

Completion of a Durable Power of Attorney for Health Care: What Does Cognition Have to Do With It?

Lisa C. McGuire, PhD,¹ Jaya K. Rao, MD, MHS,^{1,2}
Lynda A. Anderson, PhD,^{1,3} and
Earl S. Ford, MD, MPH¹

Purpose: This study examined the association between cognitive functioning and completion of a durable power of attorney for health care. **Design and Methods:** Participants were from the Second Longitudinal Study on Aging (LSOA II), a nationally representative sample of community-dwelling persons who were at least 70 years of age at the time of participation. The sample included 325 older adult respondents (144 men, 181 women) with a mean age of 80.7 years ($SE = 0.36$) and a mean educational attainment of 11.6 years ($SE = 0.18$). Researchers measured each respondent's cognitive functioning during follow-up by using an adapted Telephone Interview of Cognitive Status, and a proxy informant indicated whether the respondent completed a durable power of attorney for health care. **Results:** A durable power of attorney for health care was completed by 60.8% ($SE = 2.51$) of respondents prior to their death. Logistic regression demonstrated that respondents with the first quartile of global cognitive functioning were 76% less likely to have completed a durable power of attorney (adjusted odds ratio = 0.24, 95% confidence interval = 0.09–0.60) than those with the fourth quartile of cognitive functioning. **Implications:** The factors associated with completion of durable power of attorney for health care by older adults with lower levels of

cognitive functioning should be investigated further. Such data could be used to inform interventions to increase the completion rates of durable power of attorney for health care among this particular group of older adults.

Key Words: Cognition, Advance directives, Longitudinal study on aging

As the number of community-dwelling older adults continues to grow, the number of people with mild to severe cognitive impairment is expected to increase proportionately. Mild cognitive impairment is found in approximately 20% of older adults (Hanninen, Hallikainen, Tuomainen, Vanhanen, & Soininen, 2002; Ritchie & Touchon, 2000), and the prevalence of Alzheimer's disease is 10% among adults aged 65 or older and nearly 50% among those aged 85 or older (Evans et al., 1989). With the overall expansion of an aging population, the number of older adults facing end-of-life decisions is increasing. Several methods exist to help people and their families prepare to make such decisions. Living wills are a form of advanced directive that allow people to state their preferences for specific treatments in the event of life-threatening situations (Fagerlin & Schneider, 2004; The President's Council on Bioethics, 2005).

To date, the literature has paid little attention to the influence of cognitive functioning on completion of living wills and other forms of advance directives. Cognitive functioning has been shown to influence the process of making medical decisions (McGuire, 1996; McGuire, Morian, Coddling, & Smyer, 2000; Park & Gutches, 2000). Simple cognitive abilities such as verbal skills may underlie the capacity to designate a surrogate decision maker or state a treatment preference, whereas higher order cognitive abilities may affect the ability to understand the

Address correspondence to Lisa C. McGuire, PhD, Healthy Aging Program, Division of Adult and Community Health, Centers for Disease Control and Prevention, 4770 Buford Highway, NE, MS K-45, Atlanta, GA 30341. E-mail: lmcguire@cdc.gov

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¹Division of Adult and Community Health, Centers for Disease Control and Prevention, Atlanta, GA.

²Department of Medicine, Emory University, Atlanta, GA.

³Department of Behavioral Sciences and Health Education, Emory University, Atlanta, GA.

consequences of personal decisions or provide reasons for those choices (Allen et al., 2003). The complexity of decisions involved in the completion of a living will may represent a major challenge for older adults in general and especially for those adults with cognitive decline.

It has become apparent that living wills have several disadvantages (Fagerlin & Schneider, 2004; The President's Council on Bioethics, 2005). Some people may not fully comprehend the clinical treatments required in a life-threatening situation or have clear treatment preferences. Others may be reluctant to commit their preferences in writing. Furthermore, the evidence suggests that living wills have had a limited influence on end-of-life care because they are vague and difficult to apply to the patient's clinical situation at the time or they may not be transmitted to health care providers (Fagerlin & Schneider, 2004; The President's Council on Bioethics, 2005). Even when living wills are provided to health care providers, they may not be used because neither the provider nor the family members believe the patient to be at risk of imminent death (Fagerlin & Schneider, 2004; Teno et al., 1997).

Because of the apparent limitations of the living will, bioethicists have recognized the durable power of attorney for health care (herein referred to as durable power of attorney) as a form of advance directive with distinct advantages (Fagerlin & Schneider, 2004; Mezey, Teresi, Ramsey, Mitty, & Bobrowitz, 2000; The President's Council on Bioethics, 2005). First, a durable power of attorney serves to formalize a decision-making role that significant others may already play while caring for loved ones who are judged to be incompetent (Fagerlin & Schneider; Mezey et al.; The President's Council on Bioethics). Second, it requires people to make fewer choices by limiting the decision making to the selection of a surrogate and allowing surrogates to make decisions based on the clinical situation at the time. Finally, durable power of attorney forms can be easily completed with little guidance (Fagerlin & Schneider, 2004). For older adults at risk for cognitive impairment, completion of a durable power of attorney may be an appropriate method to prepare for prolonged periods of incapacity, including the period at the end of life.

To our knowledge, only two studies have examined the association between cognitive functioning and advance directives, and both involved special populations. Rosnick and Reynolds (2003) hypothesized that low cognitive functioning would stimulate completion of an advance directive in a sample of relatively healthy, affluent community-dwelling older adults living in Florida. The researchers found no relationship between cognitive functioning and completion of a durable power of attorney. Allen and colleagues (2003) examined cognitive functioning and completion of advance directives among persons living in nursing homes. These researchers found that

global cognitive ability was related to the understanding of and appreciation of an advance directive, but not to the completion of one. Recently, Hopp (2000) called for additional research on advance directives involving national samples of community-dwelling older adults. Gaining an understanding of the relationship between cognitive abilities and completion of durable power of attorney is critical for developing guidelines and interventions to support the decision-making processes of older adults and their surrogates at the end of life.

In this study we begin that process by examining cognitive functioning as a predictor of the completion of a durable power of attorney. We used data from the Second Longitudinal Study on Aging (LSOA II), a national sample of community-dwelling U.S. older adults (National Center for Health Statistics, 2002).

Methods

Respondents

The sample consisted of participants from the LSOA II, a nationally representative sample with a multistage complex sampling design, who died following their participation in the first follow-up survey. The baseline of LSOA II was the 1994 National Health Interview Survey, Second Supplement on Aging II (SOA II), conducted by the Centers for Disease Control and Prevention after ethical approval for the study was obtained by the National Center for Health Statistics' Research Ethics Review Board. Researchers obtained informed consent from respondents prior to their participation in the survey. The SOA II was composed of 9,447 community-dwelling, civilian men and women who were at least 70 years of age ($M = 80.7$ years; $SE = 0.36$) and had a mean educational attainment of 11.6 years ($SE = 0.18$). Researchers primarily conducted follow-up surveys by using a computer-assisted telephone interview system. Respondents completed a first follow-up survey between May 1997 and May 1998. Approximately 2 years later (between June 1999 and August 2000), proxy informants completed a decedent interview for those respondents who had died (Figure 1).

Materials

Researchers obtained information about respondents' completion of a durable power of attorney from proxy informants following the respondents' deaths (Table 1). The proxy informant was asked the following question: "Did [respondent's name] make any legal arrangement for a specific person or persons to make decisions about [his/her] care or medical treatment if [he/she] could not make these decisions [himself/herself]? This is sometimes called a 'Durable Power of Attorney for Health Care.'"

Researchers assessed respondents' cognitive functioning by using an adapted Telephone Interview for Cognitive Status (Brandt, Spencer, & Folstein, 1998) at the first follow-up during May 1997 to May 1998 (Table 1). Global cognitive functioning is composed of two independent factors of cognition: mental status (orientation, registration, and attention) and immediate memory recall (immediate verbal memory). We summed respondents' scores on the mental status items (0 to 10 points) and immediate memory recall task (0 to 10 points) to calculate the global cognitive functioning score. Global cognitive functioning scores ranged from 0 to 20, with lower scores indicating lower levels of cognitive functioning. First, we analyzed global cognitive functioning, mental status, and immediate memory recall as continuous variables. Then we analyzed cognitive functioning, mental status, and immediate memory recall as categorical variables, with each of the cognitive functioning variables converted to quartiles (global cognitive functioning = first, 0–10; second, 11–12; third, 13–14; fourth, 15–20; mental status = first, 0–7; second, 8; third, 9; fourth, 10; immediate memory recall = first, 0–2; second, 3; third, 4; fourth, 5–10). We chose to perform categorical data analyses because such data may help to inform future guideline development by identifying clinically relevant cutoff points.

Researchers obtained demographic and health information from the respondents, and we used this information as covariates in the analyses (Table 1). From the baseline survey, the covariates were gender, race, and years of educational attainment; from the first follow-up survey, the covariates were age, marital status, income, number of chronic health conditions, limitations in activities of daily living (ADL), limitations in instrumental activities of daily living (IADL), and self-rated health. Among the covariates, age (Rosnick & Reynolds, 2003), years of educational attainment (Hopp, 2000), marital status (Hopp, 2000), income (Klinkenberg, Willems, Onwuteaka-Philipsen, Deeg, & van der Wal, 2004), and number of chronic health conditions (Rosnick & Reynolds, 2003) have been associated with some form of advance directive. To our knowledge, no prior studies have reported ADL limitations, IADL limitations, and self-rated health as significantly related to durable power of attorney completion rates. However, we included these variables because of the likelihood that people who were more severely disabled or judged their health to be poorer were at greater risk of dying. The relationship between self-rated health and mortality is well established (McGee, Liao, Cao, & Cooper, 1999).

We classified marital status as married or not married, with the latter group including respondents who were widowed, divorced, separated, or never married. We categorized income into two levels (< \$20,000 or ≥ \$20,000; see Table 1). We calculated participants' number of chronic health conditions as the number of their self-reported chronic health

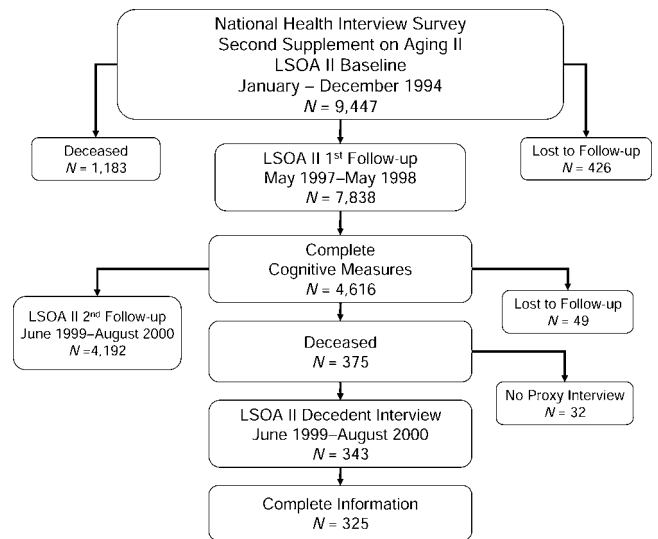


Figure 1. Flow diagram of participants in the present study (LSOA II = Second Longitudinal Study on Aging).

conditions (arthritis, asthma, cancer, diabetes, heart disease, hypertension, lung disease, and stroke). We calculated limitations with ADLs of bathing or showering, dressing, eating, transferring, walking, and toileting as the number of activities for which the respondent reported experiencing difficulty. We similarly calculated limitations with IADLs of preparing meals, shopping for groceries, managing money, using the telephone, performing heavy housework, performing light housework, and managing medications as the number of activities for which the respondent reporting experiencing difficulty. We coded respondents' self-rated health into three levels (excellent or very good; good; or fair or poor).

Interviewers asked proxy informants two additional questions about their relationship with the decedent and their living situation at the time of death (Table 1). Interviewers asked proxy informants these questions: "How are you related to [the respondent]?" and "Did you live with [the respondent] at the time of his [or her] death?"

We limited our analyses to people who completed cognitive measures without proxy assistance and who died following their participation in the first follow-up questionnaire. To account for the complex sampling design, we used SUDAAN version 9.0 (Research Triangle Institute, 2004), in all of our analyses. We estimated prevalence rates of durable power of attorney completion, along with the potential factors associated with completion. We conducted a series of logistic regression models for the overall sample by using SUDAAN to examine the association between cognitive functioning (as both continuous and categorical variables) and having a durable power of attorney (dependent variable) after we controlled for gender, race, years of educational attainment, age, marital status, income, number of

Table 1. Summary of Outcome, Predictor, Covariate, and Descriptive Measures of Completion of a Health Care Durable Power of Attorney by U.S. Adults

Variables	Data Source	Measures	Explanation
<i>Respondent</i>			
Durable power of attorney completion (outcome)	Decedent interview	“Did [respondent’s name] make any legal arrangement for a specific person or persons to make decisions about [his or her] care or medical treatment [he or she] could not make these decisions [himself or herself]? This is sometimes called a ‘Durable Power of Attorney for Health Care.’”	Responses were classified as 1 = has or 0 = does not have a durable power of attorney.
Global cognitive functioning	1st follow-up	Abbreviated Telephone Interview for Cognitive Status	Correct responses to the mental status and memory task were summed. Continuous: Scores, 0–20; lower scores indicate lower cognitive functioning. Categorical: Global cognitive functioning, converted to quartiles (1st, 0–10; 2nd, 11–12; 3rd, 13–14; 4th, 15–20).
Mental status	1st follow-up	Who is the president/vice-president? What is used to cut paper? What is a desert plant? What is the day, date, month, year? Counting backward from 20 and from 86	Continuous: Correct responses were summed; scores, 0–10; lower scores indicate lower functioning. Categorical: Mental status, converted to quartiles (1st, 0–7; 2nd, 8; 3rd, 9; 4th, 10).
Immediate recall	1st follow-up	Immediate memory recall of 10 concrete nouns	Continuous: Correct responses were summed; scores, 0–10; lower scores indicate lower immediate recall performance. Categorical: Immediate recall, converted to quartiles (1st, 0–2; 2nd, 3; 3rd, 4; 4th, 5–10).
Gender	Baseline	Self-reported gender	Classified as 1 = male or 2 = female.
Race	Baseline	Self-reported race and ethnicity	Classified as 1 = White, non-Hispanic or 2 = other race or ethnicity.
Educational attainment	Baseline	Self-reported years of formal educational attainment	Years ranged from 0 (never attended or kindergarten only) to 18 (indicating ≥6 years of college).
Age	1st follow-up	Chronological age	Calculated from reported birth month and year, and month and year of 1st follow-up completion.
Marital status	1st follow-up	Self-reported marital status	Classified as 1 = married or 2 = not married (including respondents who were widowed, divorced, separated, or never married).
Income	1st follow-up	Self-reported level of income	Classified as 1 = <\$20,000 or 2 = ≥\$20,000.
No. of chronic health conditions	1st follow-up	Participants indicated whether they had arthritis, asthma, cancer, diabetes, heart disease, hypertension, lung disease, or stroke	Sum of the number of self-reported chronic health conditions, ranging 0–8 (lower scores indicate fewer chronic health conditions).
ADL limitations	1st follow-up	Limitations with bathing or showering, dressing, eating, transferring, walking, and toileting	Sum of reported ADL limitations, ranging 0–6.
IADL limitations	1st follow-up	Limitations with preparing meals, shopping for groceries, managing money, using the telephone, performing heavy or light housework, and managing medications	Sum of reported IADL limitations, ranging 0–6.
Health status	1st follow-up	Self-rated health status	Coded into three levels (1 = excellent or very good, 2 = good, or 3 = fair or poor).

(Table 1 continues on next page)

Table 1. (Continued)

Variables	Data Source	Measures	Explanation
<i>Proxy</i>			
Relationship	Decedent interview	Relationship of respondent to proxy	Responses were classified into 1 = spouse, 2 = child, 3 = other relative (including son- or daughter-in-law), 4 = nonrelative.
Living arrangements	Decedent interview	Whether proxy resided with respondent at his or her time of death.	Responses were classified into 1 = proxy did or 2 = proxy did not live with respondent.

Notes: U.S. adults are aged ≥ 70 years; the Second Longitudinal Study on Aging, 1994–2000 is used for the information given in the table. ADL = activity of daily living; IADL = instrumental activity of daily living.

chronic health conditions, number of ADL limitations, number of IADL limitations, and self-rated health. Adjusted odds ratios (AORs) for the models are provided, along with their corresponding 95% confidence intervals (CIs) and p values.

Results

Of the 9,447 respondents of the SOA II, 7,838 participated in the first follow-up survey (Figure 1). Of the 4,616 respondents who completed the cognitive tasks in the first follow-up survey without assistance from a proxy, 375 died before the second follow-up survey. Only 343 of the 375 respondents had a proxy informant who completed the decedent interview. We excluded an additional 18 respondents because of incomplete decedent interviews or missing information for the covariates. There was no difference in first follow-up cognitive functioning, $t(341) = -1.68, p = .09$, and age, $t(341) = -0.48, p = .63$, between those respondents who were excluded as a result of missing covariates and those who were included in the sample. The resulting sample consisted of 325 community-dwelling older adults with a mean age of 80.7 years ($SE = 0.36$) and a mean educational attainment of 11.6 years ($SE = 0.18$).

The unadjusted characteristics of the sample are shown in Table 2. More than half of the respondents were women ($n = 181$, weighted percentage = 55.2%, $SE = 2.85$), were not married ($n = 208$, weighted percentage = 63.6%, $SE = 2.97$), were White ($n = 291$, weighted percentage = 91.9%, $SE = 1.63$), and many rated their health as excellent or very good ($n = 94$, weighted percentage = 28.7%, $SE = 2.50$). Respondents had an average of 1.9 chronic conditions ($SE = 0.07$), 1.0 ADL limitations ($SE = 0.08$), and 0.9 IADL limitations ($SE = 0.08$). The proxy informant was most likely to be an adult child ($n = 150$, weighted percentage = 50.1%, $SE = 3.32$) who did not live with the respondent prior to his or her death ($n = 172$, weighted percentage = 59.5%, $SE = 3.04$).

The unadjusted characteristics of the sample as a function of durable power of attorney completion

are shown in Table 3. A durable power of attorney was completed by 60.8% ($SE = 2.51$) of respondents prior to death. Respondents with a durable power of attorney were more likely to be older ($p < .01$), to have higher levels of educational attainment ($p = .04$), to be White ($p = .02$), and to have more ADL limitations ($p = .01$). In addition, respondents with a durable power of attorney were less likely to have chronic health conditions ($p = .02$). There was no association in the unadjusted comparisons between completion of a durable power of attorney and gender, marital status, income, global cognitive functioning, mental status, immediate memory recall, IADL limitations, and self-rated health ($ps > .05$).

We first report on a series of logistic regression models independently performed to examine the relationship between completion of a durable power of attorney and aspects of cognitive functioning (global cognitive functioning, mental status, and immediate word recall) as continuous variables. We adjusted the models for gender, race, years of educational attainment, age, marital status, income, number of chronic health conditions, number of ADL limitations, number of IADL limitations, and self-rated health. We observed a direct relationship between global cognitive functioning scores and completion of durable power of attorney among older adults in our sample (Adjusted Odds Ratio [AOR] = 1.13, 95% Confidence Interval [95% CI] = 1.02–1.25, $p = 0.02$; data not shown). That is, each unit increase in global cognitive functioning score was associated with a 13% increase in the odds of completing a durable power of attorney. We observed a similar relationship with mental status scores and durable power of attorney completion (AOR = 1.20, 95% CI = 1.01–1.43, $p = 0.03$; data not shown). In other words, each unit increase in mental status score was associated with a 20% increase in the odds of completing a durable power of attorney. However, immediate word recall was not related to completion of a durable power of attorney ($p = 0.07$; data not shown).

We then report on a series of logistic regression models that were independently performed to examine the relationship between completion of a

Table 2. Unadjusted Characteristics Among U.S. Adults

Characteristics of Respondents	<i>n</i>	Total (<i>SE</i>) ^a
Global cognitive functioning by quartile (%) ^b		
1st	73	20.9 (2.10)
2nd	88	27.9 (2.47)
3rd	93	30.0 (2.43)
4th	71	21.4 (2.35)
Mental status by quartile (%) ^b		
1st	71	17.9 (1.95)
2nd	54	15.2 (1.96)
3rd	112	32.6 (2.63)
4th	116	34.2 (2.85)
Immediate memory recall by quartile (%) ^b		
1st	87	23.9 (2.29)
2nd	81	21.5 (2.35)
3rd	86	25.7 (2.43)
4th	97	28.9 (2.61)
Gender (%) ^c		
Male	144	44.8 (2.85)
Female	181	55.2 (2.85)
Race (%)		
White	291	91.9 (1.63)
Non-White ^d	30	8.1 (1.63)
Educational attainment (mean year) ^c	325	11.6 (0.18)
Age (mean year)	325	80.7 (0.36)
Marital status (%)		
Married	117	36.4 (2.97)
Not married ^e	208	63.6 (2.97)
Income (%)		
<\$20,000	87	25.7 (2.64)
≥\$20,000	238	74.3 (2.64)
Chronic health conditions (<i>M</i>)	325	1.9 (0.07)
ADL limitations (<i>M</i>)	325	1.0 (0.08)
IADL limitations (<i>M</i>)	325	0.9 (0.08)
Self-rated health (%)		
Excellent or very good	94	28.7 (2.50)
Good	119	38.2 (3.01)
Fair or poor	112	33.1 (2.66)
Relationship of proxy informant to participant (%) ^f		
Spouse	83	28.1 (2.89)
Child	150	50.1 (3.32)
Other relative	55	17.6 (2.59)
Other nonrelative ^d	14	4.3 (1.15)
Proxy informant lived with participant before death (%) ^f		
Yes	123	40.5 (3.04)
No	172	59.5 (3.04)

Notes: U.S. adults are aged ≥ 70 years; the Second Longitudinal Study on Aging, 1994–2000 is used for the information given in the table. ADL = activity of daily living; IADL = instrumental activity of daily living; *SE* = standard error.

^aWeighted estimate.

^bDescriptive statistics of continuous cognitive functioning variables: Global cognitive functioning, *M* = 12.4 (*SE* = 0.16); mental status, *M* = 8.6 (*SE* = 0.09); immediate memory recall, *M* = 3.8 (*SE* = 0.11).

^cObtained from a baseline interview with the respondent.

^dUnstable estimate.

^eIncludes widowed, divorced, separated, and never married individuals.

^fObtained from an interview with the proxy following the respondent's death.

durable power of attorney and aspects of cognitive functioning (global cognitive functioning, mental status, and immediate word recall) as categorical variables. We adjusted the models for gender, race, years of educational attainment, age, marital status, income, number of chronic health conditions, number of ADL limitations, number of IADL limitations, and self-rated health. Older adults in the first quartile of global cognitive functioning were 76% less likely to have completed a durable power of attorney (AOR = 0.24, 95% CI = 0.09–0.60; Table 4) than were those adults in the fourth quartile of cognitive functioning. Respondents with global cognitive functioning in the second quartile (AOR = 0.46, 95% CI = 0.22–0.98) and third quartile (AOR = 0.41, 95% CI = 0.20–0.87) were 54% and 59% (respectively) less likely to have completed a durable power of attorney than were respondents in the fourth quartile of global cognitive functioning. Mental status was not related to completion of a durable power of attorney. Immediate memory recall was not related to completion of a durable power of attorney for those in the first or second quartiles of functioning; however, those in the third quartile were 53% less likely to have completed a durable power of attorney than were respondents in the fourth quartile of immediate memory recall (AOR = 0.47, 95% CI = 0.25–0.87).

Discussion

In this national study of community-dwelling older adults, 60.8% of respondents completed a durable power of attorney prior to their death. In previously published literature, this figure varies widely, depending on how advance directives were operationalized and the methodology used to collect information. In prospective surveys, the completion rates among community-dwelling older adults have been between 34% and 60% for nonspecified types of advance directives (Morrison & Meier, 2004; Kahana, Dan, Kahana, & Kercher, 2004) and between 32% and 58% for durable power of attorney (Ditto et al., 2001; Kahana et al., 2004; Morrison & Meier, 2004; Rosnick & Reynolds, 2003; Teno et al., 2004). Teno and colleagues used an approach similar to LSOA II in the National Mortality Follow-Back Survey and reported advance directive completion rates of 70.7% for both living wills and durable power of attorney.

Notably, this study is the first that we know of to document a relationship between cognitive functioning and completion of a durable power of attorney in a sample of community-dwelling older adults. As we discussed earlier, older adults with lower levels of cognitive functioning were less likely to have completed an advance directive than were those with the highest levels of cognitive functioning. Although global cognitive functioning is related to understanding end-of-life treatment options and

Table 3. Unadjusted Characteristics Among U.S. Adults by Completion of Durable Power of Attorney for Health Care Status

Characteristics of Respondents	Total % (SE) ^a		<i>p</i>
	No (<i>n</i> = 129)	Yes (<i>n</i> = 196)	
Durable power of attorney completion ^b	39.2 (2.51)	60.8 (2.51)	
Global cognitive functioning by quartile (%) ^c			0.13
1st	47.3 (6.01)	52.8 (6.01)	
2nd	39.3 (5.06)	60.7 (5.06)	
3rd	41.3 (4.59)	58.7 (4.58)	
4th	27.4 (5.45)	72.6 (5.45)	
Mental status by quartile (%) ^c			0.42
1st	48.1 (6.23)	51.9 (6.23)	
2nd	41.5 (7.27)	58.5 (7.27)	
3rd	35.9 (4.66)	64.1 (4.66)	
4th	36.2 (4.33)	63.8 (4.33)	
Immediate memory recall by quartile (%) ^c			0.19
1st	37.7 (6.05)	62.3 (6.05)	
2nd	39.5 (5.78)	60.5 (5.78)	
3rd	47.9 (5.17)	52.1 (5.17)	
4th	31.9 (4.62)	68.0 (4.62)	
Gender (%) ^d			0.42
Male	36.7 (3.75)	63.3 (3.75)	
Female	41.2 (3.76)	58.8 (3.76)	
Race (%)			0.02
White	37.0 (2.58)	62.9 (2.58)	
Non-White ^e	63.9 (9.77)	36.2 (9.77)	
Educational attainment (mean year) ^d	10.92 (0.32)	11.8 (0.24)	0.04
Age (mean year)	79.2 (0.63)	81.6 (0.49)	< 0.01
Marital status (%)			0.19
Married	44.3 (4.75)	55.7 (4.75)	
Not married ^f	36.3 (3.30)	63.7 (3.30)	
Income (%)			0.72
<\$20,000	37.6 (4.98)	62.4 (4.98)	
≥\$20,000	39.8 (3.00)	60.3 (3.08)	
Chronic health conditions (<i>M</i>)	2.2 (0.11)	1.8 (0.09)	0.02
ADL limitations (<i>M</i>)	0.8 (0.12)	1.2 (0.10)	0.01
IADL limitations (<i>M</i>)	0.8 (0.10)	1.0 (0.11)	0.17
Self-rated health (%)			0.35
Excellent or very good	33.8 (4.89)	66.2 (4.89)	
Good	43.9 (4.39)	56.1 (4.39)	
Fair or poor	38.4 (4.75)	61.6 (4.75)	

Notes: U.S. adults are aged ≥70 years; the Second Longitudinal Study on Aging, 1994–2000 is used for the information given in the table. ADL = activity of daily living; IADL = instrumental activity of daily living; SE = standard error.

^aWeighted estimate.

^bObtained from an interview with the proxy following the respondent's death.

^cDescriptive statistics of continuous cognitive functioning variables are as follows. Global cognitive functioning: no durable power of attorney, *M* = 12.2 (*SE* = 0.26); durable power of attorney, *M* = 12.7 (*SE* = 0.22), *p* = .08. Mental status: no durable power of attorney, *M* = 8.4 (*SE* = 0.15); durable power of attorney, *M* = 8.8 (*SE* = 0.11), *p* = .06. Immediate memory recall: no durable power of attorney, *M* = 3.7 (*SE* = 0.15); durable power of attorney, *M* = 3.9 (*SE* = 0.15), *p* = .27.

^dObtained from baseline interview of respondent.

^eUnstable estimate.

^fIncludes widowed, divorced, separated, and never married individuals.

appreciating end-of-life treatment consequences (Allen et al., 2003), it has not yet been associated with actual possession of advance directives in studies of nursing home residents (Allen et al., 2003) or community-dwelling older adults (Rosnick & Reynolds, 2003).

In addition to the use of different samples, a major methodological difference between this study of

LSOA II data and prior research is the measurement of cognitive functioning. The LSOA II used a lengthier immediate recall task, which consisted of 10 items and resulted in a more comprehensive assessment of short-term memory processing compared with measures used in prior studies. Interestingly, we found no relationship between immediate recall and durable power of attorney completion—suggesting that

Table 4. Adjusted Odds Ratios (95% Confidence Intervals) Predicting Durable Power of Attorney Completion From Categorized Cognitive Functioning Among U.S. Adults

	Adjusted Odds Ratio: Quartile				<i>p</i>
	1st	2nd	3rd	4th	
Global cognitive functioning	0.24 (0.09, 0.60)	0.46 (0.22, 0.98)	0.41 (0.20, 0.87)	1.00	.02
Mental status	0.48 (0.22, 1.02)	0.55 (0.25, 1.23)	0.86 (0.46, 1.63)	1.00	.16
Immediate memory recall	0.54 (0.24, 1.21)	0.56 (0.27, 1.17)	0.47 (0.25, 0.89)	1.00	.11

Notes: U.S. adults are aged ≥ 70 years; the Second Longitudinal Study on Aging, 1994–2000 is used for the information given in the table. ADL = activity of daily living; IADL = instrumental activity of daily living. Odds ratio is adjusted for gender, race, years of educational attainment, age, marital status, income, number of chronic health conditions, number of limitations in activities of daily living, number of limitations in instrumental activities of daily living, and self-rated health. The *p* values shown are for a full model.

durable power of attorney completion may be related to global cognitive functioning and mental status and not to short-term memory.

Like other studies (Hopp, 2000; Kahana et al., 2004), this study documented no relationship between marital status and durable power of attorney completion. It is thought that married people might not complete advance directives because they believe that their spouse knows their medical preferences (Kahana et al., 2004). In contrast, this study corroborated the findings of several studies (Hanson & Rodgman, 1996; Hopp; Stelter, Elliott, & Bruno, 1992) that advance directives are more likely among those who are more educated. Education is typically associated with cognitive tasks such as remembering medical information and other general measures of cognitive functioning (Cagney & Lauderdale, 2002; Lee, Kawachi, Berkman, & Grodstein, 2003; McGuire et al., 2000).

A substantial proportion of the sample of older adults in the LSOA II data did not complete a durable power of attorney; approximately 40% of the respondents did not designate a surrogate decision maker in the case of incapacitation. This highlights the need to design and implement interventions that facilitate communication about end-of-life decisions and the use of a durable power of attorney. Three groups should be targeted by such interventions: older adults, health care providers, and caregivers.

The first set of interventions concerns those aimed at community-dwelling older adults, including those at higher risk for cognitive impairments. Effectively communicating information about end-of-life decisions, including the importance of having a durable power of attorney, is an ongoing challenge. One approach is to integrate information and tools about advance directives into established chronic disease management programs. Given that nearly 75% of older adults aged 65 or older have at least one chronic illness and approximately 50% have at least two chronic illnesses (Calkins, Boulton, Wagner, & Pacala, 1999), large numbers of older adults could potentially be reached through this approach.

One such program is the Stanford Chronic Disease Self-Management Program (CDSMP; Stan-

ford University School of Medicine, 2007b). Through a 17-hour course taught by trained community health workers, people with chronic diseases learn how to better manage their symptoms, adhere to medication regimens, and maintain functional ability (Lorig et al., 1999). They also acquire coping strategies such as problem-solving techniques, action planning and feedback, and decision making. Documented evidence shows that people who complete the CDSMP, when compared with those who did not, demonstrate significant improvements in cognitive symptom management, communication with physicians, self-reported general health, and exercise; they also experience less health distress, fatigue, disability, and social or role activity limitations (Lorig et al., 2001). The CDSMP includes a module on decision making, including advance directives. Among participants in the CDSMP, durable power of attorney completion increased from a rate of 48% at baseline to a rate of 58% 3 years after completion of the course (K. R. Lorig, unpublished data, December 12, 2005).

One limitation to reaching large numbers of people through chronic disease management programs is their reliance on “live” interaction between trained instructional staff and older adults. Recent progress has been made, however, in translating some in-person chronic disease management programs into Internet programs (Stanford University School of Medicine, 2007a). Nearly one third (29.4%) of adults who are 65 years old or older reported Internet access in 2003 (U.S. Census Bureau, 2005), and these rates are projected to increase. Internet programs have been developed and tested for a number of chronic health conditions, such as diabetes. Computerized aids for advance directive education and planning, either integrated into chronic disease management programs or as stand-alone tools, should be explored and evaluated.

Interventions focusing on adults with limited health literacy may be another potentially fruitful area to explore as a method for facilitating completion of durable power of attorney by persons with a cognitive impairment. For example, as part of a randomized controlled study to improve the

forms used for advance directives, a modified informed consent process resulted in complete comprehension of consent information for 98% of participants, including those with literacy and language barriers (Sudore et al., 2006). Perhaps successful interventions that focus on adults with limited literacy could be extended to people with cognitive impairments.

The second set of interventions includes those aimed at health care providers because of their important role in older adults' decision making to complete advance directives. For example, in a survey of HMO members aged 65 years or older, rates of advance directives were significantly higher among those who were asked by their physicians about end-of-life care planning (Gordon & Shade, 1999). In addition, health care providers can enhance communication and understanding between patients and their potential surrogate health care agents. In one study (Schwartz et al., 2002), ambulatory geriatric patients and their health care agents who discussed advanced care planning with a trained nurse facilitator achieved greater congruence in their understanding of patients' preferences (76% in complete agreement vs 55% of controls, who were given a copy of the proxy form to complete).

Another potential avenue for increasing completion rates of advance directives is the use of health care systems interventions. Heiman and colleagues (Heiman, Bates, Fairchild, Shaykevich, & Lehmann, 2004) studied the effect of two strategies designed to increase completion rates of advance directives in older adults or adults with chronic illnesses. The study comprised three groups: (a) a physician reminder; (b) a physician reminder plus a mailer sent to patients with a copy of an advance directive; and (c) no intervention. The only group that demonstrated an increase in completing advance directives was the group that received a physician reminder plus a mailer sent to patients with a copy of an advance directive. This study did not assess the effectiveness of using only a patient reminder. In other areas of medical decision making, namely, hormone replacement therapy, the simple approach of using a mailed workbook has helped to prepare women to discuss hormone replacement therapy with their provider (Newton, LaCroix, Buist, Delaney, & Anderson, 2001). Future research should examine system-level approaches to prepare patients to have a discussion about advance care planning.

At the same time, it is important to recognize that providers must be prepared to have discussions about advance directives. Prior research has shown that providers' lack of understanding, their beliefs about which patients need advance directives, and time constraints served as barriers to physician-initiated discussions about advance directives (Morrison, Morrison, & Glickman, 1994). These identified barriers, combined with the lack of effectiveness of physician reminders (Heiman et al., 2004), suggest

that health care providers need support if they are to be true advocates for advance care planning. One intriguing strategy would be to include advance care planning in studies of the Chronic Care Model, which provides guidance on improving the management of chronic illness, particularly in primary care (Bodenheimer, Wagner, & Grumbach, 2002). Key components of the model include self-management, decision support, delivery system design, and clinical information systems. Although system supports have been shown to be effective for chronic disease management, they require evaluation for advance directives; however, their inclusion in the Chronic Care Model may be more cost effective than attempting to educate individual providers.

The final set of interventions are those aimed at caregivers, who play a major role in taking care of persons at risk of cognitive impairments and in making end-of-life decisions. Until recently, little attention has been paid to caregivers and end-of-life care (Schulz et al., 2003); however, the establishment of effective programs to enhance the well-being of dementia caregivers may offer promise for addressing advance directives as well. For example, a recent study called Resources for Enhancing Alzheimer's Caregiver Health II (REACH II) documented the effectiveness of a multicomponent caregiver intervention provided to ethnically diverse populations by the use of a randomized, controlled trial (Belle et al., 2006). The study did not address advance directives. Future studies may consider either incorporating advance directive planning into caregiver interventions or including referrals to community resources, such as Caring Connections, a program of the National Hospice and Palliative Care Organization, or the Alzheimer's Association.

Several cautions should be noted in interpreting the results from this study. First, the LSOA II did not collect information on when the respondent completed a durable power of attorney or the circumstances surrounding its completion. Furthermore, although it is possible that respondents executed another form of an advance directive, such as a living will, this information was not available from the data source. Thus, prevalence estimates may be conservative. Nevertheless, additional research is needed to determine the robustness of our findings. In addition, we reported statistically significant odds ratios with a relatively small magnitude.

Second, the proxy informant who provided information on whether the respondent completed a durable power of attorney was not necessarily the decedent's designated surrogate decision maker. Having this information could add credibility to the data provided by the proxy. Although 78% of the proxy informants were either a spouse or child, it is uncertain whether they were the designated surrogate decision maker specified in the respondent's durable power of attorney. Although proxy data

raise some concerns about the validity of the responses, other studies have shown the reliability of this approach when end-of-life issues are studied (Teno, 2005).

Third, the analysis did not control for race because of the fairly homogeneous racial composition of the sample (91.9% White). It is possible that this inflated the estimate of durable power of attorney completion rates. Previous research has demonstrated that African Americans and other racial or ethnic groups have lower completion rates of durable power of attorney documents than Whites do (Hopp, 2000; Kahana et al., 2004). It is important to note that the LSOA II sample was nationally representative; however, attrition across waves and decedents with proxy informants may have yielded a final sample that was not representative. Future studies should include oversampling of racial and ethnic groups to allow researchers to examine racial and ethnic differences with respect to the completion of a durable power of attorney.

Fourth, the cognitive functioning assessment in LSOA II included mental status questions and a 10-item immediate recall task, but it did not include an assessment of delayed recall. Although delayed recall would have provided more comprehensive information about the respondents' long-term memory capacity and processing, mental status and immediate recall have been shown to be related to disability and mortality (McGuire, Ford, & Ajani, 2006). Finally, despite the longitudinal design of the LSOA II, a longitudinal analysis was not possible because the data on durable power of attorney completion and cognitive functioning were not collected simultaneously and on each wave of the survey. Such an analysis would have allowed determination of whether cognitive declines preceded or followed completion of a durable power of attorney by respondents.

In conclusion, this is the first study that we know of involving a national sample of community-dwelling older adults to examine the association between cognitive functioning and the completion of a durable power of attorney. Older adults with lower levels of cognitive functioning were significantly less likely to complete a durable power of attorney. Additional research is needed to examine the potential factors that facilitate or inhibit completion of a durable power of attorney by older adults with cognitive impairments, such as additional aspects of cognitive functioning, the presence and types of caregivers, social economic status, and health literacy. Such information is critical to informing interventions aimed at increasing the completion rates of durable power of attorney among this particular group of older adults.

It is important to note that dying is not a problem to be solved (The President's Council on Bioethics, 2005) and rated by a checklist of predetermined preferences, but a human experience that everyone

must face. Instead of specifying what should be done in advance, proxy directives allow people to specify who they trust to make crucial decisions on their behalf. We need to turn our attention to understanding the outcomes of end-of-life care as they occur when a durable power of attorney is used in end-of-life decision making.

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