only 3 discharge summaries included all PT recommendations). For those patients with any recommendations, PT recommendations were completely omitted in 53% (322/611) of the discharge summaries/orders and partially omitted in 47% (286/611). PT recommendations for maintaining patient safety were completely omitted in 54% (316/584) and partially omitted in 14% (82/584) of discharge summaries/orders (for patients with any patient safety recommendations). Recommendations for assistance required for mobility were completely omitted almost 100% of the time (535/537). PT recommendations for use of assistive devices were completely omitted in 77% (409/532) and partially omitted in 11% (58/532) of discharge summaries/orders.

Additionally, recommendations made the most often by hospital-based physical therapists (i.e., fall risk, assistance $\times$ 1, and walker) were among those omitted the most frequently within discharge summaries/orders (Table 2). Infrequently, the clinician who wrote the discharge summary/orders included additional PT orders (e.g., crutches) that were not recommended by the physical therapist (Supplemental Table 2).

Omission of PT Recommendations and 30-Day Outcomes

Fifty-nine percent of the sample (366/613) were Medicare beneficiaries with linkable outcomes data. These Medicare beneficiaries with PT recommendation omissions demonstrated some trends towards greater frequencies of 30-day rehospitalization/emergency room visit/death, when compared to those without such omissions. As compared

to those without patient safety restriction/precaution omissions, Medicare beneficiaries with such omissions demonstrated a trend towards more negative 30-day outcomes (26% versus 18%, p -value = 0.10). Similar, albeit non-significant, outcome trends were observed in the other omission categories (see Figure 2). However, given the extremely high rate of PT recommendation omissions overall, power for assessing linkages between these omissions and 30-day post-hospital outcomes was limited.

Discussion

While previous qualitative research has suggested that PT recommendations are omitted from discharge summary/orders for high-risk patients transitioning to sub-acute care, this study is the first to quantify the alarming frequency at which such omissions occur. Greater than 99% of discharge summaries/orders omitted at least one PT recommendation made within the categories of interest; over half completely omitted every PT recommendation made. Recommendations for level of assistance for sitting to standing were omitted at the greatest frequency (nearly 100%) followed by recommendations for medical assistive devices (88%) and patient safety restrictions or precautions (68%). Given the importance of PT recommendations to patient outcomes, especially within the early post-hospital period, the frequency at which this information was omitted in this study is concerning. Furthermore, early exploratory analyses in this study suggest that such omissions may be associated with worse 30-day post-hospital outcomes.

Sub-acute care facilities have become complex organizations with a wide array of clinicians providing care to an increasingly complex patient population with multiple acute and chronic health needs.^{30,31} Despite this increasing complexity, the resources available to sub-acute care facilities are very different from those available to hospitals. A sub-acute care facility may 1) require many days to order and receive medical assistive devices necessary to provide safe patient care, such as a bariatric bed or a trapeze; 2) offer only limited rehabilitation hours with a physical therapist who is able to provide consultation and treatment; 3) have low nursing staff to patient ratios; and 4) generally do not have immediate access to a physician to obtain, clarify or revise plan of care orders.¹ Poor quality discharge communication further exacerbates an already overburdened sub-acute care facility and leads to delays in necessary care.^{1,11} While the majority of patients discharged to a sub-acute care facility ultimately receive a PT consultation at the facility, there is often a delay between when the patient arrives, when the consultation occurs, and when the physical activity plan of care is enacted.¹ The consequences of these delays are potentially catastrophic for high-risk patients whose rehabilitative gains made in the inpatient setting may be interrupted or poorly maintained due to inappropriate activity levels or safety precautions in the sub-acute care facility.

Although our available retrospective data do not allow for a definitive understanding of the reasons for these omissions, it is likely that a lack of transitional care training among health professionals, as well as misconceptions about resources available in post-hospital settings, contribute to poor quality discharge communication.^{1,32} This is certainly an area in need of future study. Previous work examining the omission of various data elements (e.g., discharge diagnosis, medication information, lab test results) from discharge documentation

for older patients discharged to sub-acute facilities found that providers from community hospitals were less likely to omit information as compared to providers from academic settings.³³ Those authors hypothesized that community hospitals have more experienced physicians completing discharge documentation, and that this greater experience in interacting with sub-acute facilities provides a better understanding of what information these facilities need. To encourage similar understanding in early-career providers, including the importance of communicating PT recommendations to sub-acute care, improved transitional care training is needed.

In addition to enhancing provider understanding of the sub-acute care setting, interventions are needed to improve hospital to sub-acute care communication related to PT recommendations. One possible solution includes implementing a formalized communication process that explicitly highlights the need to include PT recommendations for patients transitioning to a sub-acute care facility. A recent bundled communication intervention, the I-PASS Handoff Bundle, formalized shift-handoff communication between residents in pediatric residency training programs and through the use of mnemonic device (I-PASS) explicitly identified the information that needed to be communicated during the transition between shifts. In addition, residents participated in a handful of education sessions focused improving communication skills. This pairing of a standardized communication tool with additional training resulted in significant post-intervention effects with a 23% decrease in medical errors and a 30% decrease in preventable adverse events.³⁴ A similar approach of formalizing communication concerning PT recommendations could be developed and tested with current transitional care interventions such as Coordinated-Transitional Care (C-TraC),³⁵ and Interventions to Reduce Acute Care Transfers (INTERACT)³⁶ serving as viable platforms for integrating a communications intervention into existing transitional care processes. Additional possibilities include automatically pulling PT recommendations into the discharge summary/orders via electronic medical record-based technologies, empowering allied health providers including physical therapists/nurses/social workers within the health care team during the creation of discharge summary/orders, and/or sharing electronic medical records across health systems ensuring transparency regarding the patient's past, current, and future plan of care.

Study Limitations

While this study raises awareness of a significant gap in our current health care system, there are several limitations that need to be considered when interpreting these findings. First, the results are from one large, academic hospital with a comprehensive stroke center that may not reflect how other hospitals communicate PT recommendations at discharge. However, comprehensive stroke centers tend to focus strongly on PT recommendations and treatments, while other hospital settings without a designated unit may have higher rates of omission.³⁷ Second, it is possible that the patient's physical activity plan of care may have changed between their final PT consultation and the date of discharge. It is possible that last minute changes in PT orders/therapies were made prior to a patient's discharge and that these changes were not captured in the written medical record documentation. However, given the culture of the study hospital, it is felt that such an occurrence would be rare. Additionally, a consistent strategy to PT note choice was needed given the retrospective

nature of this study; thus, the present approach was chosen. Using this method, 95% of PT consultation notes used for data abstraction were written within 48 hours of patient discharge. Lastly, we have no way of knowing whether or not the PT recommendations were communicated through some other means (e.g., during a nursing hand off, through other documents sent to the sub-acute care facility, email or patient chart). However, focus groups of sub-acute care nurses have demonstrated that the discharge summary/orders is the primary document they use for creating the care plan and that verbal communication at discharge is poor quality.¹ Other means of communication can be lost in transit, between shifts (for verbal) or hidden within the reams of other paperwork that the sub-acute care facility receives.¹ The discharge summary is currently the only mandated document that must accompany the patient to the sub-acute care setting and therefore, the most likely method of communicating information related to PT recommendations.⁴

Conclusions

All categories of PT recommendations made during a hospital stay are routinely omitted from hospital discharge communications to sub-acute care facilities. In this study, recommendations for level of assistance for sitting to standing were omitted at the greatest frequency (nearly 100%) followed by recommendations for medical assistive devices (88%) and patient safety restrictions or precautions (68%). Exploratory analyses suggest that such omissions may be associated with a trend towards more negative 30-day outcomes. Future studies are needed to verify this outcomes association in a larger, more generalizable sample. However, interventions to reliably improve between-setting communication of PT recommendations are clearly needed.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Abbreviations

PT Physical Therapy

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Figure 1.
Prevalence of PT Recommendations in Discharge Summaries/Orders as Compared to the
Prevalence of PT Recommendations in PT Consultation Notes for Each Recommendation
Category

Figure 2.

Rehospitalization, Emergency Department Visit and/or Death within 30 Days of Hospital Discharge by Omission Category for Medicare Beneficiaries within the Study Sample

*P-value=0.10

†Each category reflects only events for those patients with such recommendations made by inpatient physical therapy

Category	Item
<i>Maintaining Patient Safety</i>	
	Bed Bound Precautions
	Pivot Restrictions*
	Weight Bearing as Tolerated Restrictions
	Touch Down Weight Bearing Restrictions
	Non-Weight Bearing Restriction
	Total/Partial Hip Precautions [†]
	Fall Risk Precautions [‡]
	Craniotomy/Craniectomy Precautions [§]
	Altered Mental Status ^{//}
<i>Assistance Required for Mobility</i>	
	Independent
	Stand By Assist
	Contact Guard [¶]
	Gait Belt for Sit to Stand
	Assistance × 1
	Assistance × 2
	Assistance × 3+
	Sit to Stand Using a Lift [#]
<i>Use of Assistive Devices</i>	
	Gait Belt for Ambulating or Transferring
	Cane
	Trapeze
	Crutches
	Walker
	Wheelchair
	Mechanical Lift for Transferring ^{**}
	Slide Board ^{††}
	Cardiac Chair
	Brace

See Appendix Table 1 for specific definitions and examples of each item

* Avoid use of pivoting motions and rotations during transfers.

[†] Guidelines describing limits of leg motion to avoid hip joint dislocation. Ex: avoid bending past 90 degrees, avoid twisting legs in or out, avoid crossing legs.

[‡] Guidelines describing fall-prevention measures. Ex: Use of side rails on bed, keep area clutter free, keep bed in low position, use non-skid slippers, socks or shoes

[§] Guidelines describing activities to ensure proper healing of incision site. Ex: head of bed elevated 30 degrees, no lifting greater than 10 pounds, avoid bending so that head is in a dependent position, wear a helmet if needed

// Includes patients with Alzheimer's Disease, Dementia or Delirium. Ex: Use simple directions and only one at a time, reassure patient, reorient the patient as needed

¶ Direct contact is made with patient for safety, but no physical assistance is given.

Use of a lift to aid in mobility. Ex: EZ Stand lift

** Use of an assistive device using hydraulic power to transfer patients between resting places. Ex: hooyer lift for nonweightbearing patients

†† Plank used primarily for seated transfers. Ex: used for non-weightbearing patients to transfer from bed to wheelchair

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Table 2

Omissions of Physical Therapy (PT) Recommendations in the Discharge Summaries/Orders for Stroke and Hip Fracture Patients Discharged from the Hospital to a Sub-Acute Care Facility (n=613)

	PT Recommendations in Patient Discharge Summary/Orders		
	Overall Category with Any Omission	Specific Recommendations with Omissions	
PT recommendations within the final PT consultation note (n = number of patients for whom PT made recommendation in PT consultation note)	% (n/N)	%	(n/N)
<i>Category: Maintaining Patient Safety (n = 584)</i>	68% (398/584)		
Bed Bound Precautions (n = 4)		100%	(4/4)
Pivot Restrictions (n = 5)		100%	(5/5)
Weight Bearing as Tolerated Restrictions (n = 182)		24%	(44/182)
Touch Down Weight Bearing Restrictions (n = 107)		20%	(21/107)
Non-Weight Bearing Restrictions (n = 33)		33%	(11/33)
Total/Partial Hip Precautions (n = 90)		40%	(36/90)
Fall Risk Precautions (n = 331)		94%	(311/331)
Craniotomy/Craniectomy Precautions (n = 23)		100%	(23/23)
Altered Mental Status (n = 45)		40%	(18/45)
<i>Category: Assistance Required for Mobility (n = 537)</i>	99% (535/537)		
Independent (n = 16)		100%	(16/16)
Stand By Assist (n = 73)		100%	(73/73)
Contact Guard (n = 112)		100%	(112/112)
Gait Belt for Sit to Stand (n = 4)		100%	(4/4)
Assistance ×1 (n = 223)		100%	(222/223)
Assistance ×2 (n = 120)		99%	(119/120)
Assistance ×3+ (n = 8)		100%	(8/8)
Sit to Stand Using Lift (n = 0)		0%	(0/0)
<i>Category: Use of Assistive Devices (n = 532)</i>	88% (467/532)		
Gait Belt for Ambulating or Transferring (n = 6)		100%	(6/6)
Cane (n = 28)		96%	(27/28)
Trapeze (n = 46)		98%	(45/46)
Crutches (n = 7)		71%	(5/7)
Walker (n = 355)		75%	(268/355)
Wheelchair (n = 82)		99%	(81/82)
Mechanical Lift for Transferring (n = 10)		100%	(10/10)
Slide Board (n = 48)		81%	(39/48)
Cardiac Chair (n = 100)		98%	(98/100)
Brace (n = 65)		55%	(36/65)