

Characteristics of Hospitalized Cancer Patients Referred for Inpatient Palliative Care Consultation

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Abstract

Background: Palliative care is associated with improved patient and family outcomes and lower cost of care, but studies estimate that <50% of hospitalized adults in the United States who are appropriate for palliative care receive it. Few studies have addressed demographic and clinical factors associated with receipt of palliative care.

Objective: Our aim was to identify characteristics of hospitalized advanced cancer patients that are associated with referral to an interdisciplinary hospital-based palliative care team.

Methods: The data are from a prospective observational study of hospitalized advanced cancer patients in five hospitals. We used multivariable logistic regression to estimate the relationship between patient characteristics and palliative care referral.

Results: The sample includes 3096 patients; 81% received usual care and 19% were referred to palliative care. Advanced cancer patients were twice as likely to receive palliative care referral if, at admission, they needed assistance with transfer from bed ($p=0.002$) and about 1.5 times as likely if they were taking medication for pain ($p=0.002$), nausea ($p=0.04$), or constipation ($p=0.04$). Patients with more comorbidities ($p=0.001$) and higher symptom burden ($p=0.001$) were more likely to be referred.

Conclusion: Advanced cancer patients were more likely to be referred to the palliative care consultation team if they had high symptom burden at hospital admission. Overall a minority of advanced cancer patients were referred. Standardized screening for palliative care may be needed to ensure that advanced cancer patients receive the highest quality of evidence based care.

Keywords: advanced cancer; hospital care; palliative care

Introduction

THE MOST SIGNIFICANT CHALLENGE facing the United States health system is the increasing prevalence of multimorbidity, functional impairment, and dementia among older adults. Currently half of the Medicare budget is accounted for by 16% of recipients with six or more chronic conditions,¹ and program expenditure is projected to double between 2015 and 2025 in the context of population aging.² Of major chronic diseases, cancer is the second leading cause of death³ and accounts for the highest per capita expenditure.^{4,5} Populations with progressive life limiting illnesses incur high costs and poor outcomes from a healthcare system designed to provide acute episodic care.⁶⁻⁹

Palliative care is focused on improving quality of life for people with serious illness and their families.¹⁰ It is most frequently provided as a consultation service from a hospital-based interdisciplinary team.¹¹ Palliative care is associated with improved patient and family outcomes¹²⁻¹⁵ and lower cost of hospital care.¹⁶ The American Society of Clinical Oncology (ASCO)¹⁷ and the National Comprehensive Cancer Network (NCCN)¹⁸ recommend concurrent palliative care as the standard of practice for all patients with advanced cancer.

Despite these guidelines and evidence that patients and families have a preference for palliative care,²⁰ a recent study estimates that <50% of patients with advanced disease or potentially life limiting conditions receive palliative care

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when hospitalized.²¹ Moreover, despite evidence showing benefits from early palliative care, it is frequently provided late in the disease process and close to death of the patient.^{15,22} Analysis of nationwide provision suggests that while over 90% of large (300+ beds) hospitals have a palliative care program,¹⁹ most teams fail to meet staffing guidelines.²³

To date there has been little consideration of which factors are associated with receipt of palliative care. Such evidence promises two important benefits. First, in the context of underprovision against clinical guidelines, it can help identify who receives palliative care and who does not and so identify underserved populations who might benefit from increased access. Second, in the context of evidence that palliative care is cost-effective for complex and multimorbid patients who drive high expenditures,^{24,25} it can help understand whether scarce resource of palliative care specialists is allocated where it is most beneficial.

To address this gap we draw on our multicenter prospective study of hospitalized cancer patients to examine the patient-level factors that are associated with referral to a palliative care consultation team (PCCT).

Patients and Methods

Study design and setting

We conducted an observational, multisite prospective study to examine the effect of inpatient PCCTs on symptom management, family satisfaction, and utilization for patients admitted with advanced cancer to five hospitals between 2007 and 2011 (The Palliative Care for Cancer study).^{25,26} All five participating hospitals are high-volume tertiary care medical and cancer centers with well-established PCCTs. All participants signed written informed consent. The institutional review board (IRB) at each hospital approved the study. This analysis examines patient characteristics associated with receipt of an inpatient palliative care consultation during the hospital stay. Details on study methods may be found at: https://projectreporter.nih.gov/project_info_description.cfm?projectnumber=5R01CA116227-04

Participants

Patients were eligible for the study if they were admitted to a participating hospital, were 18 years or older, had a primary diagnosis of metastatic solid tumor, central nervous system (CNS) malignancy, locally advanced head, neck, or pancreatic cancers, metastatic melanoma, or transplant-ineligible lymphoma or multiple myeloma. For inclusion in the study, patients had to be enrolled within 48 hours of admission. Patients were excluded if their attending physician did not give permission to recruit their patients or if the patient did not speak English, had a diagnosis of dementia, was unresponsive or nonverbal, was admitted for routine chemotherapy, died or were discharged within 48 hours of admission, or had previously received a palliative care consultation.

Variables

Outcome of interest. Our primary outcome of interest for this analysis is whether or not the patient received a palliative care referral to the PCCT during the hospital stay. Patients received specialist-led PCCT services upon referral by their attending physicians. PCCTs were interdisciplinary

consistent with national quality of palliative care guidelines (cite NCP guidelines) and provided services as specified by the referring physician.²⁷ These included clarification of goals of care and treatment options and support for patients and family members in selecting treatments consistent with their goals of care. The PCCTs at all five sites were trained in a standardized protocol approach to consultation, including use of a standard rounding form and symptom assessment tool. Adherence to protocols was monitored by the investigators. Training was provided for all new PCCT members at the five sites. Usual care included each hospital's routine assessment and treatment of pain and other symptoms, function, nutrition, and emotional concerns. Chaplaincy and psychiatry were available at all sites. These standard usual care services were also available to PCCT patients at all sites.

Predictor variables. Using the Anderson model of healthcare utilization,²⁸ we measured predisposing factors, including patient age (years), gender, race (white vs. non-white), education (more than high school vs. high school or less), marital status (married vs. not currently married), and primary diagnoses as (1) metastatic solid tumor, including anal, breast, colon, rectum, esophageal, gall bladder, head and neck, kidney, liver, lung, pancreas, prostate, stomach, and sarcoma; (2) multiple myeloma; (3) gynecological malignancy, including cervical, endometrial, uterine, and ovarian; (4) CNS malignancy; (5) lymphoma; and (6) other malignancies, including carcinoid, melanoma, mesothelioma, penis, thyroid, and vulva cancers. We measured specific medical factors, including functional status at admission (no assistance, partial or complete assistance with bathing or transfer from bed to chair). In addition, we measured whether or not the patient was taking medication for pain, nausea, constipation, depression, and/or anxiety at enrollment. Symptoms were measured using the Condensed Memorial Symptom Assessment Scale (CMSAS).²⁹ The CMSAS is a 14-item symptom inventory in which the following symptoms are rated by the patient on a 5-point Likert-type scale: lack of energy, lack of appetite, pain, dry mouth, weight loss, feeling drowsy, shortness of breath, constipation, difficulty sleeping, difficulty concentrating, nausea, worrying, feeling sad, and feeling nervous. The CMSAS measures the frequency, severity, and level of distress associated with physical and psychological symptoms. We used the physical and psychological subscales to measure symptom burden. We used the Elixhauser Comorbidity Index to measure patient comorbidity based on ICD-9-CM codes.³⁰ Hospital site was an indicator variable for each hospital.

In addition, we measured enabling resources, including living at home seven days before hospital admission, home care (visiting nurse or home health aide) in the week before hospitalization, insurance status (receiving Medicare or Medicaid), and presence of advance directives (proxy or living will) at admission. Attending physicians evaluated need for specialist palliative care and referred to the PCCT.

Data sources

Clinical and demographic data for the analysis come from medical record review by trained project staff and patient interviews at admission.

Statistical methods

We used a hospital fixed-effect, multivariable logistic regression to estimate the relationship of patient factors at baseline with receipt of an inpatient palliative care consult during the hospital stay.

Results

Participants and their characteristics

A total of 5939 patients were admitted to study sites with an advanced cancer diagnosis during the study period. Of these, 1562 (26%) refused to participate and 1159 (20%) did not meet eligibility criteria. Three thousand two hundred eighteen patients were enrolled in the study. There were 122 (4%) patients with insufficient data collected at baseline. Thus, the analytic sample includes 3096 patients with advanced cancer of whom 2502 (81%) subsequently received usual care and 594 (19%) received PCCT referral.

Table 1 shows descriptive characteristics of the advanced cancer sample classified by receipt of palliative care versus usual care. The groups differed at the bivariate level as follows. A higher proportion of patients referred to the PCCTs had Medicare and/or Medicaid, solid tumor disease, lymphoma, and needed assistance with bathing and transferring from bed to chair compared to usual care patients. In addition, at admission a higher proportion of PCCT patients were taking medication for pain, nausea, constipation, depression, and anxiety compared to the usual care patients. A higher proportion of PCCT patients compared to usual care patients used home care services in the week before admission. PCCT patients had more comorbidities and higher psychological and physical severity of illness compared to usual care patients. A higher proportion of usual care patients were white, married, and had advance directives compared to patients referred to the PCCTs.

Table 2 shows results from the multiple variable logistic regression of receipt of PCCT referral regressed on patient factors at admission. Advanced cancer patients were more likely to receive specialist palliative care referral if, at admission, they needed assistance with transfer from bed to chair (adjusted odds ratio, 2.1; 95% confidence interval [CI], 1.55–2.76; $p=0.002$), if they were taking medication for pain (adjusted odds ratio, 1.5; 95% CI, 1.55–1.91, $p=0.002$), nausea (adjusted odds ratio, 1.3; 95% CI, 1.01–1.60, $p=0.04$), and constipation (adjusted odds ratio, 1.3; 95% CI, 1.01–1.55, $p=0.04$). Patients with more comorbidities (adjusted odds ratio, 1.2; 95% CI, 1.11–1.28, $p=0.001$) and higher physical symptom burden (adjusted odds ratio 1.7; 95% CI, 1.51–2.01, $p=0.001$) were more likely to receive PCCT referral. Patients were less likely to receive palliative care referral if their advanced cancer diagnosis was lymphoma compared to other diagnoses, but this finding was significant at only one of the five sites. Odds of receiving palliative care referral were lower at higher levels of psychological symptom burden (adjusted odds ratio, 0.9; 95% CI, 0.79–0.95, $p=0.002$). Patient age, gender, and race were not associated with receipt of PCCT referral compared to usual care. Advanced cancer patients were less likely to receive a PCCT referral at sites 1 and 2 compared to site 4 and were more likely to be referred at site 5 compared to site 4.

TABLE 1. CHARACTERISTICS OF THE SAMPLE AT BASELINE (N= 3096)

Characteristics	Palliative care (n=594)	Usual care (n=2502)	p
Age, years (SD)	60.0 (12.41)	60.4 (12.24)	0.561
Male gender (%)	42.42	44.76	0.302
White race (%)	67.34	77.42	<0.001
More than high school education (%)	42.76	52.80	<0.001
Married (%)	49.49	58.87	<0.001
Lived at home seven days before hospital admission (%)	96.73	97.63	0.216
Insurance, Medicare (%)	50.84	40.41	<0.001
Insurance, Medicaid (%)	18.69	9.71	<0.001
Advance directives (%)	50.67	56.31	0.013
Primary diagnosis (%)			
Solid tumor	72.73	65.05	<0.001
Hematological malignancy	1.85	3.04	0.116
Gynecological malignancy	10.27	12.32	0.167
CNS	1.68	2.72	0.148
Lymphoma	2.69	4.64	0.035
Other malignancy	10.77	12.24	0.324
Functional status (%)			
Needs partial or complete assistance with bathing	32.08	13.64	<0.001
Needs partial or complete assistance with transfer from chair	33.33	11.86	<0.001
Medications (%)			
Pain	76.94	53.28	<0.001
Nausea	35.35	22.10	<0.001
Constipation	42.26	29.02	<0.001
Antidepressants	20.37	15.15	0.002
Anti-anxiety	16.16	13.15	0.055
Homecare (%)			
Home health aide	8.42	5.20	0.003
Visiting nurse	13.64	11.47	0.143
Comorbidities: Elixhauser Index, mean (SD)	3.44 (1.55)	2.71 (1.50)	<0.001
Illness severity: CMSAS, mean (SD)			
Physical severity	1.87 (0.83)	1.24 (0.87)	<0.001
Psychological severity	1.53 (1.30)	1.36 (1.20)	0.002
Site (%)			
1	7.41	10.75	0.015
2	9.76	5.84	0.001
3	11.45	21.82	<0.001
4	27.10	40.81	<0.001
5	44.28	20.78	<0.001

p Values from chi-square and *t* tests.

CMSAS, Condensed Memorial Symptom Assessment Scale; CNS, central nervous system; SD, standard deviation.

Discussion

We found that patients with advanced cancer at hospital admission were more likely to get PCCT referral if they were taking medicines for pain, nausea, or constipation at hospital admission. In addition, patients with a higher level of physical symptoms, more comorbidities, and lower functional status were more likely to get palliative care. These findings suggest that although all patients had advanced cancer at

TABLE 2. PREDICTORS OF PALLIATIVE CARE: ODDS RATIO AND 95% CONFIDENCE INTERVAL (N=3027)

Characteristics	Odds ratio	95% Confidence interval	p
Age, years	0.998	0.987–1.007	0.528
Male gender	1.037	0.834–1.291	0.748
White race	1.044	0.804–1.355	0.746
More than high school education	0.890	0.718–1.104	0.291
Married	0.864	0.694–1.076	0.191
Lived at home seven days before hospital admission	1.005	0.560–1.803	0.988
Insurance, Medicare	1.030	0.806–1.317	0.814
Insurance, Medicaid	1.364	0.997–1.866	0.052
Advance directives	0.988	0.792–1.233	0.917
Primary diagnosis			
Hematological malignancy	0.832	0.417–1.661	0.602
Gynecological malignancy	0.818	0.578–1.156	0.255
CNS	0.648	0.313–1.342	0.243
Lymphoma	0.466	0.256–0.846	0.012
Other malignancy	0.512	0.649–1.241	0.512
Solid tumor is reference category			
Functional status			
Needs partial or complete assistance with bathing	1.236	0.922–1.657	0.156
Needs partial or complete assistance with transfer from chair	2.070	1.555–2.756	0.002
Medications			
Pain	1.482	1.155–1.901	0.002
Nausea	1.270	1.008–1.600	0.043
Constipation	1.250	1.006–1.552	0.044
Antidepressants	1.283	0.981–1.677	0.069
Anti-anxiety	1.077	0.803–1.443	0.621
Homecare			
Home health aide	1.150	0.759–1.742	0.510
Visiting nurse	1.152	0.840–1.579	0.380
Comorbidities			
Elixhauser Index	1.188	1.108–1.274	0.001
Illness severity: CMSAS			
Physical severity	1.743	1.511–2.010	0.001
Psychological severity	0.863	0.788–0.946	0.002
Site			
1	0.593	0.393–0.894	0.013
2	0.945	0.618–1.444	0.792
3	0.632	0.446–0.896	0.010
5	1.680	1.264–2.233	0.001
Site 4 is the reference category			
Constant	0.0439	0.0177–0.109	0.001

admission, those who exhibited more symptom burden and had greater functional impairment were more likely to be referred to the PCCT. This suggests that PCCTs are seeing those patients with the greatest need and for whom the benefit is greater,^{24,25} although all patients in the sample were candidates for palliative care and only 19% received it. In the context of rising costs and poor outcomes for this population, increasing palliative care access for all who would benefit is an urgent priority.

We found that the odds of receiving palliative care referral were lower at higher levels of psychological symptom burden. This was unexpected. We explored it *post hoc* by site.

Two of the five sites have this unexpected result, and referral rates vary among hospital sites across the sample, suggesting different referral practices. It is also possible that patients with high severity of psychological symptoms may turn down a palliative care referral. In addition, physicians may obtain a psychiatry consultation for advanced cancer patients with high severity of psychological distress rather than a palliative care consult. In any case, psychological distress is very common in patients with advanced cancer. Our findings highlight potential unmet need for psychosocial support to patients with advanced cancer and their families. Future research is needed to explain the finding.

We found no evidence that patient age, race, gender, or education was associated with the likelihood of referral to PCCT. This is in contrast to other studies showing that younger patients, female patients, and married patients are more likely to receive palliative care referral.^{32–34} However these studies used small samples,³⁵ were single site,³⁶ or retrospective based on patients who died³² raising question about the reliability of these findings. In sensitivity analyses (data not shown), we found no evidence of sociodemographic differences in palliative care likelihood within sites.

Although we found that PCCT referral rates were responsive to illness burden, most patients were not referred to palliative care despite their advanced disease. This suggests that there are factors beyond patient characteristics that drive referral rates which were not measured in this study. Szekendi et al. found that some nonpalliative care physicians with long-standing relationships with their patients and families hesitate to refer them to palliative care specialists.²¹ Similarly, a recent study of lung cancer physicians found lower PCCT referral rates among those physicians who thought it would alarm their patients.³⁷ Some physicians are concerned that a palliative care referral would be viewed negatively by patients and families. Other studies suggest that physician lack of knowledge of the scope and benefits of palliative care is also a barrier to referral.^{35,38} Moreover, some oncologists believe that they are already providing palliative care.³⁹ Rate of referral at the sites may also vary based on degree of acceptance of palliative care, number and type of palliative care providers, responsiveness and availability of palliative care services, and level of outreach education and engagement with providers about the benefits of palliative care.³⁹

Several limitations of the study merit discussion. It is important to note that the sample was enrolled between 2007 and 2011 when hospital-based palliative care consultation was relatively new. In particular, The Center to Advance Palliative Care (CAPC) reports that in 2008, 53% of U.S. hospitals had a palliative care program.³¹ By 2011, about 63% of hospitals had palliative care programs.³¹ However, the average rate of referral over the four years of this study was 19.9%. There was no significant change in the rate over the four years. In addition, the attending oncologists in this study may have been practicing principles of generalist palliative care, with the specialty care team being pulled in only when necessary, such as when patient had high levels of symptom burden. Using more recent data from 2014, Szekendi et al. found that about 39% of hospitalized patients appropriate for palliative care received it.²¹

The sites were chosen because they all had well-established PCCTs. Thus, these findings may not generalize

to new teams. Moreover greater site variation might be observed among sites with less well-established teams. Only patients with advanced cancer at admission were eligible to be in the study. Thus, these results may not hold for patients with other serious and life limiting diseases such as heart failure and chronic obstructive pulmonary disease. In addition we did not consider patients in early stages of cancer although patients referred earlier in the disease process appear to exhibit symptom distress comparable to late referrals.²² Temel et al. found that among patients with newly diagnosed Stage 3 and 4 nonsmall-cell lung cancer, early palliative care led to improvements in patients' survival, mood, and quality of life.¹⁵ In addition, differences in physician characteristics which we did not measure are likely to be significant drivers of palliative care referral. Finally, patients with other cancer-related terminal illnesses were not included in the study. The results may not generalize to patients with those conditions.

A challenge to improving quality of palliative care for patients with serious life limiting diseases is the general recognition that demand for palliative care exceeds the current supply of palliative care specialists, as well as generalists trained to deliver palliative care. The majority of NCCN cancer centers does not use automatic triggers for palliative care referral and may not be able to meet demand if they did.³⁹ Thus, more education and training of nonpalliative care providers in primary or generalist palliative care are needed to meet demand.^{23,40}

A minority of patients with advanced cancer in this study were referred to the palliative care team. The scientific evidence of the benefits to the patient and family from early palliative care referral is strong. The ASCO guidelines recommend early referral to dedicated palliative care services, concurrent with active treatment. Thus, standardized screening for palliative care may be needed to ensure highest quality of evidence based care for all persons with cancer.^{17,19,41}

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Author Disclosure Statement

No competing financial interests exist.

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