

# Short Hospice Length of Service in a Comprehensive Cancer Center

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## Abstract

**Background:** The benefits of hospice for patients with advanced cancer are well established. Short hospice length of service (LOS) is a marker of poor quality care and patient and family dissatisfaction. Interventions based on behavioral science might reduce suboptimal hospice use.

**Objective:** To assess effects of peer comparisons on rates of short hospice LOS for cancer patients at a tertiary comprehensive cancer center.

**Design:** Pre–post design utilizing a peer-comparison feedback intervention comparing individual oncologist hospice data.

**Setting:** Urban, academic, comprehensive cancer center in Maryland.

**Measurements:** Hospice enrollment rate. Median hospice LOS and percentage short hospice LOS (defined as  $\leq 7$  days).

**Results:** Sixty oncologists received the intervention. Before the intervention, 394 patients enrolled in hospice for a period of 21 months (18.76 enrollments per month). Median hospice LOS was 14.5 days. After the intervention, 418 patients enrolled in hospice for 14 months (29.85 enrollments per month). Median hospice LOS was nine days. The percentage of patients experiencing a short hospice LOS increased from 33.3% to 43.5%.

**Conclusions:** The methods are not sufficient to conclude that the intervention does not improve hospice use. A substantial number of patients with cancer who used hospice had LOS  $\leq 7$  days, a marker of poor quality. Using peer comparison in combination with additional behavioral interventions should be considered to improve end-of-life care.

**Keywords:** audit-and-feedback; behavioral economics; end-of-life cancer care; hospice; nudge

## Introduction

**D**ESPITE SIGNIFICANT PROGRESS in cancer research and treatment, 600,000 Americans with cancer will die this year. Nearly 40% of eligible cancer patients are not enrolled in hospice before death; of those who do enroll in hospice care, 33% access services in the final days of life.<sup>1</sup>

For two decades, the American Society of Clinical Oncology (ASCO) has recommended hospice for patients who are no longer candidates for effective cancer treatment.<sup>2</sup> Despite having terminal disease, patients in hospice experience better quality of care,<sup>3</sup> better survival for themselves<sup>4–6</sup> and their surviving spouses,<sup>7</sup> better perceptions of care by physicians<sup>8</sup> and family members,<sup>9</sup> and care congruent with their wishes.<sup>9</sup> In addition, hospice care is associated with reduced cost to patients, hospitals, and health systems.<sup>10–13</sup> Given these widespread benefits, ASCO and the National

Quality Forum include *the percentage of patients who die from cancer not admitted to hospice* as a “high priority” measure of quality cancer care (Quality Oncology Practice Initiative #457).<sup>14</sup>

Yet, available data on hospice utilization for cancer patients reveal a declining median length of service (LOS)<sup>1</sup> and an increase in short LOS (defined as  $\leq 7$  days).<sup>15</sup> Short hospice LOS is associated with poorer outcomes, including higher rates of emotional distress<sup>16,17</sup> and financial toxicity,<sup>18</sup> inferior symptom management,<sup>19</sup> and worse patient and caregiver experience.<sup>20</sup> Although many factors are not under the control of oncologists, research suggests physician decision making is the most frequent cause of late hospice referral identified by patients’ bereaved family members.<sup>21</sup> As oncologists remain the primary gatekeepers to timely hospice access, a need exists to inform oncologists of their practice patterns and modify behavior to reduce short hospice LOS.

We previously reported variations in hospice referrals among oncologists who treat patients with advanced cancer.<sup>22</sup> Timing of hospice referral varied substantially by individual oncologist and among disease–subspecialty divisions. A substantial proportion of patients (33.3%) experienced a short hospice LOS  $\leq 7$  days. These inconsistencies with guideline recommendations were potentially indicative of variations in physician knowledge of and familiarity with hospice and/or patient and family dynamics. A previous quality improvement initiative presented at ASCO employed an audit-and-feedback intervention to an oncology group practice and improved median hospice LOS from 19.7 to 39.6 days in 1 year.<sup>23</sup> We investigated whether a similar intervention would improve suboptimal hospice use at a tertiary cancer center.

## Methods

We carried out a nonrandomized controlled intervention study of oncologists at the Johns Hopkins Sidney Kimmel Comprehensive Cancer Center (SKCCC). Oncologists received an individualized in-person notification that reported their hospice data relative to local peers. Patient-level data were obtained from retrospective chart reviews of patients with cancer referred to hospice. We identified a primary diagnosis, a primary medical oncologist, an initial referral date to hospice, a hospice enrollment date, and a hospice discharge date. We calculated a hospice enrollment rate to understand trends in the outcome over time. The prenotification period was July 1, 2013, to March 31, 2015 (21 months). The intervention occurred in July and August of 2017. The postnotification period was December 1, 2017, to January 30, 2019 (14 months).

In total, 952 patients met the following inclusion criteria: (1) having a cancer diagnosis and referred to hospice, (2) having an assigned primary medical oncologist, and (3) having not initially declined anticancer treatment. This final criterion ruled out patients with hospice as their only treatment option on presentation. LOS was defined as the time patients were enrolled on hospice services before death. Short hospice LOS was defined as  $\leq 7$  days. From our original sample of 952 patients, 140 patients were not successfully referred to hospice, either because of patient or family declination of services, leaving 812 successfully referred patients.

Patients were categorized into eight divisions by oncologist subspecialty: hematologic, neuro-oncology, breast, gastrointestinal, thoracic, head and neck, melanomas and sarcomas, and genitourinary malignancies. LOS median and distribution were compared with data before the peer intervention.<sup>22</sup>

Peer comparisons were delivered in person (author T.J.S.). Each report listed the individual oncologist's mean hospice LOS, the national mean, and a graphical representation of individual performance depicted using an arrow pointing to the oncologist's position on the distribution compared with local peers. The ranking was blinded. Differences in LOS were analyzed among divisions, looking specifically at median and short LOS (referred to as % LOS  $\leq 7$ ). Confidentiality, collegiality, respect, and a spirit of quality improvement were emphasized in all communication. This study was approved by the Johns Hopkins Medicine institutional review board.

## Results

Overall data are summarized in Table 1. The number of eligible oncologists was 60. The demographics of oncologists before and after the intervention were similar with regard to male predominance, years in practice, and location of practice.

In total, 394 patients enrolled in hospice in the 21 months before the intervention (18.76 enrollments per month). Baseline median LOS before the intervention was 14.5 days (range, 0–473 days; interquartile range [IQR], 5–37 days). The distribution of LOS was skewed, with a large proportion of patients entering hospice within the last few weeks of life as expected. A total of 33.3% of patients had LOS  $\leq 7$  days. This was roughly equivalent to the national rate of 35.5% among all hospice patients at that time. Following peer comparison reports, 418 patients enrolled in hospice over a period of 14 months (29.85 enrollments per month). Hospice LOS did not improve, with a median LOS postintervention of nine days (range, 0–340 days; IQR, 4–34 days). In total, 43.5% of patients (181 of 418) had a LOS  $\leq 7$  days.

The data demonstrated that the hospice enrollment rate overall increased by 66%; however, hospice LOS decreased for most groups, except hematology. After the intervention, neuro-oncology had the longest LOS (median, 22 days; IQR,

TABLE 1. HOSPICE DATA

| Division             | Preintervention |                        |                     | Postintervention |                        |                     |
|----------------------|-----------------|------------------------|---------------------|------------------|------------------------|---------------------|
|                      | Patients (n)    | Median LOS, days, IQR) | % LOS $\leq 7$ days | Patients (n)     | Median LOS, days, IQR) | % LOS $\leq 7$ days |
| Hematology           | 61              | 7 (3–16)               | 54                  | 73               | 7 (3.1–20.0)           | 55                  |
| Neuro-oncology       | 24              | 33.5 (12.5–68.5)       | 12.5                | 18               | 22 (9.3–29.8)          | 22                  |
| Breast               | 25              | 20 (7–63)              | 28                  | 34               | 9 (4.3–20.3)           | 47                  |
| Gastrointestinal     | 114             | 16 (8–29.9)            | 24.6                | 115              | 9 (4.1–22.5)           | 47                  |
| Thoracic             | 79              | 18 (6–40.5)            | 27.8                | 77               | 12 (6.0–31.0)          | 34                  |
| Head & neck          | 8               | 37 (6.8–71.5)          | 37.5                | 20               | 9.5 (4.5–16.5)         | 35                  |
| Melanoma and sarcoma | 30              | 8 (2.5–33.8)           | 50                  | 43               | 7 (4.5–16.5)           | 60                  |
| Genitourinary        | 53              | 16 (6–53)              | 32.1                | 38               | 9 (4.3–31.8)           | 42                  |
| Total                | 394             | 14.5                   | 33.3                | 418              | 9                      | 43.5                |

IQR, interquartile range; LOS, length of service.

9–30 days) and the lowest % LOS  $\leq 7$  days (22%). Melanoma and sarcoma had the highest % LOS  $\leq 7$  days (60%). Of note, our analysis treated all patients independent from one another; that is, we assumed that there was no confounding based on LOS groupings of patients treated by the same provider.

## Discussion

Engaging physicians to promote behavior change is a promising approach to improve high-value care. The emerging field of implementation science seeks to promote best practice. Using a peer comparison approach, we sought to improve suboptimal hospice use for patients with cancer. There are two important findings from this investigation. First, sharing personalized practice pattern data with oncologists benchmarked to their peers appeared to increase hospice use at our cancer center, with an enrollment rate 18.76 hospice users per month preintervention to 29.85 hospice users per month postintervention. However, since the initial audit, the median hospice LOS decreased at our institution and the percentage of patients enrolled into hospice with a short LOS increased (Table 1). Although an increase in the overall number of hospice enrollments was noted, patients and families who receive hospice “too late” receive minimal benefit.<sup>24,25</sup> Second, our audit-and-feedback intervention likely failed due to poor design. Von Gunten and Haller utilized not only audit-and-feedback, but also included local opinion leaders, stakeholder feedback on appropriate benchmarks, and targeted educational sessions.<sup>23</sup> Perhaps this combined approach is critical to induce behavior change.

Learning from our experience, we posit that a future intervention may replicate their findings with the following modifications: (1) endorsement of a quality metric by a specialty society (i.e., ASCO), (2) education by key local leaders, (3) use of an achievable target with stakeholder input, and (4) amendment of peer comparison reports. Previous studies have shown that *comparing individuals to top-performing peers (i.e., top 5%) instead of average-performing peers and delivery of positive reinforcement to top performers* improves outcomes.<sup>26–29</sup>

As we reflect on the changes noted at our institution, it is important to revisit the definition of “Advance Care Planning,” as published in 2017: “A process that supports adults at any age or stage of health in understanding and sharing their personal values, life goals, and preferences regarding future medical care.”<sup>30</sup> The key is the word *process*. Planning is not a one-time event, and evolves over time and through a series of conversations. As treatment options expand, prognostic uncertainty increases. Ultimately, patients remain at risk for poor quality care at the end of life.<sup>31,32</sup> Advanced care planning could influence hospice LOS beyond audit and feedback, but as of this time, we are unable to measure due to limitations in electronic health record capture. As physician demand for benchmarking data remains strong, as demonstrated in the implementation of this study, it is vital to utilize appropriate data to leverage behavioral change.

Health care interventions targeting value-based incentives have historically been applied at the group level and have not mobilized the intrinsic motivation of *individual* physicians. Physicians are heavily influenced by perception of perfor-

mance, especially when comparators are part of the same social group and in geographic proximity.<sup>29,33,34</sup> Peer comparison exploits this behavioral principle to improve performance. Our study suggests as a prerequisite, interventions require a well-respected peer physician leadership group to endorse a metric and the broader initiative *a priori*.<sup>23</sup> Second, a clear achievable benchmark that is supported by peer leaders in the field is required. In the study by von Gunten and Haller, physician stakeholders were engaged on what constituted the optimal time for receipt of hospice at home.<sup>23</sup> Third, educational resources and system interventions may be valuable to help outliers improve. Our methods were inconsistent with audit-and-feedback delivery best practices. We intend to modify our approach and reaudit in one year.

Important limitations of this report should be acknowledged. Our data reflect the experience of a single institution and results may not be applicable to other practice settings. There may have been significant baseline differences in the population of patients and our study did not account for changes and advances in cancer diagnosis, prognosis, and treatment. We assumed the number of patients eligible for hospice within the cancer center was consistent over time, and absence of a true denominator is a major limitation. We did not adjust for these factors or other potential observed confounding such as history of fellowship training or prior experience with palliative care. In addition, by using LOS as our outcome, we may have missed many individual factors of the patient experience; for example, a patient may have declined hospice until seven days before death, despite high quality of care and timely discussion with his or her medical oncologist. However, the proportion of patients who declined hospice was evenly distributed before and after the intervention. Future study will qualitatively evaluate the thoughts and attitudes of providers and patients. We do not believe audit-and-feedback itself explains the observed change in hospice LOS.

As palliative care research within oncology is less common than clinical trials, and infrequently reported, we hope sharing both our failures and success stories motivates the research community to continue exploring how to improve patient care—especially near the end of life. Although behavioral economic research is promising, there is certainly no one-size-fits-all approach—for patient, institution, or health system.

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## Author Disclosure Statement

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