

Satisfaction with Hospital at Home Care

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OBJECTIVES: To examine differences in satisfaction with acute care between patients who received treatment in a physician-led substitutive Hospital at Home program and those who received usual acute hospital care.

DESIGN: Survey questionnaire of participants in prospective, nonrandomized clinical trial.

SETTING: Three Medicare-managed care health systems and a Department of Veterans Affairs Medical Center.

PARTICIPANTS: Two hundred fourteen community-dwelling elderly patients who required acute hospital admission for community-acquired pneumonia, exacerbation of chronic heart failure, exacerbation of chronic obstructive pulmonary disease, or cellulitis, 84 of whom were treated in Hospital at Home and 130 in the acute care hospital.

INTERVENTION: Treatment in a Hospital at Home model of care that substitutes for treatment in an acute care hospital.

MEASUREMENTS: A 40-question survey measuring nine domains of care for patients and a 37-question survey measuring eight domains of care for family members.

RESULTS: A higher proportion of patients were satisfied with treatment in Hospital at Home than with the acute care hospital in eight of nine domains, and this difference was statistically different in four domains. Hospital at Home patients were more likely than acute hospital patients to be satisfied with their physician (adjusted odds ratio (AOR) = 3.84, 95% confidence interval (CI) = 1.32–11.19), comfort and convenience of care (AOR = 6.52, 95% CI = 1.97–21.56), admission processes (AOR = 5.90, 95% CI = 2.21–5.76), and the overall care experience (AOR = 2.98, 95% CI = 1.08–8.21). Family members of

patients treated in Hospital at Home were also more likely to be satisfied with multiple domains of care.

CONCLUSION: Hospital at Home care was associated with greater satisfaction than acute hospital inpatient care for patients and their family members. These findings support further dissemination of the Hospital at Home care model. *J Am Geriatr Soc* 54:1355–1363, 2006.

Key words: hospital at home; satisfaction with care; aged; chronic care; quality of care

Hospital at Home is a care model designed to deliver acute medical care in the home as a substitute for an acute inpatient hospital admission.¹ An underlying rationale for the development of Hospital at Home is that, by avoiding the acute care hospital environment, older persons may experience high-quality care that is associated with fewer complications, less costly for payers, and more satisfying for patients and their families.²

Satisfaction with Hospital at Home care has been examined previously. A recent Cochrane review suggested that there was evidence of greater satisfaction with Hospital at Home care than with acute hospital care, whereas caregiver satisfaction was mixed,³ although most of the models included in that review were early-discharge Hospital at Home models. Previous studies of satisfaction with Hospital at Home models that substitute for acute hospital admission employed limited measures of satisfaction.^{4–8}

The outcomes of a physician-led substitutive Hospital at Home model that demonstrated clinical and economic efficacy and feasibility, as well as greater satisfaction with care for patients and their family members based on a summary measure of satisfaction that aggregated responses across several domains of satisfaction with care, were recently reported.⁹ The aim of the current study was to examine, in greater detail, patient and family satisfaction with care received from Hospital at Home and compare it with that received in usual acute hospital care by specific domains of satisfaction. It was hypothesized that Hospital at Home care would be associated with greater satisfaction in domains of care related to healthcare providers, comfort and convenience of care, discharge processes, and overall

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care and equivalent satisfaction with regard to safety, pain control, and admission processes. In addition, it was sought to explore patient and family member characteristics associated with satisfaction with acute care.

METHODS

Patients

The target population was community-dwelling persons aged 65 and older residing within a specific catchment area who required acute hospital admission for community-acquired pneumonia, an exacerbation of chronic heart failure, an exacerbation of chronic obstructive pulmonary disease, or cellulitis.

Study Design

The Hospital at Home National Demonstration and Evaluation Study was conducted in three Medicare managed care plans and a Department of Veterans Affairs Medical Center and has been described previously.⁹ The overall study was a prospective, nonrandomized clinical trial conducted in two consecutive 11-month phases. During the acute hospital observation phase (November 1, 2000, to September 30, 2001), eligible patients were identified and followed through usual hospital care. No patients were offered Hospital at Home care during the observation phase. During the intervention phase (November 1, 2001, to September 30, 2002), eligible patients were identified at the time of admission and offered the option of receiving their care in Hospital at Home rather than in the hospital. The analysis in this article will focus on intervention-phase patients only and compare satisfaction of those who received Hospital at Home care with that of those who received care in the acute care hospital.

Description of Hospital at Home Model of Care

The Johns Hopkins Hospital at Home care model has been described previously.^{9,10} In brief, Hospital at Home provided hospital-level care in a patient's home for community-dwelling patients aged 65 and older who required hospital admission for one of the target illnesses listed above and met illness-specific medical eligibility criteria.¹¹ The conditions were chosen because they occur frequently and account for a substantial proportion of hospitalizations of older persons, diagnosis is relatively uncomplicated, and treatment is well defined and feasible to deliver in the home setting. After an initial evaluation, usually in the emergency department, the patient was taken home by ambulance. Patients received continuous direct nursing supervision for the initial portion of their stay followed by intermittent nursing visits at least daily. The Hospital at Home physician made at least daily home visits and was available 24 hours a day for urgent or emergent visits. A partner Medicare-certified home health agency provided nursing and other care components, such as pharmacy support, skilled therapies, durable medical equipment, and oxygen therapy, and independent contractors provided some services such as home radiology. A Lifeline device (Lifeline Systems Inc., Framingham, MA) was placed in the home of any patient who did not have a family member present. Diagnostic studies and treatments, including intravenous fluids and medica-

tions, oxygen and respiratory therapies, basic radiography, and others were provided at home. Illness-specific Hospital at Home care maps, clinical outcome evaluations, and discharge criteria were developed and provided a path for care. The patient was followed until stable for discharge, at which time care supervision reverted to the patient's primary care physician. Hospital at Home care substituted for acute hospital admission.

Outcome Variables

Satisfaction with the episode of care during the acute illness was measured using questions adapted from the Picker-Commonwealth Scale, developed for use by hospitals to improve patient care.¹²⁻¹⁴ The instrument, made available to the study for research purposes, was one of several that contributed to the Centers for Medicare and Medicaid Services' (CMS) effort to develop the Consumer Assessment of Healthcare Providers and Systems, a standard survey instrument to measure consumers' perspectives on the hospital care they receive. The questions are intended as patient-centric reports on specific areas in which a patient may experience problems: admission; discharge; relationship with physicians, nurses, and other staff; control of pain; and overall satisfaction. This same set of questions was adapted for use by family members to assess their satisfaction with the care provided to the patient rather than proxy assessment of patient satisfaction. The questions were modified when necessary so that they would be appropriate for the acute care hospital or Hospital at Home. New domains of comfort and convenience and safety were added. See Appendix 1 for actual questions.

In addition, respondents were asked whether they would choose to receive care in the Hospital at Home or acute care hospital again and whether they would recommend the mode of care they received to other family members or friends.

There were 40 questions in nine domains for patients and 37 questions in eight domains for family members, with one to eight questions in each domain (see Appendix 1). Reliability of the satisfaction questions for patient and family member instrument was assessed using the Cronbach's alpha statistic and demonstrated acceptable levels at 0.67 and 0.74, respectively. Response categories for each question were coded as definitely unsatisfied, somewhat unsatisfied, or satisfied. To consolidate responses within a domain and characterize the respondent as satisfied or dissatisfied, a highly conservative algorithm was adopted; if any one or more of the questions within a domain was definitely unsatisfactory or if half or more of the responses within a domain were somewhat unsatisfactory, the response for the domain was designated as unsatisfactory. Identifying unsatisfied appealed to the authors as having more certainty than designating a cutpoint for satisfied, although for presentation of results, the converse, or satisfied, was used to avoid the use of double negatives and to clarify interpretation.

Patient and family member satisfaction was assessed 2 weeks after acute care hospital or Hospital at Home admission in telephone interviews administered by a survey research firm that was not privy to study hypotheses. For the family satisfaction interview, patients, even if they lived alone, were asked to identify, at the time of admission, a

family member, friend, or caregiver who could describe the patient before his or her hospitalization. In 79% of cases, this was a family member; in 14%, it was nonfamily caregivers; and in 7%, it was an unknown relationship. For ease of reference, these persons are collectively referred to as “family.”

Independent Variables

Age, sex, and primary diagnosis were obtained on all eligible patients. Informed written consent was required for review of medical records and to perform satisfaction interviews. Sociodemographic characteristics of patients obtained at the baseline interview were age (≥ 75 vs < 75), sex, whether the patient lived alone, and whether reported family income was below the poverty level according to 1996 Social Security tables. Indicators of health status were primary admission diagnosis, illness severity at time of admission according to Acute Physiology and Chronic Health Evaluation II score (≥ 16 vs < 16),¹⁵ comorbid conditions abstracted from the medical record (≥ 6 vs < 6), whether the patient had impairment in functional status as measured using activities of daily living (ADLs)¹⁶ and instrumental activities of daily living (IADLs),¹⁷ symptoms of depression as measured using the 15-item Geriatric Depression Scale (no symptoms of depression present (score 0–5) vs moderate to severe symptoms of depression present (score ≥ 6)),^{18,19} and cognitive function as measured using the Mini-Mental State Examination (MMSE) (no cognitive impairment (score ≥ 24) vs cognitive impairment (score < 24)).²⁰ Characteristics of the family respondent included age, sex, relationship to the patient, self-reported health status (excellent, very good, or good vs fair or poor), whether the respondent had any ADL or IADL impairment, whether the respondent lived with the patient, and whether the family member had given ADL or IADL assistance to the patient in the month before the index Hospital at Home or acute care hospital admission.

Approval

The study received institutional review board approval from each study site, the coordinating center, and by officials at the Center for Health Plans and Providers at CMS. Informed written consent for participation was obtained from all participants.

Analysis

An earlier report of the study was powered on the outcome of costs and employed an intention-to-treat analysis that compared all observation-phase subjects who were treated in the acute care hospital with all intervention-phase subjects, whether treated in Hospital at Home or the acute care hospital.⁹ In this report, no data from the observation phase were used, the analysis was restricted to intervention-phase subjects only, and an “as treated” approach was employed, comparing those patients who were treated in the Hospital at Home with those treated in the acute care hospital. This latter group consisted of those who were offered and refused Hospital at Home care and those who were not offered Hospital at Home care, because they were admitted between 10:00 p.m. and 6:00 a.m. when Hospital at Home did not accept new admissions. This “as treated” analytical

approach is more appropriate in this circumstance, because it examines potential differences in satisfaction experienced by patients who chose their mode of treatment and who experienced care in these distinct settings and reduces potential temporal effects. A complete-case analysis was conducted. The respective proportions of participants consenting to data collection who also completed satisfaction interviews were similar between the Hospital at Home group (75%) and the hospital group (81%).

Bivariate analyses comparing satisfaction in each domain of satisfaction, by each of the independent variables, was performed separately for patients and family members using the chi-square or Fisher exact test. The independent variables for patients were age, sex, whether they lived alone, poverty status, comorbid conditions, functional impairment, depression status, and cognitive function. The independent variables for family members were age, sex, relationship to patient, self-reported health status, functional status, and whether the family member provided ADL or IADL assistance to the patient. To explore the question of what factors were associated with satisfaction with acute care, logistic regression was used to determine whether there was an independent relationship between site of treatment and satisfaction for each domain, adjusting always for site of treatment (Hospital at Home vs acute care hospital) and for independent variables associated with satisfaction in that domain in bivariate analyses at a statistical significance level of $P < .05$. Odds ratios and 95% confidence intervals are reported.

RESULTS

Figure 1 depicts patient flow and data availability by study group. There were 214 patients eligible for Hospital at Home care during the intervention phase of the study. Eighty-four patients received Hospital at Home care, all of whom completed a baseline interview and 63 (75%) of whom completed a patient interview at 2 weeks. One hundred thirty patients were treated in the acute care hospital, 57 of whom were approached for but refused Hospital at Home treatment and 73 of whom were not approached to enroll in Hospital at Home, because they presented for admission at times (10:00 p.m. to 6:00 a.m.) when Hospital at Home was not open for new admissions. These hospital-treated groups were combined for analytic purposes after comparison of all sociodemographic, health-status, and family-member characteristics, which revealed only one statistically significant difference; a greater proportion of patients who refused Hospital at Home had a family member who gave them help in ADL or IADL function than of those who were not approached for Hospital at Home care (82% vs 29%, $P = .004$). Of the 130 acute care hospital patients, 57 (44%) completed a baseline interview (20 who refused Hospital at Home care and 37 who were not approached for Hospital at Home care), and 46 (35%) completed a patient interview at 2 weeks. Patients treated in the acute care hospital group who consented to data collection and completed a patient baseline interview and those who did not complete a baseline interview were similar with regard to age and primary diagnosis, but the former were more likely to be male (75% vs 45%, $P = .001$). Within-group comparisons of patients who completed 2-week

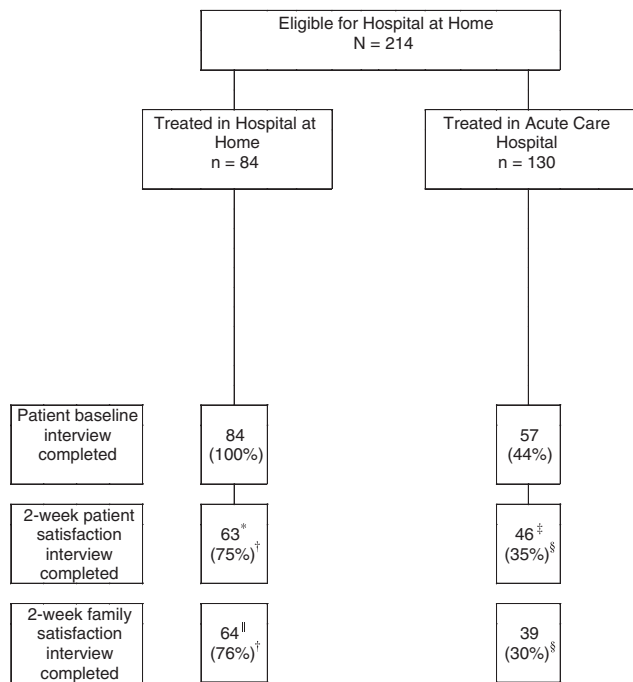


Figure 1. Patient flow and data availability by study group. *There were 73 2-week patient interviews; 10 were completed by proxy and therefore did not include patient satisfaction. [†]Percentage of all patients treated in Hospital at Home. [‡]There were 48 2-week patient interviews; 2 were completed by proxy. [§]Percentage of all patients treated in the acute care hospital. ^{||}One additional interview was obtained, but the satisfaction questions were not answered.

interviews with those who completed only a baseline interview were conducted. Of the 21 patients treated in Hospital at Home who did not complete a 2-week satisfaction interview, a greater proportion of them had poor cognition at baseline than of those who completed the interview ($n = 63$), as measured according to a MMSE score of less than 24 (48% vs 21%, $P = .02$). Of the nine patients treated in the acute care hospital who did not complete a 2-week satisfaction interview, all were aged 75 and older, compared with 61% of those who completed an interview ($P = .02$). Family satisfaction interviews were completed for 64 (76%) of the Hospital at Home patients and 39 (30%) of the acute care hospital patients. Characteristics of the family nonresponders were not available. The consent and complete case rates likely reflect the low incentive for patients treated in the acute hospital to participate in a study with a high interview burden. Neither death nor active withdrawal from the study contributed to these rates.

Patients treated in Hospital at Home and in the acute hospital were similar in sociodemographics and most health status characteristics (Table 1). One important difference was that those treated in Hospital at Home were more functionally impaired (68% had impairments in at least two IADLs vs 48% treated in the acute care hospital, $P = .04$). There were no statistically significant differences between family respondents of patients treated in Hospital at Home and the acute care hospital, although 59% of family respondents of those treated in Hospital at Home, versus 44% in the acute hospital, gave ADL or IADL care to the patient.

Figure 2 depicts the proportion satisfied by domains of care by study group for patients and family members. A higher proportion of patients were satisfied with treatment in Hospital at Home than with treatment in the acute care hospital in eight of nine domains, and this difference was statistically different in five domains. In only one domain, discharge procedures, were patients more satisfied with the acute care hospital than Hospital at Home (47% vs 43%, $P = .69$). Family members were more satisfied with treatment in Hospital at Home than with the hospital in all eight domains, and this difference was statistically significant in six domains. Analysis of satisfaction within each domain at the item level suggests that, for most domains, differences in multiple items rather than single items within a domain drove differences in proportions of patients and family members who were satisfied. There were no statistically significant differences in patient or family-member perception of safety between Hospital at Home and the acute care hospital. In addition, there were no differences in the median number of domains in which the patient or family members were satisfied with between the various Medicare managed care study sites and the Department of Veterans Affairs study site.

Table 2 depicts the odds of the patient or the family member being satisfied with a specific domain of acute care, adjusting for the site of treatment (Hospital at Home vs acute care hospital) and for additional independent socio-demographic and health status variables that were statistically associated with satisfaction in that domain in bivariate analyses. The adjusted odds of being satisfied for patients was statistically higher for Hospital at Home than for acute hospital care in four domains: relationship with physician, comfort and convenience of care, admission process, and overall care. Similarly, the adjusted odds of family member satisfaction with care was higher for Hospital at Home care in six of eight domains: relationship with physician, relationship with nurse, relationship with other staff, comfort and convenience of care, discharge process, and overall care. However, these results should be interpreted with caution given the wide confidence intervals surrounding the point estimates, which likely reflect the small number of study subjects.

There were no differences between study groups in the proportion of respondents who reported that they would choose to receive care again in the same setting (94% of patients treated in Hospital at Home vs 98% of patients treated in the acute care hospital, $P = .30$; 90% of family members of patients treated in Hospital at Home vs 95% of family members of patients treated in the acute care hospital, $P = .43$). In addition, patients reported that they would recommend the type of care they received to other family members or friends: 97% of patients treated in Hospital at Home vs 96% of patients treated in the acute care hospital, $P = .75$; and 98% of family members of patients treated in Hospital at Home vs 91% of family members of patients treated in the acute care hospital, $P = .09$.

DISCUSSION

To the authors' knowledge, this is the first study of satisfaction with a substitutive, physician-led Hospital at Home program that provides detailed data on satisfaction with

Table 1. Characteristics of the Study Population

Characteristic	Hospital at Home	Acute Care Hospital	P-value
Patient			
n	63	46	
Age, mean \pm SD	76.6 \pm 6.7	77.1 \pm 7.2	.74
Aged \geq 75, n (%)	37 (59)	29 (63)	.65
Male, n (%)	42 (67)	34 (74)	.42
Lived alone, n (%)	27 (43)	16 (35)	.39
Income below poverty level, n (%)	12 (20)	5 (11)	.23
Primary diagnosis, n (%)			.19
Pneumonia	15 (24)	18 (39)	
Chronic heart failure	14 (22)	9 (20)	
Chronic obstructive pulmonary disease	21 (33)	8 (17)	
Cellulitis	13 (21)	11 (24)	
Acute Physiology and Chronic Health Evaluation II score \geq 16, n (%)	7 (11)	4 (9)	.68
\geq 6 comorbid conditions, n (%)	37 (59)	23 (50)	.37
Impairment in $>$ 2 ADLs, n (%)*	33 (52)	17 (37)	.11
Impairment in $>$ 2 IADLs, n (%) [†]	42 (68)	22 (48)	.04
Geriatric Depression Scale score (15-item) \geq 6, n (%)	15 (24)	12 (26)	.79
Mini-Mental State Examination score \geq 24, n (%)	50 (79)	38 (83)	.67
Family respondent			
n	64	39	
Age, mean \pm SD	59.0 \pm 17.0	61.8 \pm 12.4	.35
Aged \geq 75, n (%)	15 (24)	8 (22)	.77
Male, n (%)	9 (18)	6 (17)	.87
Relationship to patient, n (%)			.81
Spouse	23 (36)	19 (49)	
Child	16 (25)	11 (28)	
Other family	8 (13)	4 (10)	
Nonfamily	10 (16)	5 (13)	
Unknown	7 (11)	0 (0)	
Lives with patient, n (%)	44 (69)	24 (62)	.45
Health status, n (%)			.84
Excellent/very good/good	48 (76)	29 (74)	
Fair/poor	15 (24)	10 (26)	
Family member has ADL* or IADL [†] impairment, n (%)	8 (13)	5 (13)	.99
Family member gives ADL* or IADL [†] care to patient, n (%)	37 (59)	17 (44)	.14

* Activities of daily living (ADLs): bathing, dressing, eating, toileting, transferring, walking.

[†] Instrumental activities of daily living (IADLs): telephone use, managing money, medication use, light housework, heavy housework, meal preparation, shopping. SD = standard deviation.

specific domains of care and controls for patient and family member characteristics. Patients and family members experienced greater satisfaction with Hospital at Home care for overall care and for multiple specific domains of care related to healthcare providers and staff, comfort, and processes of care. Of the specific domains of satisfaction measured, the greatest difference in the proportion of patients who experienced satisfaction between care venues was with admission processes and comfort and convenience associated with care. This latter domain was also important for family members. Perceptions of providing safe care was not a concern for patients or family in either site of care, and this is reassuring for Hospital at Home development, given the importance of perceptions of safety in older persons' decision to choose home as a site for treatment of acute illness.^{21,22}

Although patients and families were more satisfied with physician and other healthcare staff performance in Hospital

at Home, families but not patients were more satisfied with nursing care. It had been hypothesized that, in the home setting, the relationship between patients and nurses would be associated with greater satisfaction than in the acute care hospital, and this has been seen in previous study of a Hospital at Home program in the United Kingdom.⁴ Nevertheless, it was found that patient satisfaction with nursing was nearly identical in the two settings, and this equivalence is surprising given the fact that the Hospital at Home program examined in the current study provided patients with initial continuous one-on-one nursing care. Satisfaction with discharge processes was low for patients in both care settings and for family members of acute care hospital patients. The significantly higher level of satisfaction for family members of Hospital at Home patients in this domain may reflect enhanced communication with family members.

Patient and family member characteristics were examined in a post hoc analysis to explore the association

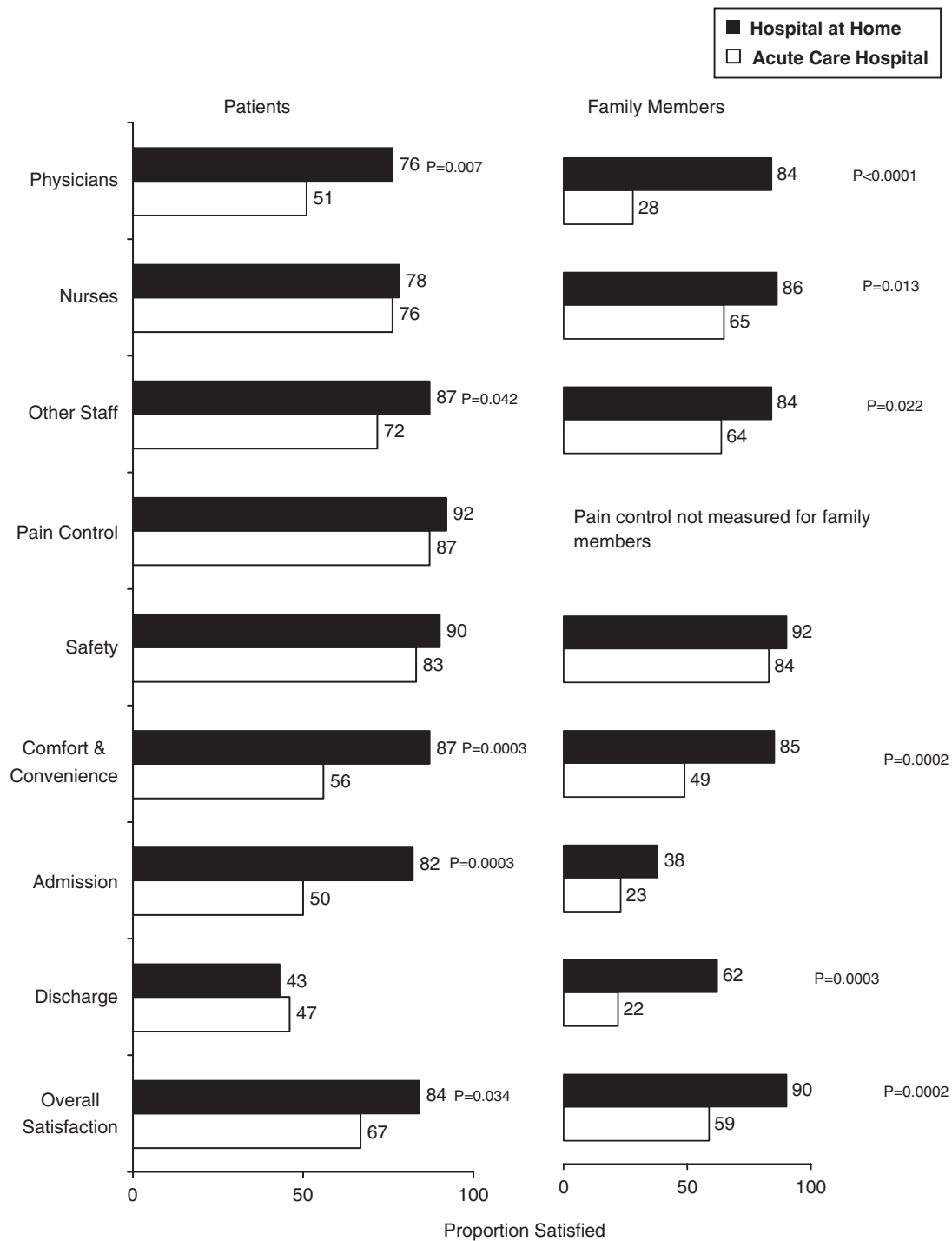


Figure 2. Proportion satisfied by site and domain of care.

between patient and family member characteristics and the odds of satisfaction with acute care. Patient and family member characteristics that were associated with satisfaction in bivariate analyses often lost statistical significance in multivariate analyses when the site of treatment was included in the model, suggesting that the effect of Hospital at Home care on satisfaction was robust. The odds of satisfaction with Hospital at Home care remained high even when a family member was a caregiver for the patient before the hospital episode, although it could have been hypothesized that care in the hospital would have provided

a respite for the family member and therefore would have been more satisfying. Studies with diverse hospital populations have found that older and poorer people were less satisfied with hospital care.^{12,13} In the current study population, poverty level was not associated with satisfaction, but advanced patient age was associated with lower satisfaction with discharge procedures.

There have been few previous studies of satisfaction with substitutive Hospital at Home programs. In an Australian substitutive Hospital at Home model with limited physician involvement, one study assessed overall satisfac-

Table 2. Adjusted Odds Ratios for Patient and Family Member Satisfaction by Domains of Satisfaction

Domain	Covariate*	Adjusted Odds Ratio (95% Confidence Interval)
Patient satisfaction		
Physician	Hospital at Home	3.84 (1.32–11.19)
	Mini-Mental State Examination score ≥ 24	4.43 (1.31–15.01)
	Patient GDS score ≥ 6	0.39 (0.13–1.22)
	Family member limited in ADL or IADL	0.15 (0.03–0.71)
Nurse	Hospital at Home	1.37 (0.45–4.11)
	Patient GDS score ≥ 6	0.42 (0.14–1.30)
	Family member helps patient with ADL or IADL	0.32 (0.10–1.08)
Staff	Hospital at Home	3.46 (0.99–12.08)
	Patient GDS score ≥ 6	0.35 (0.10–1.25)
	Family member limited in ADL or IADL	0.33 (0.05–2.16)
	Family member health [†]	1.73 (0.38–7.87)
Comfort and convenience	Hospital at Home	6.52 (1.97–21.56)
	Safety	4.62 (1.20–17.80)
Pain management	Hospital at Home	2.10 (0.61–7.19)
	Patient GDS score ≥ 6	0.19 (0.05–0.64)
	Hospital at Home	1.95 (0.43–8.90)
Admission procedures	Patient GDS score ≥ 6	0.21 (0.05–0.95)
	Family member health	7.78 (1.68–36.13)
	Hospital at Home	5.90 (2.21–5.76)
Discharge procedures	Patient GDS score ≥ 6	0.16 (0.06–0.47)
	Hospital at Home	0.92 (0.38–2.22)
	Patient aged ≥ 75	0.60 (0.25–1.49)
	Male	4.05 (1.36–12.05)
	Patient lived alone	0.41 (0.16–1.03)
Overall	Patient GDS score ≥ 6	0.35 (0.12–1.01)
	Hospital at Home	2.98 (1.08–8.21)
Family member satisfaction		
Physician	Hospital at Home	16.12 (5.60–46.45)
	Family member lived with patient	4.13 (1.39–12.23)
Nurse	Hospital at Home	3.31 (1.25–8.78)
	Staff	3.43 (1.16–10.17)
Comfort and convenience	Family member lives with patient	6.85 (2.11–22.18)
	Family member limited in ADL or IADL	0.10 (0.02–0.48)
	Hospital at Home	5.25 (1.87–14.78)
	Safety	0.31 (0.10–0.99)
Admission procedures	Hospital at Home	2.43 (0.64–9.20)
	Family member lives with patient	3.09 (0.81–11.82)
	Family member health	2.15 (0.77–6.01)
Discharge procedures	Hospital at Home	2.05 (0.79–5.36)
	Family member aged ≥ 75	4.26 (1.55–11.75)
	Hospital at Home	11.40 (3.27–40.00)
Overall	Patient aged ≥ 75	0.37 (0.13–1.09)
	Family member age ≥ 75	0.76 (0.23–2.46)
	Family member health	1.21 (0.66–2.21)
	Hospital at Home	5.61 (1.78–17.66)
Overall	Patient lived alone	0.42 (0.13–1.31)
	Patient GDS score ≥ 6	0.30 (0.09–0.98)

* Covariates—within each domain, the model was always adjusted for site of care (Hospital at Home vs acute care hospital) and for independent variables associated with satisfaction in that specific domain in bivariate analyses.

GDS = Geriatric Depression Scale; ADL = activity of daily living; IADL = instrumental activity of daily living.

[†] Family member health excellent, very good, or good.

tion with care and found better overall satisfaction with Hospital at Home than with usual hospital care for patients and caregivers.⁷ In the Leicester Hospital at Home pro-

gram, a nurse-led substitutive Hospital at Home, satisfaction was assessed using a six-item questionnaire, and better satisfaction was found with Hospital at Home in most

satisfaction domains. In addition, qualitative data from that same study suggested that Hospital at Home care was not associated with greater caregiver burden, although a few patients had concerns about lack of physician attention and medical care.⁴ In a recent New Zealand Hospital at Home program that combined admission avoidance and an early discharge scheme, patients' and caregivers' overall ratings of Hospital at Home were higher, with even higher ratings by caregivers, similar to results from the current study.⁸

Compared with these previous studies of satisfaction with Hospital at Home care, the current study has several unique strengths. First, it employed an instrument that examined, in detail, multiple domains of satisfaction based on patient and family member reports of various aspects of hospital care. Second, the study employed a conservative algorithm to rate responses as satisfied. Third, the satisfaction instrument parallels closely the Consumer Assessment of Healthcare Providers and Systems-H, a measure currently being piloted by the CMS to assess hospital quality from a consumer standpoint. Fourth, the outcome of satisfaction was controlled for patient and family characteristics using multivariate techniques. Finally, the study is the first to provide information on a physician-led U.S. Hospital at Home model. All prior studies have examined Hospital at Home models in Europe, Israel, Australia, and New Zealand, which have different healthcare systems.

The study has limitations. First, patients were not randomly assigned to treatment, and differences between study groups may be due to selection bias. However, patient and family-member characteristics in the two study groups were remarkably similar, a highly conservative algorithm was employed in defining satisfaction, and important covariates that may have affected satisfaction with care were controlled for. Second, there was a difference in overall response rates between the Hospital at Home and the usual care group, and this may have introduced additional bias into the data, although in both groups, similar proportions of those participants who agreed to data collection completed 2-week satisfaction interviews. Response rates were similar to those of previous studies of satisfaction with substitutive Hospital at Home.^{4,7} Third, the study examined relatively few patients, and this is reflected in the wide confidence intervals around the odds of satisfaction in the multivariate analyses.

The concepts of patient safety and quality of care, which have the attention of healthcare and policy experts, should be measured from the patient and family-member perspective. Satisfaction with care is a marker of healthcare quality. Coupled with the favorable clinical outcomes previously reported,⁹ the satisfaction with Hospital at Home care demonstrated in the current study bodes well for dissemination of this innovative care model.

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Appendix 1. Questions for Patient and “Family” Satisfaction Survey

1 Admission Process

- How coordinated was the admission process?
- Do you feel you had to wait an unnecessarily long time for treatment to begin?
- If you had to wait to go to your room (wait to go home) did someone explain the reason for the delay?
- How would you rate the courtesy of the staff who admitted you to the hospital (to Hospital at Home)?*

2 Satisfaction with Doctor

- Was there one particular doctor in charge of your care in the hospital (in Hospital at Home)?
- When you had important questions to ask a doctor, did you get answers you could understand?
- If you had any anxieties or fears about your condition or treatment, did a doctor discuss them with you?
- Did you have confidence and trust in the doctors treating you?
- Did doctors talk in front of you as if you weren't there?
- How would you rate the courtesy of your doctors?
- How would you rate the availability of your doctors?

3 Satisfaction with Nurse

- When you had important questions to ask a nurse, did you get answers you could understand?
- If you had any anxieties or fears about your condition or treatment, did a nurse discuss them with you?
- Did you have confidence and trust in the nurses treating you?
- Did nurses talk in front of you as if you weren't there?
- How would you rate the courtesy of your nurses?
- How would you rate the availability of your nurses?

4 Satisfaction with Staff

- Sometimes one doctor or nurse will say one thing and another will say something quite different. Did this happen to you often, sometimes, or not at all?
- Did you have enough say about your treatment?
- Was it easy for you to find someone on the hospital (Hospital at Home) staff (did you find that the nurse or doctor were easily available) to talk to about your concerns?
- When you needed help getting to the bathroom, did you get it in time?
- Did a doctor or nurse explain the results of tests in a way you could understand?
- Were your scheduled tests and procedures performed on time?
- Did you feel like you were treated with respect and dignity while you were in the hospital (in Hospital at Home)?

5 Satisfaction with Pain Control

- Do you think that the hospital (Hospital at Home) staff did everything they could to help control your pain?*
- Overall, how much pain medicine did you get?*

6 Comfort and Convenience

- How convenient was it for other persons to visit you during your hospital (Hospital at Home) stay?*
- Did your being in the hospital (Hospital at Home) disrupt your family's routine?*
- Was the hospital (Hospital at Home) quiet and restful?
- When you needed help to get out of bed, was it easy, somewhat easy, or not easy to get that help?
- Was your sleep disrupted by nurses and doctors much of the time, some of the time, seldom, or never?
- Did you have an adequate amount of privacy, not as much as you wished for, or none at all?

7 Safety

- Did you feel confident about what would happen if a medical emergency occurred?

8 Discharge Process

- Did someone on the hospital (Hospital at Home) staff explain the purpose of the medicines you were to take at home in a way you could understand?
- Did someone tell you about medication side effects to watch for (when you went home, hospital patients only)?
- Did they tell you what danger signals about your illness to watch for (when you went home, hospital patients only)?
- Did someone arrange for special care the patient needed following the hospital (Hospital at Home) stay?†
- Did they tell you when you could resume your usual activities, such as when to go shopping or drive a car?
- Did the doctors and nurses give your family or someone close to you all the information they needed to help you recover?

9 Overall Satisfaction

- How would you rate how well the doctors and nurses worked together?
- Overall, how would you rate the care you received?

* Question not asked of family respondent.

† Question not asked of the patient.