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End-of-Life Care Intensity for Physicians, Lawyers, and the General Population

Care at the end of life must balance intensity of treatment with quality of life. Previous research has not determined whether physicians, the group most familiar with end-of-life care, receive higher or lower intensity end-of-life treatments compared with nonphysicians.[1]

Methods | Non–health maintenance organization Medicare beneficiaries aged 66 years or older who died between 2004 and 2011 in Massachusetts, Michigan, Utah, and Vermont were included due to availability of electronic death records and ability to link to Medicare. The Partners human research committee determined the study was not human research.

Death records were not available for Massachusetts in 2011 and Utah for 2004 through 2005, and approximately 10% of decedents could not be linked to Medicare claims. Death certificates documented age, education, Social Security number, and usual industry and occupation (the type of job engaged in for most of his/her working life). Industry and occupation are typically provided by family members to the funeral director and are highly accurate.[2]

From Medicare records, we obtained data on 5 validated measures of end-of-life care intensity during the last 6 months of life: surgery,[3] hospice care,[4] intensive care unit (ICU)

Table 1. Characteristics of Deceased Physicians, Lawyers, and General Population in 4 States, 2004-2011[a]

	No. (%) [95% CI][b]		
	Physicians (n = 2396)[c]	Lawyers (n = 2081)[c]	General Population (n = 665 579)[c,d]
Sex			
Male	2092 (87.3) [85.9-88.6]	1906 (91.6) [90.3-92.7]	301 309 (45.3) [45.1-45.4]
Female	304 (12.7) [11.4-14.1]	175 (8.4) [7.3-9.7]	364 263 (54.7) [54.6-54.9]
Age, mean (SD), y	83.3 (8.0)	82.6 (8.3)	83.1 (8.3)
Race/ethnicity[e]	**(n = 2310)**	**(n = 2020)**	**(n = 645 936)**
Non-Hispanic white	2136 (92.5) [91.3-93.5]	1964 (97.2) [96.4-97.9]	591 733 (91.6) [91.5-91.7]
Asian/Pacific Islander	93 (4.0) [3.3-4.9]	7 (0.35) [0.17-0.71]	2897 (0.45) [0.43-0.47]
Non-Hispanic black	61 (2.6) [2.1-3.4]	42 (2.1) [1.5-2.8]	45 230 (7.0) [6.9-7.1]
Hispanic	7 (0.3) [0.15-0.62]	6 (0.3) [0.14-0.65]	5354 (0.83) [0.81-0.85]
Other	13 (0.6) [0.33-0.96]	1 (0.05) [0.01-0.28]	722 (0.11) [0.10-0.12]
Education level	**(n = 2376)**	**(n = 2067)**	**(n = 654 992)**
<College	0	45 (2.2) [1.6-2.9]	495 737 (75.7) [75.6-75.8]
≥Some college	2376 (100.0) [100.0-100.0]	2022 (97.8) [97.1-98.4]	159 255 (24.3) [24.2-24.4]

[a] Age of 66 years or older and receiving Medicare coverage at the time of death.

[b] Unless otherwise indicated.

[c] Totals vary in column due to missing data. Data on deaths were not available in electronic format for 2011 from Massachusetts and for 2004 and 2005 from Utah.

[d] Excludes lawyers and health care workers.

[e] Race/ethnicity has been shown in prior work to be associated with end-of-life care intensity and therefore was included in this analysis. The race/ethnicity variable is contained in Medicare's enrollment data/master beneficiary file. Information on race/ethnicity is obtained from the Social Security Administration, which obtains the information from the beneficiary.

Table 2. End-of-Life Care Intensity for Physicians, Lawyers, and the General Population in 4 States, 2004-2011[a]

	Unadjusted[b]						Adjusted[g]					
	Physicians (n = 2396)	Lawyers (n = 2081)	*P* Value[c]	General Population (n = 665 579)[b,d]	*P* Value[e]	*P* Value[f]	Physicians (n = 2376)	Lawyers (n = 2022)	*P* Value[c]	General Population (n = 159 255)[d,g]	*P* Value[e]	*P* Value[f]
Died in hospital	725 (30.3) [28.5-31.2]	740 (35.6) [33.5-37.6]	<.001	224 869 (33.8) [33.7-33.9]	<.001	.09	27.9 (26.1-29.7)	32.7 (30.7-34.8)	<.001	32.0 (31.8-32.3)	<.001	.78
Last 6 mo of life												
Surgery	653 (27.3) [25.5-29.1]	619 (29.8) [27.8-31.7]	.06	187 364 (28.2) [28.0-28.3]	.33	.11	25.1 (23.4-26.9)	27.1 (25.3-29.1)	.12	27.4 (27.2-27.6)	.01	.76
Hospice	1042 (43.5) [41.5-45.5]	845 (40.6) [38.5-42.7]	.05	288 049 (43.3) [43.2-43.4]	.83	.01	46.3 (44.2-48.3)	43.8 (41.6-46.1)	.12	44.6 (44.3-44.8)	.11	.52
ICU admission	679 (28.3) [26.5-30.2]	597 (28.7) [26.8-30.7]	.80	199 830 (30.0) [29.9-30.1]	.07	.19	25.8 (24.0-27.5)	25.7 (23.9-27.6)	.97	27.6 (27.4-27.9)	.04	.05
Expenditures, $[h]	22 981 (21 537-24 425)	25 336 (23 745-26 927)	.03	22 471 (22 394-22 548)	.49	<.001	21 022 (19 578-22 467)	22 839 (21 240-24 438)	.10	22 302 (22 141-22 462)	.08	.06

Abbreviation: ICU, intensive care unit.

[a] Age of 66 years or older and receiving Medicare coverage at the time of death.

[b] Data are expressed as unadjusted No. (%) [95% CI] unless otherwise indicated.

[c] Comparison is physicians vs lawyers.

[d] Excludes lawyers and health care workers.

[e] Comparison is physicians vs general population.

[f] Comparison is lawyers vs general population.

[g] Data are expressed as adjusted % (95% CI) unless otherwise indicated. Adjusted for race, sex, age-adjusted Charlson Comorbidity Index, and hospital referral region. The adjusted analyses were limited to decedents with at least a college education. Education was missing for 20 physicians.

[h] Data are expressed as mean (95% CI).

admission; death in the hospital; and expenditures.[5] Measures were compared between physicians and the general population (excluding other health care workers and lawyers), physicians vs lawyers, who are presumed to be socioeconomically and educationally similar, and lawyers vs the general population.

For unadjusted analyses, Pearson χ^2 tests of proportions or robust *t* tests with unequal variances were used. Adjusted analyses were performed for decedents with at least a college education. For dichotomous outcomes, we used logistic regression to calculate percentages adjusting for correlates of end-of-life care intensity: sex, age-adjusted Charlson Comorbidity Index, race/ethnicity, and hospital referral region. For costs, robust linear regression was used.[6] Statistical analyses were performed with SAS version 9.3 (SAS Institute Inc). A 2-sided $P < .05$ was considered significant.

Results | There were 2396 deceased physicians, 2081 lawyers, and 665 579 in the general population (**Table 1**). Physicians and lawyers were more likely to be male and college educated than the general population. In adjusted analyses, physicians were less likely to die in a hospital compared with the general population (27.9% vs 32.0%, respectively; $P < .001$), less likely to have surgery (25.1% vs 27.4%; $P = .01$), and less likely to be admitted to the ICU (25.8% vs 27.6%; $P = .04$) (**Table 2**). Physicians were less likely to die in a hospital compared with lawyers (27.9% vs 32.7%, respectively; $P < .001$) but did not differ significantly on other measures.

Discussion | For 3 of 5 end-of-life care intensity measures, physicians received significantly less intensive care than the general population. Although not large, the differences suggest less aggressive care for physicians. The possible reasons physicians received less intense end-of-life care than others could be knowledge of its burdens and futility as well as the benefits and the financial resources to pay for other treatment options, such as palliative care or skilled nursing required for death at home.

In contrast, only 1 measure differed between physicians and lawyers. Economic resources and education may therefore contribute to end-of-life-care decisions. However, the lower rates of hospital deaths of physicians compared with lawyers suggest that while resources may promote home deaths, actual experience with hospital deaths may differentially motivate physicians to avoid them.

Study limitations include the use of retrospective data and omission of unmeasured confounders, particularly income, although this is partially addressed by controlling for hospital referral region and making comparisons with lawyers. Second, this study does not address complex decision-making processes nor satisfaction with end-of-life experiences. Third, we could not identify physicians' specialty or professional experience with end-of-life care. Fourth, death data from some states for selected years were not available. Fifth, data were available on only a limited number of states.

These findings could inform how health professionals communicate with patients about end-of-life care choices. For example, family members of critically ill patients sometimes seek

reassurance from physicians that their loved one is receiving the same type of care that a physician would receive.

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COMMENT & RESPONSE

Finerenone for Albuminuria in Patients With Diabetic Nephropathy

To the Editor Dr Bakris and colleagues[1] evaluated the safety and efficacy of dual blockade of the renin-angiotensin-aldosterone system by adding the nonsteroidal mineralocorticoid receptor antagonist (MRA) finerenone to an angiotensin-converting enzyme (ACE) inhibitor or an angiotensin receptor blocker in patients with diabetic nephropathy. The authors stated that the addition of finerenone resulted in improvement in the urinary albumin-creatinine ratio (UACR) compared with placebo. We have a number of concerns about the study.

First, the primary outcome of the study was the change in UACR from baseline to day 90. Despite being a marker for kidney injury, this ratio does not necessarily predict a hard outcome. In previous systematic reviews and meta-analyses, the combination of an MRA and an ACE inhibitor or angiotensin receptor blocker was found to be associated with a significant decrease in blood pressure, albuminuria, and proteinuria without a reduction in all-cause mortality, cardiovascular mortality, or progression to end-stage renal disease.[2]

Second, the study did not provide data on the incidence of hypotension or blood pressure variability, which are associated with prognosis and safety. Hypotension is an important adverse event with dual therapy,[3] and blood pressure variability has been linked with diabetic nephropathy.[4] If the authors could provide such data, physicians would be able to better evaluate the safety and implications of dual blockade therapy.

Third, the dose-dependent effect was investigated by analysis of covariance in the study. The higher the MRA dose, the greater was the reduction in proteinuria. But it is possible that the effects might instead be attributed to the use of high-dose ACE inhibitor or angiotensin receptor blocker treatment.[5]

This study increases understanding of dual blockade with an MRA plus an ACE inhibitor or angiotensin receptor blocker. However, further studies are needed to support combination therapy as an evidence-based practice.

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