Impact of a Care Directives Activity Tab in the Electronic Health Record on Documentation of Advance Care Planning

Marianne Turley, PhD; Susan Wang, MD; Di Meng, PhD; Michael Kanter, MD; Terhilda Garrido, MPH

ABSTRACT

Context: To ensure patient-centered end-of-life care, advance care planning (ACP) must be documented in the medical record and readily retrievable across care settings.

Objective: To describe use of the Care Directives Activity tab (CDA), a single-location feature in the electronic health record for collecting and viewing ACP documentation in inpatient and ambulatory care settings, and to assess its association with ACP documentation rates.

Design: Retrospective pre- and postimplementation analysis in 2012 and 2013 at Kaiser Permanente Southern California among 113,309 patients aged 65 years and older with ACP opportunities during outpatient or inpatient encounters.

Main Outcome Measures: Providers’ CDA use rates and documentation rates of advance directives and physician orders for life-sustaining treatments stratified by CDA use.

Results: Documentation rates of advance directives and physician orders for life-sustaining treatments among patients with outpatient and inpatient encounters were 3.5 to 9.6 percentage points higher for patients with CDA use vs those without it. The greatest differences were for orders for life-sustaining treatments among patients with inpatient encounters and for advance directives among patients with outpatient encounters; both were 9.6 percentage points higher among those with CDA use than those without it. All differences were significant after controlling for yearly variation (p < 0.001).

Conclusion: Statistically significant differences in documentation rates between patients with and without CDA use suggest the potential of a standardized location in the electronic health record to improve ACP documentation. Further research is required to understand effects of CDA use on retrieval of preferences and end-of-life care.

INTRODUCTION

Advance care planning is a process in which patients make decisions about their future health care in consultation with clinicians, family, and important others. The main goal of this planning is to allow patients to continue to participate in shared decision making should they become incapable of making care decisions. The overarching aim is to provide patient-centered care in all circumstances, especially those in which patients can no longer express their goals and preferences or advocate for themselves. To achieve these goals, advance care planning activities must be documented in the medical record and readily retrievable in any setting in which patients receive care. Signed documents such as advance directives and standardized, state-approved physician or medical orders for life-sustaining treatments (POLSTs) provide a legal foundation for tailoring treatments to patient preferences.

Only 18% to 30% of the total US adult population has completed advance directives, and just 1 in 3 chronically ill patients has a documented advance directive. The percentage of older adults completing advance directives is unclear. Population-based estimates are in the range of 5% to 15%. Conversely, interviews with health care proxies suggest that as many as 70% of adult decedents older than age 60 years may have some form of advance directive. Substantial racial-ethnic disparities exist in rates of completion of advance directives.

Regardless of the proportion of older adults completing advance directives and having POLSTs, documentation of preferences is problematic. In a recent study, agreement between hospitalized elderly patients’ expressed preferences for end-of-life care and documentation in the medical record was only 30%; for example, 28% of elders preferred only comfort measures at the end of life, but just 5% of all documented treatment goals reflected this preference. Similar findings among community-dwelling vulnerable elders were obtained in a secondary analysis of data from 2 related studies; only 15% to 47% of 800 elders who reported completing an advance directive and giving it to a health care clinician had corresponding documentation in the medical record. Agreement between expressed and documented preferences may be affected by the fact that a substantial proportion of older adults completing advance directives may not fully understand these documents.

Advanced care documentation must be readily accessible to clinicians. A recent study assessed the documentation of advance care planning discussions and decisions in the electronic health records (EHRs) of more than 60,000 ambulatory care patients aged 65 years and older. Variable locations rendered retrieval difficult, and the authors concluded that
standardized location was necessary to ensure quick retrieval of needed information. Similarly, information related to advance care planning is located inconsistently in the Kaiser Permanente (KP) EHR, KP HealthConnect. When 50 KP Southern California (KPSC) physicians and medical assistants who were experienced EHR users were asked to locate advance care planning documentation, they looked in multiple locations in 35% of searches. Twenty-three percent of physicians and 72% of medical assistants were unable to locate advance care planning documentation within 2 minutes. When they located advance care planning documentation, even these experienced users required up to 19 seconds to do so (unpublished data, 2011 Dec 8-9).

Multiple strategies are required to improve advance care planning and ensure that care is patient-centered: facilitating clinician-patient discussions; improving documentation rates; and readily retrieving documented patient preferences, including information about health care proxies or surrogate decision makers, from the medical record. Systematic programs that include clinician support for engaging patients in and conducting advance care planning conversations over time can improve the proportion of patients who engage in discussions about advance care planning and the quality of those conversations. However, KP recognized that challenges related to documenting and retrieving patient preferences transcended conversations about advance care planning.

From June 2009 to November 2012, a KP interregional workgroup designed, built, and implemented a new functionality in the EHR for recording and viewing documentation of patients’ advance care planning across settings in a single, easily accessible location. The Care Directives Activity tab (CDA) is embedded into the Epic software (Epic Systems Corp, Verona, WI) on which the EHR is based. The purpose of this study was to assess patterns of CDA use and the impact of CDA use on documentation rates of advance directives and POLSTs.

**METHODS**

**Setting and Design**

KPSC is 1 of 7 Regions of KP, which, with its 9.6 million members, is among the largest not-for-profit integrated care delivery systems in the US. Of the approximately 3 million patients KPSC cares for, 668,000 are 65 years of age or older. An integrated EHR is available in all KPSC care settings. It includes comprehensive clinical information (demographics, documentation from all provider types, problem and medication lists, and discharge summaries), computerized order entry for medications, laboratory tests, radiology, consultation, and nursing care, results (eg, laboratory, radiology, and consultation) management, point-of-care decision support, and secure messaging between clinicians and with patients.

We conducted a retrospective observational study, assessing documentation rates of advance directives and POLSTs before and after CDA implementation in the KPSC Orange County Service Area in November 2012. We defined the preimplementation period as January 2012 to October 2012 and the postimplementation period as January 2013 to October 2013.
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Population
We examined documentation rates of advance directives and POLSTs among unique KPSC patients aged 65 years and older. Although younger patients may benefit from advance care planning, we limited our study to older patients because we assumed they were more likely to need end-of-life care. For inclusion, patients had to have at least 1 ambulatory care or inpatient encounter during the study period; we also assumed that documentation of advance care planning was more likely among patients with face-to-face interactions with clinicians that represented opportunities for advance care planning conversations. Between 2009 and 2012, for KPSC patients aged 65 years and older with at least 1 ambulatory care or inpatient visit, average annual rates of new documentation in the EHR of advance directives and POLSTs were 3.1% and 1.4%, respectively.

Intervention
Accessible in all inpatient and outpatient care settings, CDA is a single EHR tab used for documenting and viewing activities of advance care planning and patient preferences. Figure 1 displays the top-level summary view across settings, which contains an overview of end-of-life care preferences and activities, including documentation of advance directives and POLSTs, and links to subpages:

- current and historical code status
- the POLST: whether on file, in process, or not completed, with a hyperlink to scanned documents (Figure 2)
- advance directives: whether on file, in process, or not completed, with a hyperlink to scanned documents
- surrogate and protected health information: contact information for a designated health care surrogate, individuals excluded from surrogate decision making, and individuals with whom protected health information can and cannot be shared
- advanced illness care: value- and religion-based treatment preferences, end-of-life goals, preferred location for advanced illness care, and preferences for specific treatments (eg, mechanical ventilation, transfusion of blood or blood products, and intravenous nutrition and hydration)
- blood product declaration: any blood transfusion or infusion, no blood transfusions or infusions, and nonblood medical management (eg, nonblood volume expanders)
- palliative and hospice care: start dates and care team.

Advance directives and POLSTs are completed and signed on paper by patients and clinicians, centrally scanned, and stored in a single location in the enterprise data warehouse. Hyperlinks to electronic versions then appear in the CDA in the patient’s EHR. Hyperlinks to documents may also appear elsewhere in the patient’s record, but the CDA is the single consistent location for hyperlinks to advance directives and POLSTs across all patient records.

Implementation of the CDA was accompanied by on-site trainings for selected departments with an anticipated high need for documentation of advance care planning; approximately 150 clinicians (physicians, nurse practitioners, and physician assistants) participated. Webinars introducing the CDA were available to all clinicians and were recorded for later viewing.

Outcome Measures
We measured CDA use, which we defined by the following clinician actions: clicking on the tab in a patient’s EHR to launch the summary page or clicking to view information or perform activities in one of the CDA sections. Clinicians’ CDA use was linked to an encounter occurring in either the ambulatory care or inpatient setting in the postimplementation period; if patients had multiple encounters during the postimplementation period, CDA use was linked to the first encounter. Patients with CDA use in each setting were examined separately, and those with CDA use in both settings were included in each encounter-based group.

We also measured rates of filed advance directives and POLSTs before and after implementation of the CDA. We defined a filed document as one completed by the patient and/or his/her clinician or health care proxy, signed, returned to the clinician, and linked as a scanned version to a patient’s EHR. This sequence was indicated by a document’s presence in the enterprise data warehouse. Documentation filing was not linked to a patient encounter because it could occur outside of an encounter (eg, if a member mailed in an advance directive).

Statistical Analysis
We tabulated the number of encounters in ambulatory care and inpatient settings among the study population in which clinicians used the CDA in the patient’s EHR during the postimplementation period. To evaluate filed documentation rates, we tabulated the number of times that new or updated advance directives and POLSTs were filed in patients’...
EHRs during the pre- and postimplementation periods, comparing filing rates before and after implementation and, in the postimplementation period, with and without CDA use. We assessed the statistical significance of differences in documentation rates and controlled for temporal trends with Mantel-Haenszel χ² tests using statistical software (SAS Version 9.2, SAS Institute, Cary, NC). The KPSC institutional review board approved this study.

RESULTS

In the preimplementation period, 56,251 patients were included in the study population; 43,057 unique patients (76.5%) had 1 or more ambulatory care visits and 13,194 (23.5%) had an inpatient encounter. In the postimplementation period, 57,058 patients were included in the study population; 47,145 unique patients (82.6%) had 1 or more ambulatory care encounters and 9913 (17.4%) had an inpatient encounter. In the postimplementation period, among patients with ambulatory care and inpatient encounters, 464 (1%) and 764 (7.8%), respectively, had CDA use.

Documentation Rates

Among patients with ambulatory care encounters, documentation rates of advance directives in the pre- and postimplementation periods were 3.3% (n = 1401) and 3.0% (n = 1431), respectively (p = 0.06, Table 1). Among patients with an inpatient encounter, documentation rates of advance directives were 5.8% in both periods (p = 0.91).

For POLSTs, filed documentation rates were higher in the postimplementation period, with and without CDA use. We stratified documentation rates for patients with and without CDA use in the postimplementation period to examine associations between CDA use and documentation rates (Table 2). Filed documentation rates of advance directives and POLSTs in both care settings were higher among patients with CDA use than among patients without it. For patients with ambulatory care encounters, advance directive documentation rates were 12.5% (n = 58) and 2.9% (n = 1373) for CDA use and no CDA use, respectively (p < 0.001, Table 2). Compared with patients without CDA use, patients with CDA use in ambulatory care were nearly 5 times as likely to file an advance directive (odds ratio [OR] = 4.71; 95% confidence interval [CI] = 3.56-6.24). For patients with inpatient encounters, advance directive documentation rates were 9.0% (n = 69) and 5.5% (n = 504) for CDA use and no CDA use, respectively (p < 0.001). Compared with inpatients without CDA use, inpatients with CDA use were more likely to file an advance directive (OR = 1.70; 95% CI = 1.31-2.22).

Documentation rates of POLST were also higher for patients with CDA use than for those without it. For patients with ambulatory care encounters, POLST documentation rates were 8.2% (n = 38) and 1.7% (n = 814) for CDA use and no CDA use, respectively (p < 0.001). Compared with patients in ambulatory care with no CDA use, patients with

| Table 1. Documentation of advance directive and physician order for life-sustaining treatments before and after implementation of Care Directives Activity tab |
|-------------------------------------------------|-----------------|-----------------|-----------------|-----------------|
| Document                                       | Unique members with ambulatory care encounters (N = 90,202) | Unique members with inpatient encounters (N = 23,107) |
|                                                | Pre-CDA (n = 43,057) | Post-CDA (n = 47,145) | Pre-CDA (n = 13,194) | Post-CDA (n = 9913) |
| Advance directive filed, no. (%)               | 1401 (3.25)         | 1431 (3.04)         | 758 (5.75)         | 573 (5.78)        |
| p value of difference                          | 0.06               | 0.91               |                   |                  |
| POLST filed, no. (%)                           | 505 (1.2)           | 852 (1.8)           | 262 (2.0)          | 419 (4.2)         |
| p value of difference                          | < 0.001            | 0.01               |                   | < 0.001          |

CDA = Care Directives Activity tab; POLST = physician order for life-sustaining treatments.

| Table 2. Documentation of advance directive and physician order for life-sustaining treatments with and without use of Care Directives Activity tab |
|-------------------------------------------------|-----------------|-----------------|-----------------|-----------------|
| Document                                       | Unique members with ambulatory care encounters (N = 47,145) | Unique members with inpatient encounters (N = 9913) |
|                                                | CDA use (n = 464) | No CDA use (n = 46,681) | CDA use (n = 764) | No CDA use (n = 9149) |
| Advance directive filed, no. (%)               | 58 (12.5)         | 1373 (2.9)         | 69 (9.0)          | 504 (5.5)        |
| p value of difference                          | < 0.001           |                   |                   |                  |
| POLST filed, no. (%)                           | 38 (8.2)          | 814 (1.7)          | 100 (13.1)        | 319 (3.5)        |
| p value of difference                          | < 0.001           |                   |                   | < 0.001          |

CDA = Care Directives Activity tab; POLST = physician order for life-sustaining treatments.
CDA use were 5 times more likely to file a POLST (OR = 5.03; 95% CI = 3.58-7.05). Documentation rates among patients with inpatient encounters were 13.1% (n = 100) and 3.5% (n = 319) for CDA use and no CDA use, respectively (p < 0.001). Compared with inpatients with no CDA use, inpatients with CDA use were 4 times more likely to file a POLST (OR = 4.17; 95% CI = 3.28-5.29).

**DISCUSSION**

In the pilot study reported here, we found statistically significant associations between clinicians’ CDA use and higher rates of filed advance directives and POLSTs. Patients with CDA use were 1.7 to 5.0 times more likely to file advance directives and POLSTs than were those without CDA use.

Strengths of our report include that it is, to the best of our knowledge, the first describing the use of a standardized location in an EHR for documenting advance care planning. In addition, we assessed the use of CDA in a large metropolitan population and compared preexisting documentation rates with those after implementation. Limitations of our report include the potential impact of unmeasured factors on our findings. For instance, we did not adjust CDA use rates for factors known to have an impact on advance care planning, such as race and literacy, although we have no reason to believe that patients with and without CDA use differed in ways that would have influenced our findings. Although the CDA is intended to improve both the documentation and retrieval of advance care planning preferences, this study addressed only the first. Advance care planning is also a concern for younger patients with terminal conditions; we did not assess the use of the CDA among this population. We did not assess the impact of clinician participation in a limited number of trainings provided on CDA use, and implementation itself may have drawn attention to the need for advance care planning that played a role in increased documentation rates. We cannot distinguish between the effects of increased awareness and the availability of the CDA or assess the impact of CDA implementation throughout KPSC in July 2013.

The rate of CDA use was low at 1% to 7.8%. Following regional rollout, we conducted a survey of KPSC clinicians to ascertain reasons for nonuse. Among more than 800 respondents, 74% indicated that they used the CDA rarely or not at all because they did not know what it was or where it was located in the EHR, and 41% indicated that they did not know how it fit into clinical workflows. Nevertheless, low use rates were associated with statistically significant increases in POLST documentation rates for the entire study population. Subsequent efforts to promote broader use have included incentives to document advance care planning on the tab for providers in selected specialties, a short educational video posted on a regional continuing education Internet portal, and embedding documenting advance care planning preferences on the tab into workflows for an advance care planning process adopted regionally.

Statistically significant differences in documentation rates between patients with and without CDA use point out the potential of a standardized location in the EHR to affect rates of advance care planning documentation for older adults. We cannot assert a causal relationship from our findings. However, we speculate that a single easily accessible location for these documents may engender confidence among clinicians that the effort required to obtain them will be well spent because advance care planning documentation will be available when needed. It is also possible that a standardized location helps clinicians identify patients who need to complete advance care planning documents.

A centralized location provides a clear and efficient process for documenting patient care preferences; KPSC physicians across inpatient and outpatient settings used the CDA in the same way. Our findings suggest that the CDA facilitated advance care planning documentation that was relevant to the care setting. In the inpatient setting, differences in documentation rates were more pronounced for POLSTs than for advance directives; the opposite was true in ambulatory care.

The documentation of patient care preferences is pivotal to ensuring patient-centered care at the end of life. The CDA is one approach to doing so. Other efforts are under way across KP to facilitate advance care planning via patient engagement, shared decision making, and documentation. Attention must also be paid to providing advance care planning processes that are sensitive to beliefs and values common in racial-ethnic groups that influence decision making at the end of life. Our report offers early evidence that a systematic approach is beneficial to documenting care preferences. As we successfully engage more patients in advance care planning, we anticipate that benefits will accumulate. Ongoing work examines how to adapt the CDA to systematic advance care planning programs.

Standardized documentation of preferences in the EHR is necessary, but not sufficient, for ensuring that end-of-life care is patient-centered. An important concern not addressed here is the quality of advance care planning conversations, particularly in terms of informed consent and an ongoing dialogue that addresses patients’ changing circumstances. The retrieval of advance care planning documents when they are needed is also a key step in ensuring patient-centered care, and adherence to the patient values and goals they reflect is essential. Evidence exists that even among patients with documented advance care planning preferences, care may not reflect their goals and values.”

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**CONCLUSION**

Use of the CDA in the EHR was associated with statistically significant increases in documentation rates of advance directives and orders for life-sustaining treatments. Our study will help improve patient-centered end-of-life care.
References


Honor

A good death does honor to a whole life.

— Petrarch, 1304-1374, Italian Renaissance poet and scholar