



Five Myths of Medical Malpractice

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We identify five myths of medical malpractice that have wide currency in medical circles. The myths are as follows: (1) Malpractice crises are caused by spikes in medical malpractice litigation (ie, sudden rises in payouts and claim frequency), (2) the tort system delivers “jackpot justice,” (3) physicians are one malpractice verdict away from bankruptcy, (4) physicians move to states that adopt damages caps, and (5) tort reform will lower health-care spending dramatically. We test each assertion against the available empirical evidence on the subject and conclude by identifying various nonmythical problems with the medical malpractice system.

CHEST 2013; 143(1):222–227

As Sen Daniel Patrick Moynihan (D, New York) memorably observed, “Everyone is entitled to his own opinion, but not his own facts.” In that spirit, we identify five myths of medical malpractice that have wide currency in medical circles. One can find these mistaken and misleading views in op-eds, blog postings, and public statements by physicians of all specialties, including those designated as spokespersons for organized medicine.

The myths are as follows:

1. Malpractice crises are caused by spikes in medical malpractice litigation (ie, sudden rises in payouts and claim frequency).
2. The tort system delivers “jackpot justice.”
3. Physicians are one malpractice verdict away from bankruptcy.
4. Physicians move to states that adopt damages caps.
5. Tort reform will lower health-care spending dramatically.

Readers have surely heard of all these views. In this article, we compare each myth with the available empirical evidence on the subject.

Manuscript received July 31, 2012; revision accepted August 24, 2012.

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Although we focus on various myths of medical malpractice, we do not believe that all is well with the medical malpractice system. We discuss the real pathologies of the system at the end of this article. But, like Sen Moynihan, we believe that good policymaking requires an understanding of the real facts, whatever they may be.

MYTH 1: MALPRACTICE CRISES ARE CAUSED BY SPIKES IN MALPRACTICE LITIGATION (IE, SUDDEN RISES IN PAYOUTS OR CLAIM FREQUENCY)

It is natural to believe that malpractice crises are caused by sudden and dramatic increases in malpractice litigation, particularly when physicians can readily summon to mind jury verdicts with jaw-dropping awards issued to patients with highly questionable (if not entirely frivolous) claims. However, extensive research indicates that these highly salient anecdotes of runaway jury verdicts are thoroughly unrepresentative. Further, for reasons we discuss in greater detail later, they are rarely paid in full.

Because the overwhelming majority of payments to plaintiffs are the result of voluntary settlements, one must study closed claims (rather than jury verdicts) to get a full picture of what is going on. Using both federal and state closed claims databases, studies have found that both the frequency of malpractice claiming and the payments per claim were either stable or declining during the period that preceded the latest malpractice crisis, which began in 1999 to 2000. For example, a study we recently completed using the National Practitioner Databank found that the frequency of paid medical malpractice claims per physician

has been dropping steadily since 1992, and is now less than one-half the level it was in 1992 (Myungho Paik, PhD; Bernard Black, JD; and David A. Hyman, MD, JD, unpublished data, October 28, 2012). Payout per physician was roughly stable from 1992 to 2001 but began dropping in 2003 and is now 46% below the 1992 level. The decline is largest in states that recently capped total or noneconomic damages, but there are also large and sustained declines in states with no damages caps. An earlier study using National Practitioner Databank data found that average payments grew 52% from 1991 to 2004, roughly in line with increases in health-care spending.¹ Other studies using state-specific closed claims databases from Texas (covering 1988-2002) and Florida (covering 1990-2003) also found that malpractice claiming and payouts were stable prior to the malpractice crisis that hit in 1999 to 2000.^{2,3} Unfortunately, similar data are not available with which to assess the causes of the malpractice crises that hit the United States in the mid-1970s and mid-1980s.

The finding that the latest malpractice crisis was not caused by spikes in malpractice claims or payouts should not be surprising. Although hot spots can occur, the liability system primarily responds to (and lags) the frequency of serious medical injuries. Because the frequency of serious medical injuries changes slowly, the litigation rate should not be prone to dramatic spikes in claiming.

Similarly, the outlandish jury verdicts that attract popular attention are not at all representative and often are slashed dramatically by judicial oversight or through other means. More broadly, the overwhelming majority (> 95%) of cases are resolved, and the overwhelming majority of payouts are made as a result of voluntary settlement.

So what causes malpractice insurance crises if not spikes in liability? Insurance scholars have offered several theories, including underpricing and under-reserving in soft market periods and external shocks that trigger constraints on the capacity of the insurance system to cover risks.⁴⁻⁸ We do not know which of these theories is correct, but we do know that the only malpractice crisis for which high-quality data are available was not caused by spikes in malpractice litigation.

MYTH 2: THE TORT SYSTEM DELIVERS JACKPOT JUSTICE

The assertion that the malpractice liability system serves up jackpot justice takes various forms, but the basic charge is that the system doles out compensation randomly.⁹ Uninjured patients take home millions, whereas those who suffer grievously receive little or nothing at all.

There is a grain of truth to this charge, particularly if one focuses on the inputs to the malpractice system. Many patients who experience bad outcomes cannot tell whether they are victims of negligent treatment or of bad luck. Consequently, many patients who received appropriate care initiate claims. A far larger problem, however, is that an enormous fraction of patients who are harmed by medical negligence either make no effort to recover damages or cannot find lawyers willing to take their cases. These patients, who are entitled to compensation, never initiate claims. Thus, the liability system is simultaneously beset by overclaiming and underclaiming.

If one focuses on outputs, the liability system does much better than conventional wisdom suggests; it sorts the wheat from the chaff reasonably well. Focusing on those who initiate claims, patients treated negligently recover damages far more often than patients who were treated nonnegligently.¹⁰ There is also a well-established severity gradient: Payments increase with injury severity, with the exception of a death discount (ie, those who die receive less than those who are severely and permanently injured). Unfortunately, most patients are undercompensated, and those with the most severe injuries suffer the biggest gap between provable injuries and the amounts they recover.

Table 1 provides some objective figures drawn from a closed claims database maintained by the Texas Department of Insurance. Because Texas adopted tort reform in 2003, Figure 1 separately reports results for 6 years prereform and postreform.¹¹ Table 1 shows that even in a state as large as Texas (population of almost 25 million), there were only 7,650 malpractice claims per year during the prereform period, and

Table 1—Summary Statistics on Texas Medical Malpractice Claims, 1998 to 2009

Statistic	1998-2003	2004-2009
Total malpractice claims, per y	7,650	5,300
Malpractice claims that close without payment, %	85	80
Total large paid malpractice claims, per y	860	633
Mean payout for all large cases, \$	609,000	419,000
Median payout for all large cases, \$	246,000	202,000
Number of large paid malpractice claims after plaintiff prevails at trial, per y	24	15
Mean jury verdict (when plaintiff prevails at trial), millions \$	2.29	3.04
Mean payment after jury verdict (when plaintiff prevails at trial), millions \$	1.14	1.47
Median jury verdict (when plaintiff prevails at trial), \$	739,000	711,000
Median payment after jury verdict (when plaintiff prevails at trial), \$	570,000	529,000

All figures are for Texas closed claims. Large cases are those with payment in excess of \$25,000 (1988 dollars). This cutoff (about \$46,000 in 2010 dollars) accounts for 98% of total payouts.

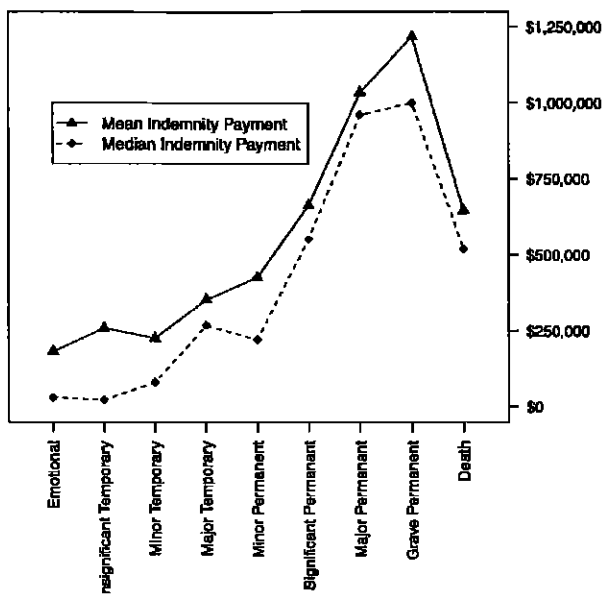


FIGURE 1. Mean and median payouts by injury severity for Illinois claims, 2005 to 2008 (in 2010 dollars).¹¹

tort reform caused the number of claims to decline substantially to 5,300 per year. Both prereform and postreform, most (80%-85%) of these claims closed without payment. When there was a payment, it was almost always the result of a voluntary settlement; that is, trials were rare. Across all paid cases, the mean payout was \$609,000 during the prereform period and \$419,000 during the postreform period. Jury verdicts were substantially higher, but there was a significant "haircut" before they were paid. Further, as detailed later, physicians rarely paid any amount out of pocket.

Similarly, Figure 1 shows how severity of injury affects payouts. Using data from the Illinois Department of Insurance closed claims database from 2005 to 2008, we find that the mean payout was \$626,827 (median, \$454,060), but the amount paid was more modest for less-severe injuries. To receive more than the mean and median payout, one had to suffer at least significant permanent injury. Further, the ceiling on payouts is modest: Those who suffered grave and permanent injuries received a mean payout of only \$1.25 million and a median payout of about \$1 million. Figure 1 also clearly documents the death discount referenced previously.

MYTH 3: PHYSICIANS ARE ONE MALPRACTICE VERDICT AWAY FROM BANKRUPTCY

Many physicians seem to believe that malpractice verdicts threaten to wipe out their savings. When assessing this fear, it is appropriate to start by observing that jury trials are uncommon and that plaintiff victories are even less common. As Table I reflects,

most malpractice cases are settled or dismissed; only about 2% of claims are tried, and at trial, providers win about 75% of the time.

When one compares actual payments to jury awards, many patients who win turn out to be losers as well. Because jurors tend to be stingy, awards often fail to cover patients' actual losses. Blockbuster verdicts dominate the press, but their coverage reflects their rarity. Reporters are interested in big verdicts for the same reason they are interested in airplane crashes: Both are unusual. Any verdict, blockbuster or otherwise, that exceeds the limits of a provider's insurance coverage is quite unlikely to be paid in full. Our study of Texas jury verdicts, which was based on an enormous closed claim database maintained by the Texas Department of Insurance, quantified the frequency and magnitude of verdict haircuts, where the plaintiff received less than the jury awarded. We found that the larger the verdict, the more likely and larger the haircut because policy limits serve as a functional cap on patients' recoveries.¹² Stated differently, the portion of a jury award that exceeds the available insurance coverage is rarely collectible. Other studies have documented similar haircuts with large verdicts.^{13,14}

We also learned something that may surprise many readers. When payments above the policy limits were made, whether in tried or in settled cases, they almost always came from insurers.^{15,16} Out-of-pocket payments by physicians were extraordinarily rare, particularly when physicians had policy limits of \geq \$500,000. One might say, with only the slightest exaggeration, that physicians have effectively no personal exposure on malpractice claims (other than the obvious and unavoidable side effects of litigation, eg, the emotional and time-related costs of being deposed). Why do plaintiffs' lawyers not pursue personal assets? Years ago, a qualitative study documented a strong social norm among malpractice lawyers against seeking "blood money" from individual physicians.¹⁷ Our findings buttress that account. The only physicians who should worry about personal exposure are those who grossly under-insure, and even they should not worry too much.

MYTH 4: PHYSICIANS MOVE IN LARGE NUMBERS TO STATES THAT ADOPT DAMAGES CAPS

If physicians relocate because of liability risk, damages caps are an obvious strategy for attracting more physicians, particularly in lawsuit-prone specialties. Reform advocates have argued that damages caps have exactly this effect. Of course, this strategy only works if some states do not have caps. When all states have caps, the incentive to relocate disappears. Thus, a nationwide cap would actually reduce relocations. Table 2 lists the states that currently have damages caps in effect and provides some basic information on how

Table 2—States Currently With Damages Caps

Type of Damages Cap	States
Total damages caps	Colorado, Indiana, Louisiana, Nebraska, New Mexico, Virginia ^a
Noneconomic damages caps	Alaska, California, Florida, Georgia, Hawaii, Idaho, ^a Kansas, Maryland, ^a Michigan, ^a Mississippi, Missouri, Montana, Nevada, North Dakota, Ohio, Oklahoma, ^a South Carolina, South Dakota, Tennessee, Texas, Utah, ^a West Virginia, ^a Wisconsin
Both caps	Massachusetts

^aInflation adjusted.

the cap is designed, such as whether it is inflation adjusted and whether it affects total damages, noneconomic damages, or both.

Various researchers have studied the impact of damages caps on physician supply. They have found mixed evidence, suggesting that damages caps may have a small positive impact on physician supply in rural areas or particular specialties, but much less evidence of postreform increases in statewide physician counts.¹⁸ For example, Encinosa and Hellinger¹⁹ found that states that adopted damages caps had 3.2% more physicians per capita in rural counties. Matsa²⁰ found no effect of damages caps on overall physician supply but did report a positive and significant increase in physicians per capita in the quartile of counties with the lowest population density. Klick and Stratmann²¹ found a 6% to 7% rise in per capita counts for the five highest-lawsuit-risk specialties, and a 3% to 4% effect for the 10 highest-risk specialties relative to the five (or 10) lowest-risk specialties, with risk based on payout per paid claim. Kessler et al²² reported that damages caps predicted a 3.3% increase in physicians per capita 3 years after reform, with the effect coming from greater entry and slower retirements.

In a study, we examined Texas's experience after it adopted damages caps in 2003 (David A. Hyman, MD, JD; Charles Silver, JD; Bernard Black, JD; and Myungho Paik, PhD, unpublished data, October 28, 2012). Before Texas adopted tort reform, proponents claimed that physicians were deserting Texas in droves. After tort reform was enacted, proponents claimed that there had been a dramatic increase in physicians moving to Texas because of the improved liability climate. We found no evidence to support either claim. Physician supply was not measurably stunted prior to reform, and it did not measurably improve after reform, whether one focused on all patient-care physicians in Texas, on high-malpractice-risk specialties, or on rural physicians. Thus, although damages caps may play a small role in attracting and keeping physicians practicing in rural areas and in high-risk specialties, the evidence is mixed, and some studies have found no effect.

MYTH 5: TORT REFORM WILL LOWER HEALTH-CARE SPENDING DRAMATICALLY

How much does the malpractice system cost, and how much will tort reform reduce the cost of the malpractice system, including its impact on health-care spending? As our formulation reflects, it is important to distinguish between the direct and indirect costs of the malpractice liability system. The direct costs include the cost of malpractice awards and settlements and all costs associated with defending against such claims, including the administrative costs of medical malpractice insurers. The indirect costs (commonly called defensive medicine) are incurred when providers take steps to reduce their perceived likelihood of being sued, such as by running extra tests. Because tort reforms make lawsuits less likely and less expensive, they may reduce defensive medicine and thereby reduce health-care spending. There is broad agreement that the direct costs of the malpractice system are relatively modest (ie, on the order of 2% of health-care spending).²³ However, proponents argue that tort reform can also reduce indirect costs by amounts ranging from \$100 billion to \$650 billion per year.

Kessler and McClellan²⁴ performed the first rigorous studies of the impact of tort reforms on health-care spending and found that damages caps and other reforms that limited liability directly reduced post-treatment medical spending by 5% to 9%. In response to criticisms that their study had not controlled for managed care penetration, Kessler and McClellan²⁵ reanalyzed their data and found a 4% to 5% decline. More recent studies cast doubt on the generalizability of Kessler and McClellan's results because they studied only Medicare patients who were treated for serious heart disease in 1984, 1987, and 1990. The Congressional Budget Office applied Kessler and McClellan's methods to a broader range of medical conditions, and "found no evidence that restrictions on tort liability reduce medical spending."²⁶ A follow-up Congressional Budget Office study with additional controls estimated that a cap on noneconomic damages would reduce Medicare spending by a statistically insignificant 1.6%.²⁷ A study by Sloan and Shadle²⁸ that covered more conditions and more years than did Kessler and McClellan also did not find significant results. Lakdawalla and Seabury²⁹ used a county-level instrument for medical malpractice risk and found that lower risk predicted modestly lower health-care prices, no significant change in health-care quantity, and somewhat higher mortality. In two studies, Baicker and Chandra^{30,31} found no overall association between insurance premiums and Medicare spending but did find an association for the Medicare Part B spending subcategory for diagnostic, laboratory, and radiograph services. They hypothesized that diagnostic testing is

more likely to reflect defensive medicine than medical practice more generally and, thus, is more sensitive to liability risk. Thomas et al³² compared medical spending for 35 clinical specialties in regions with high and low medical malpractice insurance premiums. They concluded that even a large (30%) reduction in medical malpractice premiums would predict only a 0.4% decline in health-care spending. Avraham et al³³ measured spending in terms of premiums collected by employer-funded health insurance plans representing > 10 million Americans annually from 1998 and 2006. They found that each of three reforms (caps on noneconomic damages, abrogation of the collateral source rule, and reform of joint and several liability) reduced premiums for self-funded health plans by 1% to 2% but had no effect on premiums for fully insured plans. Other studies, including those that have focused on patterns of clinical practice, have produced similarly modest or mixed results.³⁴⁻⁴¹

In our own work, we found that Texas's adoption of a damages caps resulted in a dramatic decline in claim frequency and payout per claim, reducing overall payouts by about 75%.⁴² However, this dramatic change in the malpractice environment did not result in significant changes in health-care spending levels or trends, as assessed statewide and at the county level. Indeed, we found some evidence of increased physician spending postreform in counties where medical malpractice risk was high. In sum, we found no evidence that Texas's tort reforms bent the cost curve downward.

SOME TRUTHS ABOUT THE MEDICAL MALPRACTICE SYSTEM

We have cataloged five myths of the medical malpractice system. Now we turn to some truths. First, the malpractice system is slow. On average, it takes about 2 years from the date of injury to the date a lawsuit is filed and roughly the same amount of time for the case to be settled. But the time period required can be much longer, particularly if minors are involved or if the case goes to trial. It is unrealistic to expect the malpractice system to provide much in the way of useful feedback if it takes at least 4 years to get an answer.

Second, the malpractice system is extremely expensive. In an earlier article, we reported that the cost of defending paid medical malpractice claims has roughly doubled since 1988 and was about 20% of the amount paid to the plaintiff.⁴³ Even if the fee for retaining a plaintiffs' attorney, along with the associated costs, has remained constant at about 35% of the amount recovered, this still means that it costs > \$1 for the plaintiff to end up with \$1 in his or her pocket. In part, high costs are "baked into" the third-party fault-based process for determining who gets paid by the malpractice

system. Costs are also increased by limitations on who can serve as an expert because decreased supply translates into higher prices.

Third, the malpractice system is perceived by everyone involved as unpleasant and often unjust or unfair. Providers who were not negligent resent being dragged into lawsuits and having their competence questioned. Patients who were injured (whether negligently or not) are usually unable to find out what happened to them unless they find a plaintiffs' lawyer willing to take their case, and then they must wait several years for the process to be completed.

Finally, damages caps do little to improve the malpractice system. Although they can dramatically reduce claims frequency, payouts per claim, and insurance premiums, they do not make health-care safer, reduce health-care spending, compensate those who are negligently injured, or make the liability system work better. The best reforms are patient safety initiatives that reduce the frequency and severity of medical mistakes. Ideally, the liability system would encourage providers to adopt patient-protecting innovations. Its effect in that regard is limited, however, partly because tort reforms insulate providers from many of the costs of medical errors.

ACKNOWLEDGMENTS

Financial/nonfinancial disclosures: The authors have reported to *CHEST* the following conflicts of interest: Prof Silver's center receives an annual budget from the University of Texas School of Law. Both Prof Silver and Dr Hyman regularly write and speak about the subjects addressed in the article, usually without compensation. Neither report potential conflicts of interest with any companies/organizations whose products or services may be discussed in this article.

Other contributions: This work was performed at the University of Illinois and the University of Texas at Austin.

REFERENCES

1. Chandra A, Nundy S, Seabury SA. The growth of physician medical malpractice payments: evidence from the National Practitioner Databank. *Health Aff (Millwood)*. 2005;26(suppl):W5-240-W5-249.
2. Black BS, Silver C, Hyman DA. Stability not crisis: medical malpractice claim outcomes in Texas, 1988-2002. *J Empirical Leg Stud*. 2005;2(2):207-259.
3. Vidmar N, Lee P, MacKillop K, McCarthy K, McGwin G. Uncovering the "invisible" profile of medical malpractice litigation: insights from Florida. *DePaul Law Rev*. 2005;54:315-356.
4. Baker T. Medical malpractice and the insurance underwriting cycle. *DePaul Law Rev*. 2005;54:393-438.
5. Harrington SE. Tort liability, insurance rates, and the insurance cycle. *Brookings-Wharton Pap Financial Serv*. 2004;(2004):97-138.
6. Winter RA. Comment on Scott E. Harrington, tort liability, insurance rates, and the insurance cycle. *Brookings-Wharton Pap Financial Serv*. 2004;(2004):128-129.
7. Harrington SE, Danzon PM. Price cutting in liability insurance markets. *J Bus*. 1994;64(4):511-538.
8. Gron A. Capacity Constraints and cycles in property-casualty insurance markets. *RAND J Econ*. 1994;25(1):111-127.

9. Hyman DA, Silver C. Medical malpractice litigation and tort reform: it's the incentives, stupid. *Vanderbilt Law Rev.* 2006; 59(4):1085-1135.
10. Studdert DM, Mello MM, Gawande AA, et al. Claims, errors, and compensation payments in medical malpractice litigation. *N Engl J Med.* 2006;354(19):2024-2033.
11. Illinois Department of Insurance. 2011 *Closed Claims Report*. Illinois Department of Insurance website. http://insurance.illinois.gov/reports/Med_Mal_Report/2011MedicalMalpracticeClaimsReport.pdf. Accessed July 30, 2012.
12. Hyman DA, Black B, Zeiler K, Silver C, Sage WM. Do defendants pay what juries award? Post-verdict haircuts in Texas medical malpractice cases, 1988-2003. *J Empirical Leg Stud.* 2007;4(1):3-68.
13. Vidmar N, Brown LA. Tort reform and the medical liability insurance crisis in Mississippi: diagnosing the disease and prescribing a remedy. *Miss Coll Law Rev.* 2002;22(9):1-37.
14. Vidmar NJ, Gross F, Rose M. Jury awards for medical malpractice and post-verdict adjustments of those awards. *DePaul Law Rev.* 1999;48:265-299.
15. Silver C, Black BS, Zeiler K, Hyman DA, Sage WM. Malpractice payouts and malpractice insurance: evidence from Texas closed claims, 1990-2003. *Geneva Pap Risk Insur.* 2008;33:177-192.
16. Zeiler K, Silver C, Black B, Hyman DA, Sage WM. Physicians' insurance limits and malpractice payouts: evidence from Texas closed claims, 1990-2003. *J Leg Stud.* 2007;36(S2):S9-S45.
17. Baker T. Blood money, new money, and the moral economy of tort law in action. *Law Soc Rev.* 2001;35(2):275-320.
18. Kachalia A, Mello MM. New directions in medical liability reform. *N Engl J Med.* 2011;364(16):1564-1572.
19. Encinosa WE, Hellinger FJ. Have state caps on malpractice awards increased the supply of physicians? *Health Aff (Millwood).* 2005;(suppl):W5-250-W5-258.
20. Matsa DA. Does malpractice liability keep the doctor away? Evidence from tort reform damage caps. *J Legal Stud.* 2007; 36(2):S143-S182.
21. Klick J, Stratmann T. Medical malpractice reform and physicians in high-risk specialties. *J Leg Stud.* 2007;36(2):S121-S142.
22. Kessler DP, Sage WM, Becker DJ. Impact of malpractice reforms on the supply of physician services. *JAMA.* 2005; 293(21):2618-2625.
23. Mello MM, Chandra A, Gawande AA, Studdert DM. National costs of the medical liability system. *Health Aff.* 2010;29(9): 1569-1577.
24. Kessler D, McClellan MB. Do doctors practice defensive medicine? *Q J Econ.* 1996;111(2):353-390.
25. Kessler D, McClellan MB. Malpractice law and health care reform: optimal liability policy in an era of managed care. *J Pub Econ.* 2002;84(2):175-197.
26. Congressional Budget Office. Limiting tort liability for medical malpractice. 2004. Congressional Budget Office website. <http://www.cbo.gov/ftpdocs/49xx/doc4968/01-08-MedicalMalpractice.pdf>. Accessed July 30, 2012.
27. Congressional Budget Office. Background paper: medical malpractice tort limits and health care spending. 2006. Congressional Budget Office website. <http://www.cbo.gov/ftpdocs/71xx/doc7174/04-28-MedicalMalpractice.pdf>. Accessed July 30, 2012.
28. Sloan FA, Shadle JH. Is there empirical evidence for "defensive medicine"? A reassessment. *J Health Econ.* 2009;28(2): 481-491.
29. Lakdawalla DN, Seabury SA. The welfare effects of medical malpractice liability. NBER working paper series. 2009. National Bureau of Economic Research website. <http://www.nber.org/papers/w15383>. Accessed July 30, 2012.
30. Baicker K, Fisher ES, Chandra A. Malpractice liability costs and the practice of medicine in the Medicare program. *Health Aff (Millwood).* 2007;26(3):841-852.
31. Baicker K, Chandra A. The effect of malpractice liability on the delivery of healthcare. In: Cutler D, Garber AM, eds. *Frontiers in Health Policy Research*. Cambridge, MA: MIT Press; 2005:16-18.
32. Thomas JW, Ziller EC, Thayer DA. Low costs of defensive medicine, small savings from tort reform. *Health Aff.* 2010; 29(9):1578-1584.
33. Avraham R, Dafny LS, Schanzenbach MM. The impact of tort reform on employer-sponsored health insurance premiums. *J Law Econ Organ.* 2012;28(4):657-686.
34. Frakes M. Defensive medicine and obstetric practice. *J Empirical Leg Stud.* 2012;9(3):457-481.
35. Dranove D, Watanabe Y. Influence and deterrence: how obstetricians respond to litigation against themselves and their colleagues. *Am Law Econ Rev.* 2010;12(1):69-94.
36. Gimm GW. The impact of malpractice liability claims on obstetrical practice patterns. *Health Serv Res.* 2010;45(1): 195-211.
37. Yang YT, Studdert DM, Subramanian SV, Mello MM. A longitudinal analysis of the impact of liability pressure on the supply of obstetrician-gynecologists. *J Empirical Leg Stud.* 2008;5(1):21-53.
38. Morrissey MA, Kilgore ML, Nelson LJ. Medical malpractice reform and employer-sponsored health insurance premiums. *Health Serv Res.* 2008;43(6):2124-2142.
39. Currie J, MacLeod WB. First do no harm? Tort reform and birth outcomes. *Q J Econ.* 2008;123(2):795-830,835.
40. Hellinger FJ, Encinosa WE. The impact of state laws limiting malpractice damage awards on health care expenditures. *Am J Public Health.* 2006;96(8):1375-1381.
41. Grant D, McInnes MM. Malpractice experience and the incidence of cesarean delivery: a physician-level longitudinal analysis. *Inquiry.* 2004;41(2):170-188.
42. Paik M, Black BS, Hyman DA, Silver C. Will tort reform bend the cost curve? Evidence from Texas. *J Empirical Leg Stud.* 2012;9(2):173-216.
43. Black B, Silver C, Sage W. Defense costs in medical malpractice and other personal injury litigation: evidence from Texas, 1988-2004. *Am Law Econ Rev.* 2008;10:185-245.