

HEALTH POLICY REPORT

New Directions in Medical Liability Reform

Allen Kachalia, M.D., J.D., and Michelle M. Mello, J.D., Ph.D.

Medical liability reform has maintained a tenacious hold on the national policy agenda. During the first several years of the 21st century, a malpractice insurance “crisis” prompted vociferous demands by organized medicine and liability insurers for tort reforms to curb litigation costs.¹ Many observers anticipated that once the insurance market calmed, so too would calls for reform. Instead, a new force for change emerged — health care reform.^{2,3}

Leading up to the passage of the Patient Protection and Affordable Care Act in March 2010, federal liability reforms were contemplated as a means of garnering support for the legislation among congressional Republicans and medical professional organizations.³ Although no liability-reform provisions survived in the final bill, Congress made clear the need for more experimentation. The final legislation authorized \$50 million for states and health care systems to test new approaches to the resolution of medical-injury disputes.⁴ This authorization supplemented the \$23 million that the Agency for Healthcare Research and Quality (AHRQ) awarded in 2010 for projects to advance new approaches to medical-injury compensation and patient safety.⁵

As policymakers' attention has shifted from winning passage of the health reform bill to determining how to implement and pay for it, medical liability reform has remained a focus because of its perceived potential to help “bend the health care cost curve.”⁶ Liability risks and costs are often cited as drivers of higher health care spending, poorer access to care, and lower quality of care.^{6,7} Long-standing criticisms of the tort system's performance — for example, that it compensates only a small proportion of negligently injured patients while generating unacceptably high overhead costs — and skepticism that it has helped improve patient safety add fuel to the fire.^{8,9}

These developments make it timely to review what is known about the effectiveness of various strategies for liability reform and the implications

for the future direction of reform. Historically, liability reform has largely been aimed at reducing insurance costs for health care providers.¹⁰ It has taken place almost entirely at the state level and has drawn repeatedly on the same set of legislative modifications to tort law. Today, reform is taking place outside of state legislatures through federal sponsorship of voluntary policy experiments led by hospital systems, liability insurers, and state agencies. The experiments target both liability cost control and patient-safety improvement. This transition is a welcome change in light of a mounting body of evidence demonstrating the limitations of traditional approaches to reform.

MEASURING THE EFFECTIVENESS OF MEDICAL LIABILITY REFORMS

Assessing the effectiveness of liability reforms first requires identification of relevant evaluation metrics. Though not an exhaustive list, the metrics presented in Table 1 can be assessed with the use of available data.

Discussions about malpractice reform often start with physicians' and insurers' complaints about the system, which include the high cost of malpractice insurance coverage, the number of nonmeritorious suits, the size and unpredictability of jury awards, and the inefficiency of litigation as a mechanism for resolving disputes. Each of these complaints finds an empirical basis in studies of malpractice claims^{11,12} and in the volatility seen in malpractice premiums over the past 10 years.¹³ Yet patients and attorneys also reasonably object that the current tort system is hard for many injured patients to access, takes an unreasonable amount of time and expense to deliver compensation, and often results in different litigation outcomes for patients with similar injuries.⁹ The best estimates are that only 2 to 3% of patients injured by negligence file claims, only about half of claimants recover money, and litigation is resolved discordantly

Table 1. Metrics for Assessing the Performance of Medical Liability Reforms.

Metric	Description	Problems in the Current System
Liability measures		
Claims frequency	The number of malpractice claims filed	Physicians and insurers perceive claims frequency as excessive, yet only 2 to 3% of patients who are injured by negligence file claims.
Indemnity costs	Settlement and verdict amounts among paid claims	Awards in some cases are very high. Awards are highly variable across similar cases. Although total claims costs are high, most injured patients receive no compensation.
Overhead costs	Administrative expenses associated with pursuing and defending litigation and running liability-insurance companies	System overhead costs consume an estimated 55% of each malpractice premium dollar.
Malpractice insurance costs	The premiums paid by health care providers for malpractice insurance coverage	Premiums vary broadly by specialty and geographic region, and they can exceed \$250,000 per year.
Care-related measures		
Defensive medicine	Ordering of tests, referrals, and other services primarily, though not solely, to reduce liability risk; or avoidance of high-risk services or patients	Although defensive medicine accounts for only a small proportion of total health care spending, the amount is large in absolute terms (>\$45 billion annually).
Physician supply	The availability of physician services in a state	High insurance costs and liability risk may create social inefficiencies if they cause competent physicians to stop practicing medicine, reduce their scope of practice, or avoid high-risk locations or patient groups.
Quality of care	The quality of care that patients receive, as indicated by patient outcomes or other measures	Defensive practices or loss of trust in the physician-patient relationship due to liability pressure may lead to a lower quality of care. Evidence suggests that the current system does not provide a strong incentive to avoid negligent care.

with the merit of the claim (i.e., money is awarded in nonmeritorious cases or no money is awarded in meritorious cases) about a quarter of the time.^{11,12} Thus, from the perspectives of these stakeholders, evaluations of system reforms should consider the frequency with which claims are brought, the amounts that plaintiffs receive, the amounts that are lost to overhead expenses in the litigation process, and the ways in which these factors translate into insurance premiums.

These liability-focused measures have long been at the center of tort-reform evaluations. Less studied, but now receiving greater attention, are measures of how the liability system affects clinical care.¹⁴ Today, the pressing need to improve quality and efficiency in health care mandates that any liability reform also be evaluated on the basis of clinically relevant metrics. Care-related metrics include those that assess how the liability system affects the cost, quality, and availability of health care (Table 1).

The tort system can affect clinical care either by design or because of unintended consequences. A key purpose of the liability system is to encourage health care providers to deliver care at a socially optimal level of safety. A well-functioning liability system thus should encourage institutions to adopt safer systems and should spur individual providers to use greater care in practice. These investments, in turn, should result in fewer adverse events and higher-quality care. An oppressive liability environment, on the other hand, can have the unintended effect of “overdeterrence” — causing unwanted provider practices aimed primarily at avoiding liability.^{7,15} These practices include defensive medicine, in which providers avoid high-risk patients or services or order extra tests, referrals, and services primarily to reduce their liability risk.

A liability reform may perform very differently across liability-related and care-related criteria, and improvements in some measures may come

at the expense of others. For example, caps on damages may be successful in lowering premiums and reducing defensive practices, but they may also weaken the incentive to practice safely, resulting in decreased quality of care. Assessments of the efficacy of reforms thus need to consider the entire picture to properly calculate the overall value of reforms for all stakeholders.

THE EVIDENCE ON TRADITIONAL TORT REFORMS

In step with legislative attention to medical liability reform, there has been a surge in interest among academic researchers in evaluating how well traditional tort-reform laws have worked. The number of well-designed studies has tripled or quadrupled over the past several years. As a result, the body of reliable evidence on which to base policy decisions has grown dramatically. We recently performed a comprehensive review of relevant studies published through 2009 in medical, economics, and law journals, as well as reports issued by government agencies and philanthropic foundations.^{14,16} The review examined studies of eight of the most widely adopted state tort reforms, which are presented and defined in Table 2.

Our review yielded two main conclusions. First, evaluations of traditional tort reforms have remained heavily focused on metrics related to liability costs, with most care-related measures receiving relatively short shrift. Second, the evidence reveals that, with few exceptions, traditional tort reforms have not proved to provide many improvements in these liability metrics (Table 3).

Caps on noneconomic damages, which limit the amounts that juries may award for pain and suffering, constitute the main exception to the above rule. Studies have nearly uniformly found that caps are an effective means of reducing the size of indemnity payments.¹⁷⁻²⁶ Studies of their effects on premiums have returned mixed findings, but a reasonable conclusion based on methodologically strong studies using recent data is that caps modestly constrain the growth of insurance premiums over time.^{18,23,24,26-31} Evidence concerning the effect of caps on claims frequency is too equivocal to permit a firm conclusion,^{17,25,26,33} and only one study has examined their effect on overhead costs.³²

Statutes of limitation and repose, which restrict the amount of time that plaintiffs have to

file a lawsuit, have been associated with lower premiums,^{18,26,28,30} but the mechanism of effect is unclear, because they are not significantly associated with lower frequency of claims, indemnity costs, or overhead expenses. Studies of pre-trial screening panels, certificate-of-merit (COM) requirements, limits on attorneys' fees, joint-and-several liability (JSL) reform, collateral-source rule reform, and periodic payment generally have not identified significant effects on claims frequency, indemnity costs, or insurance premiums.¹⁴ The evidence base for the findings can generally be characterized as moderate to high, considering the quantity and quality of available studies and the consistency of results across studies. The evidence concerning overhead costs is more limited. There is some evidence that screening panels, COM requirements, and fee limits result in increased overhead costs — the first two because they interject an additional layer of procedural requirements into the litigation process and the last possibly because it leads plaintiff's attorneys to take on more complex cases — but this evidence is not conclusive.

For all eight traditional reforms, the evidence on care-related metrics is fairly sparse overall. However, the effects of caps on damages, JSL reform, and collateral-source rule reform on defensive medicine have been well studied. Caps are associated with lower rates of defensive medicine, whereas all studies of collateral-source rule reform have found no effect, and findings concerning JSL reform have been mixed.^{34,35,47,49,50} Little or no evidence is available concerning the effects of the other five reforms on defensive medicine.

There is some evidence that caps on damages modestly increase the supply of physicians in a state, although study findings have been mixed.^{14,29,38-41} There is moderately strong evidence that limits on attorneys' fees,^{41,42} JSL reform,^{41,42} collateral-source rule reform,^{41,51,52} and periodic payment^{41,42} do not significantly affect physician supply. Little is known about the effects of the other three reforms on physician supply.

Notably, none of these eight reforms have been extensively studied for their effect on the quality of care. A handful of studies have examined limited patient outcomes as proxy measures, and all but one have found no significant association.^{34-36,42} Overall, evidence demonstrating that traditional reforms improve clinical care is lacking.

Table 2. Traditional Medical Liability Reforms.

Reform	Description	Objective
Caps on damages	Limitations are placed on the monetary compensation that can be awarded in a malpractice trial for noneconomic losses (“pain and suffering”), economic losses, or both. A cap may apply to the plaintiff, limiting the amount that the plaintiff may receive, or to a defendant, limiting the total amount that the defendant may be required to pay.	Caps are intended to reduce the number of very large awards and the high degree of variation (including perceived arbitrariness) in “pain and suffering” awards, improving insurers’ ability to predict their liability and set insurance prices accurately.
Pretrial screening panels	Expert panels review malpractice cases at an early stage and provide opinions about whether claims have sufficient merit to proceed. Typically, a negative opinion does not bar a case from going forward, but to proceed, a plaintiff may be required to post a bond, and the negative opinion will be admissible evidence at the trial.	This reform seeks to reduce the number of nonmeritorious claims that get filed or move forward. It also aims to reduce the time and money expended in resolving claims of questionable merit by encouraging plaintiffs to abandon such claims or agree to a modest settlement. In addition, for claims that go to trial, panel decisions can provide juries with a neutral source of expertise.
Certificate-of-merit (COM) requirements	The plaintiff must present, at the time of filing a malpractice claim or soon thereafter, an affidavit certifying that a qualified medical expert believes that there is reasonable and meritorious cause for the suit.	COM requirements are intended to reduce the number of nonmeritorious claims that get filed or move forward.
Limits on attorneys’ fees	Limitations are placed on the amount that a plaintiff’s attorney may take as a contingency fee. A limitation is typically expressed as a percentage of the award, but it may also incorporate a maximum dollar value.	Fee limits are intended to discourage plaintiffs’ attorneys from accepting cases, particularly cases involving small damages and claims of marginal or no merit, by diminishing the attorney’s expected return on investment in a case.
Joint-and-several liability (JSL) reform	In malpractice trials involving multiple defendants, JSL reform limits the financial liability of each defendant to the percentage of fault that the jury allocates to that defendant. Without this statutory reform, a plaintiff may collect the entire judgment from one defendant, regardless of that defendant’s extent of fault in the case.	JSL reform aims to eliminate any unfair disadvantage that defendants with “deep pockets” may have in multiple-defendant cases.
Collateral-source rule reform	This reform eliminates a traditional rule that even if an injured plaintiff has received compensation from other sources (e.g., health insurance), the amount of that compensation should not be deducted from the amount that a defendant who is found liable must pay.	Collateral-source rule reform seeks to lower the amount of damages that defendants pay and to eliminate the perceived unfairness associated with “double compensation” for plaintiffs.
Periodic payment	This reform allows or requires insurers to pay malpractice awards over a long period of time rather than in a lump sum. Insurers are also able to retain any amount that is not collected during a plaintiff’s lifetime.	With periodic payment, insurers can spread their expenses over time, allowing them to better predict their year-to-year liability costs and purchase annuities that lower their total costs.
Statutes of limitations and repose	These statutes limit the amount of time that a patient has to file a malpractice claim after being injured or discovering an injury.	Statutes of limitation and repose seek to reduce the difficulties of litigating claims when the evidence has grown stale and memories have started to fade. By shortening the long “tail” associated with malpractice claims, they also aim to help insurers better predict their liability costs.

CURRENT FOCUS ON PATIENT SAFETY AND EFFICIENCY OF CARE

Legislative activity to enact traditional tort reforms has faded over the past few years, probably because of a combination of factors. The emergence of more and higher-quality evidence that most traditional reforms have not been suc-

cessful in achieving their liability-related objectives has made it more difficult to advocate for such reforms. In 2008, when Democrats, who tend to oppose tort reforms, assumed control of health committees in Congress and in many states, the prospects for passage of traditional reforms diminished. The 2010 turnover in the House of Representatives stimulated interest

Table 3. Summary of Evidence on the Effects of Traditional Medical Liability Reforms.*

Reform	Liability Measures	Care-Related Measures
Caps on damages	Substantial savings in average indemnity costs (M) ¹⁷⁻²⁶ ; some mixed findings, but on balance, modest constraint on growth of malpractice premiums (M) ^{18,23,24,26-31} ; possible increase in defense costs (L) ³² ; mixed findings concerning effect on claims frequency (M) ^{17,25,26,33}	Reduction in at least some defensive practices (H) ³⁴⁻³⁷ ; some mixed findings, but overall modest improvement in physician supply (M) ^{29,38-41} ; evidence on quality of care too limited to draw conclusions ^{34-37,42}
Pretrial screening panels	No effect on indemnity costs, claims frequency (H) ^{19,20,22,25,26,43-45} or malpractice premiums (M) ^{26,30,44} ; panels have their own administrative costs (L), but effect on total overhead costs not studied	May reduce some defensive practices (L) ³⁶ ; effects on physician supply not studied; evidence on quality of care too limited to draw conclusions ³⁶
Certificate-of-merit requirements	Impose new administrative costs (L) ⁴⁶ but effect on total overhead costs not studied; effects on indemnity costs, claims frequency, and malpractice premiums not studied	Effects on defensive medicine and physician supply not studied; evidence on quality of care too limited to draw conclusions ⁴²
Limits on attorneys' fees	No significant effect on claims frequency, ^{25,26} indemnity costs, ^{18-20,22,25,26} or malpractice insurance premiums (H) ^{18,26,30,31} ; minimal increase in overhead costs (L) ³²	No significant effect on physician supply (M) ^{41,42} ; very limited evidence that there is no effect on defensive practices (L) ⁴⁷ ; effect on quality of care not studied
Joint-and-several liability reform	No significant effect on indemnity costs (H) ^{17,18,24,25} liability insurance premiums (M) ^{18,24,27,28,31,48} or overhead costs (L) ³² ; effect on claims frequency equivocal (L) ^{17,25}	Equivocal findings on defensive practices (M) ^{34,35,47,49,50} ; no significant effect on physician supply (M) ^{41,42} ; evidence on quality of care too limited to draw conclusions ^{34,42}
Collateral-source rule reform	No significant effect on claims frequency (M) ^{17,20,25,26} indemnity costs (H) ^{17,19,20,22,25,48} overhead costs (L) ³² or liability insurance premiums (M) ^{18,26,27,30,31}	No significant effect on defensive medicine (H) ^{34,35,47,49,50} physician supply (M) ^{41,51,52} or quality of care (M) ^{34,36,42}
Periodic payment	No significant effect on indemnity costs (M) ^{17-19,22,25} ; evidence on claims frequency ^{17,19,25} and malpractice insurance premiums ^{18,28} limited and equivocal (L); effect on overhead costs not studied	No significant effect on physician supply (M) ^{36,41,42} ; evidence on defensive medicine ⁴⁷ and quality of care ³⁵ too limited to draw conclusions
Statutes of limitations and repose	No significant effect on indemnity payments (M) ^{18,19,22,25,26} ; equivocal evidence on claims frequency (M) ^{19,20,25,26} ; some mixed findings, but on balance, modest constraint on the growth of malpractice insurance premiums (M) ^{18,26,28,30} ; evidence on overhead costs too limited to draw conclusions ³²	Evidence on defensive medicine, ⁴⁷ physician supply, ³⁹ and quality of care ³⁶ too limited to draw conclusions (L)

* The strength of evidence for each effect is provided parenthetically as follows: low (L), moderate (M), or high (H).

among Republicans in reintroducing legislation containing several traditional reforms, but such legislation is very unlikely to pass the Senate. Caps on damages and other reforms have also been struck down by the courts on constitutional grounds in some states^{14,53,54} after hard-fought battles to get them passed; these developments may have discouraged state legislators elsewhere.

Perhaps most important, with the waning of the malpractice insurance crisis, the discourse about medical liability has shifted from controlling liability costs to enhancing patient safety

and reducing waste in health care. The December 2010 report by the National Commission on Fiscal Responsibility and Reform, for example, linked the tort system with unnecessary health care costs.⁵⁵ Although the commission recommended pursuit of several traditional tort reforms, it also suggested nontraditional approaches. Indeed, policymakers and advocates have increasingly gravitated toward nontraditional liability reforms that also improve clinical care and communication. The recently funded AHRQ demonstration projects and planning grants, as well as

some federal legislation, reflect this new orientation.

The AHRQ's demonstration-project program involves some strict conditions: projects must be completed and evaluated within 3 years, must be feasible on a maximum budget of \$3 million, and must address both liability-system improvement and improvements in patient safety and physician-patient communication. Also, because of the short time frame for submitting applications, as a practical matter, proposals could not require any change in the law or other official action in order to be implemented.

The additional \$50 million authorized for demonstration projects in the health reform bill formally carries this last restriction: any demonstrations funded through that mechanism must not curtail a patient's existing legal remedies, cannot conflict with existing state law, and must give patients the ability to opt out of the demonstration at any time.⁴ Although these funds have not yet been appropriated, the AHRQ issued requests for applications for a second round of demonstration projects and planning grants in November 2010.^{56,57} For these applications, no restrictions are imposed concerning reforms that require government action in order to be implemented.

The AHRQ funded seven demonstration projects in the first round.⁵⁸ Four of these projects, in Illinois, New York, Texas, and Washington State, are testing expansions of the disclosure-and-offer approach championed by the University of Michigan Health System (UMHS). In the UMHS model, a liability insurer and its insured institutions proactively disclose unanticipated adverse outcomes to patients, conduct an expedited investigation, provide a full explanation, offer an apology, make a rapid offer of compensation in appropriate cases, and pursue clinical-process improvements to prevent recurrence of the event.^{59,60}

The Texas demonstration project is implementing the UMHS model systemwide at six university hospitals, using an obstetrical-event response team and adding an innovative component in which patients and families are formally involved in elucidating the root causes of adverse events. The Illinois and New York projects seek to export the disclosure-and-offer approach, which has so far been implemented only in closed, or self-insured, systems, to other kinds of hospitals and systems. The Washington State project is exploring whether a group of insurers can ef-

fectively pursue the approach in cases involving multiple defendants, and it is also implementing training in disclosure and care-team communication in hospitals statewide.

The New York demonstration project combines disclosure-and-offer programs in five New York City hospitals with a judicial-branch reform. Malpractice claims that involve any of these five hospitals and that reach the litigation stage will be assigned to a small group of judges who have been specially trained in malpractice-claim adjudication and who will be assisted by a full-time court attorney trained in nursing. One judge will handle each case from start to finish; ordinarily, a case may pass among several judges over its life cycle. The judge will promote settlement of cases by requiring the parties to meet with the judge and court attorney earlier and more frequently than usual to discuss the case's strengths and weaknesses. Each of the parties must send someone to the meeting who is fully familiar with the case and has the authority to agree to a settlement. The conferences take place in a private room rather than in open court, and they are substantially longer and explore the issues in the case in greater depth than usual. As for patient safety, the New York project is implementing both disclosure training and targeted clinical interventions in the hope of improving the hospitals' culture of safety.

The other three demonstration projects, which have sites in Massachusetts, Minnesota, Florida, Maryland, Wisconsin, Michigan, and Alabama, make adverse-event prevention their primary focus. They aim to improve the liability environment by improving providers' communication with patients regarding clinical care plans, thereby potentially averting injuries and claims. The Missouri and Minnesota projects seek to increase the use by several hospitals of a package of evidence-based practices for reducing injuries in the perinatal period and to improve communication among members of the care team. The Missouri project, which uses in situ simulations aimed at improving team performance, will also implement a rapid-response protocol for adverse events, including an effort to resolve incidents through better communication with patients and families. The Massachusetts project will redesign care processes in the ambulatory care setting and improve physician-patient communication during the provision of care and after adverse events.

In addition to the demonstration projects, the AHRQ has funded 13 year-long planning grants.⁶¹ Several of these grants focus on implementing clinical interventions to prevent or monitor adverse events. Others focus on improving communication by developing shared decision-making tools, developing a policy for disclosure, or examining barriers to broader adoption of disclosure-and-offer programs. One especially interesting project is an Oregon initiative to identify clinical practice guidelines that could serve as the basis for legal “safe harbors” for physicians who are sued in connection with care that adhered to the guidelines. This idea was the subject of limited experimentation in several states during the early 1990s, but those demonstration projects were not designed to facilitate a meaningful evaluation.¹⁴ Another ambitious initiative is an effort by a health care system collaborative in Washington State to designate certain types of unanticipated outcomes of care as “avoidable classes of events” and to persuade liability insurers to voluntarily offer compensation for such injuries without investigating whether the care met the legal standard of negligence and without requiring the patient to sue.

The AHRQ demonstration projects will not test the full range of reform proposals that have generated discussion in recent years. For example, none pursue a no-fault approach to compensation, in which an administrative agency or “health court,” rather than a judicial court, evaluates claims without reference to whether negligence occurred. Experience with such administrative models in other countries suggests that they may be more acceptable to physicians, compensate a larger percentage of injured patients, generate lower overhead costs, and provide more valuable information about patient-safety lapses than tort systems.^{62,63} Other proposals that are absent from the funded projects include binding arbitration and enterprise liability (a system in which liability rests with health care institutions rather than with individuals).

These small-scale demonstration projects, most of which do not use randomized designs, will also be limited in the strength of evidence that they can provide. Nevertheless, the projects could have a meaningful impact if they are carefully conducted and evaluated. Health care institutions and insurers have shown considerable interest in many of the ideas being tested, particularly disclosure-and-offer programs and avoidable classes

of events. Yet, they have been reluctant to implement them without additional evidence that these approaches can succeed without increasing liability costs. Positive results from the demonstrations may spur further experimentation and innovation in institutional responses to medical injuries. Voluntary reform by private institutions may ultimately prove more feasible and successful than reliance on state and federal legislatures to enact legal reforms.⁶⁴ Even if the results of the demonstrations are discouraging, they may still contribute constructively to conversations about the next steps in liability reform. Ultimately, whether or not voluntary reforms prove successful, public policy initiatives can still play a valuable role by testing broader reforms, including reforms that alter existing legal remedies.

CONCLUSIONS

Medical liability reform is headed in a new direction, reflecting dissatisfaction with both the narrow focus of traditional approaches to liability cost control and the lack of effectiveness of most traditional reforms in achieving even that limited objective. The launching of the federal demonstration projects may reduce the impetus for federal statutory reform in the immediate future, but it may reap longer-term gains. By spurring both private innovation and nontraditional public-policy reforms, the new approaches to medical-injury response that are now being tested may bring us closer to a liability system that fosters, rather than obstructs, progress toward safe and high-quality health care.

The findings, statements, and views expressed are those of the authors and do not necessarily represent those of the Medicare Payment Advisory Commission.

This report is based in part on analyses of liability reforms separately commissioned by the Medicare Payment Advisory Commission and the Synthesis Project of the Robert Wood Johnson Foundation (RWJF), Princeton, New Jersey. Dr. Mello's work was also supported in part by an RWJF Investigator Award in Health Policy Research.

Drs. Mello and Kachalia report receiving salary support or consulting fees from several of the AHRQ demonstration projects and planning grants discussed in this article. Dr. Kachalia reports receiving an honorarium from Zurich Services Corporation for a general lecture on medical liability and liability reform. No other potential conflict of interest relevant to this article was reported.

Disclosure forms provided by the authors are available with the full text of this article at NEJM.org.

From the Department of Medicine, Brigham and Women's Hospital and Harvard Medical School (A.K.); and the Department of Health Policy and Management, Harvard School of Public Health (M.M.M.) — both in Boston.

1. Mello MM, Studdert DM, Brennan TA. The new medical malpractice crisis. *N Engl J Med* 2003;348:2281-4. [Erratum, *N Engl J Med* 2003;349:1010.]
2. Iglehart JK. The struggle for reform — challenges and hopes for comprehensive health care legislation. *N Engl J Med* 2009;360:1693-5.
3. Mello MM, Brennan TA. The role of medical liability reform in federal health care reform. *N Engl J Med* 2009;361:1-3.
4. 42 U.S.C. 280g-15 Section 399V-4 (2010).
5. Medical liability reform and patient safety initiative: demonstration and planning grants. Rockville, MD: Agency for Healthcare Research and Quality, 2010. (<http://www.ahrq.gov/qual/liability>.)
6. Mello MM, Chandra A, Gawande AA, Studdert DM. National costs of the medical liability system. *Health Aff (Millwood)* 2010;29:1569-77.
7. Studdert DM, Mello MM, Sage WM, et al. Defensive medicine among high-risk specialist physicians in a volatile malpractice environment. *JAMA* 2005;293:2609-17.
8. Weiler P, Hiatt H, Newhouse J, Johnson W, Brennan T, Leape L. A measure of malpractice: medical injury, malpractice litigation, and patient compensation. Cambridge, MA: Harvard University Press, 1993.
9. Corrigan JM, Greiner A, Erickson SM, eds. Fostering rapid advances in health care: learning from system demonstrations. Washington, DC: National Academies Press, 2002.
10. Bovbjerg RR. Commentary: malpractice reform in policy perspective. *Milbank Q* 2007;85:297-305.
11. Localio AR, Lawthers AG, Brennan TA, et al. Relation between malpractice claims and adverse events due to negligence: results of the Harvard Medical Practice Study III. *N Engl J Med* 1991;325:245-51.
12. Studdert DM, Mello MM, Gawande AA, et al. Claims, errors, and compensation payments in medical malpractice litigation. *N Engl J Med* 2006;354:2024-33.
13. Mello MM. Understanding medical malpractice insurance: a primer. Report no. 8. Princeton, NJ: Robert Wood Johnson Foundation, 2006.
14. Mello MM, Kachalia A. Evaluation of options for medical malpractice system reform. Washington, DC: Medicare Payment Advisory Commission, 2010. (http://www.medpac.gov/documents/Apr10_MedicalMalpractice_CONTRACTOR.pdf.)
15. Kachalia A, Choudhry NK, Studdert DM. Physician responses to the malpractice crisis: from defense to offense. *J Law Med Ethics* 2005;33:416-28.
16. Mello MM, Kachalia A, Goodell S. Medical malpractice — update. Princeton, NJ: Robert Wood Johnson Foundation, 2011. (<http://www.rwjf.org/pr/product.jsp?id=72097>.)
17. Avraham R. An empirical study of the impact of tort reforms on medical malpractice settlement payments. *J Legal Stud* 2007;36:Suppl 2:S186-S229.
18. Blackmon G, Zeckhauser RJ. State tort reform legislation: assessing our control of risks. In: Schuck P, ed. *Tort law and the public interest: competition, innovation, and consumer welfare*. New York: W.W. Norton, 1991:272-309.
19. Danzon P. The frequency and severity of malpractice claims. *J Law Econ* 1984;27:115-48.
20. *Idem*. The frequency and severity of medical malpractice claims: new evidence. *Law Contemp Probl* 1986;49:57-84.
21. Hyman DA, Black B, Silver C, Sage WM. Estimating the effect of damages caps in medical malpractice cases: evidence from Texas. *J Legal Stud* 2009;1:355-409.
22. Sloan FA, Mergenhagen PM, Bovbjerg RR. Effects of tort reforms on the value of closed medical malpractice claims: a microanalysis. *J Health Polit Policy Law* 1989;14:663-89.
23. Viscusi WK, Born PH. Damages caps, insurability, and the performance of medical malpractice insurance. *J Risk Insur* 2005;72:23-43.
24. Viscusi WK, Zeckhauser RJ, Born P, Blackmon G. The effect of 1980s tort reform legislation on general liability and medical malpractice insurance. *J Risk Uncertain* 1993;6:165-86.
25. Waters TM, Budetti PP, Claxton G, Lundy JP. Impact of state tort reforms on physician malpractice payments. *Health Aff (Millwood)* 2007;26:500-9.
26. Zuckerman S, Bovbjerg RR, Sloan F. Effects of tort reforms and other factors on medical malpractice insurance premiums. *Inquiry* 1990;27:167-82.
27. Danzon PM, Epstein AJ, Johnson SJ. The “crisis” in medical malpractice insurance. In: Harris R, Litan R, eds. *Brookings-Wharton papers on financial services*. Washington, DC: Brookings Institution Press, 2004.
28. Kilgore ML, Morrisey MA, Nelson LJ. Tort law and medical malpractice insurance premiums. *Inquiry* 2006;43:255-70.
29. Mello MM. Medical malpractice: impact of the crisis and effect of state tort reforms. Report no. 10. Princeton, NJ: Robert Wood Johnson Foundation, 2006. (http://www.rwjf.org/pr/synthesis/reports_and_briefs/pdf/no10_researchreport.pdf.)
30. Sloan FA. State responses to the malpractice insurance “crisis” of the 1970s: an empirical assessment. *J Health Polit Policy Law* 1985;9:629-46.
31. Thorpe KE. The medical malpractice ‘crisis’: recent trends and the impact of state tort reforms. *Health Aff (Millwood)* 2004;Suppl Web Exclusives:W4-20–W4-30.
32. Ambrose JM, Carroll A. Medical malpractice reform and insurer claims defense: unintended effects? *J Health Polit Policy Law* 2007;32:843-65.
33. Donohue JJ, Ho DE. The impact of damage caps on malpractice claims: randomization inference with difference-in-differences. *J Empir Legal Stud* 2007;4:69-102.
34. Currie J, MacLeod WB. First do no harm? Tort reform and birth outcomes. *Q J Econ* 2008;123:795-830.
35. Sloan FA, Shadle JH. Is there empirical evidence for “defensive medicine”? A reassessment. *J Health Econ* 2009;28:481-91.
36. Yang YT, Studdert DM, Subramanian SV, Mello MM. Does tort law improve the health of newborns, or miscarry? A longitudinal analysis of the effect of liability pressure on birth outcomes. Working paper 2010.
37. Kessler D, McClellan M. Do doctors practice defensive medicine? *Q J Econ* 1996;111:353-90.
38. Helland E, Showalter MH. The impact of liability on the physician labor market (working paper). Santa Monica, CA: RAND, 2006.
39. Kessler DP, Sage WM, Becker DJ. Impact of malpractice reforms on the supply of physician services. *JAMA* 2005;293:2618-25.
40. Matsa DA. Does malpractice liability keep the doctor away? Evidence from tort reform damage caps. *J Legal Stud* 2007;36:Suppl 2:S143-S182.
41. Yang YT, Studdert DM, Subramanian SV, Mello MM. A longitudinal analysis of the impact of liability pressure on the supply of obstetrician-gynecologists. *J Empir Legal Stud* 2008;5:21-53.
42. Klick J, Stratmann T. Medical malpractice reform and physicians in high-risk specialties. *J Legal Stud* 2007;36:Suppl 1:S121-S142.
43. Struve CT. Expertise in medical malpractice litigation: special courts, screening panels, and other options: project on medical liability in Pennsylvania. Philadelphia: Pew Charitable Trusts, 2003.
44. White FJ III, Pettiette LW Jr, Wiggins RB, Kiss A. Medical malpractice review panels and medical liability system cost, timeliness, and efficiency: a cross-sectional study. *J Empir Legal Stud* 2008;5:375-405.
45. Yoon A. Mandatory arbitration and civil litigation: an empirical study of medical malpractice litigation in the west. *Am Law Econ Rev* 2004;6:95-134.
46. Stroub ML. The unforeseen creation of a procedural mine-

- field — New Jersey's Affidavit of Merit Statute spurs litigation and expense in its interpretation and application. *Rutgers Law J* 2002;34:279-320.
47. Yang YT, Mello MM, Subramanian SV, Studdert DM. Relationship between malpractice litigation pressure and rates of cesarean section and vaginal birth after cesarean section. *Med Care* 2009;47:234-42.
 48. Born P, Viscusi WK, Baker T. The effects of tort reform on medical malpractice insurers' ultimate losses. *J Risk Insur* 2009; 76:197-219.
 49. Hellinger FJ, Encinosa WE. The impact of state laws limiting malpractice damage awards on health care expenditures. *Am J Public Health* 2006;96:1375-81.
 50. Medical malpractice tort limits and health care spending. Washington, DC: Congressional Budget Office, 2006.
 51. Avraham R, Dafney LS, Schanzenbach MM. The impact of tort reform on employer-sponsored health insurance premiums. NBER working paper 15371. Cambridge, MA: National Bureau of Economic Research, 2009.
 52. Morrisey MA, Kilgore ML, Nelson LJ. Medical malpractice reform and employer-sponsored health insurance premiums. *Health Serv Res* 2008;43:2124-42.
 53. *Lebron v. Gottlieb Memorial Hospital*, 930 N.E.2d 895 (Illinois Supreme Court 2010).
 54. *Atlanta Oculoplastic Surgery, PC v. Nestlehutt*, 286 Ga. 731 (Georgia Supreme Court 2010).
 55. The moment of truth: report of the National Commission on Fiscal Responsibility and Reform. December 2010. (http://www.fiscalcommission.gov/sites/fiscalcommission.gov/files/documents/TheMomentofTruth12_1_2010.pdf.)
 56. Patient safety and medical liability reform planning projects (R21). Washington, DC: Department of Health and Human Services, 2010. (<http://grants.nih.gov/grants/guide/pa-files/PA-11-023.html>)
 57. Patient safety and medical liability reform demonstration projects (R18). Washington, DC: Department of Health and Human Services, 2010. (<http://grants.nih.gov/grants/guide/pa-files/PA-11-025.html>)
 58. Medical liability reform and patient safety: demonstration grants. Rockville, MD: Agency for Healthcare Research and Quality, 2010. (<http://www.ahrq.gov/qual/liability/demogrants.htm>.)
 59. Kachalia A, Kaufman SR, Boothman R, et al. Liability claims and costs before and after implementation of a medical error disclosure program. *Ann Intern Med* 2010;153:213-21.
 60. Boothman RC, Blackwell AC, Campbell DA, Commiskey E, Anderson S. A better approach to medical malpractice claims? The University of Michigan experience. *J Health Life Sci Law* 2009;2:125-59.
 61. Medical liability reform and patient safety: planning grants. Rockville, MD: Agency for Healthcare Research and Quality, 2010. (<http://www.ahrq.gov/qual/liability/planninggrants.htm>.)
 62. Kachalia AB, Mello MM, Brennan TA, Studdert DM. Beyond negligence: avoidability and medical injury compensation. *Soc Sci Med* 2008;66:387-402.
 63. Mello MM, Studdert DM, Kachalia AB, Brennan TA. "Health courts" and accountability for patient safety. *Milbank Q* 2006; 84:459-92.
 64. Mello MM, Gallagher TH. Malpractice reform — opportunities for leadership by health care institutions and liability insurers. *N Engl J Med* 2010;362:1353-6.

Copyright © 2011 Massachusetts Medical Society.

JOURNAL ARCHIVE AT NEJM.ORG

Every article published by the *Journal* is now available at **NEJM.org**, beginning with the first article published in January 1812. The entire archive is fully searchable, and browsing of titles and tables of contents is easy and available to all. Individual subscribers are entitled to free 24-hour access to 50 archive articles per year. Access to content in the archive is available on a per-article basis and is also being provided through many institutional subscriptions.