

Characteristics, Findings, and Outcomes of Palliative Care Inpatient Consultations at a Comprehensive Cancer Center

FADI BRAITEH, M.D.,* BADI EL OSTA, M.D.,* J. LYNN PALMER, Ph.D.,
SURESH K. REDDY, M.D., and EDUARDO BRUERA, M.D.

ABSTRACT

Purpose: There is limited information available about the role and effect of a palliative care consultation service (mobile team, MT) in patient care. The purpose of this retrospective chart review was to determine the characteristics, findings, and outcomes of patients referred to MT in a comprehensive cancer center and to thereby gain information about its role in this setting.

Patients and Methods: The study group was 61 consecutive patients assessed by one MT during 2-month period. We reviewed their charts for information about demographic and disease features, reasons for consultation, findings, interventions, and outcomes.

Results: Patients were mainly referred by thoracic ($n = 21$; 34%), genitourinary ($n = 10$; 16%), and gynecology ($n = 9$; 15%) services. The majority of patients had metastatic disease ($n = 56$; 92%). Evaluation of pain was the main reason for the consultation ($n = 47$; 77%) followed by delirium ($n = 10$; 16%). The MT found a total of 449 symptoms (median = 8 per patient), whereas the referring team had mentioned only 86 (1 symptom per patient) in their requests. Twenty patients (38%) screened positive for a history of alcoholism. The MT diagnosed delirium in 34 patients (56%) and frequently found features of opioid-induced side effects, such as sedation ($n = 46$; 75%), constipation ($n = 43$; 70%), and confusion ($n = 34$; 56%). Frequent MT interventions were: administration of neuroleptics ($n = 33$; 54%), opioid rotation ($n = 30$; 49%), and enema ($n = 33$; 54%). Seventeen patients (28%) showed symptoms improvement within 24 hours and 23 patients within 72 hours (38%). Twenty-five patients (41%) required transfer to the palliative care unit.

Conclusions: The MT had a positive impact on these patients' care in terms of clinical findings and outcomes. Further investigations are warranted.

INTRODUCTION

CANCER IS A MAJOR CAUSE of death in the United States.¹ However, improvements in cancer diagnosis and treatment mean that today, patients with cancer patients live longer than in the past. Although most cancer therapy is now administered on an outpatient basis, the hospital admission rate for patients with can-

cer remains high because of complications or comorbidities. Many patients experience severe symptom distress because of complex symptoms that emerge while they are receiving cancer therapy. In many cases, these patients require specialized palliative care. Such programs have not typically been offered; however, hospital-based integrated palliative care programs have recently been established. The utility of such pro-

Department of Palliative Care and Rehabilitation Medicine, The University of Texas—M.D. Anderson Cancer Center, Houston, Texas.

*Both of these authors contributed equally to this work.

grams for patients with terminal cancer was proved feasible by successful projects in Canada,² the United Kingdom,³ and the United States.⁴ Such palliative care programs improve symptom management and the quality of life of patients with cancer and their families.⁵

The University of Texas M. D. Anderson Cancer Center is a National Cancer Institute-designated Comprehensive Cancer Center with operational inpatient and outpatient facilities. The Department of Symptom Control and Palliative Care, established as an academic department at our institution in 1999, comprises interdisciplinary palliative care teams providing clinical support through three services: an inpatient consultation service, an outpatient ambulatory care center, and a dedicated palliative care inpatient unit (PCU). In the outpatient ambulatory center and the inpatient unit, a team of physicians, fellows, advanced practice nurses (APN), a counselor, a chaplain, a social worker, physical and occupational therapists, a nutritionist, and a pharmacist provide medical services to both newly referred and previously hospitalized patients; these services also provide follow-up monitoring for patients whose care has become exclusively palliative and supportive. Our group previously reported the outcomes of patients admitted to the 12-bed inpatient (PCU).⁶

The third service, the inpatient consultation service, consists of two mobile teams (MTs), each with one physician, one fellow, and one APN. These practitioners provide consultation and follow-up for hospitalized patients with complex symptoms. Although much evidence supports the benefits of palliative care services on an outpatient basis^{7,8} and in PCU,⁶ further research on the role of inpatient palliative care consultation services and the clinical outcome of cancer patients assessed by such services is needed.⁹⁻¹¹ The purpose of this retrospective chart review was to determine the characteristics and outcomes of patients referred to a palliative care consultation service in a comprehensive cancer center and to thereby gain information about the role of inpatient palliative care consultation teams in the care of patients with cancer.

PATIENTS AND METHODS

We analyzed data for 61 consecutive patients seen by one MT in the Department of Palliative Care and Rehabilitation Medicine at M. D. Anderson Cancer Center. To minimize bias, one palliative care fellow who was not a member of any of the MTs extracted all data for this review. This fellow was never involved

in the care of any of the 61 patients. The consultations were provided by one palliative care specialist and one fellow during 2 months period (February and May) in fiscal year 2004 and served as a representative sample of consultations performed by this MT. The M. D. Anderson Institutional Review Board (IRB) approved this study.

Information pertinent to the patients' demographic features (age and gender), their disease (cancer diagnosis, disease stage, duration of illness, and sites of metastasis, if any), the reason(s) for the consultation, the requesting service, and the findings of the MT's initial assessment were collected from the electronic medical records. We also extracted and reviewed data from routine clinical assessment instruments: the Edmonton Symptoms Assessment Scale (ESAS),¹² which is a 10-point scale with 0 = best and 10 = worst symptom, the CAGE questionnaire for alcoholism screening,¹³ and the Mini-Mental Score Examination (MMSE).¹⁴ Symptoms were considered present when the patient scored 1 of 10 or more in each symptom of the ESAS or when the MT made a diagnosis of delirium or constipation. The interventions recommended by the MT (imaging, counseling, or changing opioids or other medications) and the patients' outcomes (clinical status within 24 hours, clinical status within 72 hours, and disposition) were systemically collected from the electronic medical records. In this analysis, clinical improvement was said to have occurred if the MT had documented improvement in a statement in the chart; in the absence of a clear statement to that effect, the patients were considered not to have improved.

Descriptive statistics were used to quantify patients' demographic and disease features, the reasons the referring service gave for requesting the MT's consultation, the MT's findings and interventions, and the clinical outcomes and disposition of patients in this cohort. Statistical analysis was performed with SAS[®] version 9.1 software (SAS Institute, Inc., Cary, NC). χ^2 tests were used to determine associations between categorical variables. The binomial test was used to test for the statistical significance of between-group differences. A *p* value < 0.05 was considered significant.

RESULTS

Information about patient and disease characteristics is summarized in Table 1. Twenty-five of the 61 patients (41%) were female. Forty-three patients (70%) were 65 years old or younger. Patient age var-

TABLE 1. PATIENT DEMOGRAPHICS AND DISEASE CHARACTERISTICS FOR SIXTY-ONE PATIENTS WITH CANCER WHO WERE EVALUATED BY THE PALLIATIVE CARE CONSULTATION SERVICE

<i>Gender</i>	<i>n</i>	<i>% (95% confidence interval)</i>
Female	25	41% (29%–53%)
Age		
≤65	43	70% (59%–82%)
Disease duration		
≤1 year	26	43% (30%–55%)
≤2 years	44	72% (61%–83%)
≤4 years	52	85% (76%–94%)
Referring service		
Head, neck, and thoracic medical oncology	21	34
Genitourinary medical oncology	10	16
Gynecology medical oncology	9	15
Emergency center	5	8
Breast medical oncology	4	7
Gastrointestinal medical oncology	3	5
Other	9	15
Total	61	100
Reason for consultation ^a		
Pain	47	77
Delirium	10	16
Transfer of care	8	13
Dyspnea	8	13
Insomnia	7	12
Constipation	5	8
Anxiety	4	7
Nausea	2	3
End of life care	1	2
Fatigue	1	2
Failure to thrive	1	2
Total	94	

^aSome patients had more than one reason for consultation.

ied from 16 to 84 years, with a median of 58 years. At the time of the consultation, 26 patients (43%) had their cancer 1 year or less, 44 patients (72%) had it 2 years or less, and 52 patients (85%) had it 4 years or less (median, 1.4 years). Most of the patients ($n = 59$; 97%) had some evident malignant disease. Most patients also had metastatic disease ($n = 56$; 92%) at the time of the consultation. The main sites of metastasis were bone ($n = 26$; 43%), lung ($n = 15$; 25%), liver ($n = 10$; 16%), lymph node ($n = 10$; 16%), and brain ($n = 7$; 12%). Some patients had metastases at multiple sites.

Patients were referred to the MT by several clinical care departments at M. D. Anderson. One third of the patients were referred by the Department of Head, Neck, and Thoracic Medical Oncology ($n = 21$), 16% by the Department of Genitourinary Medical Oncology ($n = 10$), and 15% by the Department of Gynecologic Medical Oncology ($n = 9$) (Table 1). The rest were mainly referred from the emergency center ($n = 5$; 8%), the Department of Breast Medical Oncology ($n = 4$; 7%), and the Department of Gastrointestinal

Medical Oncology ($n = 3$; 5%). Departments concerned with hematologic and other nonsolid cancers requested consultations infrequently. The main reasons recorded for the consultation request were pain ($n = 47$; 77% of patients) and delirium ($n = 10$; 16% of patients) (Table 1).

The MT's evaluation revealed several problems that had not been appreciated by the referring physicians. Most patients ($n = 53$; 87%) completed the ESAS as part of the MT assessment; those who did not had profound cognitive impairment ($n = 8$; 13%). The most distressing symptoms patients reported on the ESAS were fatigue (median score = 7), anxiety (median score = 5), well-being (median score = 5), and pain (median score = 4) (Table 2). The MT commonly identified major symptoms (e.g., delirium) or syndromes (e.g., opioid toxicity) that had been underreported by the referring service. For example, delirium was the stated reason for the consultation request in only a few cases, while the MT diagnosed this symptom in more than half the patients ($n = 34$; 56%); this difference was highly significant ($p < 0.0001$) (Fig.

TABLE 2. MOBILE TEAM FINDINGS ON THE ESAS

ESAS	Median score ^a	25th–75th Quartile scores ^b
Fatigue	7	5–8
Anxiety	5	1–7
Wellbeing	5	4–7
Pain	4	0–8
Depression	3	0–4
Sleep	3	2–6
Appetite	3	0–7
Nausea	2	0–3
Drowsiness	2	0–5
Dyspnea	1	0–4

^a0 = best, 10 = worst.

^bQuartiles for the current group of patients.

1). Similarly, although many patients had features of opioid toxicity and side effects, such as sedation ($n = 46$; 75%), constipation ($n = 43$; 70%), confusion ($n = 34$; 56%), nausea ($n = 30$; 49%), hallucinations ($n = 21$; 34%), miosis ($n = 18$; 29%), and myoclonus ($n = 16$; 26%), the primary care team usually failed to report them (Fig. 2).

In χ^2 tests for associations between categorical variables, patients with myoclonus were found to be delirious more often than patients without myoclonus ($n = 41$, $p = 0.0005$; Table 3). No other associations were found.

The Mini Mental State Examination (MMSE) was completed in 25 patients (41%). Ten patients (40% of the group completing the assessment) had scores indicating abnormal or impaired mental functioning. The MMSE was not administered to the other 36 patients (59% of the total group) primarily because sedation or delirium was obvious.

While the referring physicians had only mentioned major complaints ($n = 86$; 19%) in their requests for consultation, the MT identified 449 symptoms in their comprehensive assessment for 61 patients. The median number of symptoms per patient in the request for consultation was 1 (range, 1–3), and the median number of symptoms per patient after the MT evaluation was 8 (range, 1–12).

Twenty patients (38%) had a positive score on the CAGE questionnaire (two or more positive responses). The CAGE questionnaire was not administered to patients with profound cognitive impairment ($n = 9$; 15%).

On the basis of the patient assessments, the MT recommended multiple clinical interventions to the primary service (Table 4). Opioid rotation ($n = 30$; 49%) and expressive supportive counseling ($n = 27$; 44%)

were frequently indicated for delirium and development of new coping strategies, respectively. Imaging studies ($n = 14$; 23%) were recommended when the MT determined that possible causes of constipation should be explored or that patients should be examined for the presence of pneumonia, pulmonary embolism, spinal cord compression, and tumor metastases. Symptoms in 17 patients (28%) improved within 24 hours of initiation of the MT-recommended interventions, and those in 23 patients (38%) improved within 72 hours. Ten patients (16%) had documented improvement in their symptoms more than 72 hours after the MT-recommended interventions were initiated. Symptoms in 11 patients (18%) did not improve, and in fact 7 of these patients (11% of the total group) died. The outcomes for the last 17 patients (28%) were not clearly documented.

Twenty-five patients (41%) required transfer to the PCU, while 19 patients (31%) were discharged home. Seven patients (11%) died during their hospitalization, three patients (5%) were transferred to a different service in the hospital, three patients (5%) were transferred to a long-term acute care facility, and two patients (3.5%) were transferred to an inpatient hospice unit. The disposition of two patients (3.5%) was not clear in the documentation.

DISCUSSION

Based on the findings of this descriptive study, we conclude that the inpatient palliative care consultation service had a positive effect on patient outcomes in terms of symptom relief and identification of symptoms requiring interventions. The MT found more

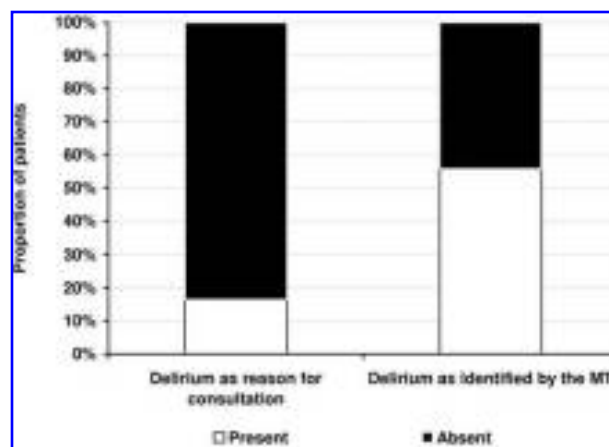


FIG. 1. Mobile team (MT) diagnosis of delirium in 61 patients.

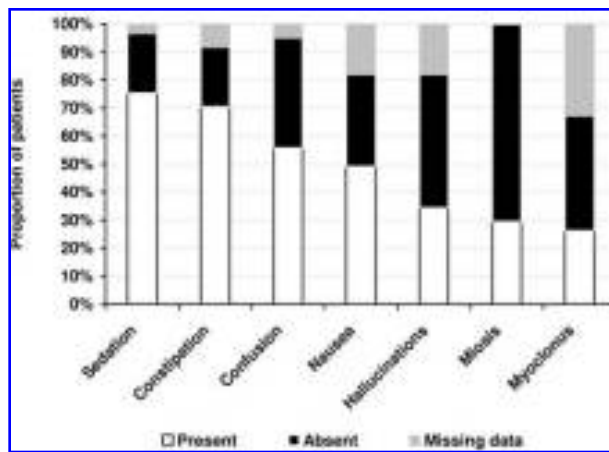


FIG. 2. Mobile team (MT) diagnosis of opioid-related side effects and toxicity in 61 patients.

symptoms than those mentioned in the referring team request; previously undiagnosed delirium, opioid-related side effects, and a history of possible alcohol dependence at any time in life were among the most common findings. As a consequence, the MT recommended investigations and changes in medication that resulted in clinical improvement in 28% of patients within 24 hours and 38% of patients within 72 hours. This study thus adds to the growing body of literature documenting the effectiveness of inpatient palliative care consultation teams.^{9,11,15,16}

Most patients with advanced cancer will develop many physical and psychological symptoms¹⁷ related to their disease, treatments, or comorbidities.¹⁸ These symptoms, which can significantly impair patients' quality of life and family dynamics, are frequently inadequately treated in conventional care. Palliative care programs have been developed to fill this gap in care, with specific attention paid to the multidimensional and dynamic nature of the symptoms affecting patients with advanced disease and their families.¹⁹ It is important to recognize that assisting families in their needs may lead to an improvement in the patient's care. Providing families with information regarding the disease, assistance with care and comfort measures, counseling about patient's symptoms as the disease progresses, and means of coping with escalating care can all ultimately benefit the patient. This type of intervention is best provided using an interdisciplinary approach.²⁰

Adopting palliative care early in the disease trajectory is a major concern of palliative care programs in acute care hospitals. However, most referrals to such programs occur late in the disease process. Many authors^{21–25} have criticized such referrals because they

give the palliative care program little time to achieve its goals.²⁶ Few studies have reported the frequency of cancer-related symptoms in patients referred to palliative care. Fatigue was the most frequently reported symptom, and pain, depression, and anxiety were the most distressing symptoms for patients with advanced cancer in various palliative care settings according to two analysis.^{9,17} The frequency of these symptoms could be related to the cancer type (e.g., a patient with lung cancer may have dyspnea as his main symptom, whereas a patient with bone cancer may mainly complain of pain), the cancer stage (e.g., an asymptomatic patient newly diagnosed with prostate cancer (stage I) may complain of back pain when his disease becomes advanced), and the setting of care (e.g., a patient newly diagnosed with metastatic colon cancer could be asymptomatic and receiving chemotherapy in the outpatient setting and could be delirious in the palliative care unit). Further research is needed to determine the characteristics of the symptom burden for each cancer at any point in its course and in specific care settings.

In our study, most patients were 65 years old or younger and had a solid metastatic tumor. The reasons the referring physicians most often gave for consulting the MT were patient pain (77% of patients) and to a lesser extent delirium (16%), constipation (8%), and anxiety (7%). Our findings underscore the value of a specific palliative care team's evaluation of such patients: the MT found multiple problems that were not ascertained by the referring team: history of alcoholism (38%), delirium (56% of patients), and other opioid side effects, including sedation (75%), constipation (70%), nausea (49%), hallucinations (34%), miosis (30%), and myoclonus (26%).

Delirium could be easily misdiagnosed for pain, insomnia, or anxiety if it is not thoroughly assessed. Identifying delirium is particularly important in patient care because it can impede communication and contribute to symptom distress in patients with advanced cancer.²⁷ Among patients with pain ($n = 47$) as a reason for the MT consultation, 24 (51%) were found to have delirium during the MT's assessment. Furthermore, this symptom is reversible in half the affected

TABLE 3. ASSOCIATION OF MYOCLONUS AND DELIRIUM ($n = 41$)

Delirium	Present n (%)	Absent n (%)
Myoclonus present ^a	14 (64%)	2 (11%)
Absent	8 (36%)	17 (89%)
Total	22 (100%)	19 (100%)

^a $p = 0.0005$.

TABLE 4. MOBILE TEAM-RECOMMENDED INTERVENTIONS ($n = 61$)

<i>Intervention</i>	<i>% of patients</i>	<i>% (95% confidence interval)</i>
Neuroleptics	54	41–68
Enema	54	41–68
Opioid rotation	49	36–63
Laxatives	49	36–63
Expressive supportive counseling	44	31–58
Transfer to the palliative care unit	41	29–56
Metoclopramide	39	26–53
Corticosteroids	25	13–36
Imaging studies	23	11–35

patients.²⁷ The main cause of reversible delirium in our patients were interpreted by the MT as related to opioids. The team's routine assessment procedure for delirium included a full history taking, physical examination including a daily completion of the MMSE, laboratory testing, and assessment of the *Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV)* criteria for delirium.

The palliative care team's assessment is not a single event. It is an ongoing process that must be integrated into patient care on a continuing basis. All of our patients are universally followed daily from the moment of their admission until discharge or death, including all weekends and holidays. Similarly, it is not about addressing one major symptom but a number of symptoms that may or may not have a common physiopathologic origin. A successful assessment by the palliative care team is based on the use of validated and standardized tools such as the ESAS, as well as physical examination, to help detect patients' symptoms. Routine use of these tools allow the MT to detect symptoms in addition to those reported by the patients and the referring team in the request for consultation, those a physical examination may not show,^{12–14,28} and symptoms that have been misaddressed and therefore mistreated (e.g. treating pain in case of an underlying delirium or constipation or treating intractable nausea without addressing constipation). In addition, these tools provide concrete information about the outcome of an MT's interventions^{12,14} and do not rely on subjective (albeit professional) judgment.

Opioid toxicity is also frequently treatable and even reversible. Appropriate treatment can lead to a rapid improvement in quality of life. Opioid toxicity occurs most frequently in the context of rapid dose escalation. When opioid toxicity is diagnosed, the palliative care team should address the issue upfront with the re-

ferring team and the patient: searching for and identifying any delirium; adding the appropriate anti-emetic and bowel regimens, with titration to the point of patient comfort; and counseling patients about the appropriate use of opioids should all be undertaken. Counseling, including psychiatric counseling as required, helps patients to develop new strategies for coping with their advanced disease and can prevent opioid escalation and early opioid toxicity.

Opioid rotation remains the key treatment for opioid toxicity.^{29,30} However, we believe that opioid rotation is underutilized by many physicians.

In a retrospective study, Jenkins et al.¹⁶ reviewed 100 consecutive cancer patients referred to a palliative care consultation team within a tertiary acute care hospital during a 6-month period. Both cognitive impairment and a history of substance abuse altered the pain assessment and management. Twenty-two percent of the patients were not receiving opioids, and 54% were prescribed opioids on an as-needed basis. Only 4% of the patients had neuroleptics prescribed before the consultation, compared with 19% for whom neuroleptics were indicated, according to the palliative care team's assessment. The palliative care consultation helped to discharge patients to the place that was appropriate to their needs.

In a previous study, Yennurajalingam et al.⁹ reviewed 100 consecutive patients who were referred to a MT during a 14-month period. Changes in medications and counseling patients and families were the main interventions. The median duration between the palliative care consult and the hospital discharge was 4 days. The study concluded that interventions should be offered rapidly secondary to the short length of our involvement with patients and families.

Higginson et al.³ conducted a systematic review of the literature to determine whether hospital-based palliative care teams improved the care of patients and

families at the end of life. All reviewed studies indicated a small positive effect of such teams except for one that documented a deterioration of quality of life during care. The authors concluded that prospective studies comparing different models are needed. Unlike earlier studies, this study was focused on the MT assessment and interventions that helped in relieving patient's symptoms related to both cancer treatment and pain management. These interventions were opioid rotation, management of delirium and constipation, and expressive supportive counseling. These interventions helped in patients' disposition to appropriate settings. Hence, this study demonstrates the ability of a palliative care consultation service in a comprehensive cancer center to have a positive effect on patient care. The tools used by the MT (e.g., ESAS, CAGE questionnaire, MMSE) helped achieve this goal. Therefore, these tools are highly recommended for incorporating in any palliative care consultation assessment. The main limiting factor of our study was the sample size, the retrospective nature, and the absence of a control group. Clinical improvement as documented in the chart can be inaccurate. However, our MT operates with specific assessment and follow-up forms and a highly homogeneous team of specially trained physicians and fellows. The specific goal of each visit is to carefully assess symptom distress as the main outcome of care. We therefore believe that these clinical assessments are more reliable than those obtained from standard retrospective chart reviews. Further investigations should be undertaken to define the optimal timing for referring patients with advanced cancer to palliative care, the physicians' knowledge in opioid rotation as a key treatment for opioid toxicity, and the impact of a palliative care consultation service on the length of hospitalization and survival of terminally ill patients.

CONCLUSION

MTs in acute care facilities act as a bridge between the "palliative" and "active" models of care^{16,31} by providing access to palliative care while the patient is still receiving active treatment. In our study, the MT's methodical assessment led to the identification of previously unrecognized and untreated issues, such as delirium, psychosocial issues, and opioid-induced toxicity and side effects. The MT was thus able to establish therapeutic interventions and obtain improvements in clinical outcomes sometimes within 24 hours. Further investigations in large prospective studies are needed to confirm the positive effects of a palliative

care consultation service on patient care, family distress, health economics, and length of stay in acute care centers.

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Address reprint requests to:

Eduardo Bruera, M.D.

*Professor of Medicine and Chairman
Palliative Care and Rehabilitation Medicine,
Unit 008*

*The University of Texas
M. D. Anderson Cancer Center
1515 Holcombe Boulevard
Houston, TX 77030-4009*

E-mail: ebruera@mdanderson.org