

## Prehospital DNR Orders: What Do Physicians in Washington Know?

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See editorial comments by Dr. Joanne Lynn and Cria Gregory on pp 1502–1503.

**OBJECTIVES:** To assess whether physicians know of Washington State's prehospital do-not-resuscitate (DNR) policy, 6 years after its implementation.

**DESIGN:** Cross-sectional survey.

**SETTING:** Washington State, April 2001.

**PARTICIPANTS:** Four hundred seventy-one practicing physicians.

**MEASUREMENTS:** Multivariate logistic regression was used to determine relationships between physician and practice characteristics with knowledge of policies governing advance care planning.

**RESULTS:** Among respondents, 60% did not know that Washington State requires an emergency medical service (EMS)-specific DNR order authored by a physician. Seventy-nine percent did not know that patient-authored advance directives apply only in hospitals and medical offices.

**CONCLUSION:** The findings in this study suggest that most physicians in Washington State lack knowledge about the documentation needed for EMS personnel to forgo prehospital attempts at cardiopulmonary resuscitation. Further study is needed to determine whether physician education or legislative change is necessary. *J Am Geriatr Soc* 51:1435–1438, 2003.

**Key words:** do not resuscitate (DNR) orders; emergency medical services (EMS); advance directives; prehospital guidelines; physician survey introduction

States vary in their policies governing the use of written advance directives directing emergency medical service

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(EMS) personnel. Washington State and 34 other states (AK, AZ, AR, CA, CO, CT, FL, GA, HI, ID, IN, KS, KY, LA, MD, MI, MT, NV, NH, NM, NY, NC, OH, OK, RI, SC, TN, TX, UT, VA, WA, WV, WI, and WY) have enacted "prehospital do-not-resuscitate" (DNR) or "out-of-hospital DNR" statutes to govern this practice.<sup>1–4</sup> Physicians typically author prehospital DNR orders, which function as doctors' orders. These orders guide EMS personnel in determining whether to attempt cardiopulmonary resuscitation (CPR) in the event of cardiopulmonary arrest. The American College of Emergency Physicians,<sup>5</sup> the American Heart Association,<sup>6</sup> the National Association of State Emergency Medical Services Directors,<sup>7</sup> and the National Association of Emergency Medical Service Physicians have endorsed prehospital DNR orders.<sup>7,8</sup>

In 1995, the Washington Department of Health established guidelines for prehospital DNR orders in response to an unfunded mandate from the state legislature.<sup>9</sup> These guidelines provide for the physician of record to complete an EMS–No CPR directive on a specific form purchased from the Department of Health. The physician must sign the form. The signed EMS–No CPR form or an EMS–No CPR bracelet (also obtained from the Department of Health) must be visible for EMS personnel to withhold or withdraw attempts at CPR. In the absence of the EMS–No CPR directive or bracelet, EMS personnel are required to attempt CPR on persons in cardiopulmonary arrest unless a physician instructs them otherwise.<sup>4</sup>

Because of the key role physicians play in completing the EMS–No CPR directive in Washington, it was felt that it was important to explore physician knowledge about this and other matters regarding advance care planning. This study was designed to ask physicians whether they knew that an EMS–No CPR directive is needed for patients who do not wish prehospital attempts at CPR by EMS personnel, 6 years after its implementation by Washington State.

It was hypothesized that most physicians would be unaware of this requirement. The investigators felt that these results could inform others throughout the country who have implemented or are considering implementing prehospital DNR policies such as the one in Washington State.

### MATERIALS AND METHODS

One thousand five hundred of the 2,777 physicians in Washington State listed in the American Medical Associa-

**Table 1. Correct Response by Question**

Question	Correct Answer	n/N Correct (%)
According to Washington law, should EMS personnel follow John's advance directive and withhold resuscitative efforts?	No	187/466 (40)
As far as you know, in Washington State, John's advance directive applies to which medical personnel?	Physicians	185/465 (40)
As far as you know, in Washington State, John's advance directive applies in which settings?	Hospital and medical offices	97/468 (21)
As far as you know, is there an EMS-specific advance directive in Washington State?	Yes	189/467 (40)
Who should pronounce John dead and sign his death certificate?	Primary care physician of record	257/456 (56)

*Note:* The five questions listed above followed a vignette regarding a hypothetical patient, John, who has terminal prostate cancer, has authored an advance directive refusing life-sustaining treatment, and is found in cardiopulmonary arrest by emergency medical services (EMS) personnel. All questions presented multiple choices, but only the correct answers and their prevalence among responses are shown above. Respondents were instructed to provide answers as they apply in Washington State according to state law.

tion (AMA) Physician Masterfile (AXCIOM, Skokie, IL) were surveyed. Physicians were eligible for the study if they had an active medical license, had a hospital- or office-based practice within Washington, and were younger than 60 (because they would be more likely to still practice medicine than older physicians who might maintain an active license despite retiring). Eligibility criteria were designed to help identify physicians likely to care for dying patients. Of the 2,777 physicians in Washington, 2,759 were eligible for this study.

From the population of 2,759 (99%) eligible physicians, physicians were selected if they were randomly selected from among all eligible family practitioners (1,599) and internists (947) or belonged to one of five specialties: critical care, cardiology, geriatrics, hematology/oncology, or infectious disease (212). The survey was mailed to 825 (52% of eligible) randomly chosen family practitioners, 463 (49% of eligible) randomly chosen primary care internists, and all 212 (100%) eligible specialists. Specialists were oversampled (proportionally speaking) because of their relatively small numbers in the AMA Masterfile.

Physicians received an initial mailing of the survey in April including a cover letter from the Department of Health describing the purpose of the study and asking for their voluntary participation; 1,500 surveys were mailed in the initial mailing. A second mailing was sent to non-respondents 2 weeks later. When questionnaires were returned undeliverable, attempts were made to identify a correct address using the Washington State Medical Association listing of physicians in the state. Respondents did not receive incentives for their participation. Questionnaires were tracked using a unique identifier to protect respondent confidentiality. All subjects were given an opportunity to request educational materials about the EMS–No CPR guidelines and advance directives through a postcard they could mail separately.

The questionnaire assessed physicians' knowledge of the EMS–No CPR guidelines and of advance directives in general. In addition, it asked physicians to describe their practice characteristics. Knowledge questions were in multiple choice or dichotomous format and followed a vignette of a hypothetical patient dying of cancer who has an advance directive and is found at home in cardiopulmonary

arrest. The questions were designed to avoid leading and loaded language. Wherever possible, technical terms such as advance directives or prehospital DNR orders were defined or described. There were nine knowledge questions and 16 demographic questions.

The questionnaire was pilot tested on a convenience sample of 20 academic physicians and revised accordingly before broad distribution. The Washington Department of Health, Office of Emergency Medical and Trauma Prevention, reviewed the questionnaire and answer key for accuracy. The University of Washington institutional review board and Washington Department of Health approved the study and considered completion of the survey as implicit informed consent.

Data analysis included descriptive statistics for respondent characteristics and responses to knowledge questions. Bivariate analyses (chi-square and Student *t* test analyses) and multiple logistic regression were used to examine physician factors hypothesized to be associated with knowledge. In these analyses, a binary knowledge score was used as the outcome of interest. This score was calculated by summing points for correct answers to five key knowledge questions (Table 1) then dichotomizing according to the median; correct answers were awarded 1 point, and incorrect or missing answers were given 0 points. Using this score as the outcome, the significance of characteristics that might associate with knowledge and could serve as markers for physicians needing education was tested. These characteristics included: care for the dying (yes/no), practice location (rural, small/medium city, and urban), year of residency graduation, practice type (patient care vs nonpatient care), and primary specialty (family practice, internal medicine, hematology/oncology, and other). All analyses were conducted using STATA/SE 7.0 Software (STATA Corporation, College Station, TX).

## RESULTS

Of 1,500 physicians in the initial mailing, 471 returned a completed questionnaire, 52 had an undeliverable mailing address, and 18 were excluded (11 for not practicing in Washington and 7 for returning the questionnaire beyond

**Table 2. Respondent Characteristics**

Characteristic	n (%)
Primary professional activity (n = 450)	
Office-based patient care	370 (82)
Hospital-based patient care	47 (10)
Research	5 (1)
Administration	4 (1)
Teaching	4 (1)
Other	20 (4)
Primary specialty (n = 453)	
Family practice	254 (56)
Internal medicine	124 (27)
Hematology/oncology	24 (5)
Infectious disease	14 (3)
Geriatrics	11 (2)
Emergency medicine	5 (1)
Other	21 (5)
Practice setting (n = 452)	
Large urban	275 (61)
Small urban	147 (33)
Rural	30 (7)
Median years since residency (n = 444)	0–30 (15)
Median years since fellowship (n = 86)	1–29 (13)

the deadline), yielding a response rate of 33%. Respondents' characteristics are summarized in Table 2.

Consistent with this selection criterion, the vast majority of respondents (91%, 424/466) cared for dying patients in their clinical practice, although half saw two or fewer dying patients per month (range 0–100). Nearly all (95%, 428/451) reported routinely encouraging patients to complete advance directives, with many (79%, 356/451) making forms available for patients in their offices (82% of those caring for dying patients). Only a few (11%, 47/427) routinely advised dying patients and their families how to obtain a death certificate.

Despite this reported experience in caring for dying patients, few physicians responded correctly to the survey questions (Table 2). The median knowledge score was 2 out of a possible 5 points (range 0–5). Only 33 respondents (7%

of 450 who responded to all five questions) answered all five questions correctly. In only one question did more than half the respondents answer correctly.

In bivariate analyses, respondents who scored above the median knowledge score were more likely to care for dying patients ( $P = .005$ ); practice in an urban setting ( $P = .065$ ); specialize in internal medicine, family practice, hematology/oncology, or geriatrics ( $P = .035$ ); and have more years since graduation (median 15 vs 14 years;  $P = .057$ ). When all personal and practice characteristics were explored simultaneously using multivariate logistic regression, only caring for dying patients predicted better knowledge (Table 3). After adjusting for other factors, physicians caring for dying patients were 2.5 times more likely to score above the median knowledge score than those who did not care for dying patients (95% confidence interval = 1.2–5.3,  $P = .02$ ).

Many respondents (66%, 285/434) wanted additional information about advance directives, preferentially through written materials (78%) rather than lectures (16%) or other forms of communication.

In an area reserved for commentary, 80 respondents remarked on the survey or its subject matter. Most responders criticized current policy surrounding advance directives and CPR in Washington for being unnecessarily complex and burdensome for patients and providers. For example, one respondent wrote, "The current law is too cumbersome. Patients have to complete separate directives in hospital, with hospice, and upon entry to nursing homes. Can't we just do this once?!" Another wrote, "Having EMS-specific advance directives is too complicated. EMS personnel should be legally able to follow a person's legal advance directive." Three respondents recommended adopting physician's orders for life-sustaining treatment (POLST), a physician's directive currently used in Oregon. POLST are physician DNR orders that travel with an individual and are recognized by all healthcare providers in Oregon.<sup>10,11</sup>

**DISCUSSION**

This study found that many Washington State physicians were poorly informed about state policies regarding advance directives and prehospital DNR orders. Sixty

**Table 3. Results of Multivariate Logistic Regression**

Characteristic	Odds Ratio	P-value	95% Confidence Interval
Care for dying patients	2.5	.02	1.2–5.3
Years since graduation (per 10 years since graduation)	1.3	.09	1.0–1.6
Primarily care for patients	2.8	.35	0.3–24.7
Practice location			
Rural	—		
Small/medium city	2.1	.09	0.88–5.04
Urban	1.7	.24	0.71–3.88
Primary specialty			
Others	—		
Family practice	1.4	.29	0.74–2.68
Internal medicine	1.5	.22	0.77–3.10
Hematology/oncology	1.9	.24	0.66–5.45

Note: Multivariate model included all the characteristics listed above. The outcome of interest was bivariate knowledge score.

percent did not know that prehospital DNR orders existed in Washington State (a percentage that reflects performance no better than random guessing) or that advance directives applied to physicians only and not emergency medical service personnel.

This raises concerns that physician ignorance of the EMS–No CPR guidelines would severely limit their success, because physicians are central in the process by which patients obtain prehospital DNR orders. The American Bar Association Commission on Legal Problems of the Elderly expressed similar misgivings after conducting a national survey of EMS directors regarding prehospital DNR protocols in 1999, in which virtually all states acknowledged that public and professional education concerning the protocols was “a major challenge, made worse by the lack of adequate resources to carry out effective education.”<sup>7</sup> Indeed, few states have allocated the necessary resources to promote prehospital DNR policies,<sup>7</sup> but to determine these policies’ effects on the number of unwanted resuscitations, more research must be done to measure their outcomes directly. Nonetheless, the present findings underscore the potential importance of educating physicians when such policies are implemented.

What might an educational program for doctors about prehospital DNR orders look like? These findings raise several points that should be considered in designing a response. First, knowledge about advance care planning appears to be related to experience. Physicians who routinely care for dying patients know more than those physicians who do not (although their knowledge is far from complete according to these findings). Physicians with more years in practice appear to be more knowledgeable than more-recent residency graduates. Therefore, educational campaigns might consider targeting physicians in training, when they are receptive to education and readily accessible through a central location. Alternatively, or in addition, education could occur as part of advanced cardiac life support or basic life support certification. Second, 18% of physicians caring for dying patients still do not have ready access to advance directives and prehospital DNR forms. Publicity campaigns should aim to ensure physicians and patients know where to find such information (e.g., Websites).

An alternative conclusion is that prehospital DNR policies are difficult to implement and that what is warranted is not more physician education but rather reevaluation of such policies altogether. Perhaps the requirement of physician signature on prehospital DNR orders, or the

alternative of uniformly applicable DNR orders, should be reconsidered. Indeed, three states (KY, LA, and OK) already permit patients to authorize prehospital DNR orders without physician authorization.

The results of this study must be interpreted with some caution in light of the study’s limitations. First, the response rate was low—perhaps because incentives were not offered to the survey population—potentially introducing bias, but response rates for physician surveys are often low, especially among primary care physicians regarding topics outside daily practice. Second, even though the survey was carefully designed to avoid misleading respondents, the questions may have elicited opinion rather than true knowledge.

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