Section Editors: Theresa Wicklin Gillespie and Constance Visovsky

QUALITY IMPROVEMENT

# Increasing Advance Care Planning Discussions and Documentation

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Authors' disclosures of conflicts of interest are found at the end of this article.

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https://doi.org/10.6004/jadpro.2025.16.7.7



## Abstract

**Background:** Advance care planning (ACP) is an important aspect of care for the oncology patient population, leading to improved outcomes, less aggressive care toward the end of life, and reduced costs. **Purpose:** The objective of this project was to increase ACP discussions and easily accessible documentation for patients with hematologic malignancies at increased risk of mortality based on a mortality prediction model. Additionally, the project aimed to avoid increasing perceived provider disruption to workflow. **Methods:** A validated mortality prediction model utilized objective patient data to predict inpatient mortality. Providers caring for at-risk patients were notified, asked to consider an ACP discussion, and instructed on consistent and easily accessible ACP documentation. Retrospective chart reviews evaluated whether ACP discussions were documented and whether they used the suggested bookend format. After 4 months, a provider education session reinforced the importance of ACP and included a demonstration of the documentation process. After another 4 months, chart reviews assessed ACP documentation rates. Rates were compared before and after education to determine the effectiveness of the implementation. A provider survey assessed perceived disruption to workflow. **Results:** Fifteen at-risk patients (eight before the education session and seven after the education session) were identified over 8 months. Three of eight patients (37.5%) had a documented ACP before the education session, and three of seven patients (42.9%) had a documented ACP discussion after the education session, which was not statistically significant. Most providers (83%) did not find the ACP implementation disruptive to workflow. Advance care planning documentation did not significantly increase after a provider education session, possibly due to low numbers of identified patients. However, 43% of at-risk patients after the education session had a documented ACP conversation, and most providers found bookends an efficient way to document ACP. **Conclusion:** The survey findings suggest that the project received provider buy-in and that continuing the bookend documentation expectation is reasonable.

J Adv Pract Oncol 2025

Advance care planning (ACP) is an important aspect of care for the oncology patient population. Patients who participate in ACP are significantly more likely to have their end-of-life wishes followed (Chan et al., 2021). It has been well established that ACP has also been associated with decreased hospital admissions and length of stay (Chan et al., 2021). Despite this, many patients with cancer report never having these conversations with their health-care providers (Waller et al., 2019).

## AVAILABLE KNOWLEDGE

The American Society of Clinical Oncology (ASCO) Guidelines recommend involving specialized palliative care teams early in the treatment course for patients with advanced hematologic malignancies, which helps increase early goals-of-care discussions. The literature suggests that ACP is particularly important when caring for patients with hematologic malignancies, as this patient population tends to have "higher rates of hospitalization, more frequent admissions to the intensive care unit, more in-hospital deaths, lower rates of hospice referrals, and shorter hospice length of stays" when compared to patients with solid tumors (Sanders et al., 2024). The literature supports the idea that ACP leads to improved outcomes for both patients and their family members, less aggressive care toward the end of life, and reduced costs (Bernacki & Block, 2014). Patients who participated in ACP were significantly more likely to have their wishes known and followed (Detering et al., 2010). In addition, their family members experienced significantly less stress, anxiety, and depression at the time of their loved one's death.

Despite the numerous benefits associated with ACP, many patients report never having these conversations with their health-care providers. A survey administered to 91 oncology patients at Baylor University Medical Center found that only 29% reported having had an end-of-life discussion with their oncologist. Of these patients, 60% initiated the conversation instead of the doctor (Barakat et al., 2013). Similarly, a cross-sectional study found that out of 185 patients with cancer, only 11% have had end-of-life discussions with their doctor. It is important to note that when asked, most of these patients felt that it was important to have these conversations with their doctors and family members (Waller et al., 2019).

Even when these conversations take place, they are often not easily accessible within the electronic health record (EHR) and are typically written as free text within a progress note, increasing the chance of being overlooked at times of utmost importance (Walker et al., 2018).

## RATIONALE

Identifying patients who are at high risk of mortality and would thus benefit most from ACP is an important first step to increasing these discussions (Picker et al., 2017). To increase the frequency and quality of ACP discussions, providers should be trained to have these conversations. Patients considered at high risk for mortality should be identified, and a standardized documentation tool should be used within the EHR (Bernacki & Block, 2014).

A pilot study used an alert algorithm to identify patients at high risk of deteriorating (Picker et al., 2017). The algorithm considered items including patient age, diagnosis, vital signs, and medication list. Once a patient was identified as high risk, a team member discussed advance directives, durable power of attorneys, and patient preferences regarding life-saving measures with the patients and family members. They found that both advance directives and code status were documented significantly more in the intervention group, while intensive care unit transfers and length of stay were significantly lower in the intervention group (Picker et al., 2017).

Another theme within the literature is the use of specific tools or prompts to increase provider adherence to both initiating and documenting these conversations. A systematic review conducted by Bestvina & Polite (2017) found that ACP prompts led to increased ACP conversations and documentation. A cluster randomized clinical trial conducted at the Dana-Farber Cancer Institute found that a goals of care communication-focused tool for clinicians led to a significant improvement in the timeliness, quality, and accessibility of goals-of-care conversations (Paladino et al., 2019). Similarly, a systematic review conducted by Huber et al. (2018) found that the use of templates helps increase ACP documentation within the EHR and leads to more consistency in documentation.

Utilizing bookend documentation within Epic is another way to improve both documentation consistency and accessibility. Bookend documentation "enables text designated within 'bookends' to be viewed in another area of the EHR" (Kantor et al., 2021). For example, using an ACP bookend within the EHR, such as writing ".ACPbegin" prior to ACP information followed by ".ACPend", allows relevant ACP information within progress notes to be filed separately as a dedicated ACP note. This also causes an ACP banner to light up on the EHR summary page with a direct link to the ACP note, making it easier for future providers to identify the patient's wishes (Kantor et al., 2021). While the literature supporting the importance of ACP is plentiful, there is evidence to suggest that easily accessible ACP documentation within the EHR is often still lacking (Fulmer et al., 2018). The capabilities of an EHR, including the bookend documentation functionality, provides opportunities for vast improvement within this area.

## PURPOSE

The project had three aims. Aim 1 was to increase the provider adherence rate to ACP bookend documentation by a clinical and statistical difference among patients who were identified to be at medium, high, or critical risk of 6-month mortality within 4 months after the education session. Aim 2 was to increase the rate of ACP conversations by a clinical difference between providers and patients who were identified to be at medium, high, or critical risk of mortality within 4 months after the education session. Aim 3 was to demonstrate minimal (< 20%) provider-perceived disruption to workflow as a result of the ACP documentation expectation.

## METHODS

### Context

The project took place on a hospital-based hematology-oncology floor employing 26 providers (17 oncologists and nine oncology advanced practice providers (APPs), composed of six nurse practitioners (NPs) and three physician assistants (PAs).

### Implementation

The project occurred in three phases. Phase one included retrospective data collection through EHR reviews over the 4-month period prior to project implementation. Using a validated mortality prediction machine model, pre-implementation data were collected on patients identified as medium, high, or critical risk of mortality. The model was used to efficiently identify patients on the hematology-oncology service who would most benefit from ACP discussions based on their mortality risk, while also creating a more manageable number of patients for the purposes of the project. The prediction model is a validated tool that utilizes patient diagnosis, comorbidities, vital signs, lab values, and medications to predict inpatient mortality (Brajer et al., 2020). When a patient is identified, an email is automatically sent to the first call provider and attending physician caring for the patient. The notification explains that the patient was identified as at risk and an ACP discussion and subsequent inpatient palliative care consult should be considered. It was then determined whether an ACP discussion was documented, and if so, whether bookend documentation was used.

Phase two of the project was an educational session for the hematology-oncology providers led by the author. The education included a demonstration of how to use bookend documentation in Epic and emphasized the importance of easily accessible ACP documentation in order to increase buy-in from key contributors.

Phase three took place 4 months after project implementation. Chart reviews were performed for patients identified as at risk to determine whether an ACP discussion was documented and whether the bookend format was used.

### Evaluation of Implementation

The effectiveness of the education and utilization of a machine-learning model to identify high-risk patients for implementation to standardized ACP documentation was assessed by comparing the use of ACP bookend documentation before and after the education session.

### Measures

A validated machine-learning model was used to identify patients at increased risk of mortality within the next 6 months. This model was developed by Brajer et al. (2020) using data from a total of 75,247 hospitalizations. The area under the receiver operating characteristic curve (AUROC) was found to

be 0.86 (95% confidence interval [CI] = 0.83–0.90) for prospective validation of the model.

An email was automatically sent to the first call provider and attending when a patient was identified as at an increased risk of mortality. This allowed for easy tracking of the patients. Thorough chart reviews of these patients helped to ensure that the identified patients were appropriate for ACP and whether ACP documentation was completed using the bookend documentation. After data collection, a repeat chart review revealed whether patients had died within a certain timeframe from when they were flagged by the mortality prediction model.

A deidentified survey for providers after the implementation was administered to assess their perceptions of the implementation as well as their subjective thoughts on the appropriateness of the patients flagged.

### Analysis

To identify whether there was an increase in bookend documentation by a clinical and statistically significant difference, the percentage difference in pre- vs. post-education session documentation was computed, and a Fisher's exact test compared overall ACP conversation rates and documentation rates before and after implementation.

Lastly, a deidentified survey was administered to providers to assess whether the implementation was disruptive to their workflow. They were asked 10 questions, including a dichotomous question: "Do you feel the notification and ACP implementation was disruptive to your workflow?" To determine the impact of the ACP implementation on workflow, the percentage of "Yes" vs. "No" responses was calculated.

### Ethical Considerations

The project was submitted to the Institutional Review Board and was deemed exempt from continued review as it did not meet the definition of research.

## RESULTS

Through the mortality prediction model, there were eight patients flagged as being at increased risk of mortality prior to the education session, compared to seven patients flagged after the education session. As seen in Figure 1, out of the eight patients in the pre-education group, three (37.5%) had an ACP conversation documented, compared to three out of seven (42.9%) in the post-education group, which was not significantly different ($p$ =.999). The percentage point increase in ACP documentation before vs. after the education session was 5.4%. All documented ACP discussions used the suggested bookend format.

Twelve out of the 22 providers (55%) who received ACP notifications responded to the post-data collection survey assessing provider-perceived workflow disruption. Of the respondents, nine were physicians, two were PAs, and one was an NP. When asked whether the ACP implementation was disruptive to workflow, 83.3% of respondents reported it was not. Additional questions gathered provider opinions about the efficiency of the mortality prediction model, whether patients flagged by the model were appropriate for ACP, and reasons for not having ACP discussions (Table 1).

The Plan-Do-Study-Act (PDSA) methodology was used throughout data collection. Fewer patients than expected were flagged as being at increased risk of mortality. Therefore, in July 2022, the prediction model was adjusted to include patients at medium risk of mortality, in addition to high and critical risk. In November 2022, the model was again adjusted to include patients with hematologic malignancies admitted under both the "hematology" and "hematology oncology" service, since data analysis indicated some patients were inaccurately admitted under the "hematology" service and had thus not been captured by the model.

## DISCUSSION

### Summary

While the educational session did not increase ACP conversations or documentation, the mortality prediction model effectively identified a small number of patients at risk of mortality. Of the 15 patients flagged, eight died within 6 months of the ACP notification. An additional patient was discharged home with hospice within 6 months and died within 7 months of ACP notification. Of the remaining five patients living, three were flagged as at risk less than 6 months prior to the end of data collection. While the small sample size makes interpreting these results challenging from a statistical standpoint, the results are arguably

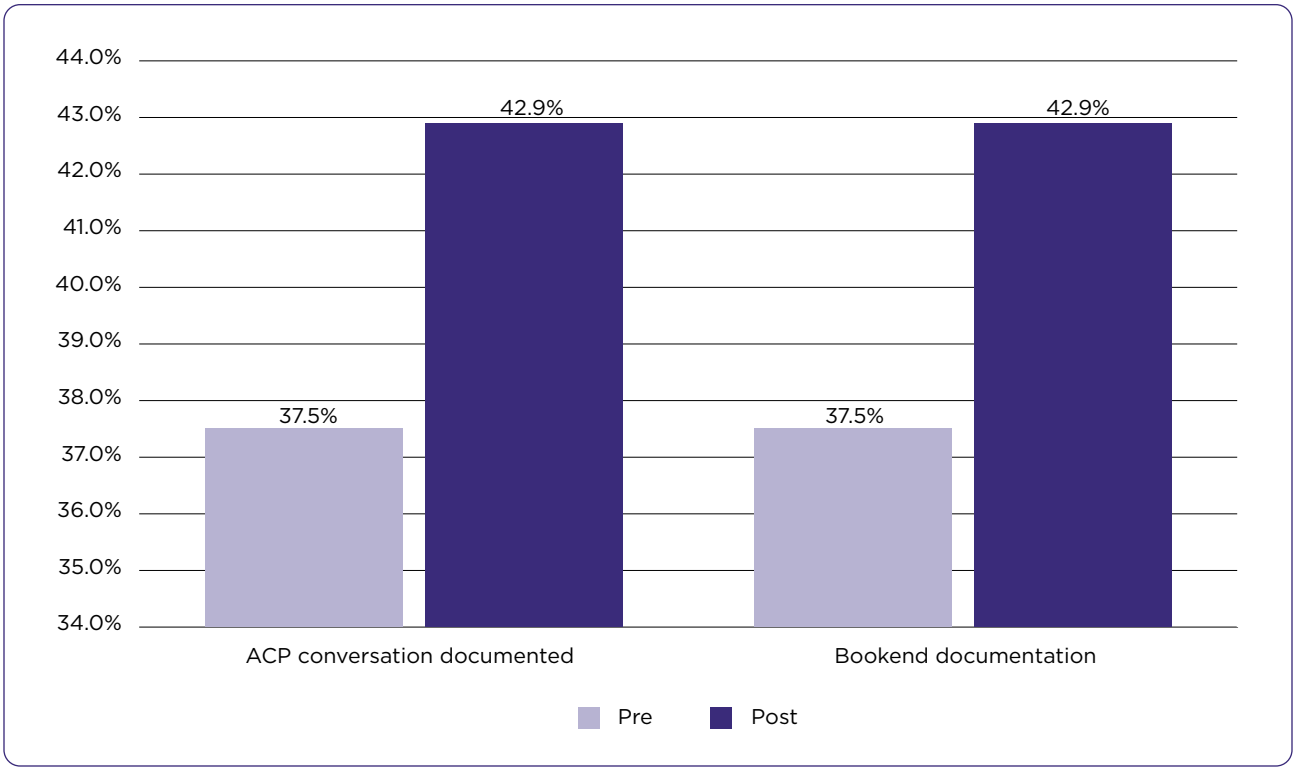


**Figure 1.** Bookend advance care planning discussion documentation before and after education session.

clinically significant. The mortality prediction model did not capture all the at-risk patients on the hematology-oncology service; however, those who were flagged were appropriate for ACP. This was further supported by the providers' subjective survey responses, where 83.3% agreed that the patients identified were appropriate for ACP.

Given that not all providers responded to the survey, response bias could be present. However, of those who did respond, less than 20% of providers (16.3%) found the notification of high-risk patients and implementation of ACP bookend documentation disruptive to their busy workflow. Additionally, 75% of providers felt the mortality prediction model was an efficient method for identifying at-risk patients, and 83.3% of providers felt that patients flagged by the model were appropriate for ACP.

### Interpretation

Prior studies, such as the cluster randomized clinical trial conducted at the Dana-Farber Cancer Institute, found that goals of care communication-focused tools for clinicians led to a significant improvement in the timeliness, quality, and accessibility of goals-of-care conversations (Paladino et al., 2019). The systematic review conducted by Bestvina & Polite (2017) also found increased ACP conversations and documentation with ACP prompts. While the bookend documentation in this project increased from 37.5% before the education session to 42.9% after the education session, this was not statistically significant. Despite this, the implementation did yield clinically significant results; six at-risk patients had ACP discussions documented. As a result of the implementation, all six of these patients had ACP information documented using the suggested bookend format. Therefore, these patients had easily accessible ACP information for subsequent encounters, which improved the efficiency with which providers were able to identify and carry out each patient's wishes.

### Limitations

While this quality improvement project led to a clinically significant increase in easily accessible ACP documentation, there were a few limitations worthy of note. These limitations include the mortality prediction model sensitivity parameters and

**Table 1. Provider Survey Questions**

| | |
|---|---|
| Q1. | What type of provider are you? |
| | Physician |
| | Physician Assistant |
| | Nurse Practitioner |
| Q2. | How many years have you worked in your current role? |
| | 2 years |
| | 2–5 years |
| | 5–10 years |
| | 10–20 years |
| | > 20 years |
| Q3. | Do you feel that this mortality prediction model is an efficient method for identifying patients for ACP? |
| | Yes |
| | No |
| | Unsure |
| Q4. | Do you feel that the patient(s) identified were appropriate for ACP? |
| | Definitely not |
| | Probably not |
| | Might or might not |
| | Probably yes |
| | Definitely yes |
| Q5. | If you did not have an ACP discussion with the patient, please select why. |
| | The patient was not appropriate for ACP |
| | Time constraint |
| | I forgot |
| | Other (please explain) |
| | N/A, I had an ACP discussion |
| Q6. | Do you feel that the notification and ACP implementation was disruptive to your workflow? |
| | Yes, it was disruptive |
| | No, it was not disruptive |
| Q7. | Indicate to what extent you agree with the following statement: "The email and prompt for an ACP discussion was disruptive to my workflow." |
| | Strongly disagree |
| | Somewhat disagree |
| | Neither agree nor disagree |
| | Somewhat agree |
| | Strongly agree |
| Q8. | Did you document your ACP discussion with the patient using the suggested bookend method (the provided ACP dotphrase) described in the email? |
| | Yes, I documented the conversation using the provided ACP dotphrase |
| | No, I did not document the conversation using the provided ACP dotphrase |
| | N/A because I did not have an ACP discussion with the patient |
| | I can't remember |
| Q9. | If you did not use the bookend documentation, please explain why (e.g., I didn't know how, I forgot, it was too complicated, etc.). |
| | Open-ended response field |
| Q10. | Did you have an ACP discussion with the patient that was not documented? |
| | Yes |
| | No |
| | I can't remember |

the small number of patients identified as at risk, which decreased the strength of the implementation. Over the 8-month data collection period, the prediction model only flagged 15 patients as at increased risk of mortality, which is surprisingly low in a hematology-oncology patient population. Utilizing a prediction model that was not initially developed solely with oncology patients posed some challenges when used with this higher-risk patient population. Slight adjustments were made to the model parameters to increase the number of patients identified as at increased risk. Adjusting the model parameters too much, however, would cause nearly every patient to be flagged, which would inundate providers with notifications and create significant workflow disruption. As such, the effectiveness of the model within this patient population should be further explored.

## CONCLUSIONS

The survey findings suggest that the project received provider buy-in and that continuing the bookend documentation expectation is reasonable. Since a similar project had been implemented on various floors throughout the hospital, implementing the email ACP notification system was fairly straightforward. The main challenge identified during implementation was determining the most appropriate way to adjust the mortality prediction model to effectively represent the hematology oncology patient population. Since the mortality prediction model was developed using data from all patients admitted to a hospital within a certain timeframe, it is not necessarily representative of oncology patients—a population that may generally be at increased risk of mortality. There are features specific to oncology treatment, such as the number of therapies already received, amount of time between relapse, and certain genetic markers, that are likely more valuable predictors of mortality in these patients. Future studies should assess whether a mortality prediction model developed specifically for oncology patients is more effective at identifying at-risk patients in this population.

Regarding increasing ACP bookend documentation, requiring that ACP conversations are documented by providers upon admission using the bookend format could be an effective strategy for

increasing easily accessible ACP information. The process could be further improved by encouraging the use of ACP bookends in the outpatient setting, not only in the oncology clinic but in primary care clinics as well. Advance care planning is an ongoing conversation that should ideally start before a patient arrives in the hospital and can be reviewed with the patient as their condition changes.

## Acknowledgment

The first author, Allison K. McLendon, would like to thank Dr. Thomas LeBlanc for allowing her to be a part of his mortality prediction project on the inpatient hematology-oncology service. She would also like to thank Yvonne Acker for all her hard work helping implement the mortality prediction model on the inpatient hematology-oncology service. The authors of the article entitled, *Prospective and External Evaluation of a Machine Learning Model to Predict In-Hospital Mortality of Adults at Time of Admission* (referenced in this article) are acknowledged for their work validating the mortality prediction machine model that was used in this project. Furthermore, the first author would like to express gratitude to her DNP project chair, Dr. Mary-Lou Affronti, for her endless support and guidance throughout this process, as well as the rest of the DNP project committee, Dr. AnnMarie Walton and Dr. Mariah Prince, for being such an integral part to the development of this project. Lastly, the first author would like to express appreciation to Dr. Julie Thompson for serving as a statistician consultant.

## Disclosure

The authors have no conflicts of interest to disclose.

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