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# Health Care Professionals' Accuracy in Predicting Patients' Preferred Code Status

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**Background.** In spite of the emphasis on physician and patient communication in the new guidelines for the use of do-not-resuscitate orders published by the American Medical Association, informal information indicates that physicians and other health care professionals often formulate code status decisions without formal knowledge of the patient's wishes. The purpose of this study was to determine how accurately health care professionals are able to predict a patient's desired code status given a profile of the patient's medical history.

**Methods.** A consecutive sample of physicians and other health care professionals attending on-site primary care and long-term rehabilitation staff meetings were asked to participate in the study. Subjects read profiles of actual patients and attempted to predict the patients' desired code status. Subjects also highlighted factors of the

patient profile that they deemed important in predicting each patient's desired code status.

**Results.** For the 12 patient profiles examined, the respondents accurately estimated patients' desired code status an average of only 6.5 times. Patient ability to perform the basic activities of daily living was the patient profile factor cited most frequently as influential in determining code status.

**Conclusions.** Given only clinical and demographic data, health care professionals are only slightly better than chance in determining patients' desired code status. Health care professionals working with long-term care patients should become familiar with individual patient's values and desires for code status decisions.

**Key words.** Decision making; patient advocacy; patient care team. (*J Fam Pract* 1995; 40:41-44)

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Understanding patients' code status preferences is a foundation for clinical medical ethics.<sup>1</sup> In the absence of documented information about patients' wishes, physicians sometimes must make code status decisions (eg, for cardiac resuscitation) informally. Under these circumstances, physicians have no alternative but to guess what a patient's preferences might be rather than basing their decision on such pivotal factors as the patient's value system and attitude toward quality of life. The methods caregiv-

ers use to predict patient preferences are rarely studied in clinical settings. Only a few other studies compare the perspectives of nurses and physicians in health care teams.<sup>2</sup> In a comparison of the ability of family physicians and nurses to predict patient preferences, Uhlmann et al<sup>3</sup> noted that neither nurses nor physicians had a systematic understanding of the resuscitation wishes of elderly ambulatory patients. Their study did not support the hypothesis that nurses would be better than physicians in predicting patient preferences.

The legal and ethical bases of resuscitation status are amply addressed in the literature, but most of the studies are not empirical. Rather, they focus on theoretical matters and on policy judgments.<sup>4</sup> A recent study that provided guidelines regarding the appropriate use of do-not-resuscitate orders focused on physician and patient expression of preference,<sup>5</sup> investigating the extent to

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which health care professionals in a variety of settings are able to predict patient preferences.

Studies have reviewed the stability of patient preferences over time regarding life-sustaining treatment,<sup>6</sup> the value of general advance directives in determining specific preferences,<sup>7</sup> and the ability of persons to predict which treatments patients would choose for themselves.<sup>8</sup> These studies confirmed that, at least in some circumstances, patient preferences are stable and durable. General advance directives have not been particularly helpful regarding specific resuscitation choices.<sup>7</sup> In a study based on hypothetical case scenarios,<sup>8</sup> proxies were not successful in accurately predicting what patients would want. There have been no studies that have attempted to identify specifically which features of a clinical scenario serve as a basis for a physician's or nurse's prediction about patient choice regarding cardiac resuscitation.

We examined the capacity of caregivers at primary care and long-term care facilities to predict the desired code status of institutionalized, chronically ill patients. Using anonymous case histories that were based on actual patient data, participants were asked to state which code status they believed the profiled patients actually chose. They were also asked to indicate which elements of the patient profile led to their determinations (eg, activities of daily living, medical diagnoses, visitors). The following questions were addressed: (1) On the basis of written profiles, how accurate are caregivers at predicting the desired code status of patients unknown to them? (2) What perceptions do caregivers have of their ability to predict code status choices accurately? (3) Does volume of experience or primary practice location at a long-term care site improve the accuracy of caregivers' predictions? and (4) In these settings, is there a difference between physicians and other health care professionals in ability to predict code status accurately?

## Methods

### *Subjects*

The study subjects were nurses, physicians, and other health care workers who regularly attended meetings in a university hospital family medicine department and a medical services unit of a long-term care and rehabilitation hospital. They were asked to read case histories and attempt to determine the code status preference of each of 12 patients. The subjects were also asked to provide information on their sex, medical specialty, practice site, number of years of professional experience, experience in discussing code status, and on how accurate the subject considered himself or herself in predicting code status.

The 12 patients who were profiled were residents of a long-term care facility and had been determined to have decisional capacity at the time they made their code status choice. The patient population was evenly divided between choice of no-code status and preference for full efforts in the event of cardiac arrest.

### *Measures*

Each subject reviewed the 12 patient profiles based on actual case histories not identified by patient name or medical chart number. Each patient profile included the following information: age, marital status, race, religion, sex, medical diagnoses, basic and instrumental activities of daily living, ambulatory status, orientation and mental status, communication ability, mood, medications, and visitors. After reading a patient history, each subject in our study was asked to choose which code status (no action vs all measures) the patient would desire in the event of a cardiac arrest and to highlight which of the factors influenced the subject's determination of code status. Each subject made a determination for each of the 12 patients.

### *Procedure*

The proposal was approved by the university institutional review board before the study was begun. Surveys were distributed and returned during regular staff meetings at a long-term care hospital, a community family practice center, a university family practice center, and a family medicine departmental faculty meeting. Anonymity was assured. A response rate of 100% was obtained for health care professionals who attended the staff meetings.

## Results

Forty-eight surveys were returned and analyzed. Sixteen (33%) respondents were physicians; 20 (42%), nurses; 11 (23%), other health care workers (eg, social workers or respiratory therapists) and 1 (2%), not specified. Approximately two thirds of the survey respondents were women. Medical specialties of the physicians included family medicine (81%), internal medicine (6%), preventive medicine (6%), and not specified (6%). Approximately 61% of all subjects cited an office setting as their primary site for patient care, 35% listed a long-term care facility, and 4% reported practicing primarily in an acute care hospital. Number of years in practice for all subjects was fairly evenly distributed: 0 to 5 years, 21%; 6 to 10 years, 28%; 11 to 20 years, 28%; and more than 20 years, 23%. Slightly more than one half of the respondents (54%) stated that they discussed code status less than 5 times a

year; 20% discussed code status between 6 and 10 times a year; 7%, 11 to 20 times; and 20%, more than 20 times.

Health professionals were asked to predict on a scale of 1 to 10 (1=least accurate, 10=most accurate) how accurately they thought they had predicted the code status actually preferred by the 12 patients. The average level of perceived accuracy was 5.0 (50%). The actual average number of cases correctly predicted was 6.5 of 12, or 54%. The kappa statistic was calculated to determine the association between the health care professionals' predictions and the patients' desired code status. Kappa statistics were 0.0 for physicians, 0.26 for nurses, and 0.17 for all health care professionals combined. These low kappas indicate that health care professionals' ability to predict patients' code status based on patient profiles is no greater than chance.

A Spearmann correlation matrix of years in practice, experience discussing code status, perceived accuracy, and actual number of correctly predicted cases showed no significant correlations. When correlated with total correctly predicted cases, the variable of experience in discussing code status approached significance ( $r=0.28$ ,  $P=.06$ ). Each patient's case profile was analyzed to determine whether the independent variables of the subject (eg, job title, sex, medical specialty, practice site, number of years in practice, or experience in making code status decisions) were significant for predicting the correct response of the patients' desired code status. Using chi-square analysis and the SAS statistical package, none of the variables was found to be significant, including differences between nurse and physician responses.

In this study, we used a conservative alpha level of .01 because of the multiple comparisons involved. Subjects' total scores of correctly predicted cases were divided into "good" predictors (7 to 12 correct) and "poor" predictors (0 to 6 correct). Scores were then analyzed, again using chi-squares to determine the significance of job title, sex, and other demographic factors as predictors of who, if anyone, was a better predictor of a patient's desired code status. None of the variables was significant. Finally, a regression equation was set up to determine if we could predict who would be "good predictors" of code status, based on a combination of subject independent variables, such as sex, job title, and years in practice. Again, there was no significance.

Variables highlighted by the subjects on each patient profile were examined to determine the frequency of perceived importance of each variable in determining patients' desired code status. Basic activities of daily living was the most frequently cited variable, listed first in 6 of the 12 patient histories and in the top 3 of all 12. No other indicator was consistent. The frequency of each variable

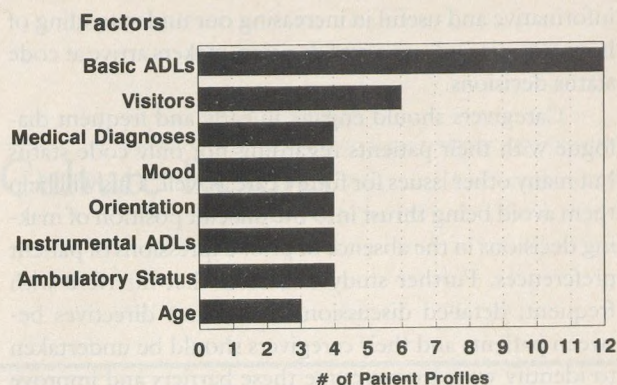


Figure. Patient profile variables identified by health care professionals as the most important factors to consider in determining code status when advance patient directives are not available. These variables were among the top three factors listed for any of the 12 patient profiles included in this study. ADL denotes patient's ability to perform activities of daily living.

cited as one of the top three influential factors in any of the patient profiles is shown in the Figure.

## Discussion

Based on the results of our study, we reached the following conclusions. Health care professionals are only slightly better than chance in predicting code status choices of patients when using written case histories of unidentified institutionalized, chronically ill patients. Random guessing would produce the same level of accuracy.

In the small sample studied, level of experience with code status per year, years of practice, and site of practice (ambulatory vs long-term care) were not significantly associated with the ability to accurately predict code status choices. A larger sample might detect a difference among caregivers in ability to predict code status choices. It would be interesting to study the ability of primary care physicians to predict treatment choices of their own patients, who presumably are well known to them.

In predicting code status choices, caregivers found that patients' basic needs (ie, ability to perform activities of daily living) were more influential than were the details of medical diagnoses. Finally, there was no significant difference between physicians and other health care professionals in ability to predict code status.

Further study of this issue will help determine how individuals make decisions about code status and help caregivers gain a better understanding of patient values. Using similar patient profiles with additional study groups, such as medical students, intensive care specialists, family members, and the lay public, would be quite

informative and useful in increasing our understanding of how patients and surrogate decision-makers arrive at code status decisions.

Caregivers should engage in early and frequent dialogue with their patients regarding not only code status but many other issues for future care as well. This will help them avoid being thrust into the difficult position of making decisions in the absence of prior expressions of patient preferences. Further study of factors that interfere with frequent, detailed discussions of advance directives between patients and their caregivers should be undertaken to identify ways to overcome these barriers and improve our ability to hear our patients and honor their wishes for their health care.

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#### References

1. Miles SH, Lane LW, Bickel J, Walker RM, Cassel CK. Medical ethics education: coming of age. *Acad Med* 1989; 64:705-14.
2. Walker RM, Miles SH, Sticking CB, Siegler M. Physicians' and nurses' perceptions of ethics problems on general medical services. *J Gen Intern Med* 1991; 6:424-9.
3. Uhlmann RF, Pearlman RA, Cain KC. Understanding of elderly patients' resuscitation preferences by physicians and nurses. *West J Med* 1989; 150:705-7.
4. Kapp MB. Legal and ethical aspects of resuscitation: an annotated bibliography of recent literature. *Resuscitation* 1987; 15:289-97.
5. Council on Ethical and Judicial Affairs, American Medical Association. Guidelines for the appropriate use of do-not-resuscitate orders. *JAMA* 1991; 265:1868-71.
6. Everhart MA, Pearlman RA. Stability of patient preferences regarding life-sustaining treatments. *Chest* 1990; 97:159-64.
7. Schneiderman LJ, Pearlman RA, Kaplan RM, Anderson JP, Rosenberg EM. Relationship of general advance directive instructions to specific life-sustaining treatment preferences in patients with serious illness. *Arch Intern Med* 1992; 152:2114-22.
8. Zweibel NR, Cassel CK. Treatment choices at the end of life: comparison of decisions by older patients and their physician-selected proxies. *Gerontologist* 1989; 29:615-21.