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Evaluating the Medical Malpractice System and Options for Reform

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The U.S. medical malpractice liability system has two principal objectives: to compensate patients who are injured through the negligence of healthcare providers and to deter providers from practicing negligently. In practice, however, the system is slow and costly to administer. It both fails to compensate patients who have suffered from bad medical care, and compensates those who haven't. According to opinion surveys of physicians, the system creates incentives to undertake cost-ineffective treatments based on fear of legal liability—to practice "defensive medicine" (Harris Interactive, 2002). The failures of the liability system and the high cost of health care in the United States have led to an important debate over tort policy. How well does malpractice law achieve its intended goals? How large of a problem is defensive medicine and can reforms to malpractice law reduce its impact on healthcare spending?

This paper begins with an overview of the operation of the malpractice system. I then summarize the empirical evidence about its effects. Although the indemnity payments and administrative expenses of the system amount to less than 1 percent of health spending, the costs of defensive medicine are likely to be far greater—by one recent estimate, 2–3 percent of health spending, or over $50 billion per year (Mello, Chandra, Gawande, and Studdert, 2010). The reason is that neither patients nor physicians bear most of the marginal costs of care in any particular case. This situation leads doctors to recommend treatments that balance the costs imposed on them by the malpractice system against a fraction of the value of the resources that the treatments consume. Thus, even if medical malpractice tort law allocated the burden of medical injuries perfectly, insensitivity to the true costs of care would lead physicians (and their patients) to prefer socially excessive precautions against iatrogenic injury (injury related to medical treatment).

The flaws of the existing system have led a number of states to change their laws in a way that would reduce malpractice liability—to adopt "tort reforms." I discuss these reforms, as well as other approaches to apportioning the costs of medical injuries. Evidence from several studies based on variation in states' laws suggests that wisely chosen reforms have the potential to reduce healthcare spending significantly with no adverse impact on patient health outcomes. However, the question of whether tort reforms can help in slowing the *growth rate* of future health spending remains largely unexplored. As is standard for this journal, the references in the paper are intended as a useful entry point to the existing literature: for more comprehensive reviews, the interested reader might begin with Mello and Kachalia (2010) or Sloan and Chepke (2008).

The U.S. Malpractice System: Basic Operation and Theory

The role of the malpractice system in U.S. health care has grown over the past 40 years. Both the number of malpractice claims per physician and the award paid per claim increased rapidly from the 1960s to the 1980s (Danzon, 2000). After 1990, claim frequency stabilized at around 15 claims per 100 physicians per year, but award per claim continued to rise, doubling in real terms between 1990 and 2001 (Thorpe, 2004). By the end of the 2000s, however, there was some evidence that claims frequency had begun to decline (Weiss, 2009).

Most physicians carry malpractice insurance that covers the defense costs of claims as well as any award that is paid: Danzon, Epstein, and Johnson (2004) review the literature on malpractice insurance. The price of malpractice insurance varies dramatically across specialty and geographic area, largely reflecting variations in the expected frequency of claims and award size. For example, in 2009, premiums in Suffolk County, New York, for specialists in internal medicine and obstetrics were $33,000 and $178,000, respectively, whereas premiums in Colorado were approximately one-third as much (Medical Liability Monitor, 2009).

In general, malpractice claims are adjudicated in state courts according to state laws, which typically require three elements for a successful claim: 1) the patient actually suffered an adverse event; 2) the provider caused the event due to action or inaction; and 3) the provider was negligent, which essentially entails showing that the provider took less care than that which is customarily practiced by the average member of profession in good standing, given the circumstances of the doctor and the patient (Keeton et al., 1984). Collectively, this three-part test of the validity of a malpractice claim is known as the “negligence rule” (Budetti and Waters, 2005, offer a layperson’s explanation).

In theory, this rule should both provide compensation to iatrogenically injured patients and lead doctors to take appropriate precautions against accidental harm. In practice, however, the rule performs poorly on both dimensions. According to the landmark Harvard Medical Practice Study (1990), only 1 in 15 patients who suffer an injury because of medical negligence receive compensation, and five-sixths of the cases that receive compensation have no evidence of negligence. More recent research by Studdert, Thomas, Burstin, Zvar, Orav, and Brennan (2000) largely mirrors these findings. Awards for medical malpractice claimants are subject to lengthy delays: on average, it takes around four years to resolve a malpractice claim (Cohen and Hughes, 2007). Moreover, for every dollar spent on compensation, 54 cents went to litigation expenses and other transaction costs (Studdert et al., 2006).

While it is more difficult to assess the extent to which the malpractice system has provided incentives for appropriate care, a variety of evidence suggests that it has not. Retrospective reviews of patients’ medical records indicate that negligent medical injuries are surprisingly common. In their analysis of the Harvard Medical Practice Study data, Brennan et al. (1991) report that 3.7 percent of hospital admissions in New York State in 1984 involved an injury due to medical care, and around one-quarter of these were due to negligence. Thomas et al. (2000) reach a similar conclusion based on an analysis of the incidence and types of adverse medical events in Utah and Colorado in 1992. As noted earlier, many injured patients fail to make claims; thus, the deterrence signal provided by such lawsuits is imprecise. Moreover, malpractice insurance is typically not strongly experience-rated (for example, Sloan, 1990) —that is, doctors’ premiums are not tightly related to claims history. These factors could lead providers to neglect to take precautions that would be cost-effective.

At the same time, the system may create incentives for too much precaution, or defensive medicine. Although doctors are largely insured against the financial costs of malpractice suits, the uninsured nonfinancial costs—such as lost time, stress, and damage to reputation—may be far more important. And as Craswell and Calfee (1986) show, uncertainty in the legal standard of care can also lead to excessive precaution, due to the all-or-nothing nature of the liability decision.

Defensive medicine can take two forms: positive and negative. Positive defensive medicine involves supplying care that is unproductive, not cost effective, or even harmful. Negative defensive medicine involves declining to supply care that could be beneficial; it also includes physicians deciding to exit the profession altogether.

Positive defensive medicine is driven by moral hazard from health insurance, which means that neither patients nor physicians bear most of the costs of care in any particular case. Negative defensive medicine is driven by two facts: that patients reap substantial surplus from medical care for which they cannot adequately compensate providers, and providers bear malpractice risk for which they cannot fully charge patients. If doctors weigh the malpractice downside of a course of care against only a fraction of the upside, then they may withhold treatments that may be in patients' best interests.

Empirical Assessment of the Effects of the Malpractice System and Tort Reforms

It is an empirical question whether malpractice law leads doctors to neglect to take appropriate precautions, or to elect to take inappropriate precautions, or both. Empirical research on the effects of the malpractice system and tort reforms is of three types. The first arm of the literature surveys physicians about their opinion of the role of the malpractice system in determining medical treatments (for example, Studdert et al., 2005). Although opinion surveys indicate that physicians believe that the existing malpractice system leads to both positive and negative defensive medicine, this approach only provides information about physicians' self-reported perceptions: it does not measure actual medical decisions.

A second arm of the literature estimates the effects of tort reforms on claim frequency, payments to claimants, malpractice premiums, and other proxies for "malpractice pressure"—the incentives for healthcare providers to shield themselves from legal liability. This arm of the literature reports two main findings: One lesson is that economic loss, rather than fault, is consistently the most important characteristic of claims in determining the probability and size of award (Danzon and Lillard, 1983; Farber and White, 1991; Brennan, Sox, and Burstin, 1996). The other lesson is that "direct" reforms—those that directly reduce expected malpractice awards—reduce measures of malpractice pressure. The most important reforms of this type are caps on damages and "collateral source offsets." Caps on damages limit a defendant's financial liability (or some element of liability, like pain-and-suffering or punitive damages) in a successful lawsuit. Collateral source offsets revoke the common-law default rule that the defendant must bear the full cost of the injury suffered by the plaintiff even if the plaintiff were compensated for all or part of the cost by an independent or "collateral" source (such as an insurance company).[1]

[1]Under the common-law default rule, defendants liable for medical malpractice always bear the cost of treating a patient for medical injuries resulting from the malpractice, even if the treatment were financed by the patient's own health insurance. Either the plaintiff enjoys double recovery (the plaintiff recovers from the defendant and his own health insurance for medical expenses attributable to the injury) or the defendant reimburses the plaintiff's (subrogee) health insurer, depending on the plaintiff's insurance contract and state or federal law. In states with reforms enacting "collateral source offsets," total damages payable in a malpractice tort are in some circumstances reduced by all or part of the value of collateral source payments.

In contrast, "indirect" reforms have had a less-consistent impact on liability and hence on malpractice pressure. One of the most important reforms of this type is limits on joint and several liability. By default, the doctrine of joint and several liability allows a plaintiff to collect all of his damages from any defendant, regardless of the extent of the defendant's fault. Limits on joint and several liability either abolish the doctrine of joint and several liability, exclude damages for pain and suffering from it, or bar its application if defendants did not act in concert. Other important indirect reforms impose mandatory periodic payments, which require damages in certain cases to be disbursed in the form of an annuity that pays out over time and limits on the contingent fees that plaintiffs' attorneys can charge. Examples of studies that have estimated the effects of reforms on malpractice pressure include Danzon (1982, 1986); Sloan, Mergenhagen, and Bovbjerg (1989); Thorpe (2004); Avraham (2007);2 and Born, Viscusi, and Baker (2009).

Taken alone, however, estimates from these studies are only the first step toward answering the policy question of interest. They show how tort reforms affect doctors' *incentives*; they do not show how tort reforms affect doctors' *behavior*. To assess the efficiency of precautionary behavior induced by the liability system, we must compare how the costs of precaution, and losses from adverse events, respond to changes in the legal environment.

A third arm of the literature seeks to make this comparison by quantifying how treatment decisions and patient health outcomes respond to malpractice pressure. The largest segment of this arm measures malpractice pressure with malpractice premiums, claims frequency, or claims severity. Studies using this approach generally find evidence of positive defensive medicine, or unproductive care (for example, Rock, 1988; Harvard Medical Practice Study, 1990; and Localio et al., 1993; but see Baldwin, Hart, Lloyd, Fordyce, and Rosenblatt, 1995; Kim, 2007), but no evidence of negative defensive medicine, that is no failure to supply care that could be beneficial (for example, Baicker and Chandra, 2005; Dranove and Gron, 2005).

However, concerns about unobserved differences between providers and between small geographic areas qualify these results. The aforementioned studies use information on claims or premiums at the level of individual doctors, hospitals, or areas within a single state over a limited time period to measure malpractice pressure, but malpractice laws within a state at a given time are constant. Thus, variation in their measures of malpractice pressure may be due to unobserved factors that are correlated with the cost and outcomes of care. For example, the claims frequency or insurance premiums of a particular provider or area may be relatively high because the provider is relatively low quality, because the patients are particularly sick (and hence prone to adverse outcomes), because the patients had more "taste" for medical interventions (and hence were more likely to disagree with their provider about management decisions), or because of many other factors. Since these factors are extremely difficult to capture fully in observational datasets, estimates from these studies represent a combination of the true effect of malpractice pressure on treatment decisions or outcomes and unobserved differences in providers, patients, and areas.

One way to address these concerns is to identify the effects of malpractice pressure with variation in tort law reforms across states and over time. This technique yields unbiased assessments of the impact of malpractice pressure under the assumption that the adoption of malpractice reforms is uncorrelated with unobserved differences across states in the determinants of treatment decisions and health outcomes. This assumption can be criticized; for example, see Danzon (2000) and Congressional Budget Office (2006).

[2]Avraham has made available on the web his comprehensive database of all state law tort reforms at ⟨http://www.utexas.edu/law/faculty/ravraham/dstlr.html⟩, accessed September 16, 2010.

In the first paper to use this approach (Kessler and McClellan, 1996), my coauthor and I match longitudinal data on essentially all elderly Medicare beneficiaries hospitalized with serious cardiac illness from 1984, 1987, and 1990 with information on the existence of direct and indirect law reforms from the state in which the patient was treated. We found that reforms that directly limit liability—such as caps on damages—reduced hospital expenditures by 5 to 9 percent in the late 1980s, with expenditure effects that are greater for patients with ischemic heart disease than for patients suffering heart attack (acute myocardial infarction). (Because ischemic heart disease is a less-severe form of illness, those patients may have more "marginal" indications for intensive treatment, leading to a greater scope for defensive practices.) In contrast, reforms that limit liability only indirectly were not associated with any substantial expenditure effects. Neither type of reforms led to any consequential differences in mortality or the occurrence of serious complications. The estimated cost-effectiveness ratio associated with liability-pressure-induced intensive treatment was over $500,000 per additional one-year survivor, with comparable ratios for recurrent heart attacks and heart failure. This level is well above the generally accepted value of a year of life saved of around $100,000 (Cutler and Richardson, 1998). Thus, this study finds that treatment of elderly patients with heart disease does involve defensive medical practices, and that limited reductions in liability can reduce this costly behavior without ill effects on health.

Two studies identify the mechanism through which tort reforms affect physician behavior, which helps predict the effects of existing reforms under different market conditions and of new, untried reforms. In Kessler and McClellan (2002b), we match longitudinal Medicare data with law reforms and data on health insurance markets to explore the ways in which managed care and liability reform interact to affect treatment intensity and health outcomes. We report that direct reforms like caps on damages reduce defensive practices in areas both with low and with high levels of managed care enrollment. At least for patients with less-severe cardiac illness, managed care and direct reforms are substitutes in the effort to reduce defensive practices, so the reduction in defensive practices that can be achieved with direct reforms is smaller in areas with high managed care enrollment.

In Kessler and McClellan (2002a), we integrate four unique data sources to illuminate how reforms affect malpractice pressure and how reform-induced changes in the incentives provided by the liability system affect treatment decisions, medical costs, and health outcomes. That paper matches by state and year the longitudinal Medicare data discussed above (updated to include all years from 1984 to 1994) with data on law reforms, physician-level data on the frequency of malpractice claims from the American Medical Association, and malpractice-claim-level data from the Physician Insurers Association of America. We show that direct reforms improve medical productivity primarily by reducing malpractice claims rates and compensation conditional on a claim, which suggests that other policies that reduce the time spent and the amount of conflict involved in defending against a claim can also reduce defensive practices. A representative finding is that, at least for cases involving elderly heart disease patients, an untried reform that would reduce the legal-defense burden on physicians and hospitals by one-quarter—which is within the range of policy possibilities—could be expected to reduce medical treatment intensity by approximately 6 percent but not to increase the incidence of adverse health outcomes. In the same population, a policy that expedited claim resolution by six months across-the-board could be expected to reduce hospital treatment costs by 2.8 percent without greater adverse outcomes. This finding is consistent with Kessler and McClellan (1997), where we report broad differences in physicians' perceptions of the impact of malpractice pressure in states with and without liability reforms.

Several more recent studies update and refine these estimates of the effects of tort reform, generally finding a small but significant impact on positive defensive medicine. Hellinger and Encinosa (2006) find that states adopting caps on noneconomic damages have 3–4 percent lower overall health spending than states that do not. Baicker, Fisher, and Chandra (2007) find that higher malpractice awards and premiums are associated with higher Medicare spending, especially for imaging services that are often believed to be driven by physicians' fears of malpractice; Smith-Bindman, McCulloch, Ding, Quale, and Chu (forthcoming) confirm the latter finding with an analysis that shows greater use of emergency CT and MRI scans in states without reforms. Sloan and Shadle (2009) find that direct reforms have a negative but statistically insignificant effect on Medicare spending, with no important effect on health outcomes. Avraham and Schanzenbach (2010) show that the effect of reform-induced reductions in health spending translates into increases in private health insurance coverage.

Other work examines the incidence of defensive practice in obstetrics. Using national birth certificate data, Dubay, Kaestner, and Waidmann (1999) show that malpractice-claims risk leads to increased rates of Caesarian-section births, but no better birth outcomes. Similarly, Yang, Mello, Subramanian, and Studdert (2009) find a negative effect of caps for C-section rates; although Currie and MacLeod (2008) (also looking at C-sections) find a positive effect of caps and a negative effect of limits on joint and several liability.

As the evidence about positive defensive medicine has accumulated, its conclusions have become more widely accepted. For example, the Congressional Budget Office (2006) found that adoption of direct reforms leads to significantly lower Medicare hospital spending per beneficiary, but questioned whether their findings, and mine with Mark McClellan, are valid estimates of the causal effect of reforms. However, the Congressional Budget Office (Elmendorf, 2009) revised this earlier assessment of the effects of tort reform and concluded that "the weight of the empirical evidence now demonstrates a link between tort reform and the use of healthcare services."

Evidence of negative defensive medicine is more mixed. In one of the few papers that measures how malpractice liability leads to patient avoidance, Dubay, Kaestner, and Waidmann (2001) examine the effect of tort reforms on prenatal care use and infant health. They find that malpractice pressure results in prenatal care beginning later in the pregnancy, although without significant harmful effects on infant health. In Kessler, Sage, and Becker (2005), my coauthors and I apply the approach of Kessler and McClellan (1996) to assess the impact of reforms on physician supply. We match data from the American Medical Association's Physician Masterfile on the number of practicing physicians in each state for each year from 1985 through 2001 with law reforms and data on healthcare markets. We find that three years after adoption, direct reforms increase physician supply by 3.3 percent, controlling for fixed differences across states and other time-varying state characteristics; using similar methods, Encinosa and Hellinger (2005) report even larger effects. In contrast, Klick and Stratmann (2007) and Matsa (2007) find no effect of reforms on aggregate physician supply, but a significant positive effect on the supply of physicians in high-malpractice-risk specialties and rural areas, respectively.

Future research might examine the effects of a new type of tort reform on both positive and negative defensive medicine: restrictions on the legal discoverability of information gathered as part of private, voluntary error-reporting systems. In theory, restrictions on discoverability have an ambiguous effect on patient welfare. On one hand, limiting injured plaintiffs' access to information could reduce incentives for appropriate care; on the other hand, it could reduce defensive practices and increase incentives for quality improvement. States have historically differed in the legal protection they gave to analyses done by

hospitals, physician groups, and insurers that sought to identify the cause of medical errors. Some states restricted the extent to which such analyses could be used as evidence against defendants in malpractice cases, and some states did not (for a discussion, see Scheutzow, 1999). In 2005, Congress passed and President Bush signed the Patient Safety and Quality Improvement Act (PL 109-41), which restricted state law discoverability of certain activities undertaken by "Patient Safety Organizations" that register with the U.S. Department of Health and Human Services. There is some empirical evidence that the state laws in effect before the adoption of this law provided less than the optimal amount of protection for voluntary error-reporting systems. In a series of case studies, the Institute of Medicine (2000) recommended expanding peer review protections along the lines eventually adopted by the federal act. To date, however, no study has examined the effect of such "peer review protection" laws. Liang, Riley, Rutherford, and Hamman (2007) propose several detailed hypotheses about the effects of this law on patient safety that deserve consideration. Greenberg, Haviland, Ashwood, and Main (2010) investigate the relationship between adverse patient safety events and malpractice pressure in ways that suggest that this may be a promising area for reform.

Alternatives to Malpractice Tort

In this section, I discuss the four main alternatives to conventional, common-law tort systems: guidelines-based systems, enterprise liability, binding alternative dispute resolution, and administrative compensation systems.

Guidelines-Based Systems

Under a guidelines-based system, physicians and hospitals who complied with a clinical practice guideline would be presumed to be non-negligent. Clinical practice guidelines are written statements of what constitutes appropriate treatment for a specific illness, set of symptoms, or type of patient. Proponents of guidelines argue that they promote evidence-based medicine and they inform physicians of best clinical practices; opponents argue that guidelines promote "cookbook medicine" that fails to account for the significant variation in patients' conditions associated with even basic health problems. Guidelines have been developed by both public and private entities, including the U.S. government's Agency for Health Care Research and Quality, state health departments, and large insurers. In one survey of the health services literature, Cabana et al. (1999) suggest that guidelines have had a limited effect on physician behavior for several reasons, including lack of awareness or familiarity; lack of agreement with the guideline recommendation; lack of applicability; and inertia.

A guidelines-based malpractice system would retain most aspects of the current tort system, but would change the method by which the physician negligence element of a malpractice claim is adjudicated. Under common law, physician negligence is an issue of fact for the jury, informed by expert testimony. Although guidelines might seem to be an obvious source of information about the negligence of a given treatment decision in a medical malpractice case, courts generally bar guidelines from being admitted as evidence under the "hearsay rule," which prohibits the introduction of out-of-court statements as evidence. In some cases, guidelines are admitted under the "learned treatise" exception to the hearsay rule. But even in such cases, under most states' common law, no one set of guidelines necessarily trumps any other, and guidelines do not carry any more weight than any other form of expert testimony (U.S. Congress Office of Technology Assessment, 1994). Adopting a guidelines-based system would thus generally require legislative action.

Several states have experimented with reforms that make evidence of compliance with guidelines statutorily admissible by defendants as an affirmative defense to malpractice. For

example, Florida and Maine passed laws creating demonstration projects in the 1990s that allowed physicians to opt into a guidelines-based malpractice system (U.S. Congress Office of Technology Assessment, 1994). Under these reforms, physicians who complied with the guidelines had an affirmative defense to malpractice, but plaintiffs could use noncompliance with guidelines as evidence of negligence.3 Deprez et al. (1997) find that the Maine project had limited effects on physician practice patterns, but that this may have been due to its idiosyncratic design and administration. Future research might further investigate the effects of such guideline-based reforms.

Enterprise Liability

"Enterprise liability" is a term used to describe a wide range of systems in which healthcare organizations bear at least some of the liability for malpractice that is traditionally borne by doctors. On one end of the spectrum are voluntary agreements by hospitals to provide malpractice insurance to affiliated physicians, also known as "channeling." For example, hospital systems operated by the Federation of Jewish Philanthropies in New York and the Harvard Medical Institutions in Boston have historically purchased malpractice insurance for their affiliated and employed physicians (Sage, Hastings, and Berenson, 1994). On the other end of the spectrum, proposed changes to state or federal law would vest physicians' malpractice liability for all or most claims in hospitals or health plans (for example, Abraham and Weiler, 1994).

Proponents of enterprise liability argue that it would make the existing malpractice system more efficient (Sage, 1997). They argue that healthcare organizations such as hospitals or health plans have the ability to monitor physicians at comparatively low cost, so these organizations could serve as an efficient intermediary between physicians and the tort system. In addition, to the extent that medical errors are caused by systemic errors rather than the carelessness of individual physicians, assigning liability to institutions could lead to systemwide quality improvement. For the same reasons, imposing enterprise liability might improve the functioning of the market for medical malpractice liability insurance.

Opponents emphasize that enterprise liability can already be implemented privately but is rare—which they argue suggests that gains from enterprise liability may be limited. Proponents have two responses to this criticism. First, they argue that gains from enterprise liability can only be achieved if a large number of providers adopt it. According to this reasoning, efficiency enhancements from changes in medical practices due to private agreements "spill over" from adopting to nonadopting providers (Baker, 1999). Second, they argue that bargaining failures inhibit the ability of physicians and healthcare institutions to capture the gains from enterprise liability. Hospitals' relationships with physicians are restricted by anti-kickback laws that prevent hospitals from paying physicians for referrals. In addition, doctors and hospitals cannot realize or divide gains from enterprise liability that would accrue to patients in the form of decreased (uncompensated) harm from medical errors. In both cases, proponents argue that statutory reform is necessary to facilitate the adoption of an enterprise liability system.

No states have adopted law reforms to impose or facilitate enterprise liability, so there is little systematic empirical evidence about its effects. However, the existing examples of voluntary enterprise liability deserve further empirical attention. Along with the examples mentioned above, liability for the negligent acts of staff physicians is assumed expressly by some managed care organizations such as Kaiser Permanente and government organizations

[3]Plaintiffs were prohibited by the Maine statute from using noncompliance with the guidelines as evidence of malpractice. However, an anomaly in the statute may have actually allowed guidelines to be used against physicians in certain cases (Hyams, Shapiro, and Brennan, 1996).

such as the Veterans Administration (Sage, Hastings, and Berenson, 1994). The effects of enterprise liability could be identified by comparing their practices to the practices of providers in otherwise similar organizations that do not assume liability.

Binding Alternative Dispute Resolution

Binding alternative dispute resolution refers to agreements between providers and patients to submit disputes over alleged malpractice to a third party other than a court. Proponents of this approach argue that it compensates victims faster, more equitably, and with lower transaction costs. It is also alleged to improve the deterrence signal to providers, due to its more informed, consistent decision-making process (Rolph, Moller, and Rolph, 1997).

Opponents of binding alternative dispute resolution argue that its decisions are biased toward defendants, because firms that supply arbitrators, and the arbitrators themselves, are more likely to develop ties to provider organizations than to individual plaintiffs. In addition, opponents criticize the fact that parties to a binding alternative dispute resolution generally have limited appeal rights and thus limited ability to correct erroneous decisions (Polzer, 2000).

As with enterprise liability, a strong argument against binding alternative dispute resolution is that it can already be implemented privately but rarely is. In a survey of California physicians and hospitals, Rolph et al. (1997) find that only 9 percent of physicians and 9 percent of hospitals, accounting for 20 percent of hospital admissions, use binding alternative dispute resolution to adjudicate malpractice claims. Based on a related survey by the California Association of Health Plans, only Kaiser Permanente and six small plans used alternative dispute resolution to adjudicate malpractice claims; other plans used it to adjudicate contract disputes only. Proponents of alternative dispute resolution respond that such agreements are technically enforceable under federal law but state legislative and judicial hostility impede their implementation (Metzloff, 1996). Specifically, the Federal Arbitration Act of 1925 makes binding arbitration enforceable and preempts inconsistent state laws; nevertheless, state legislatures and courts have imposed limitations on arbitration that have been upheld in the federal courts (Polzer, 2000).

There is a surprising lack of recent empirical evidence about the effects of binding alternative dispute resolution, especially in the realm of medical malpractice, although early work by MacCoun (1991) and Rolph, Moller, and Peterson (1994) offer empirical examinations of arbitration and mediation more broadly. Future work might examine integrated health plans that use alternative dispute resolution for some patients but not for others, or compare physician and hospitals that are similar but for their use of alternative dispute resolution.

Administrative Compensation Systems

The most radical proposed change is to replace the current tort system with an administrative compensation system. Administrative compensation systems take two forms. The “health courts” model substitutes a specially trained judge as the finder of fact and arbitrator of law for the current system’s generalist judges and juries (Mello, Studdert, Kachalia, and Breenan, 2006). The “no fault” model uses an administrative body rather than a court. Both approaches, but especially no-fault, generally seek to compensate a larger group of patients without regard to provider negligence or fault, but to compensate them less generously. Such systems are also are generally coupled with other policy changes that either mandate or more strongly encourage experience-rated malpractice insurance (Studdert and Brennan, 2001) to mitigate any adverse effects on incentives for precaution. Adoption of either reform would definitely require legislative action, and might even conflict with some

states' constitutional protections of rights of access to courts and a jury trial (Mello, Studdert, Moran, and Dauer, 2008).

Proponents of these reforms emphasize their potential to direct compensation to injured patients more accurately and to reduce transaction costs. Opponents criticize them on two grounds: First, they argue that the broadening of the base of compensable injuries will lead to much higher spending, even accounting for the savings in administrative costs and less-generous compensation levels. Second, they argue that no-fault in particular will reduce incentives for precaution and increase medical injuries, even accounting for any increase in the extent of experience rating of malpractice insurance that would accompany it.

Although no state has adopted either of these reforms, three types of studies can be used to assess their potential effects. First, in the 1970s, some states adopted no-fault for automobile injuries, and studies of its consequences highlight some strengths and weaknesses. According to Carroll, Kakalik, Pace, and Adams (1991), costs of litigation, settlement, and other administration of compensation in a typical auto tort liability system amounted to about one-third of the cost of injuries covered by insurance (although this excludes the publicly financed costs of administering the civil justice system, which are substantial). Under a typical no-fault plan, they find that transaction costs would be reduced by 39 percent. Carroll et al. also show that no-fault delivers compensation for auto accidents faster and makes it more closely track economic loss. Under a typical tort system, claimants receive initial compensation payments 181 days after the accident; under a typical no-fault system, claimants receive initial compensation payments 116 days after the accident. In addition, under a typical tort system, claimants with less-serious injuries tend to receive more than their economic loss (see also Carroll and Abrahamse, 1999, and the work cited therein, for evidence on the extent of overcompensation due to fraud and abuse), with fully 62 percent of all injured people receiving more than their economic loss; conversely, claimants with more serious injuries tend to receive less than their economic loss, with 27 percent of injured people receiving less than their economic loss. Carroll and Kakalik (1993) argue that a typical no-fault system, in comparison to a typical tort system, reduces both overcompensation of minor injuries and undercompensation of major ones.

Empirical work investigating the effects of no-fault on the auto accident rate generally finds that it leads to greater numbers of fatal accidents, with some papers based on earlier data finding no effect; this evidence is reviewed in Kessler and Rubinfeld (2007). The effect of medical no-fault on physicians' incentives could be larger than the effect of auto no-fault on drivers' incentives; after all, in the auto context, drivers still face strong incentives to avoid accidents even under no-fault—the personal cost of injuries and criminal penalties—which are arguably weaker in the medical context.

Second, Florida and Virginia have adopted limited medical no-fault systems for certain severe birth-related neurological impairments (Bovbjerg, Sloan, and Rankin, 1997). Both systems compensate claimants for medical and custodial expenses plus reasonable attorneys' fees. The Florida system also allows for a onetime payment over and above such expenses of up to $100,000; the Virginia system also allows for lost earnings from ages 18–65 of 50 percent of average wages. Both systems sought to make the no-fault remedy for qualifying claims exclusive, but at least in Florida, courts have allowed some claimants to pursue tort and no-fault claims simultaneously.

Based on a comparison of similar tort and no-fault claims from Florida, Bovbjerg, Sloan, and Rankin (1997) conclude that no-fault would be superior to tort on compensation grounds for at least some medical injuries (see also Horwitz and Brennan, 1995, for an evaluation of the Florida program). They show that no-fault delivers roughly the same level of net benefifi

ts to claimants as tort—$486,324 per case in the no-fault system versus $399,061 for a comparable tort claim (in 1995 dollars)—but with overhead and transaction costs that were less than one-sixth as large ($55,549 per case in the no-fault system versus $351,837 for a comparable tort claim). In addition, no-fault delivers these benefits about 33 percent faster for the median claim—with more than a year's less delay. However, these no-fault programs are small, apply only to a narrowly defined set of claims, and in some cases still offer a tort alternative, which makes their results difficult to generalize. In Florida, the no-fault system covered only an average of 24.5 claims per year; in Virginia, the system covered only 3.3 claims per year.

Third, a group of researchers from Harvard Medical School simulated the cost of a medical no-fault system similar to Sweden's, based on data from a broad study of medical injuries in two states (Studdert et al., 1997; Brennan, Studdert, and Thomas, 2000; Studdert and Brennan, 2001). The researchers reviewed the medical records of a representative sample of 15,000 hospital discharges from Utah and Colorado in 1992. For each discharge with a "no-fault compensable event"—that is, if the patient had a medical injury that resulted in significant disability that could have been avoided by more appropriate medical care—they calculated the damages that the patient suffered according to a schedule resembling the Swedish model. This series of studies finds that a no-fault system that cost approximately as much as the conventional malpractice system could provide somewhat less-generous compensation to a much greater number of patients—three to six times as many patients—with substantially lower transaction costs per case.

Conclusion

Empirical research on the effects of the malpractice system and potential reforms suggest two main findings. First, doctors do practice defensive medicine. Studies of the effects of malpractice pressure on positive defensive medicine find that decreases in malpractice pressure lead to decreases in the supply of care having minimal medical benefit—that is, to decreases in healthcare costs, with essentially no adverse consequences for health outcomes. Second, tort reforms reduce the prevalence and cost of defensive medicine. In particular, reforms such as caps on damages and collateral source offsets that have a direct effect on awards reduce malpractice pressure and, in turn, defensive medicine. For example, by reducing claims rates and compensation conditional on a claim, a range of feasible policy reforms could reduce medical expenditures for elderly heart disease patients by approximately 6 percent without any increase in adverse health outcomes. Although the cost of defensive medicine in the broader population is almost surely smaller, it is still likely to be quite substantial; even at 2–3 percent of total spending, expenditures on defensive practices would be over $50 billion per year.

Several important issues remain for future research. First, although approaches other than tort reform hold significant promise, comparatively less is known about their likely effects. Although a tort system with reforms is more efficient than a tort system without them, tort systems with and without reforms still compensate injured patients poorly (Sloan and Hsieh, 1990; Studdert, Yang, and Mello, 2004). There is evidence that no-fault, the most radical of the alternative approaches, would lead to both faster and more equitable compensation at lower transactions costs. However, no-fault has two important problems: First, it is unclear whether a broad no-fault system would give providers the incentive to take appropriate care, and evidence from the automobile tort context suggests that this may be a valid concern. Second, no-fault would be politically difficult and perhaps impossible to implement. Mello and Brennan (2002) report that their attempts to encourage adoption of no-fault in Utah and Colorado crumbled against the strength of the lobby of the American Trial Lawyers Association and lack of interest on the part of malpractice insurance companies.

Second, little is known about how the liability system will interact with recently proposed payment reforms that seek to reduce incentives to supply cost-ineffective care. The Kessler and McClellan (2002b) finding that the reduction in defensive practices achieved with tort reforms in the 1990s was smaller in areas with high managed care enrollment suggests that payment and tort reform will be substitutes in the effort to reduce defensive medicine; future research might seek to model these relationships more formally.

Third, the effect of the malpractice system and tort reform on the *growth* in health spending, as opposed to the *level*, also remains an important issue for future research. On one hand, the fact that most high-income countries have experienced similar rates of spending growth despite having very different liability systems suggests a lack of a causal link (Smith, Newhouse, and Freeland, 2009). On the other hand, because the standard of care required by the negligence rule changes with the availability of new treatments, higher-pressure malpractice regimes have the potential to encourage more-rapid technology diffusion and faster spending growth. Although studies that find an effect of malpractice pressure on the use of high-tech services such as intensive cardiac care and imaging suggest that the liability system may play a role in technology adoption decisions, there is surprisingly little hard evidence that they do.

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