

Attitude and Self-reported Practice Regarding Prognostication in a National Sample of Internists

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Background: Since prognostication appears increasingly important in clinical practice, especially in end-of-life care, we examined physicians' experiences and attitudes regarding it.

Methods: We mailed a survey to a national sample of 1311 internists, yielding 697 responses that were analyzed with multivariate models and other means. Findings were supplemented by qualitative comments from 162 physicians and by interviews with 20.

Results: On an annual basis, the typical internist addressed the question "How long do I have to live?" 10 times, withdrew or withheld life support 5 times, and referred 5 patients to hospice. Nevertheless, physicians disdain prognostication: 60.4% find it "stressful" to make predictions; 58.7% find it "difficult"; 43.7% wait to be asked by a patient before offering predictions; 80.2% believe patients expect too much certainty; 50.2% believe

that if they were to make an error, patients might lose confidence; 89.9% believe they should avoid being too specific; and 56.8% report inadequate training in prognostication. With respect to the key concept of "terminal" illness, physicians on average believe that such patients should have 13.5 ± 11.8 weeks to live, but responses varied substantially from 1 to 75 weeks.

Conclusions: Physicians (1) commonly encounter situations that require prognostication, (2) feel poorly prepared for prognostication, (3) find it stressful and difficult to make predictions, (4) believe that patients expect too much certainty and might judge them adversely for prognostic errors, and (5) vary in how they regard the key concept of being "terminally ill." These observations may have significant consequences for patient care.

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AFTER A long period during which prognosis has not been an important focus of medical care,^{1,2} several confluent contemporary developments are increasing the salience of prognostication for physicians and patients alike. Many of these developments reflect the long-standing linkage between prognosis and its frequent object, death.³ First, the increasing public interest in humane terminal care necessarily requires that medical professionals be more willing to make and act on predictions about the timing of impending death. A physician's prognostic assessment that a patient is "terminally ill" is an essential element, for example, in the withdrawal or withholding of life support from critically ill patients,⁴ in proposals regarding physician-assisted suicide,⁵⁻⁸ and in qualifying for the Medicare hospice benefit.⁹ Second, as the avoidance of futile treatment assumes increasing prominence for reasons of justice, beneficence, or cost con-

tainment,¹⁰⁻¹² prognostication—which is, after all, the fundamental and essential basis for a determination of "futility"—will increase in importance. Third, new technologies, such as genetic testing and prenatal screening, are emerging. While often directed at improving diagnosis and therapy, these technologies also either directly or indirectly yield information with substantial and essentially prognostic significance.¹³⁻¹⁶ Fourth, the increasing emphasis on patient autonomy in clinical care—with its implicit notion of physicians spelling out for patients various alternative courses of action and the likely results of these actions—requires physicians to generate and communicate predictions, if only to serve as an explicit predicate for patient decision making. Fifth, there is an increasing prevalence of chronic diseases. For patients with such diseases, diagnosis and therapy are often well established, and clinical encounters often center on the anticipation and avoidance of new developments.¹⁷

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SUBJECTS AND METHODS

SURVEY INSTRUMENT

Survey subjects received a 12-page, confidential survey instrument that required about 20 minutes to complete, a cover letter, a small financial incentive, and a prepaid return envelope. The survey instrument, which was pretested on 14 physicians, solicited demographic data, attitudes and self-reported practice with respect to prognostication and attendant clinical decisions, and open-ended comments. There were 3 mailing waves. The data presented herein are part of a larger, more extensive set of questions pertaining to physician attitudes and practice with respect to prognostication and death in general.³

SUBJECTS

With the use of the 1994 American Medical Association Masterfile, a directory of virtually all American physicians,²⁰ we drew a random sample of 1500 internists from the 94 381 internists (including both general internists and specialty internists in population-representative proportions) who had completed their training and were in active practice. Of the 1500 names initially provided by the American Medical Association, 82 were excluded because they were only secondarily internists; 71 were excluded because they did not have current addresses (the mail was returned by the post office or the address provided by the American Medical Association was inadequate); and 36 were excluded because they noted themselves to meet exclusion criteria (eg, they responded but noted that they were retired). The final sample thus consisted of 1311 internists. This confidential survey research was conducted in accordance with institutional review board regulations.

A total of 697 physicians responded to the survey, yielding an unadjusted response rate of 53% (697 of 1311 physicians). This response rate compares favorably with response rates achieved in such lengthy surveys of physicians.²¹ Assuming that subjects who did not respond were eligible to participate in the same proportion as those whose eligibility status could be ascertained, the estimated denominator for the survey may be adjusted downward to 1179; consequently, the adjusted response rate is 59% (697 of 1179).²² Because of occasional missing data, and because a few subjects returned unusable surveys, totals in the analyses do not equal 697.

Most previous studies of the use of prognosis have focused on the accuracy of prognostication rather than on its use, role, or implications in clinical practice. Moreover, while occupational "rituals" regarding diagnosis and therapy, and the errors therein, have been described,^{18,19} less is known about physician attitudes and practice regarding prognostication and the errors therein.³ To our knowledge, there has been no population-based study of physicians' experiences and attitudes regarding prognostication, nor of the frequency with which they find themselves in situations likely to call for the development and communication of a prognosis, nor of their attitudes about what consti-

Two techniques were used to evaluate nonresponse: (1) respondents and nonrespondents were compared along several demographic variables that were available for all 1500 subjects, and (2) the pattern of responses across time was assessed. In keeping with previous research examining response rates based on Masterfile samples,²³ our respondents did not differ from nonrespondents in terms of age, specialty, or geographic location. Moreover, time to response was not associated with any of the variables reported herein in a statistically significant fashion, including, for example, age, sex, specialty, percentage of time in patient care, experience with life support withdrawal, finding prognostication difficult, finding prognostication stressful, or believing that one's training in prognostication had been inadequate. Thus, the incremental addition of respondents to the survey sample had no observed effect on sample representativeness.^{23,24}

STATISTICAL ANALYSIS

Bivariate comparisons between dichotomous and continuous variables were performed with standard *t* tests and Kruskal-Wallis tests, comparisons of 2 binary variables with the Pearson χ^2 , and comparisons between 2 continuous variables with the Pearson coefficient of correlation. In the analysis of prognostic and diagnostic errors, the McNemar test of marginal symmetry was used.²⁵ Multivariate models were estimated by means of logistic regression, and the results are reported as the odds ratios associated with each variable.

QUALITATIVE DATA

To supplement the quantitative data, we collected qualitative data regarding physicians' attitudes and practice with respect to prognostication from 2 sources. First, we conducted in-depth interviews with a convenience sample of 20 physicians, of whom 10 were general internists and the remainder were from other specialties; 15 practiced in an academic setting. The interviews lasted an average of 80 minutes and were conducted in accordance with a semi-structured interview instrument.³ Second, we obtained physicians' written comments on the survey described above; the written comments were elicited in response to the following open-ended question on the survey: "Is there anything else you would like to tell us about how you feel about the role of prognosis in clinical practice?" and 162 respondents (23%) offered comments that ranged in length from a couple of sentences to several paragraphs.

tutes prognostically relevant categories in particularly important areas, such as "terminal illness."

Therefore, we conducted a survey of a random, national sample of internists to assess their attitudes and self-reported practice with respect to prognostication. We addressed 5 related questions: (1) How common is prognostication in medical practice? (2) Do physicians believe they were adequately trained to make prognoses? (3) How do physicians feel about making prognoses? (4) What are the implications of making a mistake when prognosticating? (5) How do physicians vary in their views regarding predictions at the end of life?

RESPONDENTS

Respondents had a mean (\pm SD) age of 45.8 ± 10.7 and had spent a mean of 18.9 ± 11.0 years in practice; 77.6% spent 90% or more of their time in clinical practice; 80.7% were male; and 79.8% were board certified. Their specialties were as follows: 47.8% were general internists, 12.5% were cardiologists, 9.5% were gastroenterologists, 6.9% were pulmonologists, 6.6% were hematologists-oncologists, and the remaining 16.7% were in other internal medicine subspecialties; this distribution parallels the specialty distribution of internal medicine in the United States.

THE PRACTICE OF PROGNOSIS

As summarized in **Table 1**, a large majority of physicians had experience with each of several possible situations that might require the formulation of a prognosis. This experience varied substantially with specialty, however. For example, in the year before responding to the survey, according to self-report, the typical general internist addressed the question "How long do I have to live?" a median of 6 times, withdrew or withheld life support 5 times, and referred 5 patients to hospice care. The typical pulmonologist-critical care physician addressed the question "How long do I have to live?" 25 times, withdrew or withheld life support 16.5 times, and referred 10 patients to hospice. The typical hematologist-oncologist addressed the question "How long do I have to live?" 100 times, withdrew or withheld life support 25 times, and referred 38 patients to hospice. Overall, specialty was associated with each of the 4 measures in Table 1 in a statistically significant fashion (data not shown). The burden of these types of situations that require prognostication, while substantial in all subspecialties, is thus unevenly distributed according to specialty.

Despite its prevalence, many physicians try to avoid prognostication; 89.9% believed that "physicians should avoid being too specific when making predictions to patients," and many (43.7%) reported that they "usually wait to be asked by a patient before offering a prediction about the course of a patient's illness." Adjusting for specialty, sex, and board certification, each additional 10 years in practice was associated with a 20% increase in the odds of waiting to be asked (95% confidence interval [CI], 1.03-1.40). In contrast, years in practice was not associated with avoiding specificity when offering prognoses; however, generalists were 77% more likely than specialists to support avoiding specificity (95% CI, 1.01-3.15).

Most of the physicians who responded to our survey (85.6%) believed that it is often helpful to have an "upbeat attitude" in discussions with patients. While 75.1% reported that they "sometimes find it helpful to shade prognoses to the positive," only 35.5% reported that they "sometimes find it helpful to shade prognoses to the negative." Most physicians (63.5%) also reported that, "in general, when patients are optimistic about their prognosis, [the physicians] reinforce their perceptions"; only a minority of physicians (5.4%) reported that

Table 1. Internists' Experience With Situations Likely to Require Prognostication in the Preceding Year

| Situation | Median No. of Such Experiences | % Reporting This Experience at Least Once |
|--|--------------------------------|---|
| Patient asking "How long do I have to live?" in last year | 10 | 89.5 |
| Patient cared for in intensive care units in last year | 30 | 87.4 |
| Patient from whom life support had been withdrawn or withheld in last year | 5 | 82.2 |
| Patient referred to hospice in last year | 5 | 84.1 |

"in general, when patients are pessimistic about their prognosis, [the physicians] reinforce their perceptions." Despite this tendency toward optimism, physicians believed that *both* unduly favorable and unduly unfavorable predictions call for an explanation to the patient: 96.1% of physicians indicated that when they "predict an outcome to a patient and things turn out unexpectedly *poorly*, [they] feel obligated to explain this to the patient," and 66.6% indicated that even when they "predict an outcome to a patient and things turn out unexpectedly *well*, [they] feel obligated to explain this to the patient."

TRAINING FOR PROGNOSIS

Although prognosis is an important part of physicians' practices, a majority believed that they have been inadequately prepared for performance of this clinical task. Whereas only 7.0% and 6.0% of physicians believed they had received inadequate training in the diagnosis or therapy of disease, respectively, fully 56.8% reported that they believed they had inadequate training in prognostication. It is hardly a surprise that this affects physicians' attitudes toward prognostication; physicians who reported inadequate training in prognosis were 1.6 times as likely to find prognosis "stressful" than physicians with adequate training (95% CI, 1.2-2.2). As 1 internist observed:

In clinical practice, I find that patients will routinely request that we make prognoses regarding conditions which remain highly variable from patient to patient. I find this aspect of the clinical practice of medicine the most difficult. This, in fact, may be the "art of medicine." Unfortunately, medical schools and residencies do little to guide us through this very difficult process.

Whether physicians believed that their training in prognostication was inadequate did not vary according to a number of personal characteristics, such as specialty, board certification, years in practice, or sex, although physicians who saw more patients in the intensive care unit were less likely to perceive their training to have been inadequate (data not shown).

ATTITUDES TOWARD PROGNOSIS

A majority of internists (60.4%) reported finding it "stressful to make predictions about the course of a patient's

illness.” There are several reasons for this. Foremost is that prognostication is in fact complicated; indeed, 58.7% of physicians reported that they “find it difficult to make predictions about the course of a patient’s illness.” Physicians who find it difficult to make predictions were 2.7 times as likely to report that they find it stressful to make predictions as well (95% CI, 1.9-3.7). A great majority of physicians (90.6%) reported that “making an accurate prognosis about the course of a patient’s disease is harder than making an accurate diagnosis.” As 1 physician observed:

Compared to prognosis, I think you have much harder facts to pin a diagnosis on a patient. There are material things, there are x-rays, there are laboratory studies, there is your physical diagnosis, your history, which are all a lot of information that lead one to have a certain degree of certainty about what the diagnosis is. On the other hand, the course of illnesses is much more difficult to pin down—you’re talking about what’s going to happen in the future. Once you’ve made the diagnosis, what you have to think about is what the course of the disease is most likely [to be]. [What are] the courses it can follow? And, you know, there is a certain degree of uncertainty as to what that course can be.

The great majority of physicians (91.7%) were “reluctant to make predictions about a patient’s illness when the clinical situation is uncertain.” The stressfulness of prognosis arises not only from this clinical uncertainty, but also from differences in physicians’ and patients’ views of prognosis. Most internists (80.2%) believed that their patients “expect too much certainty” in their predictions. Indeed, physicians who believed that their patients have such high expectations were 2.2 times more likely than other physicians to find prognosis stressful (95% CI, 1.5-3.3). However, certainty does not necessarily alleviate the stressfulness of prognostication. This is so especially if the prognosis is unfavorable or if the prognosis must actually be communicated to the patient. As 1 physician observed:

Seeing my patient with multiple sclerosis deteriorate slowly, and knowing with certainty about what the future held for her: it was so depressing for me. Bladder problems, wheelchair bound, blindness. It was terrible.

In summary, the extent to which physicians find prognostication difficult, the extent to which patients expect prognostic certainty, and the extent to which physicians lack training regarding prognostication were all positively associated with physicians’ perceptions regarding the stressfulness of prognostication. In addition, the degree to which physicians find prognosis stressful was strongly associated with the extent to which they believed that their patients—if not their colleagues—would judge them adversely for prognostic errors, as will be shown. Notwithstanding the foregoing, however, the degree to which physicians find prognostication stressful was relatively homogeneously distributed among physicians with respect to age, sex, specialty, and board certification status. Moreover, the number of times in the preceding year a physician had been asked “How long do I have to live?” and the number of times a physician had withdrawn life support were also not associated with

finding prognostication stressful, suggesting that prognosis is stressful regardless of how commonly it is confronted. The foregoing bivariate relationships are quantified and summarized in **Table 2**. Multivariate models did not meaningfully modify the findings presented in this table (data not shown).

TOLERANCE FOR PROGNOSTIC ERROR

When 80.2% of physicians believe that patients expect too much certainty from their predictions, it is worth exploring the degree to which professional and lay expectations about accuracy in prognostication diverge. Differences between the perceptions of the importance of diagnostic and prognostic errors, summarized in **Table 3**, highlight this divergence.

Physicians responding to our survey believed that prognostic errors will be held against them by patients. For example, 50.2% believed that if they were to make an error in prognosis, their patients might “lose confidence in them.” Physicians believed, however, that patients are more forgiving about prognostic errors than they are about diagnostic errors: 88.0% of physicians believed that if they were to make an error in diagnosis their patients might “lose confidence in them.” For some physicians, the acknowledged greater difficulty of prognostication may provide some means to insulate themselves from the stressfulness of prognostication. As 1 physician observed, “Because it is better accepted that accurate prognostication is difficult (as compared to diagnosis), this aspect of medicine is less stressful to the physician.”

A lower percentage of physicians believed that their colleagues—as opposed to their patients—would judge them adversely for errors in prognosis: 28.4% believed that colleagues “would lose confidence in them” after a prognostic error. Physicians believed that they are more forgiving of their colleagues regarding prognostic errors than their colleagues are of them; only 17.1% of physicians acknowledged that they would lose some confidence in the colleague because of an error in prognostication. Willingness to forgive colleagues’ prognostic errors did not vary across a number of physician attributes, including age, sex, specialty, board certification status, or finding prognostication to be difficult or stressful (data not shown). By comparison with prognosis, a majority of physicians (81.0%) believed that if they were to make an error in diagnosis, their colleagues might “lose confidence in them.”

Overall, physicians believed that diagnostic errors are significantly worse than prognostic errors (McNemar $\chi^2 = 316$, $P < .001$). Furthermore, the finding that physicians perceive that colleagues view errors less adversely than patients was highly statistically significant in the case of both prognosis and diagnosis (prognosis, McNemar $\chi^2 = 96.6$, $P < .001$; diagnosis, McNemar $\chi^2 = 17.0$, $P < .001$).

THE INTERPRETATION OF BEING “TERMINAL”

There was substantial variation among physicians regarding 1 of the key prognostic definitions related to

Table 2. Demographic and Attitudinal Factors Associated With Internists' Perception That Prognostication Is Stressful

| Variable | Prognostication Is Stressful (n = 381) | Prognostication Is Not Stressful (n = 250) | P* |
|--|--|--|-------|
| Age, mean, y | 45.3 | 46.2 | .28 |
| Sex, % male | 79.5 | 82.0 | .44 |
| Specialty, % generalists | 48.0 | 47.6 | .92 |
| Board certification, % certified | 79.8 | 79.2 | .86 |
| Time spent in patient care, % | 90.1 | 86.5 | .04 |
| Prognostic queries, mean No. of patients | 23.8 | 21.1 | .44 |
| Life support withdrawal, mean No. of patients | 16.1 | 18.3 | .55 |
| Difficulty, % finding prognostication difficult | 68.0 | 44.1 | <.001 |
| Patient expectations, % thinking that their patients expect too much certainty | 85.2 | 72.1 | <.001 |
| Training, % with inadequate training in prognostication | 61.4 | 49.8 | .004 |
| Patient confidence, % feeling that patients would lose confidence after a prognostic error | 55.6 | 42.3 | .001 |

*P values were computed with Pearson χ^2 tests for categorical variables and with t tests for continuous variables.

Table 3. Internists' Perceptions About How Prognostic Errors Would Be Regarded by Patients and Colleagues

| Statement | % Agreeing |
|---|------------|
| If I were to make an error in <i>diagnosis</i> , my <i>patients</i> might lose confidence in me | 88.0 |
| If I were to make an error in <i>prognosis</i> , my <i>patients</i> might lose confidence in me | 50.2 |
| If I were to make an error in <i>diagnosis</i> , my <i>colleagues</i> might lose confidence in me | 81.3 |
| If I were to make an error in <i>prognosis</i> , my <i>colleagues</i> might lose confidence in me | 28.7 |
| If a physician colleague made an error in prognostication, I would probably lose some confidence in the colleague | 17.2 |

end-of-life care. We asked "when physicians say that a patient is 'terminal,' about how many weeks, on average, should the patient have left to live?" The distribution of responses is given in **Figure 1**. The average response to this question was 13.5 ± 11.8 weeks. However, responses varied from 1 to 75 weeks; 28.1% thought "terminal" meant having 4 weeks or less to live and 4.4% thought it meant having more than 36 weeks to live. Overall, the pattern of responses was approximately bimodal. That is, as shown in Figure 1, 68.3% thought "terminal" meant having less than 16 weeks to live, with a peak at about 8 weeks, and 31.7% thought it meant having 16 or more weeks to live, with a peak at about 24 weeks.

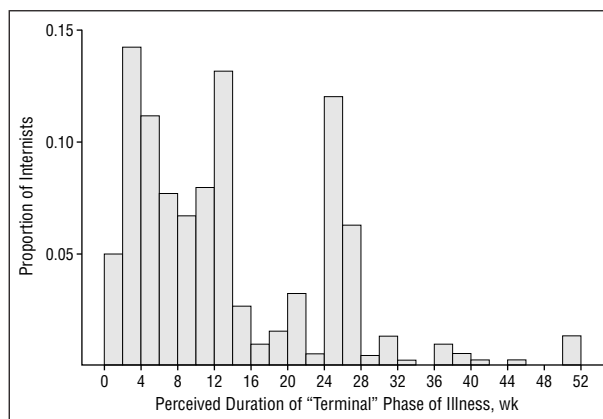


Figure 1. Definition of terminal in terms of weeks left to live in a national sample of internists.

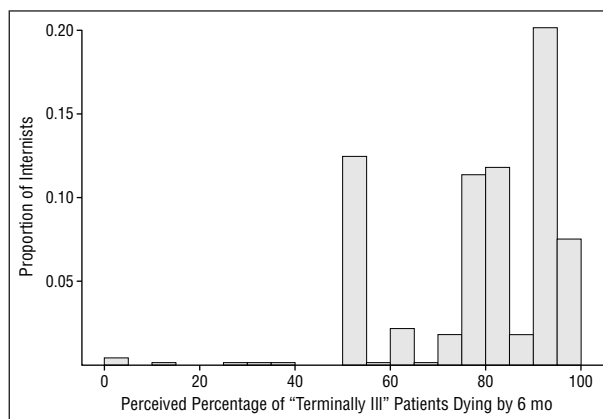


Figure 2. Definition of terminal in terms of percentage who had died by 6 months in a national sample of internists.

We also asked, "When physicians say that a patient is 'terminal,' approximately what percentage of such patients ought to be dead by 6 months later?" The distribution of responses is given in **Figure 2**. The average response to this question was $83.6\% \pm 17.8\%$, but responses varied from 0% to 100%, and the distribution was once again approximately bimodal. Indeed, 16.1% of physicians thought that being "terminal" meant having less than a 70% chance of death by 6 months and 83.9% thought that it meant having a 70% to 100% chance of death by 6 months. The 2 measures of terminality (in terms of weeks to live or of percentage dead) were reasonably correlated (Pearson $r = -0.51$, $P < .001$).

We dichotomized physicians into 2 groups: those who gave definitions of terminality of less than 16 weeks (68.3%) vs those whose definitions were 16 weeks or longer (31.7%). Adjusting for other factors, physicians with more years of practice held definitions of terminality that involved shorter expected survivals (each increment of 10 years of practice decreased the odds of having the longer definition by 34% [95% CI, 0.53-0.82]). Generalists had definitions of terminality with longer expected survival (odds ratio, 1.62; 95% CI, 1.07-2.48), as did those with more frequent queries regarding life expectancy (each increment of 10 such queries was associated with a 10% increase in the odds of having a longer definition of terminality [odds ratio, 1.10; 95% CI, 1.04-1.15]). Other

variables, including sex, board certification, and percentage of time spent in patient care, were not associated with attitudes toward terminality (data not shown).

COMMENT

We surveyed a national random sample of internists to assess certain of their attitudes and practices regarding prognostication. We found that physicians commonly encounter situations that require the development and communication of a prognosis, and that most physicians feel poorly prepared for this. Moreover, physicians find it stressful and difficult to make predictions. They believed that patients expect too much certainty and that both patients and (to a lesser extent) colleagues will judge them adversely for prognostic errors. The physicians responding to our survey believed that they should accentuate the positive in making predictions and avoid being too specific. Many believed that it is best not to volunteer prognostic assessments. We also found substantial variation in how physicians regard the key concept of being “terminally ill,” with 2 populations of physicians, 1 with a perception of terminal illness as lasting about 8 weeks and 1 with a perception of about 24 weeks. More experienced physicians and specialists had definitions of terminality that involved shorter survivals.

Many of the current technical, ethical, and legal developments regarding several areas of clinical care—areas as disparate as the use of prognostic staging systems in the intensive care unit, hospice referral, and physician-assisted suicide—can be rethought in the light of these findings. Proponents of these developments typically assume not only accuracy in physicians’ prognoses, but also a willingness of physicians to prognosticate and a consistency in how they do so.

As an example of the limitations of these assumptions, 2 of our findings—regarding the variation in physicians’ definitions of terminality and regarding their reservations about making predictions—cast doubt on claims by advocates of physician-assisted suicide that terminal illness can be defined and identified. Lynn and colleagues²⁶ argued that 1 of the essential requirements of proposals in favor of physician-assisted suicide, namely, that patients be “terminally ill,” is in practice impossible to determine. Our findings give further credence to these concerns regarding the use of subjective judgment as a standard for defining “terminal” illness, because subjective judgments can vary not only because prognostication itself is fraught with error, but also because physicians can vary in their perceptions about what they are predicting. Moreover, this variation is further confounded by the imperfect correlation between temporally based and probabilistically defined standards of terminality that we have demonstrated. Rather than taking easily available and accurate prognostication as a given, as many disparate policies regarding end-of-life care do, it is essential that the actual behavior and attitudes of physicians be the backdrop against which changes in their role are planned. These factors must be considered along with the other practical barriers to physician-assisted suicide.⁷

Studies of physicians’ ability to prognosticate accurately, or of the impact of their prognoses, are rare, and

those that do exist have focused on specific situations, typically at the end of life. With rare exceptions,²⁷ these studies have documented significant inaccuracies in physician prognostication. For example, the landmark Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatments documented that physicians systematically make overly pessimistic prognoses.^{28,29} This study developed quantitative models for the prediction of outcomes of 9 severe disease states that in general performed somewhat better than directly elicited physician prognostication.³⁰⁻³² In any case, intensive efforts to provide physicians with timely information about patients’ preferences and objectively computed prognoses were ineffective in changing physician behavior at the end of life.³³ This was despite large documented mismatches between physicians’ actions and patients’ stated preferences.^{34,35} Other studies have taken advantage of the need for explicit prognostication that is institutionalized by Medicare requirements for hospice entry⁹ to examine the process of prognostication in such patients, and they have found marked inaccuracies or problems.^{26,36-42} For example, a recent study demonstrated that the majority of patients enrolled in hospice programs under the Medicare benefit are enrolled relatively late in the course of their illness, perhaps in response to difficulties with prognostication.^{42,43} In both the intensive care unit and hospice cases, attitudes and behavior with respect to prognostication are obviously essential aspects of clinical care.

But, beyond these particular areas of clinical practice, there is a broader concern: physicians dislike making the sort of precise prognoses that patients and policymakers often seem to want. Moreover, physicians may deem that prognostication is not helpful or is even harmful to their patients. Overall, physicians try to avoid prognostication. They find the process unsettling. The “difficulty” and “stress” in rendering prognoses are both technical (in the sense of how complicated it is to formulate them) and operational (in the sense of how emotionally and professionally unsettling it is to communicate them). Physicians tend not to hold colleagues accountable for errors when they do make prognoses, but physicians believe that patients do hold them accountable. The problems physicians face in prognosis can also be seen in comparisons between diagnosis and prognosis. Whereas 28.7% of the physicians responding to our survey believed their colleagues would lose confidence in them as a result of prognostic error, 81.7% believed they could not escape such consequences from a diagnostic error. Whereas only a small minority felt inadequately trained in diagnosis, a majority felt inadequately trained in prognosis. It seems as if physicians respond to all of these facts by avoiding making predictions, if at all possible.³

The descriptive nature of our data leaves several important questions unanswered. Beyond the preliminary work presented above, we cannot explore the specific origins of physicians’ prognostic practices; hence we cannot directly derive implications for the training of physicians. Moreover, the data do not permit the analysis of the way physicians’ views of prognostication affect their daily treatment decisions, particularly in common, non-terminal situations that require predictions about the future course of disease. Our study has certain additional technical limitations. First, we studied physicians’ self-

reported behaviors and attitudes rather than their revealed behaviors during actual patient care. Second, given the response rate of less than 100%, the possibility of recruitment bias suggests caution in generalizing our results. However, our response rate was similar to that of other reported surveys requiring physician completion,²¹ there was no change in sample representativeness associated with timing of response, and there was minimal difference between respondents and nonrespondents on several measurable attributes. Third, we studied only internists and we did not examine every domain where prognostication might be important; studies of different populations of physicians or of different topics (eg, the prognostic use of genetic tests) might yield different results. In sum, while our study has all the limitations of a survey (ie, lack of direct verification of data, less than 100% response, specificity of chosen sample, etc), it also has the benefits (ie, access to representative physician experiences, the ability to incorporate physicians' own analyses and insights, etc).

Thus, despite these limitations, some pragmatic conclusions can be drawn. Our data suggest that increased attention to the prognostic foundation of medical decisions is in order. Some of the problems raised by prognostication might be addressed by a more respectful attitude toward the complexity inherent in prognosis, a more careful approach to the development of objective prognostic estimates,⁴⁴ a more thorough attention to the role of prognostication in clinical practice, and greater, better, and more empathetic communication between physicians and patients about both prognosis and its impact on clinical decisions.⁴⁵ Given that prognosis is concerned with what is arguably the most inherently uncertain, and often the most troubling, domain of clinical knowledge, it seems likely that physicians will continue to adopt variable, meaningful, and consequential responses to it in an effort to cope.

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