Published in final edited form as:

J Health Commun. 2012 ; 17(Suppl 3): 312–324. doi:10.1080/10810730.2012.712619.

Improving Care Transitions: The Patient Perspective

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Abstract

After hospital discharge, patients commonly suffer potentially avoidable adverse events and hospital readmissions. As hospitals implement interventions to improve discharge transitions, it is important to understand patients' perspectives on which intervention components are most beneficial. We examined a sample of 125 patients randomized to the intervention arm of the Pharmacist Intervention for Low Literacy in Cardiovascular Disease (PILL-CVD) study who completed a telephone survey about the helpfulness of different components of the PILL-CVD intervention, which included medication reconciliation, inpatient counseling, simple adherence aids, and telephone follow-up. The majority of patients indicated it was "very helpful" to speak with a pharmacist about their medications before discharge (72.8%), particularly about how to take the medications, and how to prevent and manage side effects. Receiving an illustrated medication list (69.6%) and follow-up phone call after discharge (68.0%) were also considered very helpful. Patients with limited health literacy indicated the greatest benefit. Patients also reported feeling more comfortable speaking with their outpatient providers about their medications after receiving the intervention. In conclusion, patients – particularly those with limited health literacy – found a hospital pharmacist-based intervention to be very helpful and empowering.

Keywords

care transitions; hospital discharge; health literacy; pharmacist

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Disclosures

Dr Kripalani is a consultant to and holds equity in PictureRx, LLC, which makes patient education tools to improve medication management. PictureRx did not provide materials or funding for this study.

Background and Significance

Care transitions have been identified as a major point of confusion and miscommunication for patients, families, and healthcare providers (Bodenheimer, 2008; E. A. Coleman & Berenson, 2004). Particularly, the transition from hospital to home is a vulnerable time (Sunil Kripalani, Jackson, Schnipper, & Coleman, 2007). During the sometimes chaotic discharge period, many patients are sent home without adequate instruction on medication management, follow-up appointments, and other necessary information to be successful post-discharge (Cua & Kripalani, 2008; Greenwald, Denham, & Jack, 2007). Consequently, patients often feel ill-prepared to provide appropriate self-care during the transition to home (Graumlich, Novotny, & Aldag, 2008). Incomplete or delayed communication between inpatient and outpatient providers further complicates post-discharge care (S. Kripalani et al., 2007). In this context, it is not surprising that adverse events and unplanned hospital readmissions are common, each affecting approximately 20% of patients during the first few weeks after discharge (Forster, Murff, Peterson, Gandhi, & Bates, 2003; Jencks, Williams, & Coleman, 2009).

Growing recognition of these problems and mounting policy pressures (Axon & Williams, 2011) have prompted hospitals and health systems to implement a number of interventions which seek to improve care transitions. They include medication reconciliation, enhanced discharge counseling, health coaching, and timely follow-up. Many of these interventions focus on reducing readmission to the hospital (Hansen, Young, Hinami, Leung, & Williams, 2011), while others seek to improve medication management, quality of life, and satisfaction (Preen et al., 2005; Schnipper et al., 2010). Unfortunately, despite positive results from a few well-conducted studies (E.A. Coleman, Parry, Chalmers, & Min, 2006; Jack et al., 2009; Naylor et al., 1999), most care transition interventions have not proven efficacious in reducing readmission (Hansen, et al., 2011).

In the available literature, patient perspectives about care transitions interventions have been conspicuously absent. Particularly given the mixed results of published studies, a better understanding of patients' views on different types of assistance could help guide the development and implementation of future care transition interventions. Moreover, as patients' health literacy likely plays a crucial role in their ability to navigate the transition from hospital to home, it would also be valuable to understand how patients' needs and perceptions differ according to their level of health literacy.

Despite numerous published studies on health literacy (Berkman, Sheridan, Donahue, Halpern, & Crotty, 2011), surprisingly few have focused on the vulnerable transition period from hospital to home (Chugh, Williams, Grigsby, & Coleman, 2009). Kripalani and colleagues surveyed patients two weeks after discharge and found that individuals with inadequate health literacy gave lower ratings to the clarity of their physicians' communication in the hospital (S Kripalani et al., 2010). Lindquist and colleagues found that, 48 hours after hospital discharge, elderly patients with limited health literacy were more likely to have unintentional non-adherence to their medications, often related to not understanding their discharge instructions (Lindquist et al., 2011). Based on these findings and others in the outpatient arena (Berkman, et al., 2011), it is likely that patients with limited health literacy have distinct needs and would benefit from different forms of assistance when returning home from the hospital.

We recently performed a randomized controlled trial of a multi-component, health literacy-sensitive care transition intervention to reduce medication errors during the 30-day period after hospital discharge. Here we describe participants' assessment of the different components of the intervention, and how this varied according to their health literacy level.

Methods

Participants

Subjects were participants in the Pharmacist Intervention for Low Literacy in Cardiovascular Disease (PILL-CVD) study. Briefly, the PILL-CVD study was a two-site randomized controlled trial of patients hospitalized with acute coronary syndromes or acute decompensated heart failure. Patients were eligible for the trial if they spoke English or Spanish, were at least 18 years of age, and managed their own medications prior to admission. A more detailed description of the study design and primary outcomes has been reported elsewhere (S Kripalani et al., 2012; Schnipper, et al., 2010). All study procedures were approved by the Institutional Review Board at each site.

The current follow-up study was conducted among a sample of participants in the PILL-CVD study who had been randomized to the intervention, spoke English, had completed their 30-day period of participation, and were willing to complete an additional interview by telephone to provide their opinions about the intervention components.

PILL-CVD Intervention

The PILL-CVD intervention consisted of pharmacist-assisted medication reconciliation and counseling, low-literacy tools for medication management, and post-discharge phone follow-up (Schnipper, et al., 2010). The pharmacists and staff who delivered the intervention were trained in clear health communication (S Kripalani & Jacobson, October 2007. Available at <http://www.ahrq.gov/qual/pharmlit/pharmtrain.htm>). Medication reconciliation involved the pharmacist taking a detailed medication history using multiple sources (e.g., electronic health record, family, community pharmacy records). An initial counseling session after enrollment allowed the pharmacist to evaluate and address the individual needs of each patient, focusing on the patient's understanding of the medication regimen, comprehension of medication labels, daily medication adherence, refill adherence, social support, and any other patient-specific problems. During a separate hospital discharge counseling session, pharmacists provided intervention patients with an illustrated discharge medication list that included dosing instructions, timing, important side effects, and any special instructions (Schnipper, et al., 2010). Patients were offered a pill box and taught how to fill it. Pharmacists also attempted to engage family members and caregivers when possible, and encouraged patients to get their help in managing medications after discharge. One to four days after discharge, a study coordinator contacted intervention patients by telephone to assess any new or worsening symptoms, medication discrepancies or non-adherence, and other concerns. Issues were forwarded to a study pharmacist who followed up with patients as needed. Sometimes, if the pharmacist was unable to provide discharge counseling in the hospital, the pharmacist conducted the post-discharge phone call to perform discharge counseling and complete the post-discharge follow-up simultaneously.

Data Collection

During the baseline interview for the PILL-CVD study, research assistants collected demographic information from the patient and number of pre-admission medications from the medical chart. They also administered the short Test of Functional Health Literacy in Adults (s-TOFHLA) (Nurss, Parker, Williams, & Baker, 1998), the Mini-Cog (Borson, Scanlan, Watanabe, Tu, & Lessig, 2005), the Medication Understanding Questionnaire (MUQ) (Marvanova et al., 2011), and the Morisky Medication Adherence Survey (Morisky, Green, & Levine, 1986). Scores on the s-TOFHLA range from 0 to 36 and classify respondents' health literacy as inadequate (0–16), marginal (17–22), or adequate (23–36). The Mini-Cog, which is a 3-item recall test with a clock-draw distraction task, provides scores ranging from 0 to 5, with 2 indicating cognitive impairment. In the Medication

Understanding Questionnaire, an interviewer provides the generic and brand names of up to 5 of the participant's pre-admission medications and asks the participant to report the indication, dose, and frequency for each medication; scores range from 0 to 3, with 3 indicating perfect understanding. The Morisky Medication Adherence Survey is a 4-item test with scores ranging from 4 to 8; a higher score indicates better medication adherence.

The PILL-CVD participants in this follow-up study completed a 5–7 minute telephone survey within approximately 2 months of having completed their 30-day participation in the trial (i.e., within 3 months of the index hospital discharge). Eleven survey items assessed the utility of different components of the intervention, including the pharmacist counseling, illustrated medication list, pill box, and follow-up phone call. Response options included “very helpful,” “somewhat helpful,” and “not helpful at all.” A response of “not applicable” was recorded if participants indicated that they either did not receive or did not recall receiving a given intervention component. Six additional questions assessed if receiving the intervention had affected patients' level of comfort in communicating with their outpatient providers about their medications. Response options included “much more comfortable,” “slightly more comfortable,” “about the same,” “slightly less comfortable,” and “much less comfortable.” A response of “not applicable” was recorded if patients indicated that they either did not discuss or did not need to discuss a specific topic with their provider(s). Survey data were collected and managed using REDCap (Research Electronic Data Capture), which is a secure, web-based application designed to support data entry for research studies (Harris et al., 2009).

Analyses

Patient characteristics were summarized using frequencies, medians, and interquartile ranges (IQR). We used frequencies to summarize patient responses to survey items about the utility of various intervention components and provider communication. We then conducted a series of bivariate analyses (i.e., chi-square tests with categorical variables and independent sample t-tests with continuous variables) to determine the relationship between patient characteristics, including health literacy, cognitive function, medication understanding, medication adherence, and number of preadmission medications, and each survey item. For these analyses, survey responses were grouped into the following categories: very helpful vs. somewhat/not at all helpful, and much more/slightly more comfortable vs. same/slightly less/much less comfortable. Invalid responses (i.e., not applicable) were excluded from bivariate analyses. All analyses were performed in SPSS version 19.0 for Windows. Two-sided p-values < 0.05 were considered statistically significant.

Results

Of the patients enrolled in the PILL-CVD study between May 2008 and September 2009 (N=862), 430 were randomized to the intervention arm. Of these, 236 (54.9%) met inclusion criteria for this follow-up study. The primary reason for exclusion was greater than 2 months' time having elapsed since their study participation. We had resources to attempt to contact 179 of these patients, and 135 agreed to participate (75.4% of attempted). Reasons for not participating included being unreachable by phone (n=36), declining to participate (n=5), or being deceased (n=3). Among those who agreed to participate, 10 were excluded from the analyses, including 9 who did not sufficiently recall their experience with the intervention and 1 who had an incomplete call.

Patients completing the survey (N=125) were primarily male (55.2%), White (81.6%), and insured (91.3%); the median age was 63 (IQR 54 to 73) (Table 1). While the majority (97.6%) of patients had completed high school, 23.2% had marginal or inadequate health

literacy, and 12% had impaired cognitive function. These characteristics did not differ meaningfully from those of the overall PILL-CVD study participants.

When assessing the utility of different forms of care transition assistance, the components of the intervention that received the most favorable responses were speaking to the pharmacist (72.8% rated as very helpful), receiving an illustrated medication schedule (69.6%), and receiving a follow-up phone call at home (68.0%) (Table 2). Just under half of patients (44.0%) rated getting help from friends and family as very helpful, though most (73.5%) had a family member or friend present during discharge instructions.

Regarding specific topics covered during pharmacist counseling, those rated most helpful included exactly how to take the medicines (71.8%) and how to prevent or manage side effects (62.6%). A smaller percentage of patients rated discussion of problems like cost or transportation to obtain medicines as very helpful (40.3%).

Between hospital discharge and the telephone survey, 110 of 125 patients (88.7%) had spoken with a doctor or nurse about their medications, either at a follow-up appointment or by phone. Overall, patients reported feeling more comfortable discussing medications with outpatient providers after having participated in the intervention (Table 3). Specifically, patients reported improvements in being able to discuss drug indications (53.7% reported feeling much more comfortable with this), side effect management (53.3%), the names of new medicines (49.6%), and any problems they were having with following the treatment plan (48.0%). Fewer patients reported improving their comfort level in the discussion of what to do with their old medications after returning home from the hospital (35%).

In subgroup analyses (Table 4), patients with marginal or inadequate health literacy were significantly more likely than patients with adequate health literacy to report various components of the intervention were very helpful (vs. somewhat or not at all helpful). Specifically, patients with limited health literacy were more likely than those with adequate health literacy to report that speaking with a pharmacist about their medications ($p = 0.03$), and receiving a follow-up phone call 1–4 days after discharge ($p = 0.01$) were very helpful. Among the pharmacists' counseling topics, patients with limited health literacy were more likely than those with adequate health literacy to report that talking with the pharmacist about always filling their prescriptions on time was very helpful ($p = 0.05$). Participants with limited health literacy tended to rate other discussion topics as very helpful compared with those with adequate health literacy, including reading and understanding medication labels ($p = 0.07$), preventing and managing drug side effects ($p = 0.08$), and taking their medications every day without missing any doses ($p = 0.09$), though these differences were not statistically significant. Patient responses to survey questions did not differ according to other variables, including patients' baseline medication understanding, medication adherence, cognitive function, or number of pre-admission medications.

Patients with limited health literacy had a similar likelihood as patients with adequate health literacy to report feeling much more comfortable talking to their doctors or nurses about the names of their new medications, what the new medicines are for, what to do with their old medicines after discharge, any problems they might have taking their medicines daily, dealing with side effects of medicines, and specific problems they were having such as the cost of their medicines or transportation (data not shown).

Discussion

In this study of patients' perspectives on a care transition intervention, we found that the majority of participants perceived the pharmacist-led intervention to be very helpful. The intervention was health literacy-sensitive and tailored to each patient, providing patients

with easy-to-understand instructions and strategies to manage their post-discharge medication regimens. Patients with limited health literacy tended to perceive greater intervention benefits.

Many studies have quantified the efficacy of multi-faceted care transitions interventions (Hansen, et al., 2011), and professional societies have recommended implementation of specific initiatives (“Executive summary of the Continuity of Care in Medication Use Summit,” 2008; Snow et al., 2009). However, this is one of the first studies to evaluate the patient perspective regarding the utility of different components of a care transition intervention. As hospitals select from numerous possible interventions to improve hospital discharge transitions, they may wish to consider that patients responded very favorably to receiving inpatient pharmacist counseling, an illustrated discharge medication list, and a post-discharge phone call. Patient satisfaction is an important outcome, as is patient empowerment to communicate with providers and manage their own conditions.

Specifically, patients reported it was very helpful to discuss with a pharmacist the exact instructions for taking their medications after discharge and how to prevent and manage side effects, as well as other aspects of their medication self-management. Other research has shown that hospitalized patients, especially those with limited health literacy skills, often have a poor understanding of their own medication regimen (Marvanova, et al., 2011). Confusion about the medication regimen, medication non-adherence, and adverse drug events are common after patients return home from the hospital (Cua & Kripalani, 2008). Therefore, efforts to enhance medication understanding and self-management among hospitalized patients are needed. These results suggest that inpatient pharmacist counseling and a patient-centered medication list may be beneficial in this regard. Others have also found patient-centered medication instructions to be useful adjuncts to discharge counseling (Jack, et al., 2009).

Importantly, patients indicated that this intervention had an enduring effect, as they reported feeling much more comfortable discussing their medications with outpatient providers after discharge. This effect was similar among patients with either limited or adequate health literacy, suggesting that pharmacist counseling may have a durable effect in promoting patient engagement regardless of health literacy status. Indeed, others have found a hospital discharge intervention to have similar efficacy across levels of health literacy (Jack, et al., 2009). However, the great majority of care transition studies have not examined whether intervention effects may differ according to health literacy, and more research is needed given the important role health literacy may play in this context (Sunil Kripalani, et al., 2007).

The main limitation of this study is that it was conducted among a relatively small sample of patients who were participating in a randomized trial, had taken part in other follow-up calls, and were willing to complete this assessment. They may have had more positive experiences to report. It is unlikely, however, that a large response bias was present, given the high response rate.

A second limitation is that, to help address the ceiling effect common in patient satisfaction studies, we analyzed responses by reporting the top response category (very helpful) versus other responses (somewhat or not at all helpful), though we recognize this approach is imperfect. We also are cautious to not over-interpret the order of intervention components that patients rated most helpful, as patients with positive experiences may have difficulty separating out the value of different components. Moreover, an intervention component that is deemed valuable by only a minority of patients (e.g., discussion of costs and

transportation) should not necessarily be dropped, because it may have a large impact on those patients for which it is relevant.

Third, by excluding patients from the parent trial who did not manage their own medications, the overall sample may have been biased toward patients who had higher medication self-management skills. This may have affected, for example, the percentage of patients replying “not applicable” to the component of receiving help from friends and family in managing their medications. Fourth, responses of “not applicable” for discussing cost and transportation issues may be a result of the demographics of the study sample, as most patients were insured, which may indicate a higher average socioeconomic status than other populations or settings. Fifth, the prevalence of limited health literacy (23.2%) in our study sample was lower than has been estimated for the US population in general (Kutner, Greenberg, Jin, & Paulsen, 2006), and this may have affected the statistical power of our subgroup comparison. Sixth, because of the modest sample size, we did not adjust for other factors that may have influenced patient ratings, such as study site, which individual pharmacist delivered the intervention, the duration of the counseling sessions, and whether or not patients were called by a pharmacist after discharge. A final limitation relates not to the study design, but rather to the applicability of our findings. Though patients found this pharmacist intervention to be helpful, hospitals will have to make their own cost-benefit assessment of inpatient pharmacist counseling based on its effects on patient satisfaction as well as other patient outcomes.

As these limitations affect the generalizability of the study, additional research should be conducted to replicate our findings.

Conclusions

During discharge, a significant amount of information about medication management must be conveyed. The care transition period requires thorough communication between patients, family members, and providers. The PILL-CVD intervention provided inpatient pharmacist counseling, medication adherence aids, and telephone follow-up, and patients perceived it to be very helpful. By educating patients on self-care and empowering them to have a more informative discourse with their providers, it may be possible to improve patient self-management after hospital discharge, though further study is required to assess the effect on health outcomes.

Acknowledgments

Sources of Funding

This study was funded by grants R01 HL089755 and 3R01 HL0890755-02S2, and in part by K23 HL077597, K01 DK087894, and K08 HL072806.

REDCap is supported through the Vanderbilt Institute for Clinical and Translational Research by the National Center for Research Resources (1 UL1 RR024975).

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Table 1

Patient characteristics

Characteristic	N=125 (%)
Site	
Vanderbilt Medical Center	104 (83.2)
Brigham and Women's Hospital	21 (16.8)
Age *	63 (54 to 73)
Gender, Female	56 (44.8)
Race	
White	102 (81.6)
Black	21 (16.8)
Other	2 (1.6)
Years of education *	13 (12 to 16)
Health literacy (sTOFHLA)	
Inadequate	15 (12.0)
Marginal	14 (11.2)
Adequate	96 (76.8)
Cognitive function (Mini-cog)	
Dementia	16 (12.8)
No cognitive impairment	109 (87.2)
Insurance status, none	11 (8.7)
Number of pre-admission medications *	9 (5 to 12)
Medication Understanding (MUQ) *	2.50 (2.25 to 2.75)

* Median (IQR)

Table 2

Utility of Different Forms of Assistance in Hospital Discharge Transition (N=125)

Items	Very helpful N (%)	Somewhat helpful N (%)	Not at all helpful N (%)	N/A (%)
How helpful was it to...				
1. Talk with the pharmacist about your medicines before you left the hospital?	91 (72.8)	29 (23.2)	3 (2.4)	2 (1.6)
2. Get a daily medication schedule, which uses pictures to show what the medicines are for and how to take them?	87 (69.6)	18 (14.4)	7 (5.6)	13 (10.4)
3. Get a pill box? *	80 (64.5)	9 (7.3)	15 (12.1)	20 (16.1)
4. Have someone call you at home a couple of days after you got out of the hospital, to check on how you were doing?	85 (68.0)	30 (24.0)	7 (5.6)	3 (2.4)
5. Get help from friends or family to manage your medicines?	55 (44.0)	21 (16.8)	25 (20.0)	24 (19.2)
How helpful was it to talk to the pharmacist about...				
6. Exactly how you should take your medicines?	89 (71.8)	23 (18.5)	6 (4.8)	6 (4.8)
7. Reading and understanding medication labels?	75 (60.4)	28 (22.6)	8 (6.5)	13 (10.5)
8. Always filling your prescriptions on time?	76 (61.3)	21 (16.9)	13 (10.5)	14 (11.3)
9. Taking your medicines every day, without missing any doses?	73 (58.9)	29 (23.4)	12 (9.7)	10 (8.1)
10. Preventing and managing side effects? *	77 (62.6)	24 (19.5)	5 (4.1)	17 (13.8)
11. Specific problems you were having, like the cost of your medicines or transportation?	50 (40.3)	25 (20.2)	12 (9.7)	37 (29.8)

* Items 3–9 and 11 were missing 1 response each, and item 10 was missing 2 responses.

Table 3

Comfort level with patient-provider communications (N=125)

Items	Much more N (%)	Slightly more N (%)	About the same N (%)	Slightly less N (%)	Much less N (%)	N/A N (%)
After meeting with the pharmacist, how much more comfortable do you feel talking to your doctor about...						
1. The names of your new medicines? *	61 (49.6)	13 (10.6)	40 (32.5)	0 (0.0)	0 (0.0)	9 (7.3)
2. What your new medicines are for?	66 (53.7)	13 (10.6)	35 (28.5)	0 (0.0)	0 (0.0)	9 (7.3)
3. What to do with your old medicines?	43 (35.0)	11 (8.9)	44 (35.8)	1 (0.8)	1 (0.8)	23 (18.7)
4. Any problems you might have taking your medicines every day?	59 (48.0)	12 (9.8)	43 (35.0)	1 (0.8)	0 (0.0)	8 (6.5)
5. Dealing with side effects of medicines?	65 (53.3)	19 (15.6)	31 (25.4)	0 (0.0)	0 (0.0)	7 (5.7)
6. Specific problems you were having, like the cost of your medicines or transportation?	46 (37.7)	15 (12.3)	45 (36.9)	0 (0.0)	0 (0.0)	16 (13.1)

* Items 1–4 were missing 3 responses each, and items 5–6 were missing 2 responses each.

Table 4

Patients reporting “Very helpful” for each item, by health literacy level

Item	Inadequate/Marginal health literacy % (n/N)*	Adequate health literacy % (n/N)*	P-value
<i>How helpful was it to...</i>			
1. Talk with the pharmacist about your medicines before you left the hospital?	89.7% (26/29)	69.1% (65/94)	0.03
2. Get a daily medication schedule, which uses pictures to show what the medicines are for and how to take them?	88.5 (23/26)	74.4 (64/86)	0.13
3. Get a pill box?	78.3 (18/23)	76.5 (62/81)	0.86
4. Have someone call you at home a couple of days after you got out of the hospital, to check on how you were doing?	89.3 (25/28)	63.8 (60/94)	0.01
5. Get help from friends or family to manage your medicines?	66.7 (18/27)	50.0 (37/74)	0.14
<i>How helpful was it to talk to the pharmacist about...</i>			
6. Exactly how you should take your medicines?	75.0 (21/28)	75.6 (68/90)	0.95
7. Reading and understanding medication labels?	81.5 (22/27)	63.1 (53/84)	0.08
8. Always filling your prescriptions on time?	84.6 (22/26)	64.3 (54/84)	0.05
9. Taking your medicines every day, without missing any doses?	77.8 (21/27)	59.8 (52/87)	0.09
10. Preventing and managing side effects?	87.0 (20/23)	68.7 (57/83)	0.08
11. Specific problems you were having, like the cost of your medicines or transportation?	71.4 (15/21)	53.0 (35/66)	0.14

* N for each item varies based on number of people who (a) had missing responses, (b) reported the item as “not applicable,” or (c) had a missing value for a covariate.