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Spring 5-1-2012

Palliative Care Consultation Trajectories

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A thesis presented to the
Graduate School of Arts and Sciences
of Washington University in
partial fulfillment of the
requirements for the
degree of Master of Arts

May 2013

St. Louis, Missouri

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Acknowledgements

First and foremost, I would like to thank my committee, which was chaired by Dr. Brian Carpenter and included Drs. Thomas Rodebaugh and Deanna Barch. My committee provided me with strong guidance throughout this project, and their feedback was instrumental. Additionally, I'd like to thank my collaborators at the St. Louis VA Medical Center: Dr. Mark Heiland, Dr. Anupam Agarwal and Michael Thorsten. Their patience and knowledge allowed me to navigate the VA system with greater ease and understanding. Finally, I'd like to thank the Clinical Geropsychology lab at Washington University for their support and encouragement.

ABSTRACT OF THE THESIS

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Masters of Arts in Psychology

Washington University in St. Louis, 2013

Professor Randy Larson, Chair

In 2008, the Veterans Association (VA) mandated that all VA hospitals have a palliative care consult team (PCCT) to provide services to veterans with life-limiting illness. PCCTs within the VA are new, so little is known about their efficacy and utilization. The purpose of this study is to examine the timing of PCCT consultations and responses; document and categorize types and rates recommendations; determine rates at which recommendations are implemented; and identify factors related to if recommendations are made and implemented. This electronic medical records review study examined 200 initial palliative care consultations conducted in one VA hospital between January 1st, 2009 and December 31st, 2010. The median interval between admission and consultation was 5 days. The PCCT made recommendations for 111 patients (55.5%). The mean number of recommendations per patient was 1.44 ($SD = 1.81$). The original care team implemented 57% of the recommendations. In this medical center, the PCCT offers a range of recommendations to enhance the care of patients with life-limiting illness, though these recommendations are implemented at differential rates. In order for PCCTs to attain maximum effectiveness, more research is needed to understand the interpersonal and organizational factors that influence how PCCT teams function within healthcare systems.

Introduction

Palliative care provides relief to patients with life-limiting illness and their family members through symptom management, psychosocial support, and care team coordination (Higginson et al., 2003). By reducing unnecessary financial, psychological, and physical burdens for patients and families (Manfredi et al., 2000), palliative care enhances quality of life while reducing overall costs (Hanson, Usher, Spragens, & Bernard, 2008). Developing palliative care programs is essential to comprehensive hospital care, as an estimated 50-60% of adults die while in the hospital (Gomes & Higginson, 2008).

The number of palliative care programs in hospitals is rising in the United States (Morrison, Maroney-Galin, Kralovec, & Meier, 2005). This increase is due, in part, to the Veterans Health Administration's (VA) recent initiative to expand palliative care to all VA hospitals. The VA has invested significant resources by creating Palliative Care Consultation Teams (PCCTs) that consist of at least a 0.25 full time equivalent employee in each of the following disciplines in every medical center: psychologist, nurse, physician, social worker, and chaplain (Veterans Health Administration, 2008). PCCTs function as a specialty team that can be consulted by the original care team for medical recommendations, as well as psychological, spiritual, and social work services. However, these teams within the VA are new, so little is known about their utilization and efficacy within this system of care. Instead, previous research has been primarily descriptive and focused on characterizing the timing of palliative care consultations, types of recommendations made by the PCCT, and recommendation implementation rates.

Timing of consultations

The timing of palliative care consultations reveals important details about utilization of the PCCT and its impact. Early involvement of the PCCT allows for more opportunities for interventions that maximize quality of life. For example, PCCTs might guide care providers and families toward comfort-only measures *before* life-prolonging treatments are started that may be unrealistic or intrusive (Manfredi et al., 2000). Therefore, a short interval between admission and initial consultation is ideal. In previous studies, the median time between admission and first consult by a palliative care team was 5-6 days (Chong et al., 2004; Hanson et al., 2008). Several factors may influence the timing of consultations. For instance, age may play a role, as in one study that documented that patients over age 80 had a shorter length of stay prior to a palliative care consultation than younger patients (Evers, Meier & Morrison, 2002). This may be, in part, because of physicians' greater willingness to terminate life-prolonging treatments for older adults. Alternatively, older patients may have more severe or complicated symptom profiles, which require the consultation of specialists. Other factors that may be related to the timing of consultations include severity and type of a patient's illness, prior hospitalizations, and level of integration of the PCCT within the hospital's operations, though these areas have not been explored in the literature.

Another informative interval is the time between consult and death. In order for PCCTs to have maximal impact on quality of life, teams must get involved early in the illness trajectory (Cheng, Wiley, Palmer, Zhang & Bruera, 2005). Often, however, PCCTs are only consulted in the final stages of life, leading to a very short interval between consultation and death. One study in a VA hospital determined that the median number of days between consultation and patient death was 23 days with a range of 1-358 days, suggesting a great deal of variability in when a consultation is placed (Chong et al., 2004). A more recent study conducted at a cancer center

found the median interval between consultation and death was 42 days, which the authors argued was too short a period for the palliative care team to be maximally effective (Osta et al., 2008). This interval did not shorten over time despite the study site's efforts to increase awareness and access to palliative care.

Consultation recommendations

In addition to understanding the timing of PCCT consultations, researchers have also categorized the types of recommendations teams make. Most recommendations fall into the following categories: pain and symptom management, discussion about goals of care/prognosis, advance directives, patient and family support, and discharge plans (Chong et al., 2004; Manfredi et al., 2000). Pain and symptom management includes, but is not limited to, recommendations such as adding, removing or changing the dosage of a medication or other interventions to minimize physical distress. Recommendations to discuss goals of care/prognosis focus on the need to talk with patients and families about the patient's probable illness trajectory, realistic outcomes, and treatment cessation (e.g., terminating antibiotics or removing a feeding tube). Advance directive recommendations encourage the patient to document a preference for Do Not Resuscitate/Do Not Intubate (DNR/DNI) status or to appoint a health care proxy. The PCCT might also recommend patient and family support in the form of counseling and psychological services. Finally, recommendations regarding discharge plans involve suggestions about patient placement after hospitalization. Manfredi et al. (2000) and Chong et al. (2004) both found that the most frequent recommendations involved discharge planning, while the least frequent addressed advanced directives.

Few studies have investigated the number of recommendations made and the rate of their implementation. Chong et al. (2004) found that the palliative care team in a VA medical center

made an average of 2.84 recommendations per patient, and an average of 2.39 (84%) of these recommendations were implemented. Another study conducted at an academic medical center found that the PCCT made an average of 4.2 recommendations per patient, with a 91% implementation rate (Manfredi et al., 2000). Notably, these studies utilized methodologies that obscure actual rates. For example, in both studies, the number of recommendations per patient was actually the number of *categories* of recommendations per patient. This means that a patient could have multiple recommendations in one category, but only the category would be counted, not the number of unique recommendations. The number of recommendations implemented was therefore the number of *categories* of recommendations implemented. Thus, implementation rates for these studies are potentially inflated while the number of unique recommendations is likely deflated.

To explore why PCCTs are not consulted earlier and more frequently and why recommendations might not always be implemented, Rodriguez, Barnato, & Arnold, (2007) interviewed hospital staff (primarily ICU nurses and physicians) and documented misperceptions about palliative care and reluctance of physicians to seek outside consultation. Many interviewees believed palliative care to be appropriate only in the final days of life and "antithetical to intensive care." Additionally, physicians reported concern that a palliative care team would prematurely change the goals of care. Lastly physicians reported that many aspects of palliative care, in particular pain and symptom management, were areas they felt capable of addressing without outside assistance. Other reasons that recommendations are not implemented include a change in the patient's medical status since the patient was seen by the PCCT, patient or family refusal, or rejection by the treating physician (Chong et al., 2004). Furthermore, treating physicians may be unaware of the benefits of consulting a PCCT because of the limited

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research and evidence for the specialty (Grant, Elk, Ferrell, Morrison, & von Gunten, 2009).

Without more comprehensive education about the services provided by a PCCT and evidence for

their efficacy, physicians may be wary of involving more providers in a patient's care team.

While the body of evidence that palliative care teams can improve quality of life for

patients with life-limiting illness grows, still relatively little is known about when and how

palliative care teams are maximally effective. For example, studies are needed to explore

whether the timing of consultations affects the likelihood of recommendations being made and

implemented. Research documenting how and when the PCCT is being utilized within a hospital

system is needed in order to target future initiatives to maximize the efficacy of PCCTs.

Additionally, accurate implementation data are needed on each recommendation made per

patient, not just each recommendation category. Without this information, we are unable to

understand how PCCTs are currently utilized in the hospital.

To address some of these gaps in the literature, in this medical records review study, we

document the timing of palliative care consultation requests and responses; identify and

categorize types of recommendations offered by the PCCT; determine whether healthcare

providers implement the PCCT's recommendations; and identify patient and organizational

factors that are related to the timing and implementation of recommendations.

Methods

Participants

This electronic medical records review study was conducted at a Midwestern, urban

Veterans Affairs Medical Center. The study site is a 246-bed hospital that initiated a PCCT in

September of 2008. By December of 2008, the team was fully staffed with a physician, nurse

practitioner, psychologist, social worker, and part-time chaplain. The PCCT functions by

responding to consultation requests placed by other disciplines. The nurse practitioner or medical doctor can make recommendations, but they do not administer any medical care themselves to the patients about whom they are consulted. For example, they can recommend a medication addition, but they cannot themselves write the prescription order. The social worker, chaplain, and psychologist on the team can all make and implement recommendations, but only within their disciplines. For example, if the psychologist recommends ongoing psychotherapy, he will often be the one to administer the psychotherapy.

There was limited previous research on which to base our effect size, so to establish the sample size we chose a conventional moderate effect size of .3 (Cohen, 1988), set alpha at .05, and used G*Power 3.1 to determine that a sample size of 197 would be required to maintain power at .80. Between January 1, 2009, and December 31, 2010, the PCCT was consulted on 657 unique patients, and we used a random number generator to select patients. If a patient had multiple palliative care consultation requests within the timeframe of the study, only their first consultation was included. Patients who had been seen by the PCCT prior to January 1, 2009, were excluded from the study. To document PCCT recommendations, we reviewed the first visit from each PCCT member within one week of the initial consultation request. We reviewed 208 patient charts; eight patients were excluded because the PCCT never saw the patient. Data from the remaining 200 patients are presented in this report.

Procedure

The principle investigator and the coinvestigator (an advanced graduate student in clinical psychology) began by independently reviewing the electronic medical records of 10 patients and discussing each chart to establish consensus on the extraction process and coding. Next, subsequent charts were coded independently, and the researchers met to reach consensus

until five consecutive charts were coded identically. This was achieved after coding 30 charts. Thereupon the coinvestigator coded the remaining charts, and the principle investigator coded a random 10% of the sample to maintain coding consistency. In addition, throughout this process, the coinvestigator documented all cases that did not have clear information, and the researchers and the PCCT reviewed these cases together to achieve consensus.

In order to track the implementation of consultation recommendations, all chart notes in the medical record following the initial palliative care consultation were reviewed. For the purpose of this study, only recommendations that suggested an action be taken by the original treatment team were recorded. This excluded recommendations for future involvement by the PCCT itself (e.g., ongoing psychotherapy by the palliative care psychologist), conditional recommendations (e.g., "If patient's progress continues to deteriorate, recommend nursing home placement"), and recommendations that would not likely appear in the medical record if ever implemented (e.g., "Discontinue nonessential activities").

Data collected

Patient characteristics. Demographic information included age at consultation date, sex, primary diagnosis, age at death, and location at death.

Consultation characteristics. Information regarding the consultation included the date of the original request, patient's location at time of consultation, and date of response. Characteristics of the PCCT response included discrete, verbatim recommendations made by each PCCT member and the date each recommendation was made. Characteristics of the response to the consultation recommendation included the date the recommended action was taken, the details of the action taken and the degree of implementation. Degree of implementation was coded 0 if the recommendation was never implemented, 1 if the

implementation was consistent with the intent of the recommendation but not the specific action (e.g., hydrocodone was administered for pain relief when morphine was recommended), and 2 if the implementation was consistent with original recommendation in intent and action (e.g., Senna was recommended as a laxative, and Senna was prescribed and administered).

The date of the original consultation request was coded into a variable that indicated the month the request occurred (1-24) in the two-year period of the study. The interval between admission and consultation request was calculated by subtracting the date of the original consultation from the date of admission. The interval between consultation request and death was calculated by subtracting the date of the original consultation from the date of death. The interval between when each recommendation was placed and then implemented was calculated by subtracting the date the recommendation was placed from the date of implementation. All date intervals included Saturdays and Sundays in the calculations.

Data Analysis

Descriptive statistics were used to characterize demographics of the patients, the location of the patient at the time of consult, number of recommendations, number of recommendations implemented, and the time intervals described above. A chi-square goodness of fit test was used to evaluate differences in implementation rates by type of provider making the recommendation as well as by category of recommendation.

Binomial logistic regression models were used to investigate the association of demographic variables and consultation characteristics with the likelihood of whether a patient received a recommendation from the PCCT as well as the likelihood of implementation. Interval between admission and consultation, month of consultation, as well as interactions between age and diagnosis, and between location and diagnosis were tested in a previous model but dropped

because they were not statistically significant predictors and because they decreased the ability

of the model to classify cases correctly. For cases where date of death was unknown and interval

from admission to consult was missing because the subject was an outpatient, the sample mean

was substituted as a conservative estimate (Tabachnick & Fidell, 2007). The location at

consultation was dummy coded using general medical inpatient unit as the reference category.

Consultation requests from the inpatient psychiatry (n = 1) and hospice (n = 1) services were

removed from the analyses because of their infrequency. Patient's diagnosis was transformed

into a dichotomous dummy coded variable with cancer as the reference category.

Results

Table 1 summarizes patient and consultation recommendation characteristics. The mean

patient age at consultation was 69.55 years (*SD* = 11.65, range = 39.28 - 91.93). The sample was

predominately male (n = 194, 97%), which reflects the patient population overall at this VA.

Fifty-nine percent of the sample carried a primary diagnosis of cancer, 7% lung disease, 6%

cardiac disease, 4% stroke, 4% dementia, 2% liver disease, 1% HIV disease, 1% renal disease,

and 17% other medical condition (e.g., failure to thrive). The mean age at death for the 166

patients who had a recorded date of death was 69.60 years (*SD* = 11.63, range = 40.00 - 91.28).

In the 103 cases where the location of death was able to be determined, 51.5% in a VA nursing

home, 19.4% in the intensive care unit (ICU), 14.6% died on a general inpatient medical unit,

12.6% at home, 01% in the emergency room (ER), and .01% in a non-VA nursing home.

For patients admitted to the hospital, the mean interval between admission and

consultation request was 7.15 days (*SD* = 10.85, range = 0 - 73 days) and the median was 5 days.

The request for consultation originated from a general inpatient medical unit in 51.5% of cases,

from the ICU in 28.5%, from an outpatient provider or clinic in 19%, from hospice in .05%, and

from inpatient psychiatry in .05%. The mean interval between consultation request and first response from a PCCT member was 2.24 days (SD = 5.57, range = 0 - 30), however, when excluding the 38 outpatient cases, the mean interval between consultation request and first PCCT response was .74 days (SD = 1.368, range = 0 - 10). The mean interval between consultation request and death for the 168 patients who had date of death recorded was 97.80 days (SD = 161.046, range = 0 – 910), and the median was 27 days.

Of the 200 patient charts reviewed in our sample, 111 (55.5%) patients received a recommendation from the palliative care team to the providing physician. Table 2 shows the results of a logistic regression predicting whether a recommendation was made based on the age of the patient, the patient's diagnosis, the location of the consultation, and the interval between consultation and death (other independent variables were tested in earlier models and dropped; see Data Analysis). Location of the patient at time of consultation was the only significant predictor; the odds ratio for ICU compared to general medical inpatient unit was .424, and the odds ratio for outpatient setting compared to general medical inpatient units was .230 (P = .013 and P = .000, respectively). ICU patients and outpatients were 57.6% and 77%, respectively, less likely to receive a recommendation than general medicine inpatients.

Two hundred eighty-seven unique and traceable recommendations were made. The average number of recommendations per patient was 1.44 (SD = 1.81, range = 0 - 10). Recommendations fell into six main categories (see Figure 2): pain management, other symptom management, discharge recommendations, suggestion to transition to comfort care measures only, consultation for other services, and miscellaneous (e.g., "attempt to avoid restraints," "transfer to private room"). Pain management recommendations were most frequently made, followed by

recommendations for other symptom management, consultation for other services, discharge, and transition to comfort care.

Fifty-seven percent of recommendations were implemented. The mean response time between recommendation and implementation was 1.87 days ($SD = 7.73$, range = 0 - 10). In terms of recommendation adherence, 90.5% were consistent with the original recommendation in intent and action, and 9.1% were consistent with the intent of the recommendation but not the specific action. The implementation rate per provider type is illustrated in Figure 1. A chi-square test of significance showed there was no significant difference in implementation across different team members making the recommendations, χ^2 (3, N = 287) = 2.437, $p = .487$. In contrast, a chi-square test of significance showed there was a significant difference in implementation across different types of recommendations, χ^2 (5, N = 287) = 19.681 $p = .001$.

Among the 43% of consultation recommendations never implemented, we attempted to identify factors associated with non-implementation in the three categories with lowest implementation rates: pain management, symptom management, and consultations for other services. There were no significant predictors in models of the implementation of symptom management or consultation recommendations. The results of the logistic regressions on pain management recommendations appear in Table 3. There was a significant effect of age, $p = .045$, $Exp(B) = .942$, and a significant interaction between location of patient and time of consultation and diagnosis, $p = .003$, $Exp(B) = 90.489$. For each one-year increase in age, the likelihood of having a pain recommendation implemented goes down 5.8%. Patients in the ICU with cancer were less likely to have pain recommendations implemented than patients in the ICU without cancer. In contrast, patients in general inpatient medical units with cancer were *more* likely to have pain recommendations implemented than patients with other illnesses.

Discussion

Palliative care consultation teams (PCCTs) are a relatively new specialty service within the VA hospital system, and their role is still developing. Previous studies describe the timing of PCCT consultations (Cheng et al., 2005; Chong et al., 2004; Hanson et al., 2008; Meir & Morrison, 2002; Osta et al., 2008) and types and rates of PCCT recommendations (Chong et al.; Manfredi et al., 2000). In the current study, we replicate some of these service indicators and also extend previous findings by identifying factors associated with whether the PCCT makes a recommendation and whether those recommendations are implemented.

To begin with characteristics of the patients themselves, the age of patients receiving a palliative care consultation was bimodally distributed, centered around patients in their 60s and patients in their 80s. These groups represent prominent cohorts seen in VA hospitals: patients in their 60s are Vietnam War veterans and patients in their 80s are Korean War and World War II veterans. Though our sample is predominately older, the range of patient ages (39-92) indicates that the PCCT does see younger patients as well.

Additionally, the majority of patients who received a PCCT consultation had a primary diagnosis of cancer. Cancer is the second leading cause of death in the United States (Kochanek et al., 2009), so the frequency of cancer patients in palliative care is consistent with cancer's prevalence. It may also be the case that oncology services are most likely to refer to palliative care teams because palliative care has been integrated with cancer care longer than it has in other life-limiting illnesses. Physicians from other specialties may be less likely to consult the PCCT because they are less familiar with the wide range of services and expertise palliative care can offer. As palliative care becomes more widely integrated in health care systems, consultation patterns may change.

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At this VA medical center, the PCCT tends to receive consultation requests within the first week of a patient's hospital stay (median = 5 days), an interval consistent with previous studies (5 days in Chong et al., 2004; 6 days in Hanson et al., 2008). It may be that it takes the original treating team this much time to assess and stabilize the patient before realizing that a PCCT consultation may be helpful. However, many patients arrive at the hospital already carrying a diagnosis of a chronic or life-limiting illness, in which case the PCCT could be consulted on the same day as admission. Of course, the PCCT would like to be involved in patient care as early as possible to offer the full range of their services, which includes future planning. It is also worth nothing that there was a wide range to the consultation interval (0 - 73 days), which suggests that many patients do not receive a PCCT consult until much later in their hospitalization. This variability might be attributable to physicians' varying knowledge of PCCT services or willingness to request a consultation. Here again, further education about palliative care could improve referral rates and timing. Previous research suggests that early involvement of the PCCT is optimal (Manfredi et al., 2000), and ideally, the PCCT would be consulted as soon as a patient is diagnosed with a life-limiting illness in order to facilitate a holistic approach to care.

In this medical center, when the PCCT receives a consultation request, they respond quickly, usually the same or next day. This particular team has a full time nurse practitioner, psychologist, and social worker, which enables the team to process consultation requests expediently. Seeing patients within one day of a consultation request is ideal, as the PCCT can respond to the immediate needs of the patients and consulting physicians. Furthermore, responding quickly to consultation requests likely helps the team earn a good reputation with other disciplines.

Another key interval to consider is the time between consultation and death, which may be one indication of where an individual is in the illness trajectory when the PCCT is consulted. In our sample, the median interval (27 days) is consistent with reports from previous studies (23 days in Chong et al., 2004; 42 days in Osta et al., 2008). A large interval may indicate that the PCCT was consulted early in the illness trajectory, when recommendations can be offered that extend a patient's life while at the same time enhancing the quality of life. A short interval suggests that the PCCT is consulted only at the very end stage of an illness when difficult decisions might have already been made and palliative care interventions may be less effective. A longer interval is beneficial to help patients process their illness and understand care options *before* deciding on goals of care. Additionally, when the PCCT is involved early, they can facilitate with advanced care planning to help ready the patient and his family for the future. Though PCCTs often help patients transition away from life-extending interventions, they also improve quality of life by making recommendations to reduce symptom burden and providing support services.

When the PCCT is consulted, they often have recommendations for the consulting team. The average number of recommendations per patient was 1.44 (range = 0 – 10). Our number of recommendations per patient is considerably lower than what previous studies reported (2.39 in Chong et al., 2004 and 4.2 in Manfredi et al., 2000). Differences in how recommendations are counted likely explain the discrepancy. Prior studies counted number of *categories* of recommendations and included recommendations the team might eventually implement themselves. For example, Chong et al. and Manfredi et al. included "patient and family support" recommendations, a category of recommendations we did not document because those services are provided by the PCCT itself.

The nurse practitioner made the majority of recommendations (81.88%), though this is likely due to the consultation process at this VA. Palliative care consultations must be answered by a medical provider, thus the nurse practitioner and the doctor alone are able to respond to consultations. Given that the doctor only saw patients when the nurse practitioner was on vacation, the nurse practitioner was the only one able to be the first responder to consultations. Furthermore, other disciplines have the ability to implement interventions and recommendations themselves (e.g. the social worker can recommend and then make discharge arrangements for a patient), which would not have been counted in our study. The nurse practitioner, however, primarily makes recommendations to the treating physicians.

PCCT recommendations fell into six categories. Pain management and symptom management were by far the most frequently made recommendations. Perhaps pain recommendations are most frequently made because pain is, in fact, the most common complaint of patients who receive a PCCT consultation (Esper & Heidrich, 2005). Pain is common in patients with life-limiting illness, and adequate pain control can be difficult to achieve due to side effects from medications, a patient's habituation to pain medications over time, and a patient's ability to metabolize medications (Esper & Heidrich). Additionally, pain recommendations may be common because pain can be readily assessed. Similarly, other symptom management, such as recommendations to facilitate breathing, dress wounds properly, etc., also revolve around problems that are common among palliative care patients, easy to assess, and relatively easy to solve. For instance, a palliative care clinician can easily glean when a patient has labored breathing and what intervention might be helpful, but it may be more difficult to determine if a patient would like to change code status. Furthermore, because in this study we

only documented recommendations to other care providers and recommendations that could be tracked in the medical record, it is possible we undercounted other types of recommendations.

The location of the patient at the time of consultation was the only significant predictor of whether the PCCT offered a recommendation to the providing care team. Holding all other variables constant, recommendations were 57.6% less likely on consultations for patients in the ICU compared to consultations for patients on general inpatient medical units. ICU patients may be less likely to receive recommendations for a number of reasons. First, because of their critical condition, patients in the ICU are surrounded by more staff and have more intensive monitoring and care. As such, physicians and nurses in the ICU may be able to follow their patients very closely and may already implement interventions the PCCT is likely to suggest. Second, the PCCT may be constrained by the condition of patients in the ICU who are often on ventilators or heavily sedated. Therefore, assessment is more complicated, and the PCCT may have fewer recommendations to offer.

Consultations for outpatients were 77% less likely to involve recommendations than consultations for patients on inpatient medical units. Outpatient consultations may generate fewer recommendations because patients are not as ill as inpatients. Additionally, one of the most common reasons outpatients are referred to the PCCT is for psychological treatment, and psychological services provided by the PCCT were not tabulated for this study.

The recommendation implementation rate in the current study (57%) is notably lower than rates reported in prior studies (84% in Chong et al., 2004; 91% in Manfredi et al., 2008). Here again, we suspect methodological differences are the reason, as we documented each unique and chartable recommendation while other studies documented *categories* of recommendations. Moreover, because we only documented consultations to outside teams, we

did not include recommendations that the PCCT would eventually implement themselves. This decision reflects our interest in how the PCCT functions within the hospital and with other medical teams.

When recommendations are implemented, they are implemented quickly and precisely. Recommendations were implemented in an average of 1.87 days, and in 90.5% of implemented recommendations, the implementation was consistent with the original recommendation in both intention and action. This swift and exact implementation suggests that original care providers value and trust the advice of the PCCT and are willing to seriously consider, and often implement, the recommendations they make.

Recommendations most likely to be implemented included those suggesting a transition to comfort care and a specific discharge disposition. Perhaps these recommendations are frequently implemented because other clinicians readily accept them as within the purview of palliative care (Payne et al., 2002). In contrast, recommendations about pain, symptom management, and consultation by other disciplines were less likely to be implemented, perhaps because physicians believe they themselves are competent to address pain and symptom management (Rodriguez et al., 2007), dismissing these recommendations from the PCCT. Likewise, recommendations from the PCCT to consult other services may not be implemented if physicians are reluctant to include even more practitioners in the care of their patient, due to concerns about complicating care by introducing too many and too varied perspectives (Rodriguez et al.). Other potential reasons why recommendations are not implemented include refusal by the patient, a change in clinical status, early discharge, or disagreement of the treating physician (Chong et al., 2004). Because of the nature of this records review study, we were not

able to determine the precise reason *why* recommendations were not implemented. Other research designs and methods would be required to address that important question.

Among recommendations not implemented, we found that increasing patient age was associated with decreasing probability that pain recommendations are implemented. Specifically, for every one-year increase in age, a pain recommendation is 5.8% less likely to be implemented. Physicians may have inadequate training for pain management in older patients, given the unique pharmacokinetics of aging adults (Gloth, 2001). Thus, physicians may be less willing to implement pain recommendations because they believe pain should be well controlled on current medications. Additionally, older adults are less likely to report pain than younger adults because they often view it as concomitant with aging (Bernabei et al., 1998). Palliative care specialists receive additional training in pain management and are more likely to be aware of the complications of treating pain in older adults. It is possible that physicians are unaware of older patients' pain, and thus find the pain recommendation unnecessary.

We also found that individuals with cancer in the ICU were less likely to have a pain recommendation implemented than patients without cancer, and that general medical inpatients with cancer were more likely to have pain recommendations implemented than patients with other diagnoses. These results should be interpreted cautiously due to the small sample sizes in these groups.

The month in which the consultation was placed did not have a significant effect on whether a recommendation was placed or implemented. Thus, as the team became more established in the hospital over two years, recommendation and implementation rates did not change significantly. Perhaps a larger time frame is needed in order to expect institution-wide change.

Recommendations were implemented at similar rates regardless of the discipline making the recommendation, suggesting that recommendations from nurse practitioners are treated similarly to recommendations from physicians. Although this result should be interpreted with caution due to unbalanced cell sizes, it is still notable given that nurse practitioners can be perceived as less medically capable than physicians (Wilson, Pearson & Hassey, 2002). Likewise, neither the interval between admission and consultation nor the interval between consultation and death significantly predicted whether a recommendation to the providing team was made or implemented. We believe this finding does not imply that early consultations are irrelevant to a patient's quality of life, as we did not document services that the palliative care team provided themselves. Rather, this finding suggests that early involvement of the PCCT may be more influential for the types of services the team is likely to provide themselves, and less meaningful in regards to the kinds of recommendations the team makes to the providing physicians.

Several limitations in this study should be noted. First, we only tracked chartable recommendations and only recommendations to providers outside of the PCCT. Therefore, we do not have data on the types and frequencies of services that the PCCT provides itself. We also did not record recommendations that were not likely to be seen in the medical record if they were implemented, such as recommending "meticulous oral care" or "terminating all non-essential activities." These types of recommendations certainly affect a patient's quality of life, but they are not routinely documented in the medical record, despite their value. Notably, we were unable to document *why* a recommendation was not implemented. For instance, many conversations happen between medical providers that are not documented in the medical record, and we were not privy to informal communication among medical providers and the PCCT that may have resulted in changes in care. Furthermore, this study was conducted in only one medical center

with one PCCT. It is possible that the results of this study are indicative of only this particular medical center's PCCT. For example, other PCCTs have disciplines represented at different time commitments. Our results, particularly the break down of recommendations and implementation rates by discipline, may reflect the operation at this particular medical center, where a full time nurse practitioner responds to every consultation request, and the team's physician only sees patients when the nurse practitioner is on vacation or sick leave. Furthermore, as with any interdisciplinary team, working styles may differ across PCCTs, which could influence productivity and efficacy. This team was observed to have a particularly strong rapport and collaborative working style, which likely contributed to their favorable reputation within the hospital. Lastly, this study utilized a retrospective, cross-sectional design, which is subject to issues of bias, reliability and validity (Wu & Ashton, 1997). After the principle investigator and coinvestigator coded the initial 30 charts together and consensus was reached, only 10% of charts were coded by both raters, and inter-rater reliability was not formally assessed and documented. It is possible that the data extraction process had errors in coding that remain undetected.

Future research that documents all the services that PCCTs provide, not just recommendations to other providers, is needed in order to understand better how PCCTs affect patient care in the hospital. Additional research is needed to understand the reasons why doctors choose not to implement PCCT recommendations. In particular, research about physicians' knowledge and perception of palliative care services could illuminate if increased education on palliative care services is warranted.

Our study has several implications for practice. For example, when PCCTs educate hospital staff about their expertise, they may consider highlighting their specialty in pain and

symptom management, as these recommendations are most frequently made but least frequently implemented. Furthermore, given that certain recommendations are less likely to be implemented, such as pain recommendations for older adults, palliative care medical providers might consider alternative techniques when making these recommendations. For example, stronger language could be used, or a clear rationale for the recommendation could be provided to stress its importance. Being part of a consultation team requires nuanced communication and persuasion skills. Future studies may consider evaluating the language of recommendations in order to determine if there are linguistic determinants of whether a recommendation is implemented.

Palliative care teams are a new specialty service within VA and other hospitals, and their roles are still being defined and developed. Although these teams have unique expertise that can help other care providers, their acceptance within medical systems has been slow. This research identifies several factors that are related to the effectiveness of PCCT consultations, but additional work is needed so that PCCTs can launch targeted initiatives to overcome interpersonal and institutional obstacles and provide effective recommendations that improve quality of life for patients with life-limiting illnesses.

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Tables and Figures

Table 1
Demographic and Recommendation Characteristics (n = 200)

Variable	n / x	% / SD
Demographics		
Male	194	97%
Age at consultation date (yrs)	69.55	11.64
Age at death (yrs)	69.59	11.62
Primary diagnosis		
Cancer	118	59%
Lung disease	13	6.5%
Cardiac disease	12	6%
Dementia	8	4%
Liver/renal disease	7	3.5%
Stroke/coma	7	3.5%
HIV	1	.5%
Other	34	17%
Patient location		
General medical inpatient unit	103	51.5%
Intensive care unit	57	28.5%
Outpatient	38	19%
Palliative care/hospice	1	.5%
Inpatient psychiatry	1	.5%
Characteristics of the PCCT response		
Interval between admission and PCCT consult (days)	7.15	10.85
Interval between consult request and PCCT first response (days)	.74	1.37
Type of PCCT provider offering recommendation		
Nurse practitioner	235	81.88%
Physician	28	9.76%
Psychologist	2	7.32%
Social worker	3	1.05%
Interval between PCCT consult request and death (days)	97.80	161.05
Characteristics of response to consultation and recommendations		
Number of recommendations/patient	1.44	1.81
# of implemented recommendations	165	57.49%
Interval between recommendation and implementation (days)	1.87	7.73

Table 2

Logistic Regression Predicting Whether a Recommendation is Made

Predictor	B	SE B	Exp(B)	95% C.I. for Exp(B)
Age at consultation	-.012	.013	.988	.963 - 1.014
No cancer	.158	.316	1.172	.631 - 2.175
In intensive care unit – Yes/No	-.857	.344	.424*	.216 - .833
Outpatient – Yes/No	-1.471	.420	.230*	.101 - .523
Interval between consultation and death	-.001	.001	.999	996 - 1.001

* *p* < .05

Table 3

Logistic Regression Predicting Pain Recommendation Implementation

Predictor	*B*	SE *B*	*Exp(B)*	95% C.I. *Exp(B)*
Age at consult	-.060	.030	.942*	.888 - .999
No cancer	-.772	.746	.462	.107 - 1.992
In intensive care unit – Yes/No	-2.106	.775	.122*	.027 - .556
Days between admission & consultation	0.34	.029	1.035	.978 - 1.094
Total # of recommendations per patient	.184	.156	1.202	.885 - 1.632
ICU*No cancer	4.505	1.512	90.489*	4.676 - 1751.198

* *p* < .05

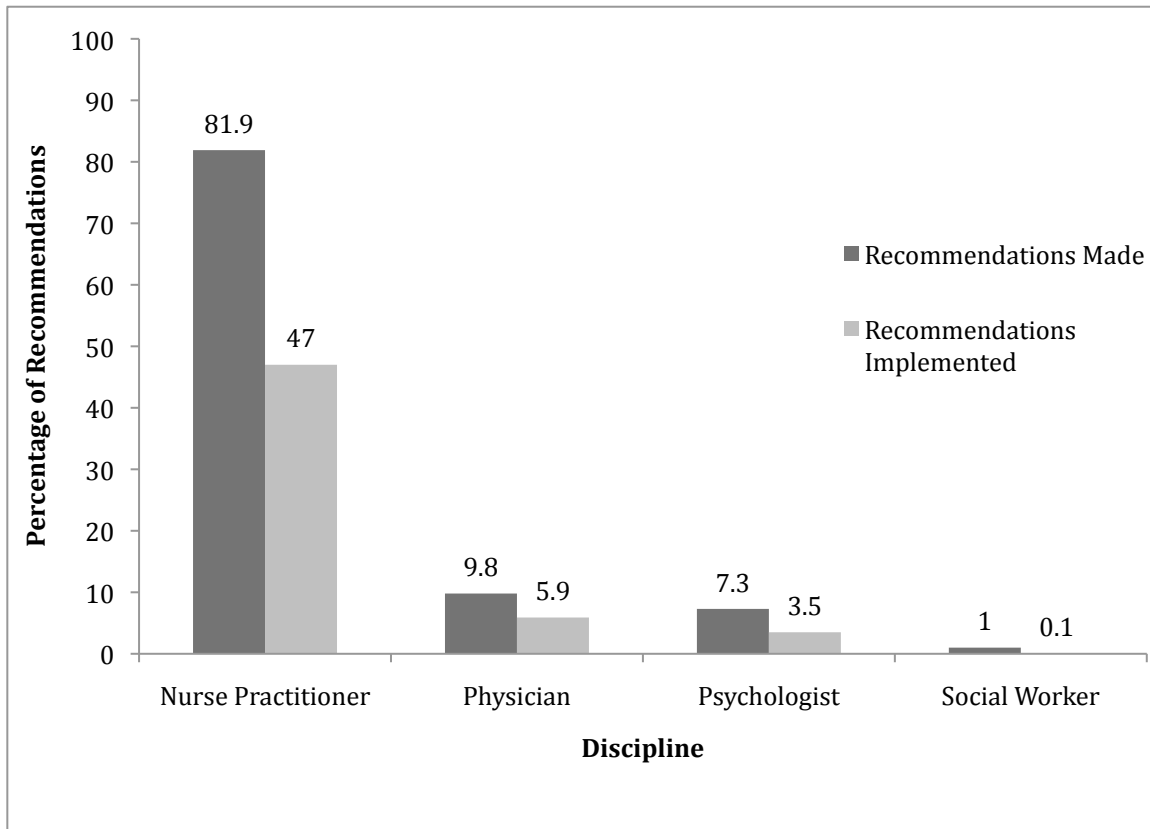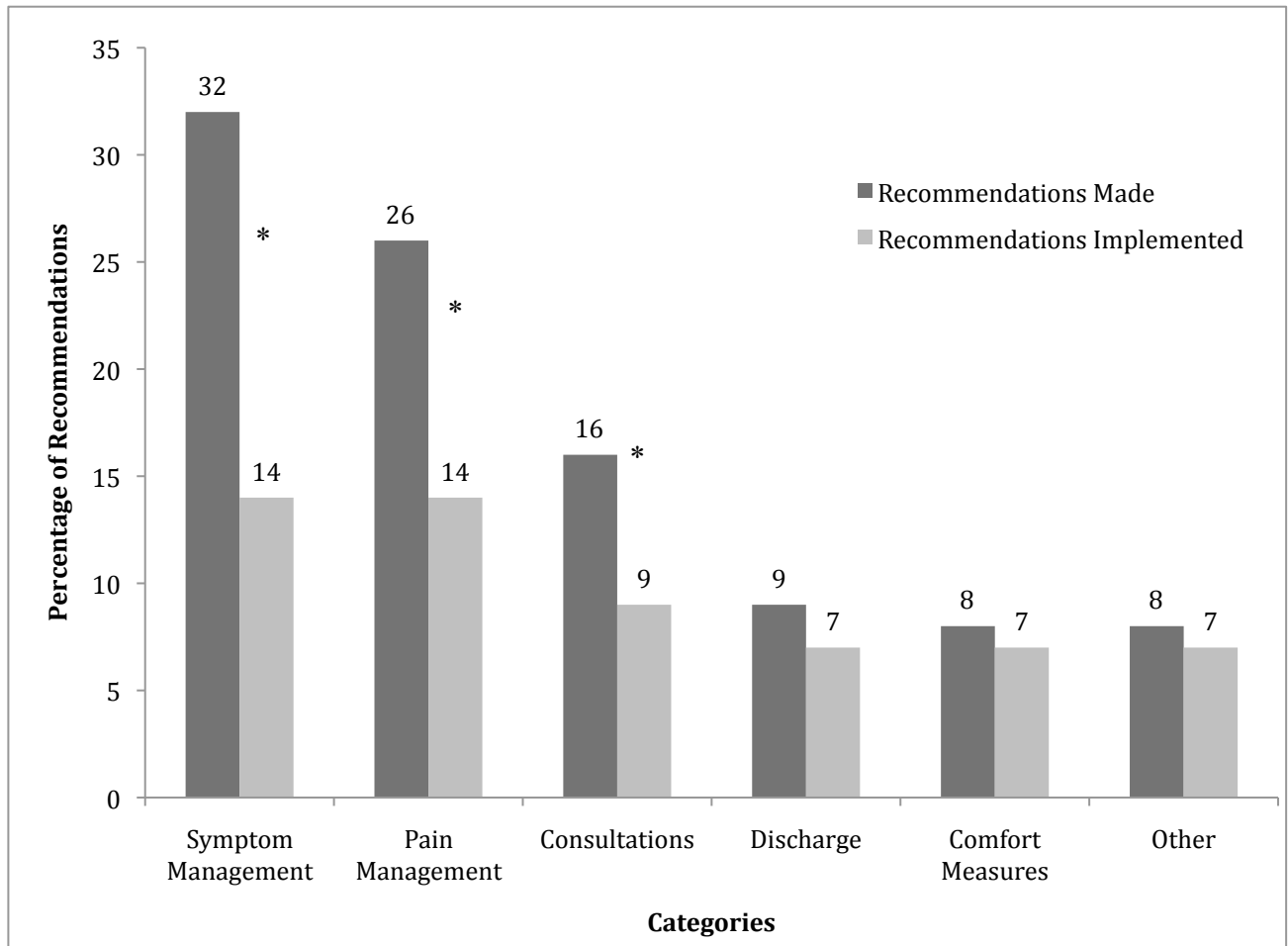*Figure 1.* Percentage of Recommendations Made and Implemented, by Discipline (n = 287).

Figure 2. Percentage of Recommendations Made and Implemented, by Category, (n = 287)

* *p* < .05