

An Alternative Method of Determining Standard of Care in Alleged Cases of Malpractice

Mark A. Graber, MD, Arthur Hartz, PhD, MD, Paul James, MD, Andrew Nugent, MD, and Michael D. Green, JD

Background: Physician experts hired and prepared by litigants provide most information on standard of care for medical malpractice cases. Because this information may not be objective or accurate, we examined the feasibility and potential value of surveying peer physicians to assess standard of care.

Methods: The survey method was evaluated for a medical malpractice case involving a patient hospitalized with abdominal pain. An abstract of the medical record was created that included the patient characteristics and physician decisions most likely to influence patient outcome. The abstract and questionnaire were sent to 16 academic family physicians and to 20 randomly chosen primary care physicians in Iowa who practiced in communities of similar size to the defendant's community.

Results: All 16 academic and 18 (90%) community physicians completed the survey. All respondents judged the patient as presenting with an acute abdomen, and 89% of the community physicians and 100% of the academic physicians judged the care as below standard. More than half the physicians surveyed listed the autopsy diagnosis (perforated ulcer) in their differential.

Conclusion: Surveys of randomly selected physicians are feasible to perform for medical malpractice cases. A pro-physician bias has little if any influence on the results. (J Am Board Fam Pract 2005;18:453–8.)

The resolution of a medical malpractice case depends in large part on whether the defending physician met the standard of care. This standard is as follows: "The law exacts of physicians and surgeons in the practice of their profession only that they possess and exercise that reasonable degree of skill, knowledge, and care ordinarily possessed and exercised by members of their profession under similar circumstances, and does not exact from them the utmost degree of care and skill attainable or known to the profession."¹ Often standard of care is assessed by expert medical witnesses who testify for one of the litigants. This testimony is not always well regarded. Experts have been referred to as "hired guns," "prostitutes," or in the lawyer's "stable" of experts.² The lack of respect with which experts are treated causes some good physicians to

refuse to be witnesses, which further damages the prestige and quality of experts who participate in legal proceedings.²

A number of factors reduce the value of testimony for both defense and plaintiff experts. The first is that lawyers only use experts who support their case. This may mean they interview several physicians before finding one whose testimony they can use. A second is that lawyers coach their witnesses so that the testimony is slanted to support their client. Some argue that the selection and preparation of witnesses makes impartial expert testimony impossible.² A third reason, that is less well recognized, is that experts may give incorrect information about customary care because they don't know how others practice. Because literature on customary care for most specific patients is lacking, the opinions of experts on customary care is speculative and may be skewed by biases that affect human judgment.³ According to one study, 64% of community physicians who had unorthodox views of medical practice thought these views were mainstream.⁴

A primary concern about expert testimony is that it may be motivated by financial interests. Expert witness remuneration is typically at a premium over what the witness earns in his or her

Submitted 1 February 2005; revised 31 May 2005; accepted 31 May 2005.

From the Departments of Family Medicine (MAG, AH, PJ) and Emergency Medicine (MAG, AN), University of Iowa, Carver College of Medicine, Iowa City, IA; and Wake Forest University School of Law (MG), Winston-Salem, NC.

Conflict of interest: none declared.

Corresponding author: Arthur Hartz, MD, Department of Family Medicine, University of Iowa, Carver College of Medicine, 200 Hawkins Drive, 01292-D PFP, Iowa City, IA 52242 (e-mail: arthur-hartz@uiowa.edu).

primary occupation, and some experts may be willing to tailor their testimony for their client. Tailored testimony may be constrained by mechanisms for assuring that testimony meet certain standards.^{5,6} Unfortunately, this involves a number of difficult steps: “assembling a true peer review panel, determining all the relevant facts, defining the standard of acceptable testimony, imposing meaningful sanctions, and—most problematic—subjecting medical and specialty organizations and physicians conducting peer review to legal risk.”⁷ Even if review is possible, the line between reasonable disagreement and fraud, misconduct, or otherwise improper testimony can be difficult to determine.

Because testimony from adversarial experts may be biased, unreliable, or invalid, alternatives have been suggested. These include court-appointed experts, malpractice screening panels, and practice guidelines. Although these approaches reduce error, they have other limitations: court appointed experts have been difficult to fund, malpractice screening panels cannot legally substitute for jury trials,⁸ and practice guidelines often conflict with each other or give only very general information that is difficult to apply in a specific case.

Another practical alternative is a survey of peer-group physicians as a method for obtaining medical input on customary and reasonable standards of practice. The present study illustrates the use of this method and some of its advantages and disadvantages.

Methods

A plaintiff's lawyer decided to use the survey method for his case after reading an article about this method in a lawyers trade journal. He provided the patient's hospital and ambulatory records to the

investigators and funded the cost of implementing the survey.

Survey Development

Two physicians (MG and AN) independently abstracted the medical records so that the abstract included key elements of the patient's medical condition and the clinical decisions that were most likely to influence patient outcome. Information in the abstract included history, physical examination, radiographs, vital signs, laboratory values, nursing notes, physician notes, the times of action, etc. The 2 abstracters resolved differences by additional review of the medical record and discussion. Two other physicians reviewed the abstract to determine whether the information presented was unclear or insufficient to evaluate the quality of care.

Slightly abbreviated versions of the patient's admission information and hospital course are shown in Tables 1 and 2. An autopsy diagnosis indicated that the patient had a perforated duodenal ulcer, but the abstract only included information about the hospital course up until a few hours before the patient died; it did not include the patient's outcome. After the abstract was completed, it was necessary to identify the decision points that had the greatest potential to influence outcome. Questions about what the surveyed physician would have done at the decision points and how the physician rated the care are shown in Table 3. The first 2 questions were included after the admission information and the last 3 at the end of the description of the hospital course.

Implementing the Survey

The defendant was an internist who practiced in a community with a population of ~20,000. Physi-

Table 1. Admission Information

HPI: A 35 year-old female with a 1-week history of constipation, indigestion, back pain, and severe left-sided abdominal pain when rising from a seated position. She had a history of chronic headaches, back pain, and iron deficiency anemia (Hb 5.2; ferritin, 8 ng/mL) requiring transfusion 1 month ago. No fever, chills, or melena.
PMH: Current smoker, asthma requiring prednisone as needed (PRN), hx of peptic ulcer disease, SP hysterectomy, appendectomy, and cholecystectomy.
Medications: A prednisone taper for asthma exacerbation begun 1 month ago; Wellbutrin, methadone, and Celebrex for back pain; Fiorinal for headache
PE: In the emergency department (ER): temperature, 96.6; blood pressure, 136/83; heart rate, 100; lungs, clear, 95% O ₂ saturation on room air, distended abdomen, guarding and rebound noted by ER physician
Diagnostic tests: WBC 20,100, 10% bands, Hb 10.6. PA chest and abdominal radiographs read in ER as “no free air, no infiltrates, normal bowel gas pattern, no mass, normal mediastinum.” EKG NSR with nonspecific ST-T changes.
Admission diagnosis: ER physician records “abdominal pain—acute.” The primary physician gave a preliminary diagnosis of gastroenteritis and constipation.

Table 2. Hospital Course

Day 1
 20:00: Admitted, started on levofloxacin for gastroenteritis, multiple treatments for constipation, Demerol (100 to 150 mg q 2 h PRN), and fluids at 100 mL/h. Celebrex and prednisone were continued. No physical.

Day 2
 01:30: Nursing noted increasing distention of the abdomen and markedly increased pain. A Foley catheter was inserted.
 05:10: Creatinine was 2.0 up from 1.3 on admission; BUN was 20 up from 12 on admission, potassium was 4.3 up from 3.0 on admission, WBC 11.0, Hb 11.8.
 07:00: Temperature (T) 98.2, blood pressure (BP) 91/51, heart rate (HR) 66, O₂ saturation 88%
 14:30: On-call physician ordered colonoscopy, computed tomography scans of the abdomen and pelvis for the following day.
 15:00: T 96.5, HR 137, BP 108/56, O₂ saturation 89%
 18:00: Input/output since 0600 was 2381 mL in and 150 mL out.
 20:00: T 96.5, BP 90/60, HR 131, O₂ saturation 88%
 The patient had to be aroused with a sternal rub to administer oral medication.

No physician wrote progress notes on this day.

Day 3
 Physicians were given details of deterioration on day 3.

cians were considered to be peers of the defendant if they were internists or family physicians who practiced in communities of <50,000. The Iowa Medical Society provided a list of 234 members who were peers. This list was randomly sorted using SAS statistical software version 8 (SAS Cary, NC), and the first 20 physicians were chosen for the sample. Assuming a 75% response rate, the standard error of the sample proportion of physicians who consider the care adequate was less than $((0.5)(0.5)/16) = 0.125$. Therefore, the sample percentage should be within 25% of the population percentage >95% of the time.

The selected physicians were sent a letter requesting their participation on Iowa Medical Society letterhead with the signature of the Society's Manager of Public and Regulatory Affairs. Physicians were told that this was an actual case, and a new method was being tested to improve the medical malpractice system. They were offered \$50 for their participation. Physicians who did not respond to the letter were telephoned by research assistants and in a few cases by one of the investigators.

This study was approved by our human subjects review committee.

Results

Eighteen of the 20 (90%) randomly selected community physicians completed the survey within ~3 weeks of receiving it. The community size where the physicians practiced was <5,000 for 5 respondents, between 5,000 and 10,000 for 5 respondents, between 10,000 and 20,000 for 3 respondents, and between 20,000 and 30,000 for 5 respondents. Results from these physicians and the 16 academic physicians are summarized in Table 4. The overwhelming consensus of both the academic and community physicians is that the care was below standard. Based on admission history alone, all but one of the physicians surveyed said that the patient had an acute abdomen or listed at least one of the following causes of an acute abdomen in the differential: peritonitis, perforated or ruptured viscus, torsion of the bowel or ovaries, ischemic bowel, or appendicitis. More than half the physicians listed the correct cause of the acute abdomen (perforated ulcer), and all would have ordered a computed tomography (CT) scan or surgical consult at admission.

Two physicians rated the care as acceptable: one rated it a 4, which is minimally acceptable and 1 rated it a 7, which is excellent. The one who rated

Table 3. Questions for Physicians

1. What is your differential diagnosis for this patient (with probabilities) at the time of hospital admission? Please explain why you think the first diagnosis in your differential is most likely.
2. Are there any diagnostic tests or consultations that should be ordered at this time? Please explain.
3. Please indicate any additional diagnostic tests or referrals you would have ordered for this patient and at what stage you would have ordered them. Only list those tests or referrals you consider critical for the care of the patient.
4. Please comment on any other aspects of the care that may have had important consequences for the patient.
5. How would you rate the quality of the hospital care provided by the primary physician?

Terrible					Minimally acceptable					Excellent
1	2	3	4	5	6	7	8	9	10	

Table 4. Physician Responses to Survey

	Random IMS survey (n = 18)	Academic Family Medicine Faculty (N = 16)	P Values Randomly Selected Physicians versus Academic FM Faculty
Overall care unacceptable (<4)	89%	100%	0.17
Overall care near terrible (1 or 2)	78%	94%	0.19
Patient has an acute abdomen based on initial data available on admission	100%	100%	NS
Peptic ulcer disease—first diagnosis in differential	22%	44%	0.18
Peptic ulcer disease—anywhere on the differential diagnosis	50%	63%	0.46
Recommends surgical consult on admission	100%	81%	0.05
Recommends CT on admission	100%	88%	0.12

the care as a 4 was the only physician who did not consider an acute abdomen as part of the differential. He or she said that the most likely diagnosis was diverticulosis without any evidence of concern of possible perforation. The differential for the physician who rated the care as a 7 was ischemic colitis, adhesions with possible obstruction, constipation secondary to narcotic use, and irritable bowel syndrome. He would have recommended a psychiatrist for pain management and tegaserod (Zelnorm) for irritable bowel.

After the survey results were tabulated, they were sent to the plaintiff's attorney who forwarded them to the defense. At the first hearing, the defense attorneys indicated that they wanted to mediate a settlement. Because mediation at the beginning of a medical malpractice claim is extremely rare, the plaintiff's attorney believed that the strength of the survey influenced this decision.

Discussion

The survey method provides 2 types of information that can be useful for establishing standard of care. Some questions ask the physician what management strategies they would use. These answers identify the customary standard of care. In this study, 100% of the respondents said that they would order a CT scan or a surgical consult or both. Therefore, the defendant, who did not order either of these, clearly did not practice medicine according to customary standards. A second type of question asked physicians to rate the quality of the care provided, ie, whether the care was reasonable. In this study, only 2 of 18 respondents, 11%, found the care to be reasonable. Although the definition of standard of care in most states is customary,

some states are moving toward a reasonable standard.⁹

The study described here was the first commissioned by a lawyer and used to resolve a case. In another study of research cases in which the survey results made no difference to the case outcome, the average response rate was 63% of 350 community primary care physicians.⁴ In 4 actual cases, 37% to 62% of the responding physicians considered the care reasonable. Although physician response rates were good in that study, they were better in this one possibly because this study paid physicians, and nonrespondents were telephoned. Clearly physician opinion was much more divided in those cases than in the present one indicating that errors made by the defending physician's error were less clear.

The survey method can provide a more objective and probably more accurate assessment of the standard of care than partisan expert witness. However, the survey method is not feasible if physicians will only participate for high reimbursement or if community physicians are not willing to criticize the care provided by other physicians. In this study of an actual medical malpractice case, 90% of randomly selected peer physicians participated for only a \$50 payment, and 16/18 physicians found the care to be below standard. In addition, surveyed physicians were very critical of the care although they understood that their opinion could adversely affect the physician defendant. These results suggest that surveys are feasible.

There are a number of possible factors contributing to the high physician response rate. Perhaps the most important is the enormous physician dissatisfaction with the current medical malpractice system. An unpublished survey in which 375 Iowa physicians responded found that more than 65%

considered medical malpractice reform to be a top priority. With the exception of universal health care for children, all other health care issues were considered by physicians to be of much lower priority. Physicians, therefore, may be willing to support an effort to make the medical malpractice system more just. A second reason may be the good relationships that the Iowa Medical Society and the University of Iowa College of Medicine have with state physicians. A third may be a cooperative attitude of people in the Midwest or of primary care physicians. It is possible that response rates would be lower in other states, if the survey did not have the support of important medical societies or for some physician specialties. It is also possible that novelty to the physicians may have increased the high response rate, but a decrease in novelty may be balanced by an increased vested interest in using the survey as opposed to dueling experts.

Plaintiff's lawyers who hear about the survey method consistently raise the concern about pro-physician bias. Our finding that 89% of the responding physicians rated the care as substandard suggests that any such bias is limited. The 2 physicians who did not rate the care as substandard possibly had some pro-physician bias, but they also differed from other physicians as to how they viewed the medical problem. Perhaps they too would have committed malpractice if treating this patient. Whatever bias does exist for surveys may be reduced further by an assessment of how the surveyed physicians would have managed the cases. Physicians may be unlikely to intentionally make themselves look bad to make the defendant's management strategy seem to be the standard of care. Therefore, it is possible that even if there is a pro-physician bias in the assessment of reasonable care (and we found no solid evidence of this bias), there may be even less bias in the assessment of customary care.

This study could not assess hindsight bias in which physicians who know that there was a bad outcome were overly critical about the care. However, in a previous study we found that patient outcome had a much weaker impact than defendant's management on care ratings by the surveyed physicians.⁴ There is no reason to believe that there would be more hindsight bias in the actual case than in the research cases.

Survey methods are not appropriate for all cases. They do not provide information about whether an

adverse outcome was caused by lack of technical skill. They also may be difficult to use when relevant facts are in dispute, eg, the doctor claims that he recommended a follow-up test, but the patient claims the doctor did not. The interpretation of survey results may also be complicated by legal rules that accept a second school of thought to justify medical practice—even if the practice is not considered justified by the majority of peers.

Surveys work best for the evaluation of whether the defendant physician made clinical judgments that were reasonable or according to customary practice. Examples of these judgments include decisions to do surgery, order a diagnostic test, consult a specialist, or select a given postoperative management strategy.

At the present time, it may be easiest to use the survey method for the following: (1) for a plaintiff's attorney to assess the strength of her case before investing enormous resources, (2) for one litigant to bolster his or her case for mediation, (3) to support testimony of one's own expert witness, and (4) to challenge the assertions of the opposing experts. Evidence from surveys cannot be used at present to replace expert evidence. Another factor that will initially restrict the use of surveys is that the lawyers cannot control the results and may be concerned that their clients could be adversely affected.

Two important issues concerning the survey method have not been resolved. One is the cost of developing, administering, and using the survey. Another cost is paying the physician respondents. For the present study, this was \$900. The cost will vary depending on the complexity of the survey, the specialty of the physicians surveyed, and the number of physicians sampled. It should not be high relative to experts, who often charge \$300 or more per hour. The cost of preparing the survey will vary depending on whether physicians or physician assistants prepare the abstract. Other costs may include hiring a medical expert to present the results in court.

A second unresolved issue is the survey's legal status. Permitted use of the surveys may vary according to the state and the judge. As the legal system has more experience with this method, there may be greater flexibility in how survey results can be used. In other areas of law where survey evidence is relevant, courts have admitted or permitted experts to testify about the results of surveys

that are conducted with appropriate and valid methodology.¹⁰

In summary, subjective opinions of medical experts are easily distorted and difficult for lay juries to interpret. Survey methods should provide more objective and accurate information about standard of care than is currently available by adversarial medical experts alone. This pilot study suggests that the survey method may be feasible to use in actual medical malpractice cases.

References

1. Drechsler CT. Duty of care: liability for malpractice. In: American Jurisprudence: Physicians, Surgeons, and Other Healers. Vol. 61, Section 206. 2nd Ed. St. Paul (MN): West Press; 1999.
2. Gross S. Expert evidence. *Wis L Rev* 1991;1113–232.
3. Meadow W, Sunstein, CR Statistics, not experts. Chicago (IL): John M. Olin Law & Economics Working Paper #109, (2D Series) 2000;1–13.
4. Hartz A, Lucas J, Cramm T, et al. Physician surveys to assess customary care in medical malpractice cases. *J Gen Intern Med* 2002;17:546–55.
5. Boyarsky S. Practical measures to reduce medical expert witness bias. *J Forensic Sci* 1989;34:1259–65.
6. Fisher C, Dombrowski M, Jaszczak S, Cook C, Sokol R. The expert witness: real issues and suggestions. *Am J Obstet Gynecol* 1995;172:1792–800.
7. American Medical Association. Proceedings of the House of Delegates, 52nd Interim Meeting; 1998 Dec; Chicago (IL): AMA 1998;104–10.
8. Razor D. Mandatory medical malpractice screening panels: a need to re-evaluate. *Ohio St J Disp Resol* 1993;9:115–38.
9. Cramm T, Hartz AJ, Green MD. Ascertaining customary care in malpractice cases: asking those who know. *Wake Forest Law Review* 2002;37:699–756.
10. *Tunnell v. Ford Motor Co.* 330 F. Supp. 2d 707 (W.D. Va. 2004), Shari Seidman Diamond, Reference Guide on Survey Research, in Federal Judicial Center, Reference Manual on Scientific Evidence. 2d ed:229–76.