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National Costs Of The Medical Liability System

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Abstract

Concerns about reducing the rate of growth of health expenditures have reignited interest in medical liability reforms and their potential to save money by reducing the practice of defensive medicine. It is not easy to estimate the costs of the medical liability system, however. This article identifies the various components of liability system costs, generates national estimates for each component, and discusses the level of evidence available to support the estimates. Overall annual medical liability system costs, including defensive medicine, are estimated to be \$55.6 billion in 2008 dollars, or 2.4 percent of total health care spending.

During the push to pass federal health reform legislation, considerable attention focused on the possibility that medical liability reforms could “bend the health care cost curve.”¹⁻³ Conservatives in Congress and others argued that liability reform would address two drivers of health care costs: providers' need to offset rising malpractice insurance premiums by charging higher prices, and defensive medicine—clinicians' intentional overuse of health services to reduce their liability risk. President Barack Obama elevated the profile of liability reform by acknowledging that “defensive medicine may be contributing to unnecessary costs” and by authorizing demonstration projects to test reforms.^{4,5}

Background

PREVIOUS ANALYSES

Notwithstanding this interest in liability reform, rigorous estimates of the cost of the medical liability system are scarce. The most commonly cited figures are from a 2004 Congressional Budget Office (CBO) report that concluded, based on unspecified data provided by a private

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actuarial firm and the Centers for Medicare and Medicaid Services (CMS), that malpractice costs—excluding defensive medicine—account for less than 2 percent of health care spending.⁶

In a subsequent analysis, PriceWaterhouse-Coopers used the 2 percent figure, then extrapolated from estimates of the practice of defensive medicine in a study of care for two cardiac conditions by Dan Kessler and Mark McClellan.⁷ On that basis, the firm reported that the cost of insurance and defensive medicine combined account for approximately 10 percent of total health care costs.⁸ More recently, the CBO concluded that implementing a package of five malpractice reforms would reduce national health spending by about 0.5 percent⁹ but did not estimate total malpractice costs.

CURRENT ANALYSIS

In this article we estimate the cost of the medical liability system in order to better understand its potential to affect overall health spending. We break down the various components of liability system costs, use the best available data to generate national annual estimates for each component, and discuss the quality of the evidence available to support these estimates.

LIMITATIONS—Our analysis was limited in two key respects. First, we did not attempt to estimate social costs that cannot be readily expressed in monetary terms. For example, we did not include the reputational and emotional costs for physicians of being sued. Second, we did not evaluate the social benefits of the medical liability system, of which there are arguably at least three types.

SOCIAL BENEFITS OF THE LIABILITY SYSTEM—The system makes injured patients whole by providing compensation; it provides other forms of “corrective justice” for injured persons, which produces psychological benefits; and it reduces future injuries by signaling to health care providers that they will suffer sanctions if they practice negligently and cause injury.

However, it is not possible to quantify these benefits. Reliable evidence about the deterrent effect of the tort system does not exist.¹⁰ With respect to the benefits flowing from the tort system’s compensation and corrective justice functions, not only is no evidence available, but it is not clear how to measure them. Although these benefits cannot be quantified, they certainly exist, and they should be considered in discussions of the social value of liability. The economic burden of preventable medical injuries is considerable, estimated to be \$17–\$29 billion per year,¹¹ and improving patient safety is important whether or not the improvement is achieved in part through malpractice litigation.

PURPOSE—Our purpose in this analysis was not to examine whether the medical liability system is worth maintaining, meaning whether its costs are justified by its benefits. Rather, we sought to understand the extent to which it contributes to health care spending.

Components Of Medical Liability System Costs

The total monetizable costs of the medical liability system—those that can be quantified and expressed in monetary terms—can be divided into several components (Exhibit 1). The major categories of costs are indemnity payments, or the amounts that malpractice defendants, typically through their liability insurers, pay out to patients who file malpractice claims against them; administrative expenses, consisting of attorneys’ fees and other legal expenses for both sides, plus insurer overhead; defensive medicine costs, which are the costs of medical services ordered primarily for the purpose of minimizing the physician’s liability

risk; and other costs, some of which are difficult or impossible to quantify in economic terms. All costs are presented in 2008 dollars.

Notably missing from this list are malpractice insurance premiums. Premiums represent insurers' best estimates of their indemnity costs and defense costs, plus additional amounts to cover other operating expenses, reinsurance costs, and profits or surplus building. It would be double counting to include both malpractice premium costs and indemnity and administrative costs.

We took the approach of itemizing indemnity and administrative costs rather than reporting total premium costs for two reasons. Profits are not part of the costs of paying malpractice claims or operating the necessary administrative structures to evaluate and pay claims. First, premiums include some additional costs that arguably should not be considered part of the costs of medical liability, such as insurer profit. Second, the available sources of premium data exclude many types of insurance entities, such as self-insured hospitals, and therefore do not produce utterly reliable statistics.

Some cost components included in our analysis, such as awards for lost income in malpractice suits, represent a cost that would have been incurred by another party, such as the patient or a disability insurer, if the medical liability system had not covered it. In this sense, they are "transfer" costs, not additional costs.¹² From a societal perspective, such components arguably should not be included in the analysis. However, policy makers want to know how liability reform can be used to keep health care costs down. Thus, whether a patient's wages are paid by her employer or her doctor's liability insurance company matters a great deal.

Indemnity Payments

TOTAL INDEMNITY PAYMENTS

There is no comprehensive, national repository of information on medical malpractice claims.¹³ The source that comes closest is the National Practitioner Data Bank of the Health Resources and Services Administration (HRSA), but it has important limitations.

The data bank compiles information on all medical malpractice claims paid on behalf of health practitioners. Any entity that makes such a payment must report it to the data bank within thirty days or risk civil penalties. Between January 1, 2004, and December 31, 2008, the data bank received 63,370 reports.¹⁴ Excluding 1,923 duplicate reports, total indemnity payments reported over this period averaged \$4.24 billion per year.¹⁵

Although the data bank captures claims against physicians, it does not keep track of those against health care institutions such as hospitals and clinics. Institutions are often named as codefendants in claims brought against physicians; sometimes they are the sole defendants. Previous analyses of claims data from single states and insurers suggest that indemnity payments against institutions account for approximately 35 percent of total indemnity costs. Adjusting the data bank figure up accordingly (see the Online Appendix for more details about this process),¹⁶ we estimated total national indemnity costs of approximately \$5.72 billion per year (Exhibit 1).

INDEMNITY PAYMENT COMPONENTS

There are three main types of damages in medical malpractice cases and other tort litigation: compensatory damages for an injured plaintiff's economic losses, including past and future medical costs and lost wages; damages for noneconomic losses, also known as "pain and

suffering”); and punitive damages, which are designed to punish defendants who have shown wanton disregard for the plaintiff’s well-being.

Some courts are explicit in their verdicts for plaintiffs about how the indemnity dollars have been divided among the components, but many courts are not.¹⁷ More important, the vast majority of paid malpractice claims are settled out of court. The allocation between damages components in those settled cases is rarely explicit and is extremely difficult to track.

The best sources of information about the split among economic, noneconomic, and punitive damages in verdicts and out-of-court settlements combined are state databases of closed malpractice claims. Texas and Florida are among the few states that compile this information.¹⁸

For this study, we undertook a review of data on the composition of damages awards from those two states, together with an extrapolation to the national level that takes into account both the damages caps in Texas and Florida and the caseloads there relative to other states. This analysis suggests that a reasonable split to apply to a national indemnity total is approximately 55 percent economic damages, 42 percent noneconomic damages, and 3 percent punitive damages (see the Online Appendix).¹⁶ Exhibit 1 shows the cost figures that result from applying this split to the total indemnity estimate.

An important caveat to this estimate of the damages components is that applying its percentages to a national indemnity total masks tremendous variation at the case and state levels. In certain types of cases, noneconomic damages will account for virtually all of the award. Examples are cases involving plaintiffs with low or no income, such as the elderly, and injuries that result in little lost work time or medical expenses (for example, when the only injury is one or more scars, as opposed to something worse).¹⁹

Conversely, payouts designed to cover expensive care over extended periods tend to have very large economic components that dwarf the noneconomic components. Birth-related neurological injuries are the best example.¹⁹ At the state level, whether the jurisdiction has a cap on noneconomic damages—as half of the states currently do—and the level of that cap will heavily influence the proportion of the award accounted for by noneconomic damages.²⁰

Administrative Expenses

PLAINTIFF ATTORNEY FEES AND EXPENSES

Attorneys’ contingency fee levels reported in the literature for medical malpractice and other types of tort litigation converge fairly consistently in the range of 35–40 percent of awards to plaintiffs.²¹ Because these costs are drawn from the case payouts, however, they should not be tallied separately from indemnity costs in calculating total system costs. To do so would be double counting.

DEFENDANT ATTORNEY FEES AND EXPENSES

Our recent study of 1,452 malpractice claims from five insurers in several regions found that defense costs averaged nineteen cents for every indemnity dollar paid out.²¹

OTHER OVERHEAD EXPENSES

Malpractice insurers incur administrative expenses that are not directly related to defending claims. These include general operating expenses; commissions and brokerage expenses; and taxes, licenses, and fees. The A.M. Best Company reported that these costs totaled \$1.8 billion in 2008.²²

A.M. Best's figure does not include expenses of entities not subject to state insurance reporting requirements, including self-insured organizations. The market share of these organizations is not known, but to account for them, we increased the A.M. Best figure for other overhead costs by 10 percent, to \$1.98 billion (Exhibit 1).

Also relevant are the expenses of hospitals and other health care facilities on risk management offices that work to reduce and respond to medical injuries. These offices typically pursue activities aimed specifically at minimizing and managing claims, while also engaging in wider efforts to improve the quality and safety of care.

Because some quality improvement activities would take place even in the absence of tort liability, their total costs should not be charged to the liability system. However, there is little doubt that liability risk has led to much greater institutional investment in risk management.

The variety of institutional arrangements for risk-management functions makes it challenging to estimate operational costs.²³ Confidential budget figures that we obtained from hospital systems collectively representing 179 hospitals ranged from \$185,000 to \$1.9 million per hospital per year in 2008, with the latter figure being a self-described outlier.

Using the most conservative estimate of \$185,000, the estimated national cost of risk-management operations for all 5,708 registered U.S. hospitals is approximately \$1.06 billion. This figure is also conservative because it does not include risk-management costs for other types of facilities, such as independent ambulatory surgery centers.

Defensive Medicine Costs

Although most scholars of malpractice agree that defensive medicine is highly prevalent, reliable estimates of its cost are notoriously difficult to obtain.²⁴ An initial challenge is to settle on a definition of *defensive medicine*.

The most commonly used definition, proposed by the now-defunct U.S. Congress Office of Technology Assessment (OTA), conceptualizes defensive medicine as occurring “when doctors order tests, procedures, or visits, or avoid certain high-risk patients or procedures, primarily (but not solely) because of concern about malpractice liability.”²⁴ This definition says nothing about the benefits—potentially substantial—to patients that may arise from greater use of medical services²⁵—or, for that matter, about the damages that patients could incur from excess or unnecessary care.

In contrast, definitions in the law and economics literature limit defensive medicine to spending that exceeds the socially optimal amount. Because our analysis focused on the costs of the liability system, rather than its benefits, we adopted the OTA definition. It is important to note, however, that our calculations ignored benefits arising from this spending.

Even with this definition, considerable uncertainty surrounds estimates of defensive medicine costs. Previous research has examined the use of a small set of specific procedures, surveyed physicians about “consciously defensive” medicine, or compared the intensity with which specific cardiac conditions are treated in states with and without tort reforms.^{7,24,26-28}

Extrapolation from a handful of procedures or conditions to a national estimate is problematic, and physician survey reports may overstate or understate the true prevalence of defensive practices. Studies comparing states with and without tort reforms calculate only

the change in the amount of defensive medicine associated with an increase in liability exposure, not the absolute magnitude of defensive medicine costs.

There are also difficulties in adequately controlling for variations in practice styles across geographic areas arising from factors other than liability pressures. Finally, most studies were conducted prior to the mid-1990s, and the magnitude of their estimates might not apply today.

HOSPITAL SERVICES

To produce the most rigorous possible estimate of the magnitude of defensive medicine, in spite of these limitations, we began with a finding from the most widely cited academic paper on this topic. Kessler and McClellan examined the effect of tort reforms that directly reduce expected malpractice awards—such as caps on noneconomic damages—on Medicare hospital spending for acute myocardial infarction and ischemic heart disease from 1984 to 1990.⁷ The reforms lowered hospital spending by 5.3 percent for myocardial infarction and 9.0 percent for heart disease.

Considerable uncertainty surrounds estimates of defensive medicine costs.

In subsequent work examining data through 1994, Kessler and McClellan found that such direct reforms reduced hospital spending by 8.3 percent, but this estimate was based only on data about myocardial infarction.²⁹ In a further analysis incorporating information about levels of managed care through 1994, they estimated that direct reforms reduced hospital spending by 3.8 percent for myocardial infarction and 7.1 percent for heart disease.³⁰

Two other studies could not replicate these findings for other health conditions.^{6,31} Consequently, national extrapolations from Kessler and McClellan's estimates should be interpreted with considerable caution. Treatment intensity for other diagnoses may be less subject to physician discretion than cardiac care. Nevertheless, Kessler and McClellan's studies remain the best available basis for estimating national costs.

In our analysis, we used a value of 5.4 percent for the effects of defensive medicine on hospital spending, a conservative assumption that represents the lower of Kessler and McClellan's original estimates and the midpoint between their latest estimates. National health spending for 2008 was estimated to have been \$2.3 trillion, of which \$718.4 billion was hospital spending.³² Our 5.4 percent estimate suggests that \$38.8 billion of this spending could be reduced through direct tort reforms.

This estimate understates the magnitude of defensive medicine under two conditions: first, if the passage of direct tort reforms reduces only a portion of defensive medicine, as we believe it does; and second, if physicians perceive that elderly Americans—recall that Kessler and McClellan's estimates come from a Medicare population—are less likely than other patients to sue or, if they sue, to recover large awards.

However, the estimate overstates the magnitude of defensive medicine if physician responses to liability in the realm of cardiac care are more dramatic than in other clinical areas, or if responses are larger for Medicare patients than for privately insured patients. The latter might be the case because higher levels of managed care outside of Medicare reduce physicians' discretion.

Balancing these competing sources of bias is difficult, but the two sets of concerns probably serve as counterweights to one another.

PHYSICIAN AND CLINICAL SERVICES

The above cost estimate relates solely to hospital spending, but defensive medicine also occurs in other settings. Our prior work found that between 1993 and 2001, malpractice payments per physician grew by 11 percent and were associated with a 1.1 percent increase in Medicare reimbursement for all physician and professional services in Medicare Part B. Similar results were obtained when malpractice premiums were used as a measure of liability.^{33,34}

We could use these figures to estimate the level of current annual spending that can be attributed to malpractice premium growth. A first step was to estimate the increase in Part B spending that may be attributed to malpractice liability between 1993 and 2001. The total is \$2.9 billion, or 1.1 percent of Part B spending in 1993.

However, this calculation ignored the role of malpractice payments made on behalf of physicians before and after that period in contributing to the current level of spending. We estimated the increase in defensive medicine since 2001 by making two assumptions.

First, we assumed that the association between malpractice payments and health spending is the same in the period after 2001 as it was in the 1993–2001 period. That is, we assumed that an 11 percent average annual growth in malpractice payments was associated with 1.1 percent average annual growth in reimbursements. Second, we assumed that malpractice payments grew at the same average annual rate after 2001 that they did in 1993–2001.

With these assumptions, we estimated that a total of \$2.5 billion in physician and clinical spending since 2001 was attributable to defensive medicine. Adding this amount to the \$2.9 billion spent in the 1993–2001 period resulted in a total of \$5.4 billion for the cost of defensive medicine in the area of physician and clinical services since 1993.

As noted earlier, this calculation still ignored the contribution of defensive medicine to the absolute level of health care spending in 1993. This is an extremely difficult parameter to estimate (see the Online Appendix).¹⁶ We can provide only a rough estimate.

In 1960, spending on physician and clinical services was \$39.3 billion in 2008 dollars. Assuming that malpractice payments per physician grew at an average annual rate of 1.3 percent, we would expect spending on this class of services to be \$2.8 billion more in 2008. Thus, our estimate range for the cost of defensive medicine in 2008 for physician and clinical services is \$5.4–\$8.2 billion. This midpoint of this range is \$6.8 billion.

OVERALL ESTIMATE

Combining the amounts for hospital and physician spending, we arrived at an overall estimate of \$45.6 billion in defensive medicine costs for 2008. Although our figure was based on methodologically strong studies, because the hospital spending estimates were derived from a narrow range of diagnoses, the quality of evidence supporting our systemwide estimate is best characterized as low.

Other Costs

There are a number of other, indirect costs of the medical liability system, most of which are not possible to estimate.

LOST CLINICIAN WORK TIME

Malpractice lawsuits against physicians produce costs of time away from patient care for legal proceedings, with resulting lost productivity and income. The median amount of work

time that being sued costs a physician is in the range of 2.7–5 days, according to two surveys of malpractice defendants.^{35,36} Given an estimated 50,000 new malpractice claims against physicians annually and an average 2008 physician income of \$272,000, we estimated that the total value of lost work days is \$140–\$260 million (see the Online Appendix).¹⁶ Our systemwide cost estimate is at the midpoint of this range, \$200 million.

EFFECTS ON HEALTH CARE PRICES

Studies indicate that physicians in group practices preserve their net income in the face of malpractice premium increases by increasing both the volume of services they perform and the unit prices they charge.^{37,38} About half to three-quarters of physicians' response takes the form of higher volume; price effects are comparatively modest.

It is impossible to determine how much of the increase in volume constitutes defensive medicine—services performed primarily to reduce liability risk—as opposed to services performed primarily to enhance revenue. Price may also be affected by a reduced supply of medical services. If rising malpractice premiums lead some clinicians to leave practice or reduce the range of services they offer, the remaining providers may be able to charge higher prices.

Such effects are, however, largely theoretical at this point. We did not include effects on prices in our estimates because we were unable to quantify them reliably, and because it would result in double counting to the extent that they are already included in the hospital and outpatient spending outlined above.

Reforms that offer the prospect of reducing these costs have modest potential to exert downward pressure on overall health spending.

REPUTATIONAL AND EMOTIONAL TOLL ON CLINICIANS

Physicians can insure against malpractice awards by purchasing insurance, but they cannot insure against the psychological costs of being involved in litigation, including the stress and emotional toll. Nor can they avoid the reputational effects of being sued, which affect their income as well as their status. Whether or not they prevail in a lawsuit, physicians anecdotally report that these effects occur.³⁹

Few studies have attempted to estimate the extent of these harms,⁴⁰ and none has quantified the resulting financial losses. To the extent that patients take their business elsewhere, reputational costs represent a transfer from one physician to another. Emotional costs do not. They are not likely to confer any social benefit, because there is no evidence that this stress and anxiety improve the quality of care. Although impossible to quantify, and therefore not included in our estimates, these costs may be large.

Overall System Cost Estimates

Combining the various cost components, we estimated the total annual cost of the medical liability system to be \$55.6 billion in 2008 dollars (Exhibit 1). This amount is equivalent to approximately 2.4 percent of total national health care spending in 2008.

We have highlighted the many limitations to the data available to support this analysis. Our estimates should be interpreted cautiously, with recognition that some system cost elements were excluded and others—particularly the defensive medicine figures—were estimated based on substantial assumptions and extrapolations.

Exhibit 1 summarizes the quality of the evidence underlying each of the component estimates. Although our estimates are imperfect, they are more comprehensive, transparent,

and firmly grounded in the best available data than previous estimates of liability system costs.

Conclusion

The medical liability system costs the nation more than \$55 billion annually. This is less than some imaginative estimates put forward in the health reform debate, and it represents a small fraction of total health care spending. Yet in absolute dollars, the amount is not trivial.

Moreover, to the extent that some of these costs stem from meritless malpractice litigation,²¹ they are particularly objectionable to health care providers. The psychological and political value of addressing this grievance could be considerable.

Reforms that offer the prospect of reducing these costs have modest potential to exert downward pressure on overall health spending. Reforms to the health care delivery system, such as alterations to the fee-for-service reimbursement system and the incentives it provides for overuse, probably provide greater opportunities for savings.

Some aspects of federal health reform may reduce medical liability costs. Extending health insurance coverage to the uninsured may reduce their need to file malpractice claims to recoup medical expenses occasioned by injuries caused by malpractice.

Additionally, in states that have adopted “collateral-source offsets”—meaning that costs covered by health insurance cannot be recovered by malpractice plaintiffs—greater prevalence of health insurance will mean more frequent offsets, lower total indemnity payments, and less “double payment” of medical expenses. A farther-reaching reform that merits discussion would be to impose a federal collateral-source offset in connection with the move to universal coverage. In these respects, health reform and liability reform may have unexpected synergies in bending our cost curve down.

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NOTES

1. Mello MM, Brennan TA. Medical liability reform and federal health care reform. *N Engl J Med* 2009;361(1):1–3. [PubMed: 19528190]
2. Malpractice and health care reform [editorial]. *New York Times*; 2009 Jun 17.
3. Langel, S. GOP pushing malpractice reform. *Roll Call* [serial on the Internet]. 2009 Jul 6. [cited 2010 Jul 1]. Available from: http://www.rollcall.com/issues/55_1/ci_health_education_labor_pensions/364291.html
4. Obama, B. Remarks by the president to a joint session of Congress on health care [Internet]. Washington (DC): White House; 2009 Sep 9. [cited 2010 Jul 1]. Available from: http://www.whitehouse.gov/the_press_office/Remarks-by-the-President-to-a-Joint-Session-of-Congress-on-Health-Care
5. Obama, B. Letter to Speaker Pelosi, Senator Reid, Senator McConnell, and Representative Boehner [Internet]. Washington (DC): White House; 2010 Mar 2. [cited 2010 Jul 1]. Available from:

<http://www.whitehouse.gov/blog/2010/03/02/president-obama-follows-thursdays-bipartisan-meeting-health-reform-0>

6. Congressional Budget Office. Limiting tort liability for medical malpractice [Internet]. Washington (DC): CBO; 2004 Jan 8. [cited 2010 Jul 1]. Available from: <http://www.cbo.gov/ftpdocs/49xx/doc4968/01-08-MedicalMalpractice.pdf>
7. Kessler D, McClellan M. Do doctors practice defensive medicine? *Q J Econ* 1996;111(2):353–90.
8. PriceWaterhouseCoopers. The factors fueling rising healthcare costs 2006 [Internet]. New York (NY): PriceWaterhouseCoopers; 2006 Jan. [cited 2010 Jul 1]. Available from: <http://www.ahip.org/redirect/PwCCostOfHC2006.pdf>
9. Elmendorf, DW. Letter to Hon Bruce L. Braley [Internet]. Washington(DC): CBO; 2009 Dec 29. [cited 2010 Jul 1]. Available at http://www.cbo.gov/ftpdocs/108xx/doc10872/12-29-Tort_Reform-Braley.pdf
10. Mello MM, Brennan TA. Deterrence of medical errors: theory and evidence for malpractice reform. *Tex Law Rev* 2002;80(7):1595–637.
11. Kohn, LT.; Corrigan, JM.; Donaldson, MS., editors. *To err is human: building a safer health system*. Washington (DC): National Academies Press; 2000.
12. Baker, T.; Kritzer, HM.; Vidmar, N. *Jackpot justice and the American tort system: thinking beyond junk science* [Internet]. Rochester (NY): Social Science Research Network; 2008 Jul 1. [cited 2010 Jul 1]. Available from: <http://ssrn.com/abstract=1152306>
13. Hillman, RJ.; Allen, KG. Statement in testimony before the Subcommittee on Wellness and Human Rights, Committee on Government Reform, House of Representatives [Internet]. Washington (DC): GAO; 2003 Oct 1. Medical malpractice insurance: multiple factors have contributed to increased premium rates. [cited 2010 Jul 1]. Available from: <http://www.gao.gov/new.items/d04128t.pdf>
14. National Practitioner Data Bank. Public use data file [Internet]. Chantilly (VA): NPDB; 2010 Jun. [cited 2010 Jul 1]. Available from: <http://www.npdb-hipdb.com/publicdata.html>
15. We defined duplicates as reports involving the same practitioner, payment amount, and incident year.
16. To access the Online Appendix, click on the Online Appendix link in the box to the right of the article online.
17. Courts in states with legal caps on damages tend to be explicit because the cap is typically applied after the verdict, making the separation a technical necessity.
18. Cohen, TH.; Hughes, KA. Bureau of Justice Statistics Special Report, NCJ 216339. Washington (DC): Department of Justice; 2007 Mar. Medical malpractice insurance claims in seven states 2000–2004 [Internet]. [cited 2010 Jul 1]. Available from: <http://bjs.ojp.usdoj.gov/content/pub/pdf/mmics04.pdf>
19. Studdert DM, Yang YT, Mello MM. Are damages caps regressive? A study of malpractice jury verdicts in California. *Health Aff (Millwood)* 2004;23(4):54–67. [PubMed: 15318567]
20. Hyman DA, Black BS, Silver S, Sage WM. Estimating the effect of damages caps in medical malpractice cases: evidence from Texas. *Journal of Legal Analysis* 2009;1(1):355–409.
21. Studdert DM, Mello MM, Gawande AA, Gandhi TK, Kachalia A, Yoon C, et al. Claims, errors, and compensation payments in medical malpractice litigation. *N Engl J Med* 2006;354(19):2024–33. [PubMed: 16687715]
22. A.M. Best Company. *Best's aggregates and averages: property/casualty*. Oldwick (NJ): A.M. Best; 2009.
23. Large hospitals may separate traditional risk management and quality assurance activities, dividing responsibilities for them between different departments.
24. U.S. Congress Office of Technology Assessment. *Defensive medicine and medical malpractice* [Internet]. Washington (DC): OTA; 1994 Jul. [cited 2010 Jul 1]. Available from: <http://biotech.law.lsu.edu/policy/9405.pdf>
25. Studdert DM, Mello MM, Brennan TA. Defensive medicine and tort reform: a wide view. *J Gen Intern Med* 2010;25(5):380–1. [PubMed: 20349156]
26. Baldwin LM, Hart LG, Lloyd M, Fordyce M, Rosenblatt RA. Defensive medicine and obstetrics. *JAMA* 1995;274(20):1606–10. [PubMed: 7474245]

27. Localio AR, Lawthers AG, Bengtson JM, Hebert LE, Weaver SL, Brennan TA, et al. Relationship between malpractice claims and cesarean delivery. *JAMA* 1993;269(3):366–73. [PubMed: 8418343]
28. Dubay L, Kaestner R, Waidmann T. The impact of malpractice fears on cesarean section rates. *J Health Econ* 1999;18(4):491–522. [PubMed: 10539619]
29. Kessler DP, McClellan MB. How liability law affects medical productivity. *J Health Econ* 2002;21(6):931–55. [PubMed: 12475119]
30. Kessler D, McClellan M. Malpractice law and health care reform: optimal liability policy in an era of managed care. *J Pub Econ* 2002;84(2):175–97.
31. Sloan FA, Shadle JH. Is there empirical evidence for defensive medicine? A reassessment. *J Health Econ* 2009;28(2):481–91. [PubMed: 19201500]
32. Centers for Medicare and Medicaid Services. National health expenditures 2008 highlights [Internet]. Baltimore (MD): CMS; 2010 Jun. [cited 2010 Jul 1]. Available from: <http://www.cms.gov/NationalHealthExpendData/downloads/highlights.pdf>
33. Baicker, K.; Chandra, A. The effect of malpractice liability on the delivery of health care. In: Cutler, D.; Garber, AM., editors. *Frontiers in health policy research*. Cambridge (MA): MIT Press; 2005. p. 16-18.
34. Baicker K, Fisher ES, Chandra A. Malpractice liability costs and the practice of medicine in the Medicare program. *Health Aff (Millwood)* 2007;26(3):841–52. [PubMed: 17485765]
35. Lawthers AG, Laird NM, Lipsitz S, Hebert L, Brennan TA, Localio AR. Physician perceptions of the risk of being sued. *J Health Polit Policy Law* 1993;17(3):463–82. [PubMed: 1464708]
36. Zuckerman S. Medical malpractice: claims, legal costs, and the practice of defensive medicine. *Health Aff (Millwood)* 1984;3(3):128–34. [PubMed: 6519633]
37. Pauly, M.; Thompson, C.; Abbott, T.; Margolis, J.; Sage, W. Who pays? The incidence of high malpractice premiums. *Forum Health Econ Policy* [serial on the Internet]. 2006. [cited 2010 Jul 1]. Available from: <http://www.bepress.com/fhep/9/1/2>
38. Danzon PM, Pauly MV, Kington RS. The effects of malpractice litigation on physicians' fees and incomes. *Am Econ Rev* 1990;80(2):122–7. [PubMed: 10104316]
39. Currie J, MacLeod WB. First do no harm? Tort reform and birth outcomes. *Q J Econ* 2008;123(2):795–830.
40. Waters TM, Studdert DM, Brennan TA, Thomas EJ, Almagor O, Mancewicz M, et al. Impact of the national practitioner data bank on resolution of malpractice claims. *Inquiry* 2003;40(3):283–94. [PubMed: 14680260]

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Michelle M. Mello is a professor of law and public health at the Harvard School of Public Health. She received her master of philosophy degree from the University of Oxford, her Ph.D. in health policy and administration from the University of North Carolina, Chapel Hill, and her J.D. from Yale Law School.

In 2008 Mello received a Robert Wood Johnson Foundation (RWJF) Investigator Award in health policy research. In 2006 she received the Alice S. Hersh New Investigator Award from AcademyHealth. The author of more than 100 articles and book chapters on medical malpractice, medical errors, and patient safety, among other topics, she studies legal and ethical issues concerning the pharmaceutical industry as a Greenwall Faculty Scholar.



Amitabh Chandra is an economist and professor of public policy at Harvard's John F. Kennedy School of Government. He is also a research fellow at the IZA Institute in Bonn, Germany, and at the National Bureau of Economic Research. He received his Ph.D. in economics from the University of Kentucky. Chandra is the recipient of the UpJohn Institute's International Dissertation Research Award, the Kenneth Arrow Award for best paper in health economics, and the Eugene Garfield Award for the impact of medical research. His research focuses on productivity and cost growth and has been supported by the National Institute on Aging, the National Institute of Child Health and Development, and the Robert Wood Johnson Foundation.



Atul A. Gawande is an associate professor of surgery at Harvard Medical School and Brigham and Women's Hospital and an associate professor in the Department of Health Policy and Management, Harvard School of Public Health. He was a Rhodes Scholar, earning a philosophy, politics, and economics degree from Balliol College, Oxford University. He received his medical degree from Harvard Medical School and his master of public health degree from the Harvard School of Public Health.

Gawande was an adviser to Bill Clinton during his 1992 presidential campaign and subsequently directed three committees of the Clinton health reform task force. He is the author of a number of *New Yorker* pieces, including a June 2009 essay titled "The Cost Conundrum," which President Barak Obama cited during Congress's deliberations on health care reform. In 2006 Gawande was named a MacArthur Fellow.



David M. Studdert is a Federation Fellow and professor at the University of Melbourne in both the School of Population Health and the Law School. He earned a bachelor of laws degree from the University of Melbourne and master of public health and Sc.D. degrees from the Harvard School of Public Health. Studdert has been an associate professor of law and public health at the Harvard School of Public Health and has served as an adviser to the Victorian Minister for Health, in Australia.

In 2004 Studdert received the Alice S. Hersh New Investigator Award. The author of more than 120 articles and book chapters, Studdert is currently examining compensation system reform, informed consent, disclosure of medical injury, and the work of coroners in Australia.

According to Mello, it was “sheer fatigue” that drove this stellar cast of authors to focus their efforts on addressing the question of how much medical liability contributes to overall U.S. health care costs. Mello explained that she and her coauthors were “getting the same questions from reporters and congressional staff over and over. How much does malpractice litigation really cost, and how much would federal tort reform bend the health care cost curve down?”

Mello noted that they were “hearing some very imaginative estimates.” She and her colleagues concluded that a “more defensible estimate would contribute to the policy debate about liability reform” by bringing to bear the best available evidence.

Mello and Studdert have collaborated in the past on estimating national costs of malpractice litigation. However, this effort represents the first time that all four of these authors have worked together. Mello noted that Chandra was brought on board “as an expert on the defensive medicine side,” while Gawande’s involvement was to help ensure that the authors kept in mind the “big picture,” including “what other aspects of health reform might contribute to cost control... and how health reform and liability reform might interact.”

In the end, Mello said, the medical malpractice cost estimate the authors derived “was not out of step with [their] expectations,” given their belief in the soundness of the dominant defensive medicine cost component, which they knew would “drive the total figure pretty heavily.” Mello added that her next step, along with Studdert, will be to estimate the cost of a “health court” system that could replace traditional tort litigation for medical malpractice.

EXHIBIT 1

Estimates Of National Costs Of The Medical Liability System

| Component | Estimated cost (billions of 2008 dollars) | Quality of evidence supporting cost estimate |
|-----------------------------|---|--|
| Indemnity payments | \$5.72 | Good as to the total; moderate as to the precision of the split among the components |
| Economic damages | \$3.15 | |
| Noneconomic damages | \$2.40 | |
| Punitive damages | \$0.17 | |
| Administrative expenses | \$4.13 ^a | Moderate |
| Plaintiff legal expenses | \$2.00 ^a | Good |
| Defendant legal expenses | \$1.09 | Moderate |
| Other overhead expenses | \$3.04 | Good |
| Defensive medicine costs | \$45.59 | Low |
| Hospital services | \$38.79 | |
| Physician/clinical services | \$6.80 | |
| Other costs | | |
| Lost clinician work time | \$0.20 | Moderate |
| Price effects | _b | Low |
| Reputational/emotional harm | _b | No evidence |
| Total | \$55.64 | |

Source Authors' analysis.

^a Although plaintiff legal expenses are separately itemized, they are not included in the overall administrative costs total because, in the contingent fee system, they are already represented in the indemnity costs.

^b These costs are not estimable with the available data.