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Conflicting Goals Influence Physicians' Expressed Beliefs to Patients and Colleagues

Siyuan Yin, Hal R. Arkes, John P. McCoy, Margot E. Cohen, and Barbara A. Mellers

Background. Physicians who communicate their prognostic beliefs to patients must balance candor against other competing goals, such as preserving hope, acknowledging the uncertainty of medicine, or motivating patients to follow their treatment regimes. **Objective.** To explore possible differences between the beliefs physicians report as their own and those they express to patients and colleagues. **Design.** An online panel of 398 specialists in internal medicine who completed their medical degrees and practiced in the United States provided their estimated diagnostic accuracy and prognostic assessments for a randomly assigned case. In addition, they reported the diagnostic and prognostic assessments they would report to patients and colleagues more generally. Physicians answered questions about how and why their own beliefs differed from their expressed beliefs to patients and colleagues in the specific case and more generally in their practice. **Results.** When discussing beliefs about prognoses to patients and colleagues, most physicians expressed beliefs that differed from their own beliefs. Physicians were more likely to express greater optimism when talking to patients about poor prognoses than good prognoses. Physicians were also more likely to express greater uncertainty to patients when prognoses were poor than when they were good. The most common reasons for the differences between physicians' own beliefs and their expressed beliefs were preserving hope and acknowledging the inherent uncertainty of medicine. **Conclusion.** To balance candor against other communicative goals, physicians tended to express beliefs that were more optimistic and contained greater uncertainty than the beliefs they said were their own, especially in discussions with patients whose prognoses were poor.

Keywords
hope preserving, physician-patient communication, uncertainty

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The foundation of medical decision making is expected utility theory (EUT), a framework in which decision makers select options that maximize their expected utilities. Decision makers who have the most accurate information about their future outcomes are best positioned to achieve this goal.[1] Modern versions of EUT and cost-effectiveness analysis[2] are most useful when prognostic estimates are accurate. In the 1960s, many physicians were reluctant to discuss prognoses, even when patients were severely ill.[3] But times have changed. With the patient empowerment movement in the 1990s, physicians felt an ethical obligation to communicate accurate prognostic information to their patients.[4]

Communication about prognoses requires physicians to convey risk and uncertainty.[5-13] Numerous techniques have been suggested to help physicians express accurate probability information to their patients, including icon arrays[14] and natural frequencies.[15] However, these techniques are predicated on the assumption that physicians want to communicate accurate probability estimates to

Corresponding Author
Barbara A. Mellers, Psychology and Marketing Departments, University of Pennsylvania, 3720 Walnut Street, University of Pennsylvania, Philadelphia, PA 19104, USA (mellers@wharton.upenn.edu).

their patients. Here, we ask physicians to report their own beliefs and those they would express to patients and colleagues. Differences between these quantities potentially reflect other goals, such as preserving hope or preventing unrealistic hope.[16]

Expressing Greater Optimism or Pessimism

Many physicians want to give accurate prognostic information to their patients, especially when their patients want to participate in the decision-making process, Of course, not all patients wish to participate or even hear critical facts.[17,18] Hofmann and colleagues[19] found that more than half of seriously ill hospitalized patients did not wish to discuss end-of-life decisions. They preferred to maintain hope and strengthen their personal ties with physicians.

On one hand, physicians might want to prevent patients from becoming despondent by expressing greater optimism in a successful outcome than the physician believes. Physicians are less likely to communicate prognostic information accurately if they believe the patient is distressed.[20,21] On the other hand, physicians might want to discourage patients from attempting futile, costly, or painful interventions by expressing greater pessimism in the outcome than they believe.

Physicians often turn to their colleagues for advice. When their patients have poor prognoses, physicians might try to motivate colleagues by suggesting an optimistic outcome with their help. Another strategy might be to suggest a pessimistic outcome without their help. Either approach to framing might improve their chances of getting colleagues' assistance.

We elicit the beliefs physicians report as their own and the beliefs they say they would express to patients and colleagues when prognoses are either good or poor. We also give each physician a specific case and request a diagnosis, their confidence in it, the chances of the patient's successful treatment, and the chances of the patient's 5-y survival. We ask physicians for numerical expressions of their own beliefs and those they would express to the patient, assuming the patient was their primary responsibility. We also ask physicians for the numerical expressions they would express to colleagues if they were discussing the patient.

Psychological studies have shown that people differ in their communications depending on the audience to whom they are accountable.[22] We hypothesize that physicians are less likely to express beliefs that differ from their own beliefs when communicating with colleagues than with patients, but differences could still occur if physicians feel that shading their beliefs could increase the assistance they might receive from colleagues.

We propose the following:

Hypothesis 1: Physicians often express beliefs to patients and colleagues that differ from their own beliefs.
Hypothesis 1A: Physicians express greater optimism than they feel when discussing poor prognoses than good prognoses with patients.
Hypothesis 1B: Physicians express greater optimism than they feel when discussing both types of prognoses with patients than with colleagues.

Expressing Greater Uncertainty

Physicians can present information to patients with different levels of certitude. A patient who is learning about a poor prognosis might prefer the physician to express it with less, rather than more, certainty. Yet physicians may want to convey enough certainty that they motivate patients to sustain treatment plans. Many physicians dislike communicating poor prognoses so much that they avoid it entirely.[8–13,17] For example, Lamont and Christakis[11] reported that more than 60% of physicians provided no prognostic information to patients near the end of life. One way to cope with patients and their families is to express less certainty than one truly believes.[10] Decreased certainty could benefit the physician, the patient, and the family. Physicians may feel more comfortable delivering bad news with qualifications. Relatives of patients who are near the end of life often tolerate bad news that is given with some degree of doubt.[23] Decreased certainty may give clinicians "permission" to speak to patients about the end of life. We propose the following:

Hypothesis 2: Physicians often express a degree of uncertainty to patients and colleagues that differs from the degree of uncertainty they report as their own.

Department of Marketing, The Wharton School, University of Pennsylvania, Philadelphia, PA, USA (SY, JPM); Department of Psychology, Ohio State University, Columbus, OH, USA (HRA); The Harding Center for Risk Literacy, Berlin, Germany (HRA); Department of Medicine, University of Pennsylvania, Philadelphia, PA, USA (MEC); Department of Psychology and Department of Marketing, University of Pennsylvania, Philadelphia, PA, USA (BAM). The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Financial support for this study was provided by a grant from the National Science Foundation (DRMS #9559370). The funding ensured the authors' independence in designing the study, interpreting the data, writing, and publishing the report.

Hypothesis 2A: Physicians express greater uncertainty than they feel when discussing poor prognoses than good prognoses with patients.

Hypothesis 2B: Physicians express greater uncertainty than they feel when discussing prognoses with patients than with colleagues.

Method

Participants

Participants were selected on the basis of having completed their medical degrees in the United States, practiced in the United States, and specialized in internal medicine. We intended to have 400 physicians, with 100 in each of 4 groups. Our sample consisted of the first 398 physicians (127 women) who met the criteria and completed the survey.

Physicians had practiced an average of 19 y (s = 9.7 y). Some worked with inpatients (11%), others with outpatients (47%), and some with both (42%). Participants were from the Reckner Healthcare Online Panel, which consists of physicians recruited via phone and social media to participate in research. Each was paid $30 for the 30-min experiment. No physician data were excluded for any reason.

Procedures and Materials

The experiment consisted of 3 parts. In the first part, physicians read 1 of 4 cases: diabetic ketoacidosis (DKA), multiple myeloma (MM), Lambert-Eaton myasthenic syndrome (LEMS), and tuberculosis (TB). Cases were adapted from deidentified, real medical cases and included chief complaints, history of present illness, medical history, medications, family history, physical examinations, case-specific laboratory tests, imaging, and procedures. Two cases were malignancy based and associated with worse prognoses (MM, LEMS), and 2 cases were acute, treatable, and associated with better prognoses (DKA, TB). Each case was intended to be diagnostically challenging but with an attainable correct diagnosis. The 5 diagnostic options we provided were reasonable alternatives, and 1 of them was correct. Our goal was to achieve an accurate diagnosis rate of approximately 65% to avoid ceiling effects and obtain a reasonable range of diagnostic accuracy and uncertainty. (See Supplemental Materials for cases and survey questions: https://osf.io/uafkb/?view_only=ca1fab309ed244b59fc9ae88ab7673d7.)

To keep the study a reasonable length of time and to minimize fatigue, we gave each physician a single case. Cases differed along multiple dimensions, and we had no a priori hypotheses about differences in cases. We simply treated case as a between-subjects factor.

After reading a randomly assigned case, physicians were told, "Suppose the patient was your primary responsibility" and asked to select the most likely diagnosis and, using a probability scale from 0% to 100%, reported their confidence in their diagnosis. They read the text and stated their belief that the patient would be cured or successfully treated and the belief that the patient would survive for at least 5 y.

The survey continued, "Suppose the patient was your primary responsibility and you are discussing him/her with your colleagues." Physicians were asked to report beliefs about the same 3 questions that they would express to the patient and their colleagues. Those beliefs included their confidence that the selected diagnosis was correct, their belief that the patient would be cured or successfully treated, and their belief that the patient would survive for at least 5 y. We counterbalanced the order in which physicians were asked about the beliefs that they would express to patients and to colleagues.

In the 2 parts of the survey that asked physicians how they communicated their beliefs with patients and colleagues in general, all physicians were asked how they expressed their beliefs when patients had "very poor prognoses" and "very good prognoses." Although our survey asked physicians about "very poor" and "very good" prognoses, we will refer to these as "poor" and "good" prognoses for ease of exposition.

We asked physicians whether they expressed beliefs that differed from their own beliefs using a 5-item scale ranging from "never" to "almost always." Unless physicians answered "never," we followed up with a question about the direction in which their expressed beliefs differed from their own beliefs using a 6-item scale ranging from "much more pessimistic" to "much more optimistic." A follow-up question asked why they expressed beliefs that differed from their own beliefs when communicating with patients and colleagues.

Next we asked physicians whether, on a 5-item scale ranging from "never" to "almost always," they expressed greater or less uncertainty than they felt. Unless physicians selected "never," they were given questions about how and why they expressed greater or less uncertainty.

We coded the reasons physicians gave for expressing beliefs that differed from those they said were their own beliefs. Two co-authors coded each answer physicians gave to why their expressed beliefs differ from their own beliefs. Interrater agreement averaged 81%. Disagreements were resolved by a third coauthor. Nine responses to the colleague/poor prognosis question and 5 to the colleague/very good prognosis question were

discarded, because coders agreed that they pertained to communication toward patients rather than colleagues. The Supplemental Materials contain detailed information about coding.

To address previous research on how physicians communicate prognostic beliefs,[24] we asked physicians about their propensity to use verbal and quantitative terms when discussing prognoses with patients and colleagues. Questions and results are presented in the Supplemental Materials. All statistical analyses were performed with IBM SPSS version 27 and R Studio version 1.2.5042.

Ethics

This study was approved by the Institutional Review Board of the University of Pennsylvania (824090).

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Results

Physicians' Beliefs in General

We begin with physician's answers to questions about their own beliefs and those they expressed to patients and colleagues in general. We pooled these answers over groups with different cases. There was no significant effect of case on subsequent responses about general tendencies (see the Supplemental Materials). Our claims about physicians' beliefs rely on self-reports. When we refer to physicians'"own beliefs," we mean the beliefs that physicians attribute to themselves, rather than the beliefs they say they would express to others.

Hypothesis 1 deals with physicians' tendencies to express beliefs to patients and colleagues that differ from what they report as their own beliefs. Figure 1 shows the relative frequencies of expressed beliefs that differed from physicians' own beliefs. Consistent with this hypothesis, 62% of physicians reported that when communicating with patients in general, they expressed beliefs that differed from their own (from "rarely" to "almost always") regardless of the prognosis, whereas 50% said they expressed beliefs that differed from their own when communicating with colleagues.

When prognoses were poor, 71% of physicians said their expressed beliefs to patients differed from their own. When prognoses were good, only 53% of physicians said their expressed beliefs to patients differed from their own. Consistent with hypothesis 1A, physicians were more likely to express beliefs that differed from their own when discussing poor prognoses than good prognoses with patients (McNemar test, $\chi^2[1] = 7.64$, $P < 0.001$). In all subsequent analyses, we examine the directional change between physicians' own and expressed beliefs and eliminate physicians who said that they never expressed beliefs that differed from their own beliefs.

Figure 2 provides a fine-grained analysis of the differences between physicians' own and expressed beliefs to patients and to colleagues when prognoses were poor and good. Significantly more physicians were more optimistic ("slightly more optimistic," "more optimistic," or "much more optimistic") when communicating with patients whose prognoses were poor than good (84% v. 59%), consistent with hypothesis 1A (Wilcoxon test, $r = 0.25$, $P < 0.001$). By contrast, when communicating with colleagues, physicians reported the same tendency toward optimism regardless of the patient's prognoses.

Hypothesis 1B stated that physicians were more likely to report beliefs that differed from their own to patients than to colleagues. Results were consistent with this hypothesis (McNemar test, $\chi^2[1] = 4.93$, $P < 0.05$). A more fine-grained look shows that this tendency occurs more often with poor prognoses. When prognoses were poor, physicians expressed greater optimism when talking to patients (84%) than to colleagues (55%; Wilcoxon test, $r = 0.28$, $P < 0.001$). However, when prognoses were good, physicians' expressed beliefs did not differ significantly between patients and colleagues. The comparison between good and poor prognoses was not preregistered.

Next, we turn to the differences between physicians' own beliefs and their expressed beliefs about uncertainty. Figure 3 displays physicians' frequencies of expressing greater uncertainty than they felt to patients and to colleagues when prognoses were poor and good. Significantly more physicians expressed greater uncertainty than they felt to patients when prognoses were poor (71%) than good (55%), consistent with hypothesis 2A (Wilcoxon test, $r = 0.42$, $P < 0.001$). This tendency to express greater uncertainty also occurred with colleagues. Physicians expressed greater uncertainty than they felt when communicating with colleagues about patients' poor prognoses (57%) than good prognoses (48%; Wilcoxon test, $r = 0.27$, $P < 0.001$).

Finally, physicians expressed greater uncertainty to patients than to colleagues for both poor prognoses ($r = 0.28$, $P < 0.001$) and good prognoses ($r = 0.14$, $P = 0.004$), consistent with hypothesis 2B. We also asked physicians how often they expressed beliefs that were more certain than they felt. Most reported never doing so with

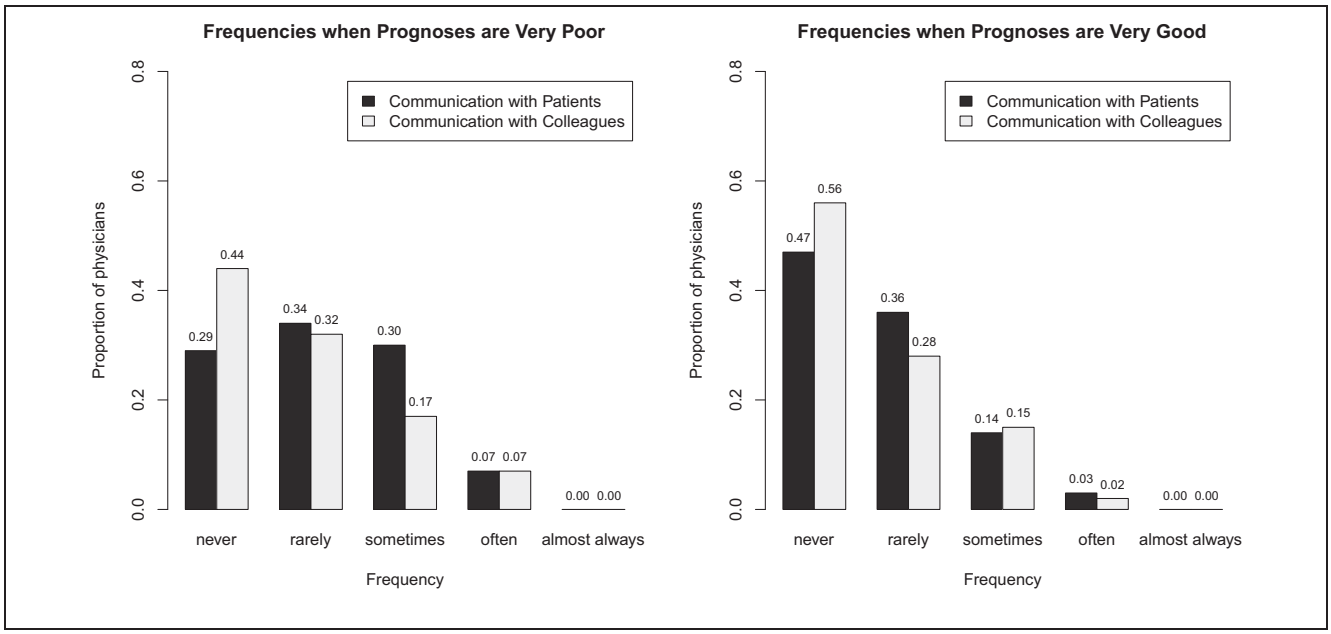

Figure 1 Relative frequencies of expressing beliefs that differ from physicians self-reported beliefs when communicating with patients and colleagues about very poor and very good prognoses on the left and right, respectively.

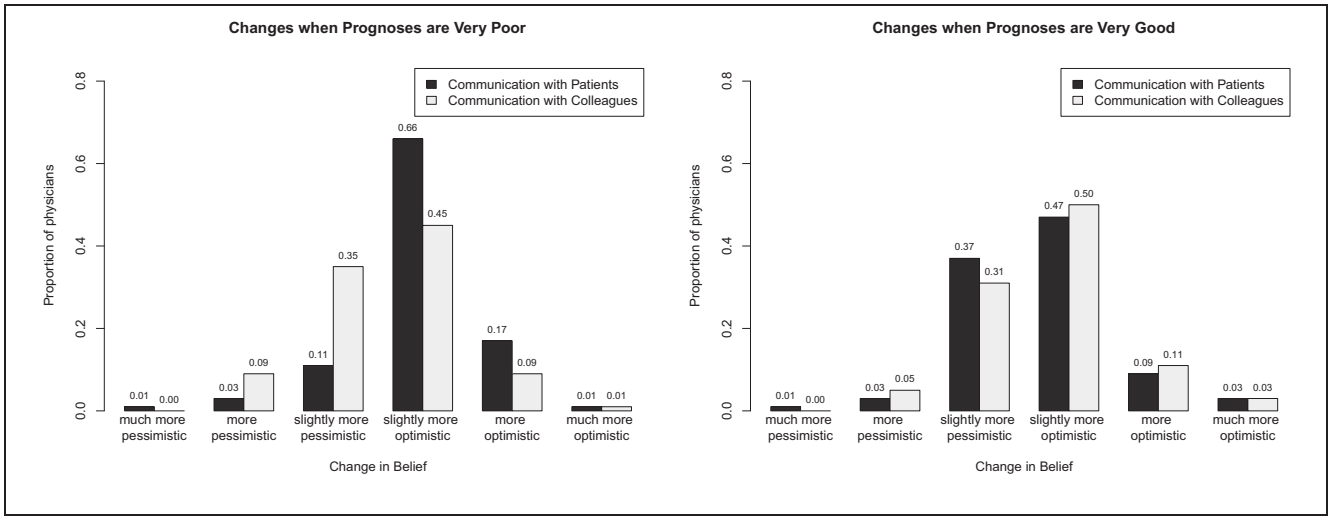

Figure 2 Direction of shift when physicians express beliefs that differ from their self-reported beliefs in discussions with patients and colleagues about very poor and very good prognoses.

either patients or colleagues for either poor or good prognoses, so we do not discuss these results.

Physicians' Beliefs in Specific Cases

Next, we examine physicians' responses to the 4 randomly assigned cases. Were there still differences between physicians' own beliefs and their expressed beliefs to patients and colleagues? Because we had no hypotheses about differences among cases, we collapsed across the 4 sets of responses and present the results for all physicians. If we restrict our analyses to physicians who made the correct diagnoses, results are similar but variability is reduced (See the Supplemental Materials for [a] an

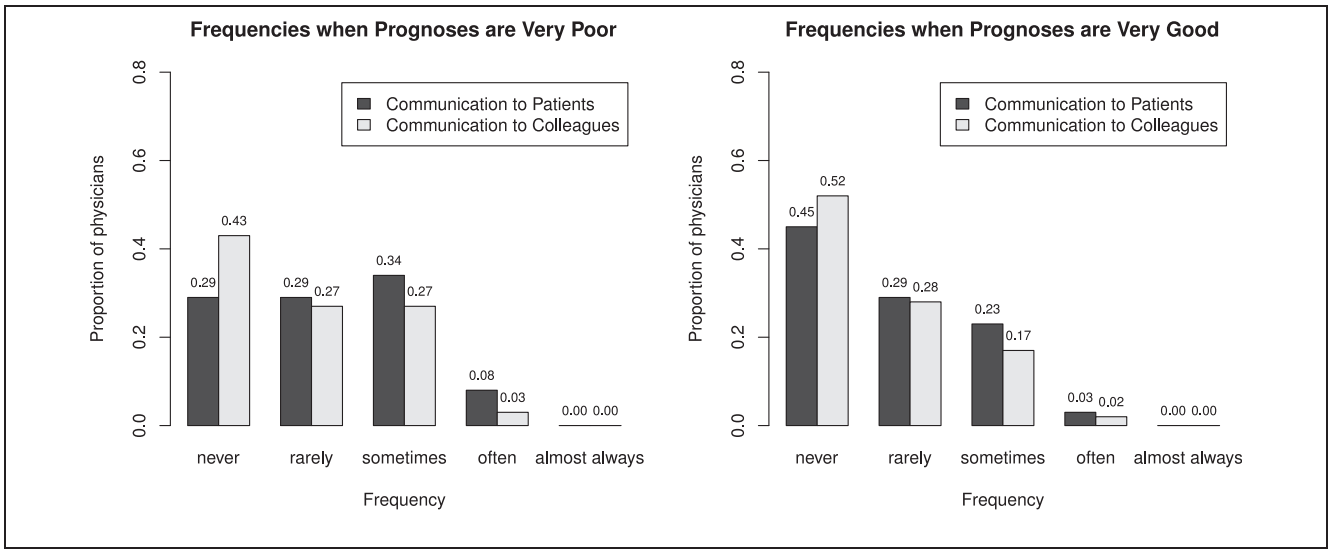

Figure 3 Relative frequencies of expressing greater uncertainty than physicians feel when communicating with patients and colleagues about very poor and very good prognoses.

analysis using only physicians who made the correct diagnosis and [b] separate analyses of each case. We did not pre-register either of these two additional analyses.)

We computed differences between physicians' own beliefs and those they said they would express to patients and colleagues. Figure 4 shows these differences about diagnostic accuracy, about the patient being cured or successfully treated, and about 5-y survival. There was sizeable variability in these differences, and we analyzed them using paired-sample t tests.

On average, physicians' confidence in their diagnostic accuracy did not differ statistically from the average estimates they expressed to patients. But with colleagues, physicians expressed greater confidence in their diagnosis than they attributed to themselves (M[Colleague] = 71.2%, M[Own] = 69.9%, paired $t[397] = -2.2$, $p = 0.03$).

On average, physicians' own probability estimates of a cure or successful treatment did not differ from the estimates they expressed to patients. However, to colleagues, physicians expressed greater pessimism than their own estimates (M[Colleagues] = 54.6%, M[Own] = 56.6%, paired $t[397] = 2.8$, $p = 0.006$). Finally, the 5-y survival estimates that physicians expressed to patients were more optimistic than their own estimates (M[Patients] = 51.9%, M[Own] = 49.2%, paired $t[397] = -4.2$, $P < 0.001$), and the estimates they expressed to colleagues were more pessimistic than their own estimates (M[Colleagues] = 47.7%, M[Own] = 49.2%, paired $t[397] = 3.0$, $P = 0.003$).

The small average differences between physicians' own and expressed beliefs do not reveal the large variability in the differences. To investigate them, we computed the absolute values. The average absolute difference between physicians' own beliefs of a correct diagnosis and their expressed belief to patients was 8.9% and to colleagues was 7.5% (paired $t[397] = 2.5$, $P = 0.012$). The average absolute difference between own and expressed beliefs about a successful treatment to patients did not differ from that expressed to colleagues. For 5-y survival, the average absolute difference was 8.3% with patients and 6.4% with colleagues (paired $t[397] = 3.5$, $P < 0.001$). In sum, average absolute deviations between physicians' own and expressed beliefs tended to be greater with patients than with colleagues for all 3 questions.

We hypothesized that physicians would be more likely to express estimates that differed from their own beliefs with patients than colleagues, but we did not anticipate an association between the directional changes to patients and to colleagues. The correlation between the difference between physicians' own and expressed belief to patients about the diagnosis and the difference between physicians' own and expressed belief to colleagues was 0.72. The correlation between these differences to patients and colleagues about a cure/successful treatment was 0.83, and the correlation between these differences to patients and colleagues about 5-y survival was 0.88 (all Ps < 0.01).

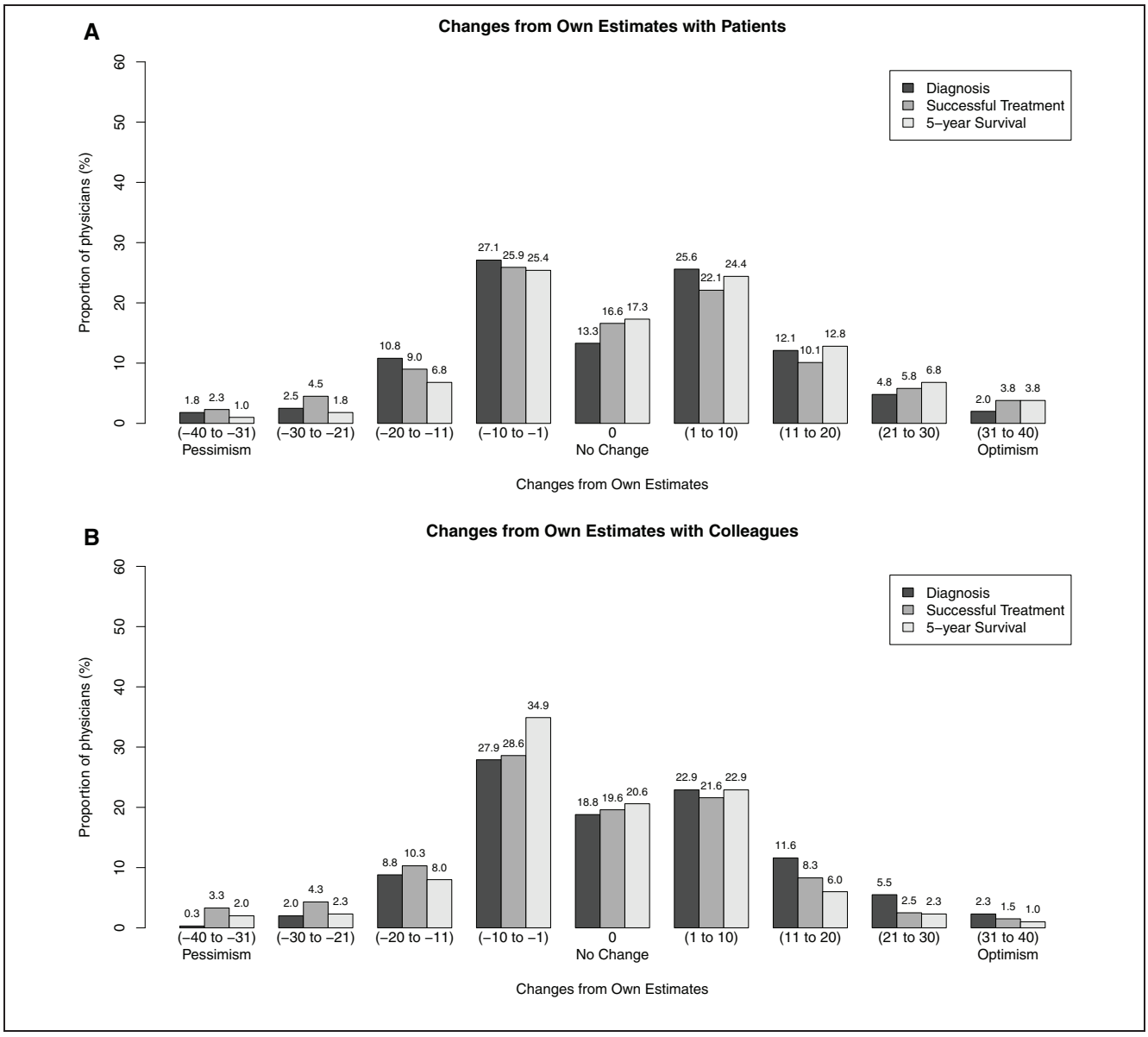

Figure 4 Direction of shift when physicians deviate from their self-reported beliefs when communicating with patients (top panel) and colleagues (bottom panel) with the specific cases. Negative and positive values reflect greater pessimism and optimism, respectively.

Reasons for Differences between Own and Expressed Beliefs

Why did most physicians say they expressed beliefs that differed from their own when communicating with patients and colleagues? We posed this question to the physicians, and approximately half of them gave answers. For exploratory purposes, we coded these reasons using 6 categories: 1) maintaining realistic hope, 2) the inherent uncertainty of medicine, 3) preventing false hope, 4) motivating patients/colleagues, 5) obtaining information, and 6) preserving self-image. There were 2 other categories. One contained reasons that were too brief to understand or irrelevant. The other, "honesty," contained the responses of those who said they did not change their beliefs. This category consisted mainly of physicians who selected "rarely" as the frequency with

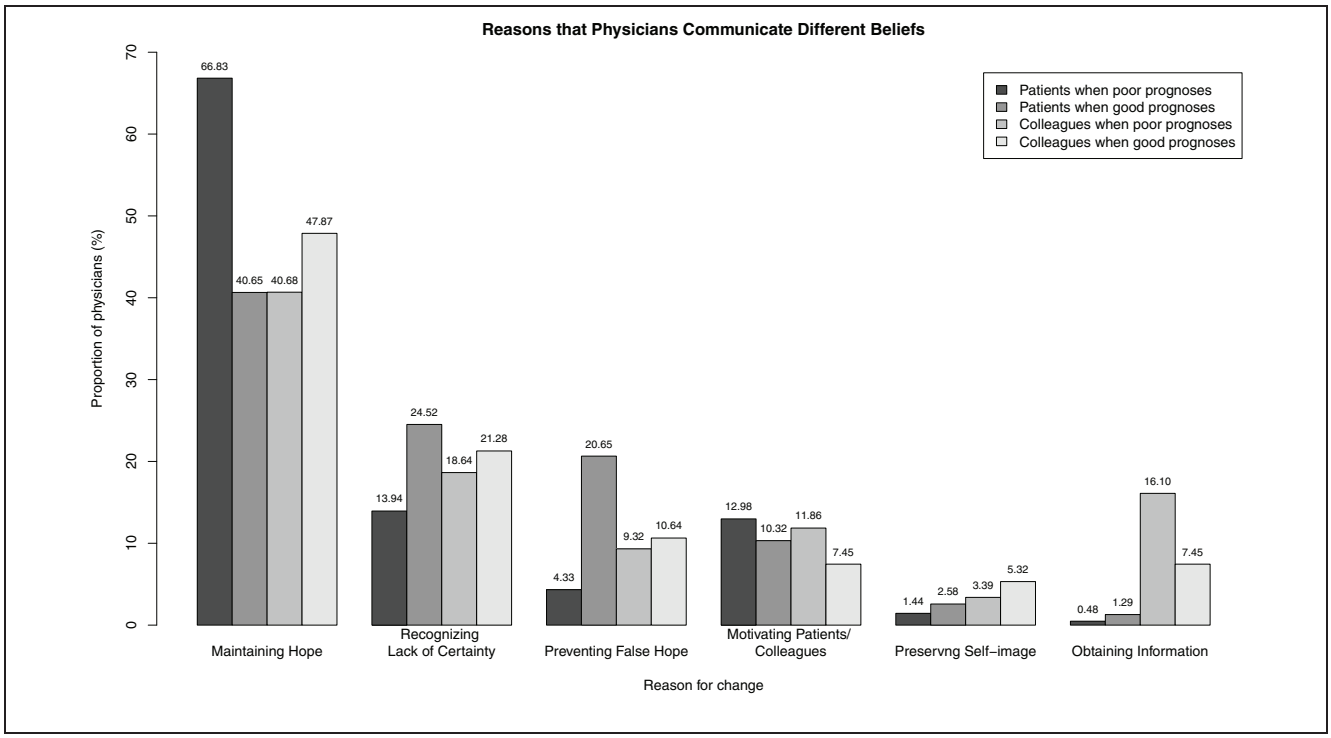

Figure 5 Six reasons that physicians communicate different beliefs when communicating with patients and colleagues about very poor and very good prognoses.

which their expressed beliefs differed from their own beliefs.

Figure 5 shows the percentages of reasons across categories (i.e., excluding "non-answer" and "honesty"). The most frequent reason was to preserve realistic hope and convey optimism to patients and colleagues. The next most common reason was acknowledging the uncertainty of medicine. This reason allows for the possibility of hedging. One physician wrote, "There are no *definites* in medicine, and a poor prognosis may have a better outcome than expected."

Next, we looked at the directional shifts that occurred when physicians gave different reasons. When physicians spoke to patients about poor prognoses, their expressed beliefs tended to be more optimistic than their own beliefs, regardless of the reason. When physicians spoke to patients about good prognoses, their expressed beliefs to patients were on average neither more optimistic nor more pessimistic than their own beliefs. When communicating with colleagues about patients with ether poor or good prognoses, physicians were optimistic if they wanted to maintain hope or motivate behavior. When speaking with colleagues about patients with poor prognoses, physicians were pessimistic when they wanted to prevent false hope.

Discussion

Most physicians say that they express beliefs that differ from their own, both with respect to the content of the beliefs and the uncertainty surrounding them. Perhaps the uncertainty in their own beliefs licenses physicians to satisfy other communicative goals, such as preserving realistic hope or preventing false hope.[25] Balancing tradeoffs among competing goals presents physicians with a serious dilemma. Expressing beliefs that differ from physicians' own beliefs could be helpful or harmful. Providing optimistic prognostic beliefs might lead patients to comply with a benevolent treatment option, adhere to a crucial medication regimen, or perform necessary but uncomfortable physical therapy that would improve their outcomes. However, optimistic information might encourage the patient's or the family's desire to continue costly, painful, and perhaps futile treatments. Similarly, providing pessimistic prognostic information may foster treatment compliance of patients who would otherwise be cavalier about medication adherence. Yet, pessimism could also discourage patients who wish to explore all options. Difficulties managing conflicting goals may contribute to patients' perceptions that communications with their physicians were of low quality[26]

and that, in turn, may contribute to patients' desire for more involvement in the decision making.[27]

Although we did not ask patients what they would like the physicians to do when communicating prognostic uncertainty, the tendency of physicians to express greater optimism than they say they believe is consistent with previous findings that many seriously ill patients prefer not to discuss end-of-life decisions and instead wish to maintain hope and believe in the competence of surgeons.[13,19] A recent study found that patients judged physicians who gave them decision autonomy, rather than paternalistic advice, as less competent and even less helpful.[28] From the physician's perspective, the task of assessing whether and how much patients want to be involved in decision making is not an easy one.[27,29]

Another consideration in physician-patient communication is the interpretation of vague uncertainty phrases. For example, we asked the physicians to provide the patient's "probability of being cured or successfully treated." As Lynn[30] pointed out, a patient might interpret "successfully treated" as completely cured, whereas, to the physician, it could mean settling on an appropriate course of action.

In general, physicians were more likely to express beliefs that differed from their own when speaking to patients than to colleagues. Why? There are more tradeoffs in physician-patient communication than physician-colleague communication, such as the maintenance of hope,[19] the reluctance to distress the patient,[20] and the protection against worse-than-expected outcomes.[31] Physicians who are sensitive to these goals might be more likely to express estimates that differ from their own, as seen in the distributions of differences between physicians' own and expressed beliefs. For example, to instill hope, physicians might try to be more optimistic, but to prevent false hope and promote malpractice accusations, physicians might try to be more pessimistic. Such tradeoffs are less likely in discussions with colleagues.

Our study has several limitations. First, we focused mainly on prognostic communication, but there are other topics that require the communication of uncertainty, such as explaining examinations or test results, balancing the risks and benefits of treatment options, or managing families' expectations. Second, the 4 cases presented in the study are a small set of potential medical conditions, and we may have missed other ways of communicating uncertainty. Third, our conclusions rely on self-reports, not actual data from physician communication with patients and colleagues, and what people say they do may not be what they actually do. Fourth, as physicians responded to our queries about their general communication tendencies, they may have been unduly swayed by a recent case or a particularly memorable one, thus influencing their assessment of their overall communication tendencies.

Communicating beliefs that express greater optimism, pessimism, or uncertainty than physicians actually feel may help them achieve goals such as motivating patients to sustain treatments or encouraging colleagues to provide assistance. Most physicians in our study said that, at least some of the time, they express beliefs to others that differ from their own. Nonetheless, we have come a long way since 1961, when surveys showed that 90% of physicians preferred not to tell their patients about cancer diagnoses.[3]

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ORCID iD

Barbara A. Mellers https://orcid.org/0000-0001-9869-5880

Supplemental Material

Supplementary material for this article is available on the *Medical Decision Making* Web site at http://journals.sagepub.com/home/mdm.

References

1. Sox HC, Blatt MA, Higgins MC, Marton KI. *Medical Decision Making*. Boston: Butterworths; 1988.
2. Asaria M, Griffin S, Cookson R. Distributional cost-effectiveness analysis: a tutorial. *Med Decis Making*. 2016;36:8–19.
3. Oken D. What to tell cancer patients: a study of medical attitudes. *JAMA*. 1961;8:1120–8.
4. Annas GJ. Informed consent, cancer, and truth in prognosis. *N Engl J Med*. 1994;330:223–5.
5. Novack DH, Plumer R, Smith RL, et al. Changes in physician's attitude toward telling the cancer patient. *JAMA*. 1979;249:897–900.
6. Berkey FJ, Wiedemer JP, Vithalani ND. Delivering bad or life-altering news. *Am Fam Physician*. 2018;98:99–104.
7. Bhise V, Meyer A, Menon S, et al. Patient perspectives on how physicians communicate diagnostic uncertainty: an experimental vignette study. *Int J Qual Health Care*. 2018;30:2–8.
8. Curtis JR, Engelberg R, Young JP, et al. An approach to understanding the interaction of hope and desire for explicit prognostic information among individuals with severe chronic obstructive pulmonary disease or advanced cancer. *J Palliat Med*. 2008;11:610–20.
9. Gordon EJ, Daugherty CK. "Hitting you over the head": oncologists' disclosure of prognosis to advanced cancer patients. *Bioethics*. 2003;17:142–68.

10. Hagerty RG, Butow PN, Ellis PM, et al. Communicating with realism and hope: Incurable cancer patients' views on the disclosure of prognosis. *J Clin Oncol*. 2005;23:1278–88.
11. Lamont EB, Christakis NA. Prognostic disclosure to patients with cancer near the end of life. *Ann Intern Med*. 2001;134:1096–105.
12. Mattes MD, Sloane MA. Reflections on hope and its implications for end-of-life care. *J Am Geriatr Soc*. 2015;63: 993–6.
13. Mendick N, Young B, Holcombe C, et al. Telling "everything" but not "too much": the surgeon's dilemma in consultations about breast cancer. *World J Surg*. 2011;25: 2187–95.
14. Fagerlin A, Wang C, Ubel PA. Reducing the influence of anecdotal reasoning on people's health care decisions: is a picture worth a thousand statistics? *Med Decis Making*. 2005:25(4):398–405.
15. Gigerenzer G, Gaissmaier W, Kurz-Milke E, Schwartz LM, Woloshin S. Helping doctors and patients make sense of health statistics. *Psychol Sci Public Interest*. 2007;8(2):53–96.
16. Robinson TM, Alexander SC, Hays M, et al. Patient-oncologist communication in advanced cancer: predictors of patient perception of prognosis. *Support Care Cancer*. 2008;16:1049–57.
17. Kazdaglis GA, Arnaoutoglou C, Karypidis D, et al. Disclosing the truth to terminal cancer patients: a discussion of ethical and cultural issues. *East Mediterr Health J*. 2010;16: 442–7.
18. Krawczyk M, Gallagher RE. Communicating prognostic uncertainty in potential end-of-life contexts: experiences of family members. *BMC Palliat Care*. 2016;15:Article 59.
19. Hofmann J, Wenger N, Davis R, et al. Patient preferences for communication with physicians about end-of-life decisions. *Ann Intern Med*. 1997;127:1–12.
20. Hancock K, Clayton JM, Parker SM, et al. Truth-telling in discussing prognosis in advanced life-limiting illnesses: a systematic review. *Palliat Med*. 2007;21:507–17.
21. Han PKJ, Dieckmann NF, Holt C, et al. Factors affecting physicians' intentions to communicate personalized prognostic information to cancer patients at the end of life: An experimental vignette study. *Med Decis Making*. 2016;36: 703–13.
22. Lerner JS, Tetlock PE. Accounting for the effects of accountability. *Psychol Bull*. 1999;125:255–75.
23. Anderson RJ, Stone PC, Low J, et al. Managing uncertainty and references to time in prognostic conversations with family members at the end of life: a conversation analytic study. *Palliat Med*. 2020;34:896–905.
24. White DB, Engelberg RA, Wenrich MD, et al. The language of prognostication in intensive care units. *Med Decis Making*. 2010;30:76–83.
25. Iezzoni LI, Rao SR, Sowmya R, et al. Survey shows that at least some physicians are not always open or honest with patients. *Health Aff*. 2012;31:383–91.
26. Holmes-Rovner M, Montgomery JS, Rovner DR, et al. Informed decision making: assessment of the quality of physician communication about prostate cancer diagnosis and treatment. *Med Decis Making*. 2015;35:999–1009.
27. Hudak PL, Frankel RM, Braddock C, et al. Do patients' communication behaviors provide insight into their preferences for participation in decision making? *Med Decis Making*. 2008;28:385–93.
28. Wilson IB, Green ML, Goldman L, et al. Is experience a good teacher? How interns and attending physicians understand patients' choices for end-of-life care. *Med Decis Making*. 1997;17:217–27.
29. Anderson C, Brion S, Moore DA, et al. A status-enhancement account of overconfidence. *J Pers Soc Psychol*. 2012;103:718–35.
30. Lynn J. Commentary: "When I use a word," with respect for Lewis Carroll. *Camb Q Healthc Ethics*. 2019;28: 410–412.
31. Siegler M. Pascal's wager and the hanging of crepe. *N Engl J Med*. 1975;293:853–7.