

Physician Characteristics Associated with Decisions to Withdraw Life Support

ABSTRACT

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Objective. This study was undertaken to identify attributes of physicians associated with physicians' decisions to withdraw life support.

Methods. Of the 862 Pennsylvania internists surveyed and asked to make decisions in response to hypothetical vignettes and to report their actual experience with the withdrawal of life support, 485 (56%) responded. The data were analyzed with regression models.

Results. With other factors controlled, physicians were more willing to withdraw life support if they were young, practiced in a tertiary care setting, or spent more time in clinical practice; they were less willing if they were Catholic or Jewish. Physicians reported a higher frequency of actually withdrawing life support if they were young, had more contact with ICU patients, spent more time in clinical practice, or were specialists. Physicians with a greater willingness to withdraw were more likely to report having done so.

Conclusions. Physicians' personal characteristics are associated with both their preferences and their practice in the withdrawal of life support, and a greater willingness to withdraw is associated with a higher frequency of withdrawal. The influence of physician characteristics demonstrates that patient preferences and clinical circumstances do not exclusively govern such ethical decisions. (*Am J Public Health.* 1995;85:367-372)

Introduction

Although decisions to have life support withdrawn and to die are most appropriately made by patients themselves, physicians also participate in—and sometimes make—such decisions. Most research on the withdrawal or withholding of life support in critically ill patients has focused on patients' preferences to undergo intensive care¹ or on general ethical concerns regarding the decision to withdraw therapy.²⁻⁵ Several studies have examined *patient* characteristics, such as age, quality of life, diagnosis, disease acuteness, social role, neurological status, and prognosis, that influence physicians' recommendations to withdraw life support.⁶⁻¹⁰ And a few studies have examined *physician* characteristics in this regard.^{6,11-14} Previous research has revealed that house staff and attending physicians differ in their willingness to withdraw some forms of life support (such as mechanical ventilation),^{11,12} that physicians from teaching hospitals are less inclined to intubate patients than those from nonteaching hospitals,¹² and that physicians' attitudes toward risk influence these decisions.¹³ However, previous research has generally considered only a limited range of variables and often has used bivariate rather than multivariate methods of analysis. Moreover, the extent to which intrinsic physician attitudes are associated with actual physician practice in the withdrawal of life support, when controlling for other physician characteristics, remains unknown.

Here, we report the association of several physician characteristics, such as practice type, sex, age, religion, and specialty, with physician attitude and self-reported practice regarding the withdrawal of life support. We also investigate how physician attitude toward the with-

drawal of life support is associated with self-reported practice.

Methods

Subjects and Survey Instrument

The sample was drawn from the 862 residents, fellows, and attending physicians affiliated with the Department of Medicine at the University of Pennsylvania who had current addresses. These physicians were on staff at 24 different area hospitals. They were mailed a 20-page survey booklet requiring approximately 35 minutes to complete, and they were assured that participation was voluntary and responses confidential. Those who did not respond within 50 days were sent a second copy. This research was approved by the University of Pennsylvania Committee on Human Subjects.

The survey instrument elicited (1) responses to questions about life support withdrawal accompanying several clinical vignettes; (2) actual experience with life support withdrawal; and (3) professional, demographic, and social information. Be-

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fore distribution, the survey instrument was reviewed by two experts in critical care and pretested on 10 internists.

Measures of Attitude and Practice

Four vignettes described critically ill and comatose patients from whom life support might be withdrawn (for an example, see Appendix A). In all cases, the decision to withdraw life support was in accord with the patient's previously stated goals and the family's current wishes. After reading each vignette, subjects were asked to estimate their likelihood of withdrawing each of two different forms of life support using 5-point Likert-type response scales (from "very unlikely" to "very likely," as shown in Appendix B). Subjects' responses to these individual scales were then used to develop a more comprehensive attitudinal scale reflecting their overall willingness to withdraw life support. This scale was the average response to eight questions—two from each of the four vignettes—which was normed to a 5-point ordinal scale reflecting the original response format. This 5-point ordinal scale was treated as an ordered categorical variable when dependent.¹⁵ Such a scale, if reliable, should reflect an underlying attitude in the respondents, regardless of the particular details of the vignettes.

For an assessment of actual practice, subjects were asked to report the number of patients under their care from whom life support was withdrawn during the preceding year.

Professional, Demographic, and Social Variables

Several categorical and continuous variables that might be associated with subjects' attitude toward or practice in the withdrawal of life support were collected.

Certain of those variables reflected professional practice characteristics: attending status (coded as 1 if the respondent was an attending physician, 0 if otherwise); number of contacts with intensive care unit (ICU) patients in an average month (open-ended response); percentage of professional time devoted to clinical practice (expressed from 0 to 100); specialty (coded as 1 if the respondent was a general internist, 0 if otherwise); and locus of hospital practice (coded as 1 if the respondent practiced in a tertiary referral center, 0 if otherwise). Information about subspecialty (for fellows and attending physicians) was also collected, but analyses involving subspecialty are not reported here because relatively few differ-

ences were found between the various medical specialties; most of the difference was found between specialists as a group and general internists.

The social and demographic variables included age (in years); sex (1 for men, 0 for women); religion (with Catholicism, Judaism, and "all other religions" being coded as indicator variables and Protestantism being the omitted category); and importance of religion (a 5-point ordinal response scale in which respondents scaled the "importance of religion in their lives" from 1 = "not important" to 5 = "very important") as a measure of religiosity.

Statistical Analysis

Cumulative logistic regression was used to analyze physician willingness to withdraw life support, as measured by the attitudinal scale. No models presented here violated the proportional odds assumption.¹⁵ The coefficients of the cumulative logistic regression models may be translated into percentage changes in the dependent variable (the odds of being above vs below any cutpoint—that is, of being more willing to withdraw life support) by the formula $100(e^{\beta} - 1)$, where β is the coefficient. Poisson regression was used to model the number of patients from whom the respondent had withdrawn life support in the preceding year; standard errors of regression coefficients were adjusted by a heterogeneity factor based on Pearson's chi-square. The logistic approximation to the Poisson distribution was used. The analyses were conducted in SAS on an IBM personal computer.

Results

Sample

Of the 862 physicians surveyed, 485 (56%) responded. Respondents did not differ in a statistically significant fashion from nonrespondents with respect to the only three variables for which information was available for nonrespondents: attending status, sex, or specialty. The percentage of respondents and nonrespondents, respectively, who were attending physicians was 70% and 74% ($P > .05$); who were male, 80% and 80% ($P > .05$); and who were general internists, 30% and 30% ($P > .05$). Because of occasional missing data, not all totals in the analyses equal 485.

The mean age of the respondents was 41 ± 12 years; 58% practiced primar-

ily at four tertiary care hospitals, and the remainder had primary appointments at 20 other area hospitals. The respondents spent an average of $66\% \pm 35\%$ of their time in clinical duties (median = 83%). Their specialties were general internal medicine (30%), cardiology (18%), hematology/oncology (10%), nephrology (9%), pulmonary/critical care (8%), gastroenterology (7%), and all others (19%). Their religious affiliations were Jewish (40%), Protestant (23%), Catholic (22%), and all other (16%). Their mean response on the 5-point scale of importance of religion was 2.8 ± 1.4 .

Experience with ICU patients in the sample was variable. When subjects were asked how many daily contacts with ICU patients they had in an average month, 19% reported no contacts; 22% reported 1 to 5 contacts; 21% reported 6 to 19 contacts; 22% reported 20 to 50 contacts; and 16% reported more than 50 contacts; the mean was 27 ± 44 and the median was 10. Experience with the withdrawal of life support in the preceding year was also variable; 17% of respondents had no patients under their care from whom life support was withdrawn; 21% had such experience 1 to 2 times; 31% had it 3 to 5 times; 19% had it 6 to 10 times; and 12% had it more than 10 times; the mean was 6 ± 8 and the median was 4.

Of the 254 physicians practicing clinical medicine more than 80% of the time, only 9% reported never having withdrawn life support. Conversely, of the 67 physicians practicing clinical medicine less than 20% of the time, 49% reported never having withdrawn life support. Moreover, every physician (100%) reporting any contact with ICU patients in the preceding year had cared for one or more patients from whom life support had been withdrawn in the preceding year.

Attitude toward the Withdrawal of Life Support

The scale regarding willingness to withdraw life support in hypothetical situations was found to be very reliable (Cronbach's alpha = 0.79), and it represented one underlying factor (which had an eigenvalue of 3.1 and accounted for 39% of the total variance). A response of 1 on this 5-point attitudinal scale thus indicated a low willingness and a response of 5 indicated a high willingness to withdraw life support. Two subjects (0.4%) had a value of 1; 51 subjects (11.2%) had a value of 2; 165 subjects (36.2%) had a value of 3; 181 subjects (39.7%) had a value of 4; and 57 subjects (12.5%) had a value of 5; 29

subjects did not respond to the questions needed for this scale. The mean response was 3.5. Because of the small number of subjects with a value of 1, those with values of 1 or 2 were collapsed into a single category in cumulative logistic regression analyses.

Table 1 shows a cumulative logistic regression model predicting willingness to withdraw life support. Positive coefficients correspond to an increased willingness to withdraw. The model reveals that physicians are more willing to withdraw life support if they practice in a tertiary care setting or spend more time in clinical practice, and are less willing if they are older or if they are Catholic or Jewish. The effect on the odds of being more willing to withdraw life support is as follows: there is a 97% increase in the odds if the physician practices in a tertiary hospital, a 55% decrease if the physician is Catholic, and a 45% decrease if the physician is Jewish. Each 1% increase in the percentage of time spent in clinical practice results in a 0.7% increase in the odds of being more willing to withdraw. Each 1-year increase in age results in a 2.0% decrease in the odds of being more willing to withdraw life-sustaining therapy.

Reported Experience with the Withdrawal of Life Support

Table 2 shows a model predicting the number of times physicians report caring for patients withdrawn from life support in the preceding year. The model reveals that physicians who see many ICU patients and those who spend a high percentage of their time in clinical practice are more likely to have had such experience. Older physicians, with more years in clinical practice, are less likely to have had such experience in the preceding year, even controlling for their exposure to ICU patients and for the other practice variables. In addition, general internists are less likely than specialists to have cared for patients withdrawn from life support, even controlling for their exposure to ICU patients and for the other practice variables. Except for age, the demographic and social variables are not significantly associated with reported practice.

Importantly, those physicians who have a high willingness to withdraw life support according to our attitudinal scale are more likely to report having done so. Indeed, controlling for other factors, each one-unit increment on our scale corresponds to a 28% (95% confidence interval = 2%, 37%) increase in the expected

TABLE 1—Cumulative Logistic Regression Model of Willingness to Withdraw Life Support^a

	Regression Coefficient (χ ²)
Professional variables	
Attending physicians	0.330 (1.67)
Percentage clinical time	0.007 (6.06)**
Intensive care unit patient number	0.001 (0.25)
General internist	0.379 (2.79)
Tertiary hospital	0.678 (10.3)**
Social and demographic variables	
Male gender	0.203 (0.73)
Age	-0.022 (5.24)*
Catholic	-0.796 (7.80)**
Jewish	-0.604 (5.50)*
Other religion	0.037 (0.01)
Religiosity	-0.126 (2.98)

^aThe table reports regression coefficients and χ² statistics with *df* = 1. Intercept terms are not reported. "Protestant" is the omitted category for religion. Positive coefficients imply an increased willingness to withdraw life support, and vice versa.
P* < .05; *P* < .01.

number of times a physician reported caring for patients withdrawn from life support in the preceding year. In absolute terms, for most physicians in our sample, this one-unit increase in the attitudinal scale corresponds with withdrawing life support from approximately one additional patient a year.

Discussion

Our results support three principal conclusions. First, there is considerable variability in internists' willingness to withdraw life-sustaining therapy. Second, internists' personal characteristics influence both attitude and reported practice in this regard. Third, an attitude of greater willingness to withdraw life support is associated with a higher self-reported frequency of having done so.

One recent study suggests that approximately 50% of deaths in an ICU occurred following the withdrawal or withholding of life support.¹⁰ The influence of physician attributes on such decisions is therefore not inconsequential. Our research confirms that most physicians have experience with life support

TABLE 2—Poisson Regression Model of Experience with the Withdrawal of Life Support^a

	Regression Coefficient (χ ²)
Professional variables	
Attending physicians	0.160 (1.10)
Percentage clinical time	0.005 (7.33)**
Intensive care unit patient number	0.004 (14.3)**
General internist	-0.425 (7.09)**
Tertiary hospital	0.069 (0.30)
Social and demographic variables	
Male gender	0.032 (0.05)
Age	-0.017 (5.67)*
Catholic	0.244 (1.93)
Jewish	0.198 (1.41)
Other religion	0.427 (4.99)*
Religiosity	0.063 (2.06)
Attitudinal variable	
Withdrawal willingness	0.162 (4.48)*

^aThe table reports regression coefficients and χ² statistics with *df* = 1. Intercept term is not reported. "Protestant" is the omitted category for religion. Positive coefficients imply experience with life support withdrawal a greater number of times, and vice versa.
P* < .05; *P* < .01.

withdrawal and that greater exposure to ICU patients is associated, not surprisingly, with more withdrawal experience.

We measured respondents' willingness to withdraw in response to hypothetical vignettes. In keeping with social psychology theory,¹⁶ we have termed this an "attitude" in the sense that it reflects a physician's *intended* behavior rather than actual practice. We recognize that the willingness to withdraw life support does not represent a disposition independent of the context of clinical management. Indeed, such attitudes and practice may be interdependent, and our results suggest that they are associated.

A number of physician attributes are associated with decisions in this area. Unlike one prior study¹⁷ but similar to others,^{11,18} our study found that, compared with older physicians, who have more years in clinical practice, younger physicians are more likely to withdraw life support in both hypothetical and real situations, even controlling for other factors. When compared with research on

physician attitudes of 20 years ago,⁶ our findings may reflect a shift in recently trained physicians toward a more restrained use of medical technology and a greater acceptance of the limits of medicine.¹⁹⁻²¹ We also find that physicians at tertiary care medical centers are more willing to withdraw life support than those in nontertiary care hospitals, controlling for other variables; if the practices at tertiary care centers lead practices elsewhere, this finding may reflect an early overall trend. We find no significant differences by physician's sex in either attitude or practice of life support withdrawal.²² Nor were there any differences based on attending status, after controlling for age.

As noted, we find that general internists are less likely than specialists to report caring for patients withdrawn from life support, even controlling for the other practice variables (Table 2). This finding obtains despite the fact that generalists and specialists do not differ in their attitudes toward life support withdrawal (Table 1). While the patients cared for by specialists may be different from those cared for by generalists, this set of observations raises the possibility that specialists may have more authority to act upon their decisions to stop life support, especially in ICU settings; however, further research will be needed to explain this difference.

Previous research has shown—and our results support—that Jewish and Catholic physicians are more “active” than Protestants in their treatment of critically ill patients.⁶ Differences in attitude and practice in life support withdrawal among religious groups probably only partly reflect religious beliefs; other ethnic or social variables that covary with religion are probably also important. With respect to religiosity, a previous study concluded that religiosity is a predictor of an “aggressive response to patient care,”¹⁷ but this previous study appears not to have controlled for religious affiliation. We find that differences in attitudes toward the withdrawal of life support appear to reflect the impact not of religiosity, but rather of religious affiliation itself.

Finally, we find that physicians' willingness to withdraw life support is significantly associated with their self-reported clinical practice. Physicians' attitudes in this area can therefore have a profound effect on patient outcomes: physicians show variability in their preferences regarding the withdrawal of life support,

and this variability appears to translate into behavior. However, while it is customary to accept that attitudes antecede and determine practice, it is possible that the association may be in the reverse direction or, in fact, that attitudes and practice in life support withdrawal may be codetermined. If they are indeed codetermined, it may be impossible to model attitudes and practice uniquely.²³ For example, physician characteristics, such as religion or willingness to withdraw life support, may influence the selection of situations in which physicians find themselves; the more willing physicians may thus have more experience. Conversely, the situations in which physicians find themselves may alter their attitudes and elicit certain behaviors and practices.

While age and percentage of time spent in clinical practice are associated with both attitude and practice in life support withdrawal (Tables 1 and 2), the impact of other physician attributes is more variable. For example, the impact of religious affiliation on decisions to withdraw life support appears to operate through its impact upon attitude (shown in Table 1); when controlling for attitude, religion is not a significant predictor of practice (shown in Table 2). Conversely, exposure to ICU patients appears not to influence attitude when other variables are controlled for, but it does appear to be associated with practice, probably because greater contact with ICU patients simply provides for more opportunities to withdraw life support.

An unexpected finding in this study is the extent to which subjects tended *not* to withdraw life support. All four vignettes describe a critically ill and comatose patient for whom the decision to withdraw life support is in accord with the patient's previously stated goals and the family's current wishes. All the vignettes, therefore, present situations in which the right to forgo life-sustaining treatment is relatively uncontroversial. Ethical principles supporting this view have gained legal support from the 1990 *Cruzan* decision by the Supreme Court²⁴ and the 1990 Patient Self-Determination Act.²⁵ Nevertheless, 47.8% of respondents were either neutral or unwilling to withdraw life support (a response of 3 or less on the attitudinal scale). This finding, which is in keeping with other findings regarding physicians' devotion to life-sustaining technology once it is implemented,²⁶ further supports an important conclusion of this study: there is more to physicians' decisions in this area than clinical circumstances and pa-

tient preferences. For example, a previous study reports that under certain circumstances, physicians are more willing to withdraw some forms of life support than others, even when the decision to withdraw has already been made.¹⁴

Our study has limitations. First, we studied physicians' self-reported behaviors and expressed preferences in response to hypothetical scenarios rather than their revealed behaviors during actual clinical encounters. Among other things, hypothetical scenarios do not allow respondents to interact with their colleagues or with patients' families. But while such limitations are difficult to avoid in research of this type, the attitudinal scale developed on the basis of the vignettes was a significant and strong predictor of self-reported behavior. Second, our vignettes describe only patients who are comatose and terminally ill and who previously expressed clear wishes regarding the use of life-supporting therapy. While not all patients in whom life support is withdrawn meet these criteria, these are the patients in whom the withdrawal should be the least controversial and the most straightforward. Even in this circumstance, however, physician characteristics clearly influenced their attitudes. Third, the results reported here do not shed light on possible variation in physician attitudes toward specific forms of life support. Fourth, we studied physicians affiliated with only one university; however, the physicians practiced in 24 different community, public, government, and university hospitals in the area. Fifth, given the response rate of less than 100%, the possibility of recruitment bias suggests caution in generalizing our results. Our response rate is very similar to that of other reported surveys requiring physician completion,^{12,26-30} and, indeed, physicians may be a difficult population to study with lengthy surveys of the type used here. We can report, however, that there was no statistically significant difference between respondents and nonrespondents in several features we were able to measure.

The most general finding of this study is that physicians differ both in their willingness to withdraw life-sustaining therapy and in their self-reported behavior. These differences are associated with measurable professional, social, and attitudinal characteristics. These findings contribute to the enlarging literature on variations in clinical practices. Regardless of whether such variations represent agendas for practice reform in general,

they suggest that, in the specific case of such ethically charged decisions, physicians act as moral participants in medical decisions. To the extent that physicians are more than just technicians, we would indeed expect that their characteristics would influence the decisions they make.^{31,32}

Since decisions regarding the end of life are so important, physicians are increasingly being asked to uncover in advance their patients' preferences for life support. Yet the apparent influence of physician attributes in this regard demonstrates that patient preferences and clinical circumstances do not exclusively govern such ethical decisions. Experienced clinicians know that their colleagues can differ widely in their attitudes toward life support and that these attitudes may be reflected in their practice. While in theory patients might choose among physicians in part according to these attitudes, more likely they do not know their physician's attitudes in advance of needing life support. It thus appears that just as physicians should uncover their patients' preferences, they should also explore their own preferences and communicate them to their patients. □

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Continued

APPENDIX A—Sample Vignette on Physician Survey Regarding the Withdrawal of Life Support

EL is a 66-year-old patient of yours with a 15-year history of severe chronic obstructive pulmonary disease. One week ago, he was admitted to the ICU with pneumonia, hypotension, and respiratory failure. He has required antibiotics, intravenous vasopressors, and mechanical ventilation to survive. He has now lapsed into a coma and shows no signs of clinical improvement. Consultant pulmonologists assert that his lung function is such that he will never be independent of the ventilator.

After his most recent, prior hospitalization, the patient had clearly expressed to his family and to you that he would never want to live by artificial means. In view of these wishes and his poor prognosis, the family asks you to withdraw life support.

You are deciding whether to stop the intravenous vasopressors or the mechanical ventilation.

APPENDIX B—Sample Likert Response Scale on Physician Survey

Assuming that withdrawal of life support would result in a gradual and painless death, how likely are you to withdraw the hemodialysis from this patient?

1	2	3	4	5
I am very <i>unlikely</i> to stop the hemodialysis.	I am <i>unlikely</i> to stop the hemodialysis.	I am <i>as likely</i> to stop as <i>not</i> stop the hemodialysis.	I am <i>likely</i> to stop the hemodialysis.	I am <i>very likely</i> to stop the hemodialysis.