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Advance Care Planning and the Quality of End-of-Life Care in Older Adults

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OBJECTIVES: To determine whether advance care planning influences quality of end-of-life care.

DESIGN: In this observational cohort study, Medicare data and survey data from the Health and Retirement Study (HRS) were combined to determine whether advance care planning was associated with quality metrics.

SETTING: The nationally representative HRS.

PARTICIPANTS: Four thousand three hundred ninety-nine decedent subjects (mean age 82.6 at death, 55% women).

MEASUREMENTS: Advance care planning (ACP) was defined as having an advance directive (AD), durable power of attorney (DPOA) or having discussed preferences for end-of-life care with a next of kin. Outcomes included previously reported quality metrics observed during the last month of life (rates of hospital admission, in-hospital death, >14 days in the hospital, intensive care unit admission, >1 emergency department visit, hospice admission, and length of hospice ≤ 3 days).

RESULTS: Seventy-six percent of subjects engaged in ACP. Ninety-two percent of ADs stated a preference to prioritize comfort. After adjustment, subjects who engaged in ACP were less likely to die in a hospital (adjusted relative risk (aRR) = 0.87, 95% confidence interval (CI) = 0.80–0.94), more likely to be enrolled in hospice (aRR = 1.68, 95% CI = 1.43–1.97), and less likely to receive hospice for 3 days or less before death (aRR = 0.88, 95% CI = 0.85–0.91). Having an AD, a DPOA or an ACP discussion were each independently associated with a significant increase in hospice use ($P < .01$ for all).

CONCLUSION: ACP was associated with improved quality of care at the end of life, including less in-hospital death and increased use of hospice. Having an AD, assigning a DPOA and conducting ACP discussions are all important elements of ACP. **J Am Geriatr Soc 61:209–214, 2013.**

Key words: advance care planning; advance directives; end-of-life; quality

Advance care planning (ACP) refers to the process by which people express their values and priorities with the goal of preparing for care at the end of life that is in accordance with their personal preferences. ACP can be a complex process requiring many conversations over time; decisions and discussions are often documented through the completion of an advance directive (AD) or assignment of a durable power of attorney (DPOA) for health care.

The majority of the existing literature about ACP has discussed the effects of ADs alone, without considering other aspects of ACP. Having a discussion about goals, values, and preferences for end-of-life care and assigning a DPOA are arguably as important as completion of an AD.[1] The focus of the literature has been on the ability of ADs to control costs at the end of life; results are mixed but largely discouraging, leading some to feel that ADs should be abandoned.[2–5] More-recent studies have reinvigorated the conversation about the need for and role of ADs.[6,7] For example, one article highlighted that more than 70% of individuals who face treatment decisions at the end of life required substituted judgment, and the majority of proxies felt that their loved ones received end-of-life care consistent with their previously expressed preferences.[6] Although these results are encouraging, the near-exclusive focus on ADs limits the ability to evaluate the ACP process as a whole, including other elements of the process such as discussing wishes and assigning a DPOA.[1,8,9]

Furthermore, although much emphasis has been placed on cost, it is not known whether ACP affects the quality of care received at the end of life. Several studies have begun to define metrics for assessing quality of care

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at the end of life. For instance evidenced-based end-of-life quality metrics have been defined, including a high proportion of deaths outside of the hospital, a low number of hospital and intensive care unit (ICU) days at the end of life, and a high rate of hospice enrollment more than 72 hours before death.[10,11]

Using these end-of-life quality metrics, the current study sought to determine whether ACP, broadly defined as having completed an AD, having assigned a DPOA, or having had an ACP discussion with a next of kin, affects the quality of care received at the end of life in older adults. The independent effect of each component of the ACP process was also assessed. Finally, whether specifically expressed goals of care are associated with the type of end-of-life care received was investigated.

METHODS

Study Population and Data Sources

The study population included decedents from the Health and Retirement Study (HRS) cohort, a community-based sample of approximately 22,000 Americans aged 50 and older who have been surveyed biennially since 1992 with the goal of illuminating trends in wealth and health throughout late life. The HRS samples households across the United States using national area probability sampling, with oversampling of African Americans, Hispanics, and residents of Florida. When members of the HRS cohort die, exit interviews are completed with a healthcare proxy within 24 months of the death. Informed consent was obtained from subjects and their healthcare proxies in the original HRS. Further details of the HRS design are available elsewhere.[12]

The 6,942 HRS respondents who were Medicare beneficiaries and died between 1993 and 2007 were included; 967 people who were not enrolled in a Medicare fee-for-service plan during the last month of life (because Medicare defined the primary outcome measure), 882 whose exit interviews did not contain complete information regarding AD completion or DPOA assignment (item response rates 99% and 99%, respectively), 379 who did not have an exit interview completed by a proxy after their death, 188 younger than 65 at the time of their death, and 132 who did not have a valid HRS survey weight were excluded. The study population therefore consisted of 4,394 subjects. The institutional review board of the University of California at San Francisco exempted this study.

Outcomes

The outcomes included evidenced-based end-of-life health services quality metrics,[10,11] including hospital admission in the last month of life, in-hospital death, spending more than 14 days in the hospital during the last month of life, ICU admission in the last month of life, more than one emergency department (ED) visit in the last month of life, hospice admission, and length of hospice stay of three or fewer days before death. All healthcare utilization quality metrics were determined from Medicare data.

Predictors

The primary predictor was ACP, determined by asking proxies during the exit interview whether the subject had engaged in an ACP discussion ("Did (the decedent) ever discuss with you or anyone else the treatment or care she/he wanted to receive in the final days of her/his life?"), documented preferences in an AD ("Did (the decedent) provide written instructions about the treatment or care she/he wanted to receive during the final days of his/her life?"), or assigned a DPOA ("Did (the decedent) make any legal arrangements for a specific person or persons to make decisions about his/her care or medical treatment if she/he could not make those decisions him/herself? This is sometimes called a durable power of attorney for health care.").

Secondarily, whether healthcare utilization varied based on the preferences that subjects expressed in their ADs was determined according to the exit interview. These preferences were categorized as all care possible (a desire to receive all care possible under any circumstances in order to prolong life), some limits (a desire to limit care in certain situations), and comfort care (a desire to keep him or her comfortable and pain free but to forgo extensive measures to prolong life).

Covariates, determined from HRS subject interviews and exit interviews with proxies, included demographic characteristics (age at death, sex, race and ethnicity, martial status, net worth, and year of death), comorbidities (history of cancer, hypertension, diabetes mellitus, lung disease, heart disease, stroke, and cognitive impairment), and a functional limitation score (range 0–6 based on number of activities requiring assistance during the last 3 months of life: walking, toileting, bathing, transferring, eating, and dressing).

Statistical Analysis

All analyses are weighted for subjects' differential probability of selection into the HRS population, taking into account the HRS's complex design. The validity of the HRS survey data was estimated by comparing the number of interviewed healthcare proxies who reported that the subject died in the hospital with the number of subjects who died in the hospital according to Medicare records. The trend in ACP documentation over time was also calculated.

For quality outcomes, bivariate analyses were used to estimate the predicted prevalence of each of the metrics of quality of end-of-life care according to history of ACP (yes/no). To determine whether differences in care were due to confounding, multivariable Poisson regressions were run with adjustment for all demographic and clinical covariates to directly estimate adjusted relative prevalences of the quality metrics according to history of ACP.[13]

To investigate which component of the ACP process had the greatest association with the outcomes of interest, the quality metrics for subjects who completed an AD only, assigned a DPOA only, or had an ACP discussion only were compared with those of subjects who did not engage in ACP.

Whether the specific preferences expressed in subjects' ADs were associated with the health care that they received were then investigated, after adjustment, by modeling differences in quality metrics according to preferences for care reported in the AD (all care possible, some limits, or comfort care).

All analyses were completed using Stata version 12.1 (StataCorp, College Station, TX), and SAS version 9.2 (SAS Institute, Inc., Cary, NC).

RESULTS

Study Population

Characteristics of the study population are shown in Table 1. Decedents were of advanced age, with 80% of subjects aged 75 and older at the time of death. Fifty-five percent were women. Thirty percent of proxies interviewed during the exit interviews about subjects' ACP documents were spouses, and 65% were other relatives, the large majority of whom were children of the decedents. The mean time from death to exit interview completion was 13.5 ± 9.1 months. Ninety-one percent (1,343/1,472) of subjects who died in the hospital according to Medicare claims data were also reported as having died in the hospital according to their proxy in the HRS exit interviews.

Of the 4,394 study subjects, 76% of people engaged in ACP: 2.8% of people had an AD only, 9.3% had a DPOA only, 13.9% reported an ACP discussion only, 9.4% had an AD and a DPOA, 5.9% had an AD and reported having an ACP discussion, 8.8% had a DPOA and reported a discussion, and 26.0% reported all three components of ACP.

The mean time from completion of an AD to death was 61 months (median 37 months, interquartile range (IQR) 11–91 months). The mean time from assignment of a DPOA to death was 56 months (median 34 months, IQR 10–80 months). ACP became increasingly common after 1993 (*P*-value for trend <.001). Fewer than half of the subjects who died before 1997 had engaged in ACP, whereas more than half of the subjects who died in and after 1997 had engaged in ACP. Seventy-two percent of subjects who died in 2007, the last year in the study period, completed ACP documents. Older decedents, women, Caucasians, unpartnered individuals, decedents with greater net worth, and long-term residents of nursing homes were more likely to have engaged in ACP, whereas decedents with better functional status were less likely ($P < .01$ for each comparison).

Ninety-two percent of people who completed an AD stated a preference to prioritize comfort and forgo extensive measures to prolong life, 5% expressed a desire to limit care in certain situations, and 3% requested all care possible.

Table 1. Participant Characteristics According to Advance Care Planning (ACP) Group

Characteristic	All Respondents, N = 4,394	No ACP, n = 1,164	ACP, n = 3,230	*P*-value
Age at death, mean; median	82.6; 82.8	81.5; 81.5	83.0; 83.3	<.001
Sex, %				
Male	45.3	49.6	43.9	.001
Female	54.7	50.4	56.1	
Race or ethnicity, %				
White	86.3	71.1	91.1	<.001
Hispanic	3.7	8.1	2.2	
Black	8.9	18.8	5.8	
Other	1.1	2.1	0.8	
Married or partnered, %	41.0	46.6	39.3	<.001
Quartile of net worth, $, %				
<6,000	25.1	33.8	22.4	<.001
6,000–80,999	25.0	28.1	24.0	
81,000–238,999	24.9	22.6	25.6	
≥ 239,000	25.0	15.5	28.0	
Nursing home resident before the last month of life, %	33.8	26.6	36.1	<.001
History of cancer,%	25.0	21.1	26.2	.01
History of hypertension, %	62.2	63.5	61.8	.43
History of diabetes mellitus, %	24.3	26.2	23.6	.06
History of lung disease, %	21.8	20.5	22.2	.29
History of heart disease, %	50.6	48.3	51.3	.15
Cognitive impairment, %	28.3	31.8	27.2	.01
Functional limitation score, median (IQR)	3 (0–5)	1 (0–4)	3 (0–5)	<.001
Months between decedents' death and proxy interview, mean ± standard deviation, median (IQR)	13.5 ± 9.1, 13 (7–19)	14.2 ± 9.8, 14 (7–19)	13.3 ± 8.9, 13 (7–18)	.01

IQR = interquartile range.

Reported values incorporated survey weights to account for the complex survey design.

Marital status, quartile of net worth, and comorbidities were determined from the last survey before death.

Functional limitations were measured as needing help with dressing, walking, bathing, eating, getting into bed and toileting (per questions in the exit interview) during the last 3 months of life. Functional limitation score was 0–6 based on number of positive responses.

ACP and Quality Metrics

Decedents whose proxies reported that they engaged in ACP were less likely to die in the hospital (unadjusted prevalence 39.2% vs 49.0%, $P < .001$), less likely to spend longer than 2 weeks in the hospital during the last month of life (10.3% vs 14.1%, $P < .001$), more likely to enroll in hospice (33.3% vs 17.6%, $P < .001$), and less likely to be admitted to hospice for 3 or fewer days (71.9% vs 85.1%, $P < .001$). They were also less likely to be have more than one ED visit in the last month of life (14.0% vs 16.4%, $P = .05$) and less likely to be admitted to the ICU (23.6% vs 26.9%, $P = .04$). There was no significant difference in the rate of hospital admission during the last month of life (56.2% vs 58.0%, $P = .28$).

After adjusting for demographic and clinical covariates, statistically significant differences between decedents whose proxies reported that they engaged in ACP and those who did not persisted for the outcomes of death in the hospital, hospice admission, and enrollment in hospice 3 or fewer days before death (Table 2). There were no significant differences between groups in terms of the proportion of decedents admitted to the hospital or ICU or who had multiple ED visits in the last month of life.

Individual Elements of ACP and Quality of End of Life

Having an AD alone was associated with 69% less risk of lengthy hospitalizations in the last month of life than no evidence of ACP, and having an AD or a DPOA or having had an ACP discussion alone was significantly associated with hospice admission and longer length of stay in hospice (Table 3).

Stated Preferences and End-of-Life Quality

People who documented a preference for comfort care in their AD (according to proxy report) were less likely to die in the hospital, were less often hospitalized for more than 2 weeks of their final month of life, were more often enrolled in hospice, and less often had brief hospice stays than the baseline group of people who did not engage in ACP (Table 4). People who documented a preference for all care possible in their AD more often had multiple ED visits in the last month of life and had a trend toward more hospital admissions, but they were also more likely to be enrolled in hospice than the group of patients who did not engage in ACP, although because the number of subjects who had expressed a preference for all care possible was small, these latter findings are considered to be exploratory.

Table 2. Adjusted Association Between Advance Care Planning (ACP) and Quality End-of-Life Care

Metric	Adjusted RR for ACP Versus No ACP (95% Confidence Interval)	*P*-value
Hospital admission	1.01 (0.95–1.07)	.83
In-hospital death	0.87 (0.80–0.94)	.001
>14 days in hospital	0.81 (0.66–0.99)	.04
Intensive care unit admission	0.92 (0.81–1.05)	.21
>1 emergency department visits	0.91 (0.76–1.08)	.27
Hospice admission	1.68 (1.43–1.97)	<.001
Length of hospice stay ≤3 days	0.88 (0.85–0.91)	<.001

Relative risk (RR) was estimated using Poisson regression with point and variance estimates using the jackknife replication method.

Reported values incorporated survey weights to account for the complex survey design.

Covariates included demographic characteristics (age at death, sex, race or ethnicity, marital status, net worth, year of death), and medical comorbidities (cancer, hypertension, diabetes mellitus, lung diseases, heart disease, stroke, and cognitive impairment).

Table 3. Association Between Advance Care Planning (ACP) and Quality End-of-Life Care

Metric	Adjusted RR (95% Confidence Interval)	*P*-value
Hospital admission		
AD only versus no ACP	0.92 (0.78–1.09)	.33
DPOA only versus no ACP	0.98 (0.86–1.12)	.82
Discussion only versus no ACP	1.05 (0.96–1.15)	.26
In-hospital death		
AD only versus no ACP	0.86 (0.73–1.01)	.07
DPOA only versus no ACP	0.88 (0.78–1.00)	.05
Discussion only versus no ACP	1.02 (0.92–1.14)	.64
>14 days in hospital		
AD only versus no ACP	0.31 (0.13–0.73)	.008
DPOA only versus no ACP	0.96 (0.67–1.39)	.84
Discussion only versus no ACP	0.97 (0.77–1.22)	.77
Intensive care unit admission		
AD only versus no ACP	0.81 (0.55–1.18)	.26
DPOA only versus no ACP	0.90 (0.72–1.14)	.38
Discussion only versus no ACP	1.02 (0.90–1.17)	.72
>1 emergency department visits		
AD only versus no ACP	1.04 (0.65–1.66)	.87
DPOA only versus no ACP	0.97 (0.71–1.34)	.87
Discussion only versus no ACP	0.89 (0.70–1.13)	.33
Hospice admission		
AD only versus no ACP	1.67 (1.20–2.33)	.003
DPOA only versus no ACP	1.40 (1.12–1.76)	.004
Discussion only versus no ACP	1.48 (1.24–1.76)	<.001
Length of hospice stay ≤ 3 days		
AD only versus no ACP	0.88 (0.78–0.99)	.03
DPOA only versus no ACP	0.93 (0.88–0.99)	.02
Discussion only versus no ACP	0.92 (0.87–0.96)	.001

AD = advance directive; DPOA = durable power of attorney.

Relative risk (RR) was estimated using Poisson regression with point and variance estimates using the jackknife replication method.

Reported values incorporated survey weights to account for the complex survey design.

Covariates included demographic characteristics (age at death, sex, race or ethnicity, marital status, net worth, year of death), and medical comorbidities (cancer, hypertension, diabetes mellitus, lung diseases, heart disease, stroke, and cognitive impairment).

DISCUSSION

This study was the first to examine the relationship between ACP and the quality of end-of-life care, as measured according to rates of care consistent with preexisting quality metrics.[10,11] Most older adults engaged in ACP before death, and ACP became increasingly common in

Table 4. Association Between Expressed Preferences and Quality of End-of-Life Care

Metric	Adjusted RR (95% Confidence Interval)	*P*-value
Hospital admission		
Comfort care versus no ACP	0.97 (0.91–1.04)	.44
Some limits versus no ACP	0.88 (0.66–1.17)	.37
All care possible versus no ACP	1.19 (0.98–1.45)	.09
In-hospital death		
Comfort care versus no ACP	0.78 (0.71–0.86)	<.001
Some limits versus no ACP	0.80 (0.61–1.06)	.12
All care possible versus no ACP	0.82 (0.59–1.13)	.23
>14 days in hospital		
Comfort care versus no ACP	0.65 (0.50–0.85)	.002
Some limits versus no ACP	0.57 (0.28–1.15)	.11
All care possible versus no ACP	1.28 (0.76–2.18)	.35
Intensive care unit admission		
Comfort care versus no ACP	0.86 (0.74–1.01)	.07
Some limits versus no ACP	0.72 (0.43–1.21)	.21
All care possible versus no ACP	1.10 (0.72–1.69)	.66
>1 emergency department visits		
Comfort care versus no ACP	0.85 (0.69–1.05)	.13
Some limits versus no ACP	0.76 (0.40–1.42)	.38
All care possible versus no ACP	1.62 (1.05–2.49)	.03
Hospice admission		
Comfort care versus no ACP	1.88 (1.59–2.22)	<.001
Some limits versus no ACP	1.83 (1.35–2.48)	<.001
All care possible versus no ACP	1.85 (1.26–2.74)	.003
Length of hospice stay ≤ 3 days		
Comfort care versus no ACP	0.84 (0.81–0.87)	<.001
Some limits versus no ACP	0.91 (0.80–1.04)	.17
All care possible versus no ACP	0.88 (0.74–1.05)	.16

ACP = advance care planning.

Relative risk (RR) was estimated using Poisson regression with point and variance estimates using the jackknife replication method.

Reported values incorporated survey weights to account for the complex survey design.

Covariates included demographic characteristics (age at death, sex, race or ethnicity, marital status, net worth, year of death), and medical comorbidities (cancer, hypertension, diabetes mellitus, lung diseases, heart disease, stroke, and cognitive impairment).

decedents throughout the 14-year study period. Older adults who engage in ACP typically do so multiple years before death, and assignment of a DPOA was more common than completion of an AD, which emphasizes how the ACP represented in this study is distinct from the inpatient code discussions that have been studied in the majority of the existing ACP literature.[4,14] Like previous studies, the current study showed that the preponderance of people who engage in ACP express a preference to prioritize comfort in late life and forgo extensive measures to prolong life.[6]

The primary finding was that ACP is associated with a lower rate of in-hospital death and greater hospice use but no significant difference in rate of hospitalization, ICU admission, or frequent ED visits in the last month of life. There appears to be utility in each aspect of ACP that was studied—completing an AD, assigning a DPOA, and having an ACP discussion with next of kin—albeit in somewhat different ways. Additionally, end-of-life care tends to correlate to the preferences expressed in subjects' ADs.

This study makes several important contributions to the existing literature. First, by defining ACP more broadly than the mere completion of an AD, the real-world ACP that older adults are participating in was more accurately captured. This is important given that the findings suggest that each aspect of ACP affects end-of-life care. Second, the association between ACP and the quality of end-of-life care was focused explicitly on, rather than costs, helping to reframe the discussion about the effect of ACP. Third, by combining Medicare data with a large, nationally representative study, it was possible to show that ACP is associated with objective measures of end-of-life quality: less in-hospital death and more hospice use.

The finding that having an AD, a DPOA, and an ACP discussion is each associated with end-of-life care has implications for traditional practitioners, who have focused primarily on completing ADs, as well as for practitioners who see minority populations, where studies suggest a general preference for discussing ACP but reluctance to sign ACP documents.[15] It may be that neither approach alone has the full effect of multimodal ACP.

Although there was no statistically significant difference in the rate of hospitalization during the last month of life between decedents who did and did not complete ACP, there was a significant difference in the rate of in-hospital mortality between these groups. These findings suggest that older adults who engage in ACP are often admitted to the hospital in the last month of life but are more likely to be discharged to home or to a nonacute facility before their death, rather than remain in the hospital for their final days to weeks. It is unclear how brief, nonterminal hospitalizations affect quality of life for the majority of people who prioritize comfort at the end of life. Given their frequency, this is an important topic for further study.

The primary limitation of this study was the use of healthcare proxy report, which occurred an average of 13.5 months after subjects' deaths, for information about whether subjects completed ACP documents and the preferences expressed in those documents. These data are subject to recall bias. Nevertheless, proxy reports are commonly used for studies of end-of-life experiences, only basic information from proxies that they would be reasonably expected to recall was relied on, and good agreement was found between proxy reports and Medicare claims data about location of death.[6,16] Future studies with prospective documentation of subject preferences before death could eliminate this concern altogether but would be expensive and time consuming to perform on such a large scale as this study. The observational study design meant that only associations could be reported; that ACP causes changes in healthcare use cannot be concluded, but given that the AD and DPOA documents studied were completed many months before death in this longitudinal study, it is unlikely that the direction of causality is reversed. Although statistically significant associations between ACP and in-hospital death and between ACP and hospice use were seen, confidence intervals were also wide, indicating the heterogeneous, complex association between ACP and end-of-life care. It is likely that many other factors that were not captured in this study are also associated with the type of end-of-life care received. This study was not designed to give a detailed answer to the question of how ACP is currently occurring and how it could be better performed in future. Basic information was available about what the ACP process entailed (creation of an AD, assignment of a DPOA, or discussion about preferences with a healthcare proxy), but it was not known whether it was performed with the help of a doctor and whether it occurred as a longitudinal process over time. Understanding these questions better through further studies could be instructive for future ACP efforts.

In summary, this large population-based study of older adults found that ACP is associated with less in-hospital death and greater hospice use. All components of ACP are associated with end-of-life care received and should be considered in future clinical care and research.

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