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Improving Hospice Outcomes through Systematic Assessment: A Clinical Trial

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Abstract

Background—Systematic assessment is vital to palliative care, but documentation confirming completion of systematic assessment in hospice settings is often inadequate or absent.

Objective—To determine the efficacy of systematic feedback from standardized assessment tools for hospice patient/caregiver dyads in improving hospice outcomes compared to the usual clinical practice.

Interventions/Methods—The sample of patients (n=709) newly admitted to hospice homecare in two hospices had designated family caregivers. The interdisciplinary teams (IDT) caring for these dyads were randomly assigned to either experimental (n=338) or control (n=371) conditions. Data were collected from both groups of dyads using standardized assessments on admission, and one week after each of the first two IDT meetings in which these dyads were discussed. The experimental intervention consisted of reporting data from the standardized assessments to the IDTs.

Results—Results showed improved patient depression ($p < .001$) as a result of the intervention, and improvement in both groups in patient quality of life ($p < .001$). No other patient outcomes (symptom distress, spiritual needs) or caregiver outcomes (depression, support, spiritual needs) were significantly different.

Conclusions—Assessment of depression added to usual care probably had an effect because it is not normally a focus of hospice staff. Hospice care was so good during the study that overall quality of life improved as a result of standard care and left little room for improvement in other variables.

Implications for Practice—Systematic assessment of depression is needed in hospice patients. No caregiver variables changed, which may indicate a need for a focus on caregivers.

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INTRODUCTION

Patients near the end of life experience a variety of symptoms that cause distress, and family caregivers also are distressed and at risk for depression. Systematic assessment is a vital part of palliative care, but documentation confirming completion of systematic assessment in oncology and hospice settings is often inadequate or absent.¹⁻⁶ Studies with cancer patients have demonstrated that improving assessment can improve pain outcomes⁷⁻⁹, but these studies have not been conducted in hospice or palliative care settings and have focused only on pain.

Depression is common in cancer and under-diagnosed by health care providers, including in hospice.¹⁰⁻¹¹ Providing feedback to professionals from standardized depression scales improves such detection.¹⁰ Although there is little research about assessing depression in hospice patients, we have found in our local hospice that psychosocial assessments were missing the check-offs for depression about 75% of the time.

Attempts have been made to change care provider assessment behaviors with mixed results. Traditional methods such as providing practice guidelines for physicians, and physician conferences are generally ineffective in changing provider behavior without additional incentives or practice change interventions.¹¹⁻¹⁶ One important component of effective clinical change models is providing quantitative data on important outcomes.^{2,4,6,17-20}

We provided an add-on to usual hospice care system assessment in an effort to enhance the usual process of care while not disrupting this care. The purpose of this study was to determine the efficacy of providing systematic feedback from standardized assessment tools for hospice patients and caregivers in improving hospice outcomes compared to the usual clinical practice. We hypothesized that patients and family caregivers who were cared for by members of interdisciplinary teams that received an enhanced assessment intervention would have significantly better outcomes compared to dyads from the teams that received only usual care.

Conceptual Model

This study was based on a revision of the model published by Emanuel and Emanuel in 1998.²¹ The revision was made to reflect the importance of the patient/caregiver dyad as the unit of care and to clarify the flow from left to right (Figure 1). While the fixed characteristics of the patient and caregiver may serve as covariates in a study of this type, it is the modifiable characteristics that may be affected by the study; that is, these modifiable characteristics may be changed by interventions for patients that are guided by careful assessments. While hospice care is generally well received by patients and caregivers and provides important benefits, there is considerable evidence that usual hospice care is hampered by inadequate assessment.^{1,3} We provided an add-on to usual hospice care system assessment (shown with dotted lines in the model) to enhance the usual process of care while not disrupting this care. The expected improved interventions that resulted from more systematic assessment would then bring about desirable proximal outcomes for patients, with possible distal outcomes for caregivers.

METHODS

Settings

This multisite study was conducted at two large private, not-for-profit hospices. Both hospices offer comprehensive services provided by interdisciplinary teams, with weekly meetings including RN's, MD's social workers, bereavement counselors, Home Health

Aides, volunteer coordinators and clergy. The average meeting time spent on each newly admitted patient is seven minutes. During typical team meetings no quantitative assessment data are presented on patients or caregivers, other than a pain intensity rating.

Sample

The study sample consisted of patients and family caregivers who were newly admitted to hospice home care from one of two involved hospices. Eligible patients had a cancer diagnosis and an identified family caregiver, were 18+ years old, able to read and understand English, and able to pass mental status screening. Eligible caregivers were adults identified by the hospice as the primary caregiver for a given patient who provided an average of at least 4 hours of care each day. Caregivers were excluded if they were in active treatment for cancer.

Patient Instruments

Palliative Performance Scale—The purpose of the Palliative Performance Scale (PPS) was to assess the physical condition and functional status of persons receiving palliative care.²² This instrument includes three broad areas: mobility, intake and level of consciousness in five categories (degree of ambulation; ability to do activities and extent of disease; ability to do self-care; food/fluid intake; and state of consciousness). The single item PPS is scored from 0-100% in 10% increments with zero meaning dead, and 100 meaning normal.

Validity and Reliability: Validity was assessed by comparing the PPS score with length of survival which supported its predictive validity.²² As part of an earlier project we assessed validity and reliability of the PPS. The predicted strong positive correlations between PPS and another measure (Karnofsky Functional Status) of performance status ($r=.88-.97$, $n=23$) supported construct validity. Inter-rater reliability between two raters was very strong ($r=.95$).²³

Memorial Symptom Assessment Scale-Revised—The Memorial Symptom Assessment Scale (MSAS) is designed to assess occurrence, intensity, and distress from symptoms. The original MSAS has 33 items reflecting symptoms commonly associated with cancer. Separate 4 point Likert-type scales were created for each of 3 dimensions: (1) severity of the symptom; (2) frequency with which it occurs; and (3) the distress it produces. The items are scored by summing the items in each subscale (i.e., physical, psychological). The higher the score, the more severe, frequent, or distressing the symptoms are for the patient. Validity and reliability data have been strong when the tool was used with persons receiving active cancer therapy.²⁴

For this project, a *revised* MSAS was used that was modified for use with hospice patients with cancer to increase appropriateness of items and to decrease burden on very ill patients. A group of hospice experts including researchers reviewed the symptoms and removed those that seemed least likely to be problematic for hospice patients; for example alopecia is a side effect seen with chemotherapy but seldom in palliative care.²⁵ In addition, a constipation item was added because it had been omitted from earlier versions. A total of 25 items has been included in the revised version of the MSAS. Items are rated from 0 to 4 for severity and from 0 to 4 for distress, resulting in subscale scores for intensity and distress that range from 0-100 for each.

Validity and Reliability of the Revised MSAS for use with hospice patients with cancer were assessed. Study of validity included correlation with quality of life (HQLI) scores. As predicted, the correlation between MSAS distress scores and HQLI scores were moderately

strong and negative ($r = -.72$; $p < .001$). This provided further support for construct validity of the MSAS for use with cancer patients near the end of life. In addition, reliability of the intensity and distress scores were good ($r = .73-.74$) using coefficient alpha.²⁵

Hospice Quality of Life Index-14—The Hospice Quality of Life Index-14 (HQLI-14) is a shortened version of the previously used and validated Hospice Quality of Life Index.²⁶ The HQLI includes three aspects of overall quality of life: Psychophysiological Well-being; Functional well-being; and Social/spiritual Well-being.²⁶ Evidence of validity for the original was provided by the ability of the HQLI to differentiate between hospice patients and apparently healthy controls using both discriminate analysis ($p = .00$) and comparison of means ($p = .00$). The finding that HQLI scores correlated at the expected level ($r = .26$; $p = .00$) with functional status scores provides further evidence of validity; this finding was expected because while functional status is related to quality of life, QOL encompasses much more than functional status. Further, the Functional Well-being subscale correlated more strongly with functional status scores ($r = .53$; $p = .000$), supporting the validity of this subscale. Finally, factor analysis confirmed the factor structure of the HQLI. Reliability of the HQLI was provided by generation of coefficient alphas for both total scale scores and subscale scores. Subscale alphas all were .84 and the total scale alpha was high for both cancer ($r = .88$) and AIDS ($r = .93$) patients.²⁷

The shortened version (HQLI-14) is designed for repeated clinical use with hospice patients. Each of the 14 items is scored on a 0 to 10 scale with 10 being the most favorable response; item scores are added to obtain a total scale score ranging from 0 (worst quality of life) to 140 (best quality of life). Mean scores in a group of 255 hospice patients with cancer from an earlier study²⁶ were calculated for the total HQLI-14. The mean total was 101.2 ($SD = 19.2$). Only total scores were used in this present study.

Validity & Reliability: As part of this current study, construct validity of the short form was evaluated by correlation with the original HQLI. The correlation between total scale scores was very strong at $r = .94$ ($r = .000$). Correlations between the original subscales and the shortened subscales were as follows: Psychophysiological well-being ($r = .90$, $r = .000$), Functional well-being ($r = .96$, $p = .000$), and Social/ spiritual well-being ($r = .89$, $p = .000$), providing excellent evidence of the validity of the shortened HQLI. Cronbach's alpha for the total tool was strong ($r = .77$).

Chart Audit—In this project, the intervention was the addition of standard assessment data provided to the IDT with the goal that they use the information to improve the interventions offered to patient and caregiver. Chart Audit data included number of home visits by nurses, aides, social workers/counselors, or chaplains during the two weeks following the first participation of the RA's in the IDT conference (Figure 2). This data was collected on a Chart Audit Form to determine whether there were more home visits for patients in the experimental group as a result of the data reported at the team conferences.

Instruments for Both Patients and Caregivers

Center for Epidemiological Study-Depression Scale—The Boston short form of the Center for Epidemiological Studies – Depression (CES-D) is a 10 item true-false instrument validated for use in clinical settings. Items are scored as either present or absent. Evidence of validity and reliability has been strong; research indicated that Cronbach's alpha was .92 for this short form, and test-retest reliability was .83. Correlation of the short form and full CES-D was .88, supporting construct validity.²⁸

Spiritual Needs Inventory: The purpose of the Spiritual Needs Inventory is to assess the extent to which individuals have spiritual needs and which of these needs remain unmet.³ This 17-item questionnaire has two main parts. First the patient and caregiver were asked to rate the items in response to the stem: “In order to live my life fully, I need to:” This stem is followed by items in *column A* such as “Sing/listen to inspirational music” and “Talk with someone about spiritual issues”. The subject responds on a scale in *column B* from 1 (never) to 5 (always). Scores in this section may range from 17 to 85 with a higher score representing a greater spiritual need. In *column C*, the respondents indicated which of these needs remained unmet by marking yes or no. Individual categories and/or questions also may be viewed for areas of strength or areas for intervention by the Chaplain for care-planning issues.

Validity was assessed²⁹ using factor analysis which confirmed the inclusion of all items. *Reliability* was assessed using Cronbach’s alpha and indicated a high degree of internal consistency (alpha=.85).

Short Portable Mental Status Questionnaire—The 10-item Short Portable Mental Status Questionnaire (SPMSQ) was used as a screening instrument for cognitive impairment. The SPMSQ has demonstrated validity in detecting moderate to severe cognitive impairment and has proven to be effective in screening both patients and caregivers for an earlier hospice project.³⁰ Eight or more correct answers out of ten items qualified the patients and caregivers to remain in the study.

Demographic Data—Demographic data was collected from patients, caregivers and patient records. Patients and caregiver data included: age, gender; education, occupation, employment and religious affiliation. Additional patient data included cancer type and length of time since diagnosis. It was assumed that if patients were admitted to hospice with a primary diagnosis of cancer (their predicted cause of death), they would all have advanced stage cancer.

Procedures

Following approval by each hospice and the University Institutional Review Board, home teams in each of the hospices were identified that were equivalent in make-up and type of patients and randomly assigned to receive either standard care (Control) or standard care plus systematic assessments (Intervention). Because of the large size of the involved hospices (1,000 patients/day), these home teams were stable and set up in geographic areas such that there was virtually no crossover of staff from one team to another.

Patients and caregivers from these teams were recruited for the study, and both signed consent forms. All patients and caregivers dyads who met study criteria were approached within 24-72 hours of admission. Patients and caregivers both were screened using the Short Portable Mental Status Questionnaire (SPMSQ).

Eligible patient/caregiver dyads were identified at the beginning of each day by research assistants (RAs) who were experienced hospice staff working *only* for the study during the data collection period. Because the RA’s worked only for the project, and team membership in the IDTs was stable, there was no opportunity for cross-contamination of the hospice interdisciplinary team members. The RAs contacted caregivers to arrange visits where the study was explained, consent of both patient and caregiver obtained, and the mental status of the patient and caregiver assessed with the SPMSQ. Baseline data was collected from dyads who both met eligibility criteria.

Intervention—IDT members of patients and caregivers in the Intervention group received reports of the standardized data from the RAs who collected data. The RAs shared, in a structured format, the results of the assessments they had conducted (Table 1). These reports were given at two IDT conferences, including the first one the week after admission and the second one the following week (Figure 2). The RAs did not offer suggestions for changing care plans. A standardized written report was given to team members during the IDT conferences. The oral report lasted less than 4 minutes.

The Control group completed all of the same standardized assessments that were completed by members of the experimental group; however, no reports were made to the IDT.

Data Collection—The RA team from each hospice included an experienced hospice RN and an experienced hospice social worker. The RN collected patient data while the social worker was collecting caregiver data. The RA's were working only for the study and did not provide any hospice care; this helped to minimize contamination. If patients asked for assistance with routine non-emergent care, they were gently referred to their hospice nurses.

Baseline data were collected from newly admitted hospice patients and their caregivers following consent and screening. Post-intervention data collection occurred at approximately one week after the first IDT conference in which the patient was discussed (1 to 8 days after admission to hospice) and again approximately one week after the second IDT conference in which the patient was discussed (8 to 15 days after admission). Thus, patients could be involved in the study up to three weeks following hospice admission, depending on when the IDTs routinely met. The RAs were also responsible for auditing charts using the Chart Audit Form for subjects in both the Intervention and Control groups to assess numbers of home visits each week during the study period.

Quality Controls—Steps were taken to insure that there were no shifts in the intervention from the beginning to the end of the study and no variations from site to site. To insure consistent compliance by the RAs with the intervention protocols, more than 10% of all intervention team conferences were attended by the Project Manager who used a standardized checklist during the IDT Conference to evaluate the presentation of data by the RAs. Following the IDT meeting, the project manager reviewed the checklist with the two RAs. These checklists were assembled by the project manager for review each month by investigators to demonstrate that the interventions were provided according to the protocol, and to insure that there was no shifting away from the protocol.

To insure there was no shift in routine care as a result of the study (Hawthorne effect), caregivers were routinely asked at the end of the intervention about the amount of time the IDT members spent discussing symptoms with them. This did not increase over time in either group.

If severe symptoms or depression were detected in either patients or caregivers, the hospice team was immediately notified. These patients were then removed from the study.

Statistical Analysis: Prior to the main analyses, patient and caregiver medical and demographic characteristics were compared to verify the randomization scheme and differences as a function of study site were also compared using ANOVAs for continuous outcomes and chi square for categorical variables. Any significant differences between groups at baseline were used as covariates in subsequent analysis.

Longitudinal changes in outcomes for caregivers across the three times of measurement (baseline, week one, week two) were examined using random effects models, which allow

inclusion of persons for whom complete data is not available.^{31,32} For each outcome, four effects were estimated corresponding to an intercept or average value for all groups at the mid-point of the study, a group effect that examines whether differences at the intercept varied as a function of intervention group, longitudinal changes over time, and a group $\times$ time interaction. The latter term allowed us to determine whether the trajectories of change varied systematically across the intervention groups. Comparable analyses were applied for the hospice team visit data by group and visit (admission, week 1, week 2).

Results

Baseline Demographic Characteristics

Demographic characteristics for patients and caregivers are shown in Table 2. The Control and Intervention groups were comparable on every variable except for patient years of education ($F [1, 704] = 4.21, p = .041$). Data were pooled across sites for the main analyses because there were no group $\times$ site interactions.

Longitudinal Attrition Analyses

Of the original 716 participant dyads randomly assigned to the Control or Intervention groups, 350 (48.8%) dyads participated in all three measurement points, whereas 366 dyads left the study at some point over the course of follow-up resulting in an attrition rate of greater than 51%. Figure 1 displays the flow of patients across the time of study. The effect of longitudinal attrition on the composition of the sample was examined by comparing baseline demographic characteristics for persons who did or did not complete all of the longitudinal assessment. In dyads that completed the study, patients were older (74.05 vs. 71.83; $F [1, 703] = 5.76, p = .017$) and had higher functional status scores at baseline (PPS = 58.57 vs. 55.14; $F [1, 703] = 18.98, p < .001$). No other comparisons were statistically significant.

Random Effects Models of Change—Table 3 displays the results of the random effects models of change for the four patient outcomes (Depression, Distress, Spiritual Needs, Quality of Life) and the three caregiver outcomes (Depression, Received Support, Spiritual Needs). Two of the patient outcomes showed either a statistically significant effect of time or an interaction between group and time. Patient depression scores showed a statistically significant group $\times$ time interaction indicating that the control and intervention groups declined at different rates on this outcome. Further analyses, separating the effects by intervention group revealed that the effect of time in the intervention group (estimate = $-.06$, $SE = .01, p < .001$) was greater than the effect of time in the control group (estimate = $-.02$, $SE = .01, p = .038$). As shown in Figure 2 patients in the treatment group showed greater improvement in depression. In addition, a statistically significant effect of time was observed for patient quality of life (HQLI), but the interaction between time and intervention group was not statistically significant and indicated that the groups improved at similar rates over the follow-up period. The parallel gains in patient HQLI are shown in Figure 3. For the remainder of the patient outcomes, as well as all of caregiver outcomes, none of the effects of time or the interaction between time and intervention group attained statistical significance. Follow-up bereavement data for caregivers was not analyzed for this paper, but will be reported separately.

Audit results are presented in Table 4, showing the average number of contacts (visits or calls) per week by various members of the IDT at each of the three time points. The results indicate that the groups failed to change over time ($p > .05$) and that intervention group status did not modify these trajectories (p 's $> .05$); however, it should be noted that the mean levels for these contacts were very low.

Discussion

The main goal of our project was to examine whether adding data from a systematic assessment of hospice patients and family caregivers to the reports at hospice team meetings would result in improved patient and caregiver well being. We were able to gather comprehensive assessment data and teams were, for the most part, receptive to this information. The significant finding was that patients in the Intervention condition showed significantly greater improvement in depressive symptoms over the three week follow-up period than patients in the Control condition. In situations where patients are nearing the end of life, sadness is expected so that depression may not be suspected when patients appear blue. Thus, the addition of the systematic assessment of depression as an add-on to usual care probably had a greater effect because it is not a symptom on which hospice staff normally focus their efforts. On the other six dependent variables studied, the Intervention and Control groups did not differ over time. The improved outcomes in patient depression are consistent with earlier work that indicated that expert information and systematic assessment data increased diagnosis of this troublesome problem and decreased symptoms.^{10,14} Improving depression is an important way of improving overall quality of life of patients and their families during this difficult time.

The impact of the intervention for problems other than depression was mixed and we cannot argue that it made a clinically significant improvement beyond usual hospice care. This inability to demonstrate a significant improvement in outcomes as a result of a provider intervention is consistent with earlier studies.^{13-15,33-34} Apparently more motivation for the providers is required to change practice.

There was one unexpected finding from our results. Patients in both the Intervention and Control conditions reported improved quality of life over the three week follow-up. It seems counter-intuitive that terminally ill patients would report improved quality of life during a time they are enrolled in hospice care. This improvement in both groups speaks to the very high quality of the hospice care delivered in the settings in which we conducted the study. Both are large hospices with stable and experienced staff; these factors may have contributed to their success.

The results from our Chart Audit data provide some clues as to why the intervention may not have been effective in improving patient and family well-being in areas other than depression. Our results show that, on average, hospice patients and caregivers received very low levels of services from any staff other than nurses, (Table 4) and the intervention did not appear to increase the number of visits for the intervention group; however, it is not clear how accurate this chart audit data might have been. For example, the average number of visits per week by psychosocial staff was about 1.2 at the time of admission, and actually decreased for both groups over the next two data points. This result is to be expected given the relatively small numbers of psychosocial staff in hospices compared to nurses. Perhaps the improved depression outcomes in patients resulted from social workers and counselors focusing their visits on the patients with the highest number of depressive symptoms, something that would not be obvious in the average number of visits for the group. While we do not have data on whether the intervention altered the specifics of staff visits (e.g. whether more attention was paid to certain problems), the lack of impact on some of our dependent variables suggests that there were not dramatic changes.

We see two likely explanations for the somewhat limited results. First is the high quality of the usual hospice care delivered. It may be difficult to demonstrate improvements in hospice care if the level of service provided is already of very high quality. However, in our previous research²³ in a similar setting, we found that a structured intervention for caregivers did

improve quality of life and decrease burden for family caregivers of hospice cancer patients. In that study, the focus was on providing information and problem solving skills directly to family caregivers. Second, providing information alone is a relatively weak intervention for changing staff behavior. Previous research in other healthcare settings has also generally found that providing information to healthcare providers does not alter their practice much.¹³⁻¹⁵ For example, Callahan and colleagues³⁵ found that intervention in primary care emphasizing extensive physician education and individualized feedback to physicians about depressed patients increased charting of depression, and prescription of antidepressant medications, but did not improve patient depression. More potent interventions that actually implement collaborative care and make policy changes in the organization have had much better outcomes^{2,36}

This study had a number of significant strengths. We were able to attain a sizeable sample and complete successful assessments. The measurement battery was brief but addressed many important clinical issues. Although not randomized by dyad, but by team, the Intervention and Control groups were highly similar (Table 2).

However, there are a number of important limitations to be noted. First, we offered information about the dyads to the team who were mostly receptive to it, but had no assurance that they valued or used the information. Our research team members commented that the hospice team sometimes seemed to “tune them out” while they were reporting assessment data. Second, we experienced high levels of attrition, greater than 51%, a fact of life when studying terminally ill hospice patients. Although patients are screened to include patients who have the best opportunity of surviving, predicting length of stay is not very dependable. Third, by selecting only patients who were alert and able to self-report and retaining only patients who remained functional throughout the study; we might have decreased the opportunity to improve outcomes to some unknown degree. Finally, an information-only intervention may have been insufficient to lead to staff behavior change. Future studies may need to use stronger interventions that actually articulate changes in clinical care or provide algorithms rather than just systematically reporting problems.

Conclusions

While our results indicate significant improvement in patient depression due to the intervention, they do not show impressive gains for the intervention group compared to controls on other variables. Further, the lack of improvement of caregiver variables in either group over time may suggest the need for greater attention to this group. Nevertheless, we believe that the findings are important. Hospice is an effective service, but efforts to improve hospice care should be a high priority. Other investigators, clinicians, and administrators seeking to improve hospice services should recognize that the bar may be quite high in terms of the magnitude of intervention needed to significantly improve hospice care

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Figure 1. Modified Emanuel & Emanuel (1998) model for a peaceful death

Figure 2.
Data Collection Schedule

Figure 3.
Patient Depression Scores over time

Figure 4.
Patient Quality of Life Scores over Time

Table 1

Variables and Scores Included in Standardized Report to IDT by Research Staff

Variable Reported	Scoring
Patient Depressive Symptoms	0 not at all to 10=Very Depressed (cut-off=4)
Symptom Distress total	0-100
Individual Symptoms Listed:	
• Intensity of each symptom	0 to 4
• Distress from each symptom	0 to 4
Quality of Life total Scores	0 to 140
• Lowest of the 14 item scores	0 to 10
Patient Unmet Spiritual Needs	0 to 17
• Two or three highest needs	Specify unmet needs
Caregiver Unmet Spiritual Needs	0-17
• Two or three highest needs	Specify unmet needs

Table 2

Baseline Demographic Characteristics for Patients and Caregivers

		Total	Control	Experimental
N		709	371	338
Caregiver Age	M	65.37	65.49	65.24
	SD	13.76	14.24	13.24
Caregiver Gender	(% Female)	73.6	73.3	74.0
Caregiver years of Education	M	13.21	13.27	13.15
	SD	2.67	2.65	2.69
Patient age	M	72.66	72.67	72.65
	SD	12.14	11.60	12.73
Patient Gender	(% Female)	43.7	43.7	43.8
Patient years of Education	M	12.71	12.94	12.46 ^a
	SD	2.95	3.02	2.85
Patient Palliative	M	57.06	57.18	56.92
Performance scale	SD	10.95	11.13	10.76
Patient SPMSQ	M	9.23	9.27	9.20
	SD	.93	.89	.97

^a
p < .05

Table 3

Summary of random effects model over the follow-up as a function of intervention group status.

Outcome	Model term	Estimate	SE	p
Patient CES-D	Intercept	4.51	.11	<.001
	Group	.01	.13	.929
	Time	-.02	.01	.023
	Group $\times$ Time	-.03	.01	.027
Patient MSAS Distress	Intercept	1.99	.06	<.001
	Group	-.08	.07	.238
	Time	-.01	.01	.628
	Group $\times$ Time	.00	.01	.991
Patient HQLI	Intercept	102.33	1.07	<.001
	Group	1.65	1.30	.206
	Time	.29	.08	<.001
	Group $\times$ Time	.03	.12	.811
Patient Spiritual Needs	Intercept	1.67	.10	<.001
	Group	-.23	.12	.062
	Time	-.02	.09	.058
	Group $\times$ Time	.02	.01	.158
Caregiver Received Support	Intercept	3.67	.03	<.001
	Group	.02	.04	.618
	Time	.00	.00	.964
	Group $\times$ Time	.01	.00	.228
Caregiver CES-D	Intercept	4.48	.10	<.001
	Group	-.11	.12	.367
	Time	-.01	.01	.104
	Group $\times$ Time	-.01	.01	.574
Caregiver Spiritual Needs	Intercept	1.21	.14	<.001
	Group	-.08	.17	.637
	Time	.01	.01	.271
	Group $\times$ Time	.02	.02	.138

Table 4

Hospice Team Visits over Time for Patients with Complete Longitudinal Audit Data

		Time 1	Time 2	Time 3
N		420	420	420
Nurse visits	M	3.4	2.2	2.5
	SD	1.4	1.4	1.7
HHA visits	M	.50	.80	.9
	SD	1.1	1.4	1.5
Volunteer visits	M	.02	.06	.05
	SD	.15	.31	.23
Physician visits	M	.3	.2	.2
	SD	.5	.4	.4
Psychosocial visits	M	1.2	.5	.6
	SD	.6	.6	.7
Chaplain visits	M	.1	.2	.2
	SD	.3	.4	.5
ARNP/PA visits	M	.1	.1	.1
	SD	.4	.3	.3