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Assessing and Treating Pain in Hospices: Current State of Evidence-Based Practices

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Abstract

The aim of this article is to report on current provider evidence-based assessment and treatment practices for older adults with cancer in community-based hospice settings. Using the Cancer Pain Practices Index (CPPI), a tool developed by the researchers to measure evidence-based pain management practices, patients received an average of 32% of the those key evidence-based practices (EBPs) that were applicable to their situation. When examining individual practices, the majority of patients had their pain assessed at admission using a valid pain scale (69.7%) and had primary components of a comprehensive assessment completed at admission (52.7%); most patients with admission reports of pain had an order for pain medication (83.5%). However, data revealed a number of practice gaps including: additional components of a comprehensive assessment completed within 48 hours of admission (0%); review of the Pain Treatment Plan at each reassessment (35.7%); reassessment of moderate or greater pain (5.3%); consecutive pain reports of 5 or greater followed by pain medication increases (15.8%); monitoring of analgesic- induced side effects (19.3%); initiation of a bowel regimen for patients with an opioid order (32.3%); and documentation of both non-pharmacological therapies (22.5%) and written pain management plans (0.6%). Findings highlight positive EBPs and areas for improving the translation of EBPs into practice. Data suggest that cancer pain is not being documented as consistently assessed, reassessed or treated in a manner consistent with current EBP recommendations for older adults with cancer in community-based hospices.

Keywords

Elderly; older adult; cancer pain; assessment; hospice; cognitively impaired

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Introduction

More than half of all persons with cancer diagnoses are over the age of 65, with the incidence increasing with age.[1] Of great concern in addressing the care of older persons with cancer are the symptoms that contribute to suffering and distress, with pain being the most common, feared, and pervasive problem. [2–5]

Cancer pain patients suffer needlessly from pain related to their cancer, its treatment and related comorbid conditions,[6–9] often experiencing physiological, psychological, emotional, social, and spiritual distress.[10–11] Up to 90% of patients with advanced cancer experience significant pain that requires intervention.[12–13] Also, cancer pain is frequently undertreated[14–15] and underprescribed.[16–18] Older adults are at particular risk for inadequate pain treatment across care settings.[4,19–20] Multiple factors contribute to the challenge of managing end-stage cancer. Evaluation of pain in those with cognitive impairment, increased sensitivity to the effects of medications, multiple comorbidities, and polypharmacy issues all contribute to the challenges of managing pain in the older population.[6–9]

One of the goals of hospice care is a pain-free death.[21] Although pain outcomes are better in hospice than non-hospice settings, there are gaps and inconsistencies in hospice practices of effective assessment and management of pain. Even high quality hospice care fails to eliminate pain in up to 75% of cases.[22–23] Kutner and colleagues[23] noted that hospice staff identified the presence of pain in 76% of 348 patients in 16 hospice settings with frequent and severe symptoms more prominent in patients with less than 15 day stays. Strassels et al.[15] noted in a retrospective cohort study that greater than 20% of 350,000 hospice patients with a mean age of 75.3 experienced severe pain at least once while in hospice care. In addition, 26% of participants with two or more documented pain scores reported a last pain intensity score in the moderate to severe range.[15]

Use of evidence-based practices (EBPs) for pain assessment and management by doctors and nurses caring for older patients is sporadic.[24–27] This is a concern given reports that suggest 70–90% of all cancer patients could achieve pain relief with implementation of existing knowledge and guidelines.[28–29] The problem in adoption of EBPs is not from a lack of available or relevant guidelines that address cancer pain. Guidelines are available from the U.S. National Comprehensive Cancer Network (NCCN),[30] the American Pain Society,[31] the National Consensus Project for Palliative Care (NCPPC)[32] and the World Health Organization (WHO).[33] Additionally, guidelines are available that focus specifically on older adults, including the American Geriatrics Society (AGS) Persistent Pain Guideline,[6] Acute Pain Management in Older Adults,[34] and Pain in Residential Aged Care Facilities: Management Strategies.[35] Thus, recommendations for best practice for cancer pain management in older adults are available; however, early evidence suggests pain care practices in this population are not consistent with guideline recommendations.[4,15] Data identifying best practices for assessment and management of pain in older adult cancer patients receiving hospice care is lacking.

Research indicates that a number of factors may influence the use of EBPs, including both characteristics of the individual users (nurses and physicians) and the organization.[36] EBP users may be impacted by their educational preparation, area of practice, or their personal attitudes related to implementing EBPs.[37–38] Organizational influences may include size of the organization, organizational leadership and organizational climate.[39–41] Thus, examination of current use of EBPs should control for provider and organizational characteristics.

Purpose

Alleviating pain for patients at the end of life is a national health concern and has been targeted as a top research priority.[33, 42–43] Further attention to determine the current status of EBPs is needed to guide future research and practice changes.

The purpose of this paper is to describe the current state of evidence-based pain management practice use in hospices caring for older cancer patients in community-based settings in the Midwest and the impact of patient, organizational or provider variables. Data were analyzed to answer the following questions: 1) What is the current state of EBP for cancer pain assessment and treatment in older adults receiving hospice services in a home setting? 2) What is the relationship of patient, provider and organizational variables to use of evidence-based cancer pain management practices for older adults receiving hospice services in a home setting?

Methods

Study Design

This paper presents baseline data from a large-scale, randomized, controlled, experimental study testing the effect of a multifaceted Translating Research into Practice (TRIP) intervention to promote adoption of EBPs for pain assessment and management in older adults with cancer at end of life. Sixteen hospices were recruited in the Midwest targeting a representative sample of small, medium and large hospices. Inclusion criteria were annual admission of a minimum of 30 patients per year and serving a majority of their older patients with a cancer diagnosis in a home care setting.

Organizational Demographics

Of the 16 participating hospices, 94% were non-profit and 6% were a for-profit entity. Twenty-five percent of the hospices described themselves as independent organizations; while 75% were part of a larger organization, such as a hospital, home health agency or county department of health. Thirty-seven percent were located in a rural setting, 19% were located in an urban setting and 44% indicated they had offices in both rural and urban settings. The sixteen hospices were stratified by size with four small hospices (average daily census [ADC] = 25 or less), eight mid-sized hospices (ADC=26–100) and four large hospices (ADC=greater than 100). The average length of stay (ALOS) for patients was 51 days. This was less then the ALOS reported for 2006 by the National Hospice Organization (NHPCO) of 59.8 days.[44]

Human Subjects Review

Human subjects approval was obtained from the Institutional Review Board (IRB) at the University of Iowa. Approval was also obtained from the corresponding human subjects review boards at each participating hospice with access to an internal IRB. The University of Iowa IRB served as the IRB of record for those hospices without an internal IRB.

Patient Sample

Patients included in the sample met the following inclusion criteria: 65 years of age or older; newly admitted to community-based hospice with a cancer diagnosis between February 1–July 30, 2006; and deceased at the time of record collection (September 2006). An average of 30 retrospective medical records for patients meeting eligibility criteria were randomly selected from each hospice for the designated time frame (February 1– July 30, 2006). For hospices that did not have a minimum of 30 eligible medical records during the defined period, all records were selected. Medical records for patients who received hospice services in a long-term care setting were excluded from the sample because of the different issues impacting pain management in the nursing home vs. home setting.

Study Variables

The major variables for this study include 1) pain assessment practices of nurses caring for older adults with cancer in community-based hospices; and 2) pain treatment practices of nurses and physicians caring for older adults with cancer in community-based hospices. Eleven selected evidence-based pain assessment and treatment practices reported in this paper are part of an index of key pain practice indicators that were identified for use as a quality improvement tool through an expert consensus process described elsewhere.[45] Additionally, data on six EBPs not included in the key indicator list but deemed important by the research team in examining broad- based comprehensive pain care practices are also presented.

Instrumentation

Cancer Pain Practice Index (CPPI)—An index of 11 key indicators was developed to measure provider overall use of EBP for older adults with cancer in a community-based hospice setting. To develop the CPPI tool, investigators initially reviewed existing EBP guidelines and selected the following guidelines specific to older adults with cancer receiving services in a community-based hospice setting:

1. Guideline for the Management of Cancer Pain in Adults and Children. [31]
2. Clinical Practice Guidelines for Quality Palliative Care. [46]
3. Evidence-Based Practice Guideline: Acute Pain Management in Older Adults. [34]

The CPPI tool was created and refined through a series of reviews by national experts in pain and hospice and palliative care. Content validity of the tool was established through an expert review process. Inter-rater reliability was established by two trained reviewers on a randomly selected group of 10 patients. The two raters were experienced with the medical record abstraction process and common issues arising in interpretation of the EBPs. Inter-rater reliability of the CPPI was established at 93%. Intra-rater reliability was established by having one trained abstractor re-abstract 10 records after a two-week period. Intra-rater reliability of the CPPI tool was established at 95%. A detailed description of the CPPI tool development and psychometrics are reported elsewhere.[45]

The CPPI includes key indicators for evidence-based pain management practices that represent the following focus areas: Comprehensive Pain Assessment, Focused Pain Assessment, Analgesic Use, Analgesic Side Effects, Non-Pharmacological Therapies and Patient Education related to pain management (Table 1). Key indicators in the area of Comprehensive Pain Assessment include: valid pain scale use at admission; comprehensive assessment-primary; comprehensive assessment-other. Key indicators in the area of Focused Pain Assessment include: pain intensity reassessment for reports of moderate or severe pain (5 or >) and review of the Pain Treatment Plan. Key indicators in the area of Analgesic Use include: order for pain medication with admission report of pain and Increases in pain medications for consecutive reports of pain intensity of 5 or greater. Key indicators in the area of Analgesic Side Effects include: bowel regimen initiated and analgesic side effects monitored. The areas of Non-Pharmacological Therapies and Patient Education each have one key indicator. They are, respectively, non-pharmacologic therapies used and written pain management plan.

In addition to the 11 key indicators in the CPPI, six additional indicators of comprehensive pain practices are presented and include: comfort-function goal established; reassessment-primary; increase in pain medications for consecutive reports of pain behaviors; no non-recommended opioid orders; identified side effects receiving recommended treatment; and instruction on use of a pain diary (Table 2).

Hospice Demographics Questionnaires—Demographic questionnaires developed by the study team were completed by the executive director of each of the sixteen participating hospices and included organizational and staff demographics. Their reported data provided information used to determine effect of organization and provider characteristics on EBPs.

Data Collection Procedures

Retrospective medical records including the admission assessment; the plan of care (including the overall care plan, the pain management pain, intervention list and non-drug treatments); the medication list; the physician orders; the history and physical, progress notes and verification of diagnoses; the nurses notes; and the social worker notes for the first two weeks of hospice care were used as the data source for determining the degree to which hospice health care providers used evidence-based cancer pain management practices for older hospice patients in a community setting. Although other data sources were considered for evidence of adherence, documentation of care delivered (e.g., the medical record) was used for several reasons: 1) its use by regulatory agencies for documentation of compliance and for reimbursement of service; 2) its use in the legal setting; 3) previous use in the research setting; and 4) direct observation of provider behaviors is not feasible in this setting. Data obtained via medical record abstraction is an accepted and often necessary method of measuring adherence to EBPs, particularly in the setting of care where patient frailty and direct observation of provider behaviors is not feasible.[47–51] Medical records for the first two weeks following hospice admission were systematically reviewed for this study. Pain intensity was examined during three specific time periods over the two-week period: 1) days 1–2; 2) days 3–7; and 3) days 8–14. Medical record data were abstracted and entered directly into an ACCESS database developed specifically for grant use.

To ensure accuracy of the abstracted data, information from each record was collected by two trained research assistants (RAs), who were nurses with clinical experience working with older adults in hospice, oncology or long-term care settings. The RAs utilized an ACCESS database specifically developed to guide the medical record abstraction process and allow direct input of abstracted data for analysis. Any discrepancies between the two RA raters were reviewed by a third RA to determine final coding. Although this approach required additional RA time and expense, it was deemed important to assure reliable and consistent interpretation of the medical record documentation.

Data Analysis

The data management and statistical analysis were performed using SAS 9.1.3 (SAS Institute, Cary, NC). A level of significance of 5% was used for all tests. In modeling the CPPI and the individual indicators, we treated the patient as the unit of all analysis, each of whom uniquely belonged to one of the 16 hospices. In modeling the demographic characteristics of the hospices, we treated the hospice as the unit of analysis. Hospices were assumed to be independent, while patients within the same hospice might be correlated.

Demographic characteristics of patients, nurses/physicians, and hospices were analyzed using descriptive statistics (frequencies, proportions and means). The key and additional pain practice indicators were recorded as a 0/1 binary variable (reflecting whether the patient received the pain practice). For indicators that contacted multiple components (e.g., comprehensive assessment-primary with five components: pain intensity, pain location, pain quality, pain duration/pattern, and impact of pain on function), a 75% achievement was required to receive a score of 1. For those indicators that had only one component but were completed multiple times over the two-week period (e.g., review of the Pain Treatment Plan at each focused pain assessment), an achievement of 100% was required to receive a score of 1. These indicators were summarized by the average across all patients. For each patient, the CPPI was calculated as the percent of the key pain practice indicators received from those that were applicable to each patient. The overall CPPI score was summarized by the average percentage across all patients.

We also collected data for 10 explanatory variables: three patient variables including age, race and gender; two hospice variables including hospice size and organizational structure; three nurse variables including RN education, RN certification and RN case load; two physician variables including Medical Director status and Medical Director certification. To study the effects of these variables upon receiving the 11 key pain practice indicators, we applied Poisson generalized linear models (GLMs) with the CPPI as the dependent variable. Specifically, the number of key practices in the numerator of the CPPI was used as the dependent variable, and the number of relevant indicators in the denominator was used as an offset. To account for the correlation between patients within the same hospice, we used the generalized estimating equations (GEE) approach along with the Poisson GLM. We assumed an exchangeable working correlation structure, i.e. the correlation between any two patients in a hospice is the same. To determine the final model, backward selection was performed on the initial model featuring all 10 explanatory variables. A final regression model was fit based on the significant variables indentified in the backward elimination procedure.

The effect of hospice size (small, medium and large) on the CPPI was investigated using a Poisson GEE/GLM. The effects of hospice size on the individual indicators (key and additional) were similarly analyzed using logistic GEE/GLMs. To determine the effect of hospice size on the demographic characteristics of patients, nurses and physicians, we used a generalized logistic regression model (based on a multinomial outcome). A dispersion parameter was included in the model to account for possible overdispersion due to heterogeneity of the hospices of a particular size.

Results

Sample Description

A total of 399 patients from sixteen participating hospices were enrolled in the study. Slightly more patients were males (56.9%) and of the patients with race identified, 91% were Caucasian. There was no significant difference in patient age or gender based on hospice size. It was not possible to analyze for the effect of race due to the limited diversity in the patient sample. Mean age was 78 years (SD 7.41), and when examined by cohort (65–74 years; 75–84 years; 85 years or over), the two younger age groups had similar numbers, with fewer patients in the oldest old group (Table 3). All patients had cancer as their primary hospice diagnosis. Only 5% (*n*=21) of patients in the sample were reported to have a cognitive impairment and likely reflects the exclusion of older patients residing in nursing homes. Overall, 88.5% (*n*=353) of patients had a report of pain or an existing pain diagnosis at hospice admission (“admission” was defined as the first 48 hours of hospice service). Those patients whose pain was controlled at admission by pharmacologic or non-pharmacologic therapies (thus reporting a pain intensity of “0”) are included in the number of patients with pain. Numeric pain intensity levels on a 0–10 point scale were defined as: none (0); mild (1–4), moderate (5–6) and severe (7–10).[52] Admission reports of pain indicate 50.9% (*n*=203) of the patient sample reported no current pain, 20.6% (*n*=82) reported mild pain, 8% (*n*=32) reported moderate pain, and 6.8% (*n*=27) reported severe pain at admission. The remaining 13.8% (*n*=55) of patients did not have an admission pain intensity documented. Pain intensity was also reviewed at two additional time periods: 3–7 days after hospice admission and 8–14 days after admission. At the midpoint (3–7 days after admission) the sample comprised 353 patients. This number reflects a decrease due to patient death or discharge from the in-home hospice setting. Of those patients, 47% (*n*=166) had pain intensity documented as none, 23.8% (*n*=84) as mild, 6.8% (*n*=24) as moderate and 5.4% (*n*=19) as severe. The number of patients with no pain intensity documented at visits during the midpoint reassessment period increased to 17% (*n*=60). Three hundred and four patients remained in the sample for at least a portion of the final review period (8–14 days after admission). Pain intensity reports were documented as follows for these patients: 49% (*n*=149) reported pain as none; 26.3% (*n*=80) as mild; 5.9% (*n*=18) as moderate; and 4.6% (*n*=14) severe. The number of patients who had no pain intensity rating documented during nursing reassessments in this time period decreased slightly to 14.1% (*n*=43) (Table 4).

A total of 383 nurses and 32 physicians served as the provider sample for the sixteen participating hospices. Sixty-six percent of the nurses worked full-time, with the remaining working less then 30 hours per week. Of the number reported, 42% (*n*=159) of the nurses had a BSN or higher. Twenty-two percent of the nurses also had certification in hospice/palliative care and/or pain management. Nurse case loads were reported by the hospices based on full-time equivalents. Forty-four percent of the sixteen hospices reported nurse case loads of 10 patients or less, with the other 56% having nurse case loads of 11 patients or more. No hospices reported having a physician on staff full-time. Sixty-three percent of the physicians were listed as part-time, with the remaining 38% serving as volunteers. Twenty-eight percent of medical directors reported having certification in hospice/palliative care. There was no significant effect of hospice size on provider variables (Table 5).

Evidence-Based Practices

The overall mean score on the CPPI was 31.7% (SD 0.2152), with a range of 0–100%. The higher the CPPI percentage the more EBPs a patient received. Of the 399 subjects in the study, 15% received none of the EBPs on the CPPI that were applicable to their situation. Only 2% of the 399 subjects received all of the EBP indicators applicable to their particular situation.

The following section presents the data for provider practices on individual indicators included in the CPPI, as well as the six additional indicators. Two indicators were statistically significant based on hospice size: completion of the primary components of a comprehensive assessment and monitoring of analgesic induced side effects.

Comprehensive Assessment

Overall, 69.7% (*n*=278) of patients had their pain assessed using a valid pain assessment scale at admission to hospice, with the majority using a numeric rating scale (NRS). Assessment of pain intensity using a culturally sensitive valid pain scale was also examined. While only three non-English speaking patients were included in the sample, none had documented access to a translated pain scale or the use of a formal translator to assist in determining pain intensity levels. Of the cognitively impaired (CI) patients (*n*=21), all but one had documentation of pain assessment at admission. Four were able to use a NRS to report pain intensity while 15 of the remaining patients with CI had pain behaviors documented at admission. Of patients with pain present at admission, 52.7% (*n*=186) had at least four of the five primary components of a Comprehensive Pain Assessment completed within 24 hours of admission. However, none of the patients with pain present at admission also had at least five of the six additional components of a Comprehensive Pain Assessment completed within 48 hours of admission (Table 6).

Focused Assessment

For patients with reports of moderate/severe pain (≥ 5), only 5.3% (*n*=5) had a reassessment of pain intensity within 24 hours of the initial pain report. Of those patients with a pain diagnosis, 35.7% (*n*=127) had documentation that nursing staff completed a review of the Pain Treatment Plan each day a focused nursing assessment was completed (Table 6).

Analgesic Use

Of patients with an admission report of pain, 83.5% (*n*=106) had an order for pain medication within 24 hours of their admission. For patients reporting consecutive pain intensity reports of 5 or greater on a 10-point NRS, 15.8 % (*n*=6) received an increase in their pain medication within 24 hours of the second report (Table 6).

Opioid Side Effects

For purposes of this study, a bowel regimen was defined as an order for both a stool softener and a laxative. The five most concerning opioid-induced side effects were defined as: respiratory depression, sedation, nausea/vomiting, constipation and delirium. In patients with opioid orders, 32.3% (*n*=112) of patients had a bowel regimen initiated within 24 hours of the opioid order. Only 19.3% (*n*=67) of patients with an opioid order were monitored for at least four of the five defined side effects when a focused nursing reassessment was completed. When more than one nursing assessment was noted on the same day, the expectation for this study was that opioid-induced side effects would be monitored during one of the visits but did not require documentation at each visit on the same day (Table 6).

Non-Pharmacologic Therapies and Patient Education

Only 22.5% (*n*=82) of patients who reported pain had documentation in their medical record of the use of any non-pharmacologic therapy in the week following the pain report. Non-pharmacologic therapies included both cognitive-behavioral strategies, such as meditation, relaxation, music, or prayer; and physical therapies, such as massage, repositioning, or use of hot/cold. Of patients with pain reported at some point during the total two-week review period, 0.6% (*n*=2) had documentation of a written pain plan that included at least 75% (6 of 7) or more of the following components: the causes of their pain; the types of and rationale for their analgesic meds; specific instructions on how to dose and titrate their analgesic meds; instructions on how to manage analgesic side effects; instructions for storage and safe keeping of medications; who to call if pain is not relieved or increases in intensity or if side effects occur; and when and how to use non-pharmacological approaches to pain management (Table 6).

Additional Indicators

Assessment/Reassessment—For patients with a pain diagnosis or report of pain on admission, only 22.7% (*n*=80) had a patient specific comfort-function goal established and 18.4% (*n*=34) of nursing reassessments for these patients included a review of the primary components (pain intensity, location, duration/pattern and impact of pain on function) of a pain reassessment at each follow-up visit (Table 7).

Analgesic Use—One practice related to analgesic use scored high. Of all opioid orders, 97.1% (*n*=335) did not include agents considered potentially inappropriate for older adults (e.g., butorphanol, pentazocine, dezocine, nalbuphine hydrochloride, codeine, meperidine, and propoxyphene). However, cognitively impaired patients with two consecutive reports of pain behaviors who received an increase in opioid order was low at 18.8% (*n*=3) (Table 7).

Side Effects/Patient Education—Documentation indicated that none of the patients with identified opioid-related side effects received a recommended treatment for all of the side effects identified. Recommended treatments included any of the following: the addition of a medication to treat the side effect; a change in pain medication; a decrease in pain medication; titration of a symptom treatment; or simply watching and waiting the identified side effect. Only 5.5% (*n*=20) of patients who reported pain during the two-week period or their caregivers received instruction on the use of a pain diary (Table 7).

Impact of Patient Characteristics on Overall Provider Practices

Age, but not gender, was significantly related to the use of EBPs as reported on the overall CPPI score (Table 8). Younger patients (those under 75) were more likely than older patients to receive the EBPs included on the CPPI. Race was also significantly related to the percent of EBPs received, with African American patients (n=20) more likely to receive the EBP than Caucasian patients. Caution is warranted, however, in interpreting effect of race as the sample of African Americans and others of diverse ethnic backgrounds is small. Because of their minimal numbers, Asians, Hispanics and American Indian patients were grouped together for purposes of analysis. Additionally, a large number of patients did not have documentation of race and thus were categorized as unknown.

Impact of Organizational and Provider Characteristics on Provider Practices

The GEE analysis of organizational and provider characteristics examined the impact on the overall CPPI score. Data indicated that medium-sized hospices (ADC 26–100) and independent hospices (those that are not part of a larger organizational structure) were significantly less likely to provide the EBPs included on the CPPI.

On an individual provider level, both nurse case load and nurse certification in hospice/palliative care or pain management were statistically significant. Data showed patients served by hospices with RN loads greater than 10 were more likely to receive the EBPs. Patients at hospices with a greater percent of nurses certified in hospice/palliative care or pain management were more likely to receive EBPs. Table 8 provides additional data regarding the effect of individual and organization characteristics on provider practices.

Other provider variables analyzed that were not significantly related to the CPPI include: nurse education level; Medical Director employment status (volunteer or part-time); and Medical Director certification status.

Discussion

Practice variation has been a long-standing concern across health care settings and hospices are no exception.[53] Although managing pain is a priority in hospice, findings from this study suggest that recommended EBPs for assessment and management of pain in older persons with cancer are not being fully implemented, or if they are, they are not being documented. While data suggest over 70% of patients had their pain controlled throughout their first two weeks after hospice admission, the lack of documentation of pain intensity ratings bring into question the degree of pain that may have been overlooked and any conclusions from pain score documentation must be interpreted with great caution.

Analysis of pain intensity reports in this study did not control for pain treatment. An average of 15% of assessments during the first two weeks of hospice service did not include a pain intensity rating. Even those patients that reported moderate or severe pain had few pain scores documented, which suggests that evidence-based recommendations for reassessment of pain at this level were not being implemented as recommended.

The mean number of pain intensity scores documented in days 3–7 and days 8–14 of hospice care were less than two reports per week per patient (1.38 and 1.79, respectively) (Table 4). This suggests that limited information was available to plan and document effective treatment decisions for hospice patients.

Pain assessment is viewed as the basis of quality pain management.[31] For purposes of this study, a comprehensive pain assessment completed at hospice admission was defined, with primary components to be completed within 24 hours of admission and additional components to be completed within 48 hours of admission (see Table 2 for complete list of components). While primary components of the admission assessment were completed for 52.7% (*n*=186) of patients, completion of at least five of six additional components for planning comprehensive care were not completed for any of the patients in the study within 48 hours of hospice admission. This would suggest that patients were not receiving complete pain assessments and judgments about pain management were based on limited data. In addition, the number of patients for which pain intensity was not documented increased during the two-week data collection period from 13.8% at admission to 17% at 3–7 days after admission, and then dropped slightly to 14.1% during the final period.

While the number of reports of moderate or severe pain in this sample was fairly low, data seem to indicate a troubling trend for patients who did have pain at this level. Only 15.8% (*n*= 6) of patients reporting consecutive pain intensity reports of 5 or greater received an increase in pain medication within 24 hours of the second report. In addition, only 5.3% (*n*=5) of patients with a pain report of moderate/severe had a reassessment of pain intensity completed within 24 hours of the moderate/severe pain report. Reports of moderate and severe pain did decrease from 14.8% (*n*=59) at admission to 10.5% (*n*=32) in the final review period (8–14 days after admission). However, the limited number of pain reassessments documented raises concerns about the treatment provided to hospice patients with increased pain.

One of the foundations of hospice is patient self-determination.[32] Only 22.7% (*n*=80) of patients in this sample had a comfort-function pain goal established with the patient when pain was identified. Of those with a goal established, it was noted that a number of the goals appeared to be hospice goals (e.g., all patients in the hospice had the same goal identified) rather than patient specific goals. As indicated in both the Clinical Practice Guidelines for Quality Palliative Care[32] and the Evidence-Based Practice Guideline on Acute Pain Management in Older Adults,[34] establishment of a pain goal that is based on best evidence, benefit and risk, and the preference of the patient and or family is optimal to understanding and assessing the patients pain situation and serves as a focus for ongoing pain treatment planning. A comfort–function goal[54] allows the patient to apply a numeric label or a functional goal to the level of pain they find acceptable providing clinicians with a clear understanding of patient preferences. For example, a given patient may be willing to experience an increased level of pain on the day their grandchildren visit if this allows them to be more alert. Or, a patient may desire a pain level that allows them to sit in their recliner daily. It is important to discuss issues related to treatment and adverse effects with each patient and establish the appropriate goals for their given situation. It also is important to review the comfort-function goal on a regular basis, as factors impacting the patient’s pain may change their perception of what is acceptable over time.

For those patients with opioid orders, monitoring and treatment of the most concerning opioid-induced side effects (respiratory depression, sedation, nausea/vomiting, constipation and delirium) was very low. Of the 347 patients with an opioid order, only 19.3% (*n*=67) had at least 75% of the five most concerning analgesic induced side effects monitored when a focused nursing reassessment was completed. Of the 206 patients with opioid-induced side effects identified, none received recommended treatment for all identified side effects although our criteria was very liberal and included any of the following: addition of medication to treat the side effect; a change in pain medication; a decrease pain medication; titration of a symptom treatment; or watch and wait. Surprisingly, data indicate that initiation of a bowel regimen for patients with an opioid order, which is thought to be a widely accepted practice, was lower then anticipated at 32.3% (*n*=112).[31]

Cultural diversity was limited in this sample. The small numbers of minority patients make it impossible to judge if valid assessment approaches are being used for this population. However, none of the non-English speaking patients identified in the sample (*n*=3) had documented access to a translated assessment tool or other pain education resources. It is important to have options for those ethnic groups a hospice is most likely to service (e.g., Hispanic, Hmong) and resources to obtain translated assessment tools.[55]

Although one might expect increased provider education to impact the use of EBP, our findings suggest that nurse education level did not have a significant impact on the overall EBPs provided. However, nurse certification in Hospice/Palliative Care or Pain Management did have a positive impact on the use of EBP by nurses in this study. While only 22% of nurses (*n*=84) overall were certified, nurses in small hospices and large hospices were more likely to be certified, at 27% and 28%, respectively. Medium-sized hospices had fewer certified nurses (14%), although the reason for this is unclear.

One unexpected finding from this sample relates to the impact of nurse case loads. One might presume a lower nurse case load would lead to increased use of EBP since time is often cited as a practice constraint. However, while nurse case loads were determined to be a significant variable, those hospices with low nurse case loads (<10) were less likely to provide EBPs. One possible explanation may be that the number of years of experience rather than nurse case load has more of an impact on implementation of EBP; however, these data were not available for analysis. A related factor may be the rate of hospice staff turn-over, although this was not analyzed in the current study. If staff turnover was indeed a factor, one might assume that small hospices (ADC 25 or less), which are often located in rural areas where employment might be more long-term, would fair better in the implementation of EBP. However, all of the small hospices had case loads of 10 or less, the group that received less EBPs. Another explanation for the effect of the nurse case load on implementation of EBP in small hospices may be the structure of the hospice. Nurses at the small hospices may be required to float between hospice care and regular home care duties depending on patient census; this may impact their knowledge or implementation of hospice-specific EBP guidelines. Rich and Gruber-Baldini[56] found that agencies which provide both home care and hospice were less likely to offer services “considered cornerstones of hospice care.” They noted these types of agencies may not have been completely implementing the hospice comprehensive care philosophy. This could include implementing EBP guidelines that are specific to the hospice environment.

Examination of individual indicators on the CPPI noted only two indicators that showed significant differences across hospice size, including completion of the primary components of a comprehensive assessment and monitoring of analgesic-induced side effects. As noted earlier, it is not clear exactly what characteristics contributed to this, but the final regression model based on the overall CPPI suggests that nurse case load and nurse certification level might have an impact.

The discrepancies in overall CPPI score and the low pain reports in this sample are curious. The sample was described as having relatively mild pain for most patients. However, the reports of pain intensity were very limited and a considerable number of patients had no assessment of pain intensity. Without accurate and consistent data on patient outcomes, it is not possible to determine the effect of EBPs on patient outcomes. Measures of pain impact on function and quality of life were not available and may provide a better picture of the state of pain and its impact. Although it is reasonable to postulate that process outcomes (e.g., documentation and adherence to EBPs) will have a positive therapeutic impact on pain-related outcomes (e.g., mood, sleep, functionality, comfort, etc.), further research is necessary to confirm this conclusion in the hospice setting. Although content validity has been established, additional validation of the CPPI as a quality assurance measure and research tool is also needed.

Implications for Research and Practice

Despite the availability of EBP guidelines related to pain management for older adults with cancer, the percent of patients receiving all recommended practices in this study is low. While a number of hospices reported they believed assessment, reassessment and patient specific treatments were occurring, they acknowledged it was not always being documented to verify completion. This is troubling and may pose a serious risk management problem. The failure to document pain assessment, reassessment and/or treatments seems to be a multi-faceted issue in the hospice environment. Due to the nature of in-home hospice, communication between professionals often takes place during “hallway chats” and via electronic or phone message. These important communications may not be transcribed into the patient record and are lost to the overall history, leaving other professionals lacking the knowledge of assessment and treatment actions. In addition, the current systems of electronic documentation available to hospices are not developed specific to the hospice environment and are often cumbersome to use and lack hospice-specific detail in a number of areas, including pain.[57]

Multiple factors influence an individual’s willingness and ability to incorporate new knowledge into systems of care. Differences in evaluation, documentation, and outcomes of cancer pain management that reflect the unique culture of pain management in each hospice were noted in this study. Research examining strategies to increase translation of EBP guideline recommendations to consistent use in hospice practice, as well as research on the ability of this methodology to apply to a broader population and still retain its validity, are needed. Changing clinical practice and patient outcomes within a health care setting requires more than education of providers, and intensive system-level implementation strategies are necessary. [58–61] Because hospice programs often have unique organizational cultures, individualization of strategies for improved practice while assuring use of reliable and valid tools and processes are essential components of translating clinical practice guideline EBPs into this setting. The degree of variability in pain management practices, evidenced by low adherence to some pain-related EBPs, encountered among the programs in this study also suggests other processes of care may lack uniformity. Since pain control is one of the highest priority issues in hospice, the likelihood of excessive variability in practices (or at least documentation of practices) in other domains is high. Individualization of care should not be equated with idiosyncratic practices. Similarly, strong adherence to EBPs cannot be assumed to imply that patient-derived goals of care will have been met.

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Table 1

CPPI Practice Indicators: Abbreviated and Detailed Descriptions

Abbreviated Description	**CPPI Indicator Detailed Description**
1. Valid pain scale use at admission	Pain assessment completed using a valid culturally sensitive pain scale (numeric scale, verbal descriptor scale, faces scale) for patients able to report pain OR using a non-verbal pain scale &/OR pain behaviors documented for patients with a cognitive impairment at hospice admission. (Culturally sensitive= translated pain scale &/or interpreter services used.)
2. Comprehensive assessment-primary	Patients with pain present at admission with **primary** components of Comprehensive Pain Assessment completed within 24 hours of admission (pain intensity; pain location; pain quality; pain duration/pattern; impact of pain on function).
3. Comprehensive assessment-other	Patients with pain present at admission with **additional** components of Comprehensive Pain Assessment completed within 48 hours of admission (detailed pain history including description of previous & current pain episodes & treatment effectiveness; physical exam, including musculoskeletal & neurological assessment; presence or absence of delirium; things that make pain better; things that make pain worse; presence of anxiety and depression).
4. Pain Intensity reassessment for moderate or severe pain (5 or >)	Reports of moderate/severe (5 or >) pain followed by pain intensity assessment within 24 hours.
5. Increases in pain medications for consecutive reports of pain intensity 5 or greater	Consecutive pain intensity reports of 5 or greater that are followed by increases of opioid dose or additional analgesic added within 24 hours.
6. Order for pain medication with admission pain report	Pts with admission report of pain as mild (1–4) with order for nonopioid or combination of opioid-nonopioid analgesic within 24 hours of admission OR Patients with admission report of pain as moderate (5–6) or greater with order for opioid analgesic within 24 hours of admission OR Patients unable to self report with pain behaviors documented with an order for a non-opioid or opioid analgesic within 24 hours of admission.
7. Bowel regimen initiated	Patients with an opioid order that have an existing bowel regimen (includes both laxative and stool softener) in place or a new order for a bowel regimen initiated within 24 hours of an opioid order.
8. Analgesic side effects monitored	Patients with opioids ordered who are monitored each day a focused assessment is completed for the five most concerning analgesic-induced side effects (respiratory depression, sedation, nausea and vomiting, constipation, and delirium).
9. Non-pharmacologic therapies used	Patients with report of pain with any cognitive/behavioral non-pharmacologic therapies documented in the following week (e.g., meditation, music, prayer, aromatherapy, imagery) OR any physical non-pharmacologic therapies documented in the following week (e.g., massage, vibrations, lotions: Ben Gay®, Icy Hot®, repositioning, use of hot, use of cold).
10. Review of the Pain Treatment Plan	Focused pain assessments that include a review of the Pain Treatment Plan. Review of Pain Treatment Plan is defined as: documentation regarding the current treatment approaches and maintaining or changing orders, etc., if patient is following the plan and/or degree of adherence to the pain treatment plan.
11. Written pain management plan	Patients with documentation of a written pain management plan that includes ALL the following components: (the causes of their pain, the types of and rationale for their analgesic meds, specific instructions on how to dose and titrate their analgesic meds, instructions on how to manage analgesic side effects, instructions for storage and safe keeping of medications, whom to call if pain is not relieved or increases in intensity or if side effects occur, when & how to use non-pharmacological approaches to pain management).

Table 2

Additional Pain Practice Indicators: Abbreviated and Detailed Descriptions

Abbreviated Description	**Detailed Description**
1. Comfort-function goal established	Patients with a comfort-function (pain) goal established (either as a number or functional goal).
2. Reassessment- primary	Nursing interactions with Focused Assessment (follow-up assessment) completed including: pain intensity, pain location, pain duration/pattern and impact of pain on function.
3. Increase in pain medications for consecutive reports of pain behaviors	Patients with two consecutive reports of pain behaviors with an increase in opioid order.
4. No non-recommended opioid orders	Opioid orders that do not include opioids NOT RECOMMENDED for older adults (butorphanol, pentazocine, dezocine, nalbuphine hydrochloride, codeine, meperidine, propoxyphene)
5 Identified SE receiving recommended treatment	Patients with an opioid order with an identified side effect (respiratory depression, sedation, nausea & vomiting, constipation, or delirium) receiving a recommended treatment. Recommended treatment is defined as any of the following: addition of medication to treat the side effect; a change in pain med; a decrease pain medication; watch and wait or titration of a symptom treatment.
6. Instruction on use of a pain diary	Patients with pain (and/or their caregivers) who are instructed on how to complete a pain diary within 48 hours of report of pain.

Table 3

Demographic Characteristics of Patients by Hospice Size

(*n*=399)	Overall	Small Hospices (ADC<25)	Medium Hospices (ADC 26–100)	Large Hospices (ADC > 100)
Age in years M (SD)	77.64 (7.41)	78.4 (8.25)	77.65 (7.02)	77.39 (7.69)
Gender *n* (%)				
Female	172 (43.1)	18 (38.3)	94 (46.1)	60 (40.5)
Male	227 (56.9)	29 (61.7)	110 (53.9)	88 (59.5)
Age category *n* (%)				
65–74	157 (39.3)	18 (38.3)	74 (36.3)	65 (43.9)
75–84	167 (41.9)	19 (40.4)	91 (44.6)	57 (38.5)
85 or over	75 (18.8)	10 (21.3)	39 (19.1)	26 (17.6)
Ethnicity *n* (%)				
White	259 (64.9)	36 (76.6)	141 (69.1)	82 (55.4)
Black	20 (5.0)	0 (0)	5 (2.5)	15 (10.1)
Other [a]	7 (1.8)	0 (0)	6 (2.9)	1 (0.7)
Unknown	113 (28.3)	11 (23.4)	52 (25.5)	50 (33.8)

[a] Included patients of Asian, Hispanic and American Indian descent.

Table 4

Percent of Patients Categorized by Pain Intensity Based on Average Pain Report During the First Two Weeks in Hospice

Pain at Admission to Hospice (*n*=399). Pain Intensity rating > 0 or pain diagnosis at admission *n* =353; Pain at admission 88.5%

	% Patients by Pain Intensity Rating					Pain Intensity Rating		Number of Assessments	
	None (0)	**Mild (1–4)**	**Moderate (5–6)**	**Severe (7–10)**	**No intensity**	**Mean (sd)**	**Range (Median)**	**Mean (SD)**	**Range (Median)**
	n (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)				
Day 1–2 (*n*=399)	203 (50.9)	82 (20.6)	32 (8.0)	27 (6.8)	55 (13.8)	1.75 (2.56)	0–10 (0)	1.13 (0.71)	1–4 (1)
Day 3–7 (*n*=353)	166 (47.0)	84 (23.8)	24 (6.8)	19 (5.4)	60 (17.0)	1.62 (2.32)	0–10 (0)	1.38 (0.99)	1–5 (1)
Day 8–14 (*n*=304)	149 (49.0)	80 (26.3)	18 (5.9)	14 (4.6)	43 (14.1)	1.41 (2.21)	0–10 (0)	1.79 (1.32)	0–10 (2)

Table 5

Demographic Characteristics of Nurses and/Physicians by Hospice Size[a]

	Total Sample *n* (%)	Small (ACD<25) *n* (%)	Medium (ADC 26–100) *n* (%)	Large (ADC>100) *n* (%)
Nurses (*n*=383)				
Full-time	251 (65.5)	15 (41)	109 (69)	127(68)
Part-time	132 (34.5)	22 (59)	49 (31)	61(32)
Nurse education				
<BSN	198 (51.7)	29 (78)	85 (53.8)	84 (45)
BSN	148 (38.6)	7 (19)	50 (31.6)	91 (48)
>BSN	11 (2.9)	1 (3)	5 (3.2)	5 (3)
Unknown or not reported	26 (6.8)	0 (0)	18 (11.4)	8 (4)
Nurse certification				
No Certification	299 (78.1)	27 (73)	136 (86)	136 (72)
Certification in Hospice/Palliative Care or Pain Management	84 (21.9)	10 (27)	22 (14)	52 (28)
Nurse case load[a] (Full-time)				
10 or less	7 (43.7)	4 (100)	1 (12.5)	2 (50)
11 or more	9 (56.3)	0 (0)	7 (87.5)	2 (50)
Medical Director status (*n*=32)				
Full-time	N/A	N/A	N/A	N/A
Part-time	20 (62.5)	2 (33)	6 (43)	12 (100)
Volunteer	12 (37.5)	4 (67)	8 (57)	0 (0)
Medical Director certified				
No certification	23 (71.9)	5 (83)	12 (86)	6 (50)
Certification in Hospice/Palliative Care	9 (28.1)	1 (17)	2 (14)	6 (50)

[a] Total n=16 hospices.

Table 6

Percent of Patients Receiving Pain Practices on the CPPI[a]

	Overall		Small Hospice		Medium Hospice		Large Hospice	
	n	**Mean % (SD)**	***n***	**Mean % (SD)**	***n***	**Mean % (SD)**	***n***	**Mean % (SD)**
Overall CPPI Score (11 Key Indicators)	399	31.7% (0.2152)	47	30.6% (0.1851)	204	29.8% (0.2313)	148	34.6% (0.1984)
Individual CPPI Indicators:	**Overall**		**Small Hospice**		**Medium Hospice**		**Large Hospice**	
Abbreviated Description	***n*[b]**	**Mean %**	***n*[b]**	**Mean %**	***n*[b]**	**Mean %**	***n*[b]**	**Mean %**
1. Valid pain scale use at admission	399	69.7	47	74.5	204	67.6	148	70.9
2. Comprehensive assessment- primary	353	52.7	39	48.7	178	44.4	136	64.7
3. Comprehensive assessment- other	353	0.0	39	0.0	178	0.0	136	0.0
4. Pain Intensity reassessment for reports of moderate or severe pain (5 or >)	95	5.3	11	9.1	49	0.0	35	11.4
5. Increases in pain medications for consecutive reports of pain intensity 5 or greater	38	15.8	5	0.0	18	27.8	15	6.7
6. Order for pain medication with admission report of pain [c]	127	83.5	17	88.2	67	79.1	43	88.4
7. Bowel regimen initiated	347	32.3	35	34.3	173	31.2	139	33.1
8. Analgesic side effects monitored	347	19.3	35	2.9	173	18.5	139	24.5
9. Non-pharmacologic therapies used	364	22.5	40	32.5	184	24.5	140	17.1
10. Review of the Pain Treatment Plan	356	35.7	39	33.3	179	25.7	138	49.3
11. Written pain management plan	293	0.6	29	0.0	172	1.2	92	0.0

[a] Percent of performance represents the % of patients who met the indicator.

[b] *n*= the number of patients who were eligible to receive this practice based on their status. To achieve indicators 2, 3, 9 and 11, the patient needed to have at least 75% of the components as defined on the CPPI completed.

[c] This does not include patients with a pain diagnosis with pain controlled at admission.

Table 7

Percent of Patients Receiving Additional Pain Practices

Additional Pain Practice Indicators:	**Overall**		**Small Hospice**		**Medium Hospice**		**Large Hospice**	
Abbreviated Description	***n*[a]**	**Mean %**	***n*[a]**	**Mean %**	***n*[a]**	**Mean %**	***n*[a]**	**Mean %**
1. Comfort-function goal established	353	22.7	39	10.3	178	15.7	136	35.3
2. Reassessment- primary	185	18.4	21	0.0	95	12.7	69	31.9
3. Increase in pain medications for consecutive reports of pain behaviors	16	18.8	1	0.0	8	15.6	7	0.25
4. No non-recommended opioid orders	345	97.1	35	97.1	173	96.5	137	97.8
5. Identified side effects receiving recommended treatment	206	0.0	21	0.0	106	0.0	79	0.0
6. Instruction on use of a pain diary	364	5.5	40	12.5	184	8.2	140	0.0

[a] *n*= the number of patients who were eligible to receive this practice based on their status.

Table 8

Effect of Patient, Provider, and Organizational Variables on CPPI Score

Variables/category	Estimate	*P*-value	CPPI Change [a] exp(estimate)
Patient variables			
Age			
Overall		<0.0001	
<=74	0.2377	<0.0001	1.2683
75–84	0.0884	0.1157	1.0924
>=85	reference	reference	reference
Race			
Overall		0.0008	
Black	0.1294	0.0184	1.1381
Other[b]	−0.2478	0.3690	0.7805
Unknown	0.1236	0.0036	1.1316
White	reference	reference	reference
Hospice variables			
Size			
Overall		<0.0001	
Small	0.0351	0. 7258	1.0357
Medium	−0.3384	<0.0001	0.7129
Large	reference	reference	reference
Organizational Structure			
Overall		<0.0001	
Independent Org	−0.1807	<0.0001	0.8347
Part of System	reference	reference	reference
Nurse variables			
Nurse Certification			
Overall		0.0114	
%Certification >= 0.2	0.1014	0.0114	1.1067
%Certification < 0.2	reference	reference	reference

Variables/category	**Estimate**	***P*-value**	**CPPI Change [a] exp(estimate)**
Case Load			
Overall		<0.0001	
> 10	0.2756	<0.0001	1.3173
<= 10	reference	reference	reference

Note: Results for the final GEE/GLM produced from the backward elimination procedure;

[a] Multiplicative change in the mean CPPI relative to the reference group.

[b] Includes patients of Asian, Hispanic and American Indian descent.