

Working Paper

The Effects of the U.S. Malpractice System: A Review of the Empirical Literature

Daniel P. Kessler*

Stanford University, Hoover Institution, and the National Bureau of
Economic Research

* I would like to thank Ashley Ensign for excellent research assistance and the Manhattan Institute for Policy Research for financial support. Sections of this essay have been taken from Daniel Kessler and Mark McClellan, "Do Doctors Practice Defensive Medicine?", Quarterly Journal of Economics 111: 353-90 (1996); the Winter 2000 edition of the NBER Reporter, available at <http://www.nber.org/reporter/winter00/kessler.html>; and Daniel Kessler and Daniel Rubinfeld, "Empirical Study of the Common Law and Legal Process," forthcoming in the Handbook of Law and Economics. The views expressed in this paper do not necessarily reflect those of the Manhattan Institute or any of the author's institutions.

Introduction

The medical malpractice liability system has two principal objectives: to compensate patients who are injured through the negligence of health care providers, and to deter providers from practicing negligently. By most standards, the system does not achieve its compensation goal. First, the system is neither sensitive nor specific in its distribution of awards. 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. Reviews of closed malpractice insurance claims by Taragin et al. (1992) and Farber and White (1994), as well as more recent work by Studdert et al. (2000), largely mirror these findings. Second, awards for medical malpractice claimants are subject to lengthy delays: on average, it takes around 4 years to resolve a malpractice claim (Sloan et al. 1993, table 2.4). Third, according to Weiler et al. (1993 p. 53), litigation expenses and other transaction costs account for 55 to 60 percent of malpractice compensation expenses.

The unpredictability of malpractice compensation suggests that the system may not be achieving its second goal: to provide incentives to protect patients against negligent medical injury. Injury attributable to medical care generally, and negligent care specifically, is surprisingly common. According to the Institute of Medicine (2000), medical errors are the leading cause of accidental death in the United States: estimates of the number of deaths in 1997 due to medical errors range from 44,000 to 98,000. Medication errors alone account for approximately 7,000 deaths per year, exceeding the number of deaths due to workplace injuries. The Harvard Medical Practice Study (1990)

reports that nearly 1 percent of hospital admissions in New York state in 1984 involved an injury due to negligent care; the proportion of serious injuries due to negligence was even higher. 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.

At the same time, U.S. health spending has reached unprecedented levels, with no sign of slower growth rates in sight. The prevalence of mistakes and the high cost of health care in the U.S. have led to an important debate over tort policy. Does malpractice law lead doctors and hospitals to neglect to take appropriate precautions to avoid harming patients? Or, does it lead doctors and hospitals to elect to take inappropriate precautions, and practice "defensive medicine" -- costly treatment decisions based on fear of legal liability rather than patients' best interests?

The purpose of this paper is to review existing empirical research on the effects of the U.S. malpractice system (see Danzon (1991, 2000) for excellent and comprehensive alternative reviews). The paper proceeds in four sections. Section I outlines the operation of the U.S. malpractice system and why understanding its effects on medical care is an important empirical issue. Section II summarizes the empirical evidence about the effects of the existing malpractice system, and the effects of "tort reforms" -- changes to state law that seek to reduce liability. In summary, the empirical evidence supports the hypotheses that existing malpractice system leads to defensive medicine and that tort reforms reduce its prevalence. Section III discusses research on other approaches to apportioning the costs of medical injuries that seek to supplant the tort system. Section IV concludes with a comparison of these approaches.

I. The U.S. malpractice system: basic operation and theory

In general, malpractice claims are adjudicated in state courts according to state laws. These laws require three elements for a successful claim. First, the claimant must show that the patient actually suffered an adverse event. Second, a successful malpractice claimant must establish that the provider caused the event: the claimant must attribute the injury to the action or inaction of the provider, as opposed to nature. Third, a successful claimant must show that the provider was negligent. Stated simply, this 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."

In theory, the negligence rule should lead doctors' decisions to reflect society's overall interests by leading them to balance the social benefits of medical care, the costs of precaution, and the costs of negligence. In practice, however, this may not be true. On one hand, underclaiming by injured patients, imprecision of the deterrence signal, and insurance against the financial costs of malpractice that is not strongly experience-rated (e.g., Sloan (1990)) could lead providers to neglect to take precautions that would be cost-effective.

On the other hand, the system may create incentives for too much precaution, or "defensive medicine." The practice of defensive medicine can take two forms: "positive" and "negative." Positive defensive medicine involves the supply of care that is relatively unproductive for patients; negative defensive medicine involves declining to supply care that is relatively productive for patients.

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. The costs of precautionary services financed through health insurance are generally larger than the uninsured cost of the physician's own effort. Doctors and patients make decisions that balance the costs of precaution that they bear against the costs imposed on them by the malpractice system. Thus, even if medical malpractice tort law allocated the burden of medical injuries with neither errors nor transaction costs, insensitivity to the true costs of care would lead physicians and their patients to prefer to take socially excessive precautions against injuries. The added burden due to errors and transaction costs only intensifies this effect.

Negative defensive medicine is driven by the fact that patients reap substantial surplus from medical care for which they can not compensate providers, while providers bear malpractice risk for which they can not 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.

Both forms of defensive medicine may be much more economically important than the costs of awards and settlements imposed by the malpractice system. If the costs of precaution borne by patients and physicians account for a small share of the total costs, but the costs imposed by the malpractice system are roughly proportional to the costs of awards and settlement payments, then a \$1 change in malpractice awards could induce a change in treatment decisions that costs much more than \$1. Thus, although the direct cost of malpractice tort awards, including transaction costs, is relatively insignificant at roughly one percent of medical spending (Danzon 2000), the indirect costs of the

malpractice tort system, in terms of relatively unproductive medical treatment or loss of life due to medical errors, are likely to be far greater.

II. Empirical assessment of the effects of the malpractice system and tort reforms

Simple statistical indicators suggest that the role of the malpractice system in health care has grown over the past 40 years. As Danzon (2000) points out, the number of malpractice claims per physician and the award paid per claim increased rapidly in the U.S. from the 1960s to the 1980s. Claim frequency increased at more than 10 percent per year, reaching a peak of 17 claims per 100 physicians in 1986. Awards paid per claim increased at roughly twice the rate of inflation (Danzon (1986)), with some evidence of even greater growth for the most costly cases (Shanley and Peterson (1987)). In turn, malpractice liability insurance markets experienced two "crises," one in the mid-1970s and one in the mid-1980s, in which prices for malpractice insurance skyrocketed and availability of insurance contracted (see Danzon (2000), section 4.2, for a cataloguing of the literature on malpractice insurance). Taken together, these factors led states' legislatures to change their laws governing medical malpractice claims to reduce liability – to adopt tort reforms.

Empirical research on the effects of the malpractice system and tort reforms is of one 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 (Reynolds et al. 1987; Moser and Musaccio 1991; U.S. Congress OTA 1994; Klingman et al. 1996). Although surveys indicate that physicians believe that the existing malpractice system leads to defensive medicine, surveys only provide information about physicians' self-

reported perceptions of the effects of law: they do not measure behavior in real situations.

The second arm of the literature estimates the effects of the characteristics of claims and of tort reforms on compensation and other dimensions of "malpractice pressure" -- the incentives for hospitals and physicians to shield themselves against the costs of legal liability. This arm of the literature reports three main findings. First, 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 et al. 1996).

Second, tort reforms significantly reduce malpractice pressure. Danzon (1982, 1986) and Sloan, Mergenhagen, and Bovbjerg (1989) find that tort reforms that cap physicians' liability at some maximum level or require awards in malpractice cases to be offset by the amount of compensation received by patients from collateral sources¹ reduce payments per claim. For example, based on 1975-1978 data, Danzon (1982) reports that states enacting caps on damages had 19 percent lower awards, and states enacting mandatory collateral source offsets had 50 percent lower awards. Based on 1975-1984 data, Danzon (1986) reports that states enacting caps had 23 percent lower awards, and states enacting collateral source offsets had 11 to 18 percent lower awards. Based on 1975-1978 and 1984 data, Sloan, Mergenhagen, and Bovbjerg (1989) find that

¹ Reforms requiring collateral-source offset revoke the common-law default rule which states 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. 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. However, some states have enacted reforms that specify that total damages payable in a malpractice tort are to be reduced by all or part of the value of collateral source payments.

caps reduced awards by 38 to 39 percent, and collateral source offsets reduced awards by 21 percent. Danzon (1986) also finds that collateral-source-rule reforms and statute-of-limitations reductions reduce claim frequency. Based on data from malpractice insurance markets, Zuckerman, Bovbjerg, and Sloan (1990) and Barker (1992) reach similar conclusions: Zuckerman, et al. find that caps on damages and statute-of-limitations reductions reduce malpractice premiums, and Barker finds that caps on damages increase profitability.

Third, the two reforms most commonly found to reduce payments and the frequency of claims, caps on damages and collateral source rule reforms, share a common property: they *directly* reduce expected malpractice awards. Caps on damages truncate the distribution of awards; mandatory collateral source offsets shift down its mean. Other malpractice reforms that only affect malpractice awards *indirectly*, such as reforms imposing mandatory periodic payments (which require damages in certain cases to be disbursed in the form of annuity that pays out over time), have had a less discernable impact on liability and hence on malpractice pressure.

Taken alone, estimates of the impact of reforms on frequency and severity from these analyses are only the first step toward answering the policy question of interest. They provide evidence only of the effects of tort reforms on doctors' incentives; they do not provide evidence of the effects of tort reforms on doctors' behavior. Identifying the economic efficiency of precautionary behavior due to legal liability requires a comparison of the response of costs of precaution and the response of losses from adverse events to changes in the legal environment.

The third arm of the literature investigates how treatment decisions and patient health outcomes respond to malpractice pressure. Early work estimates the effect of physicians' actual exposure to malpractice claims to clinical practices and outcomes (Rock 1988; Harvard Medical Practice Study 1990; Localio et al. 1993; Baldwin et al. 1995). Rock, Localio et al., and the Harvard Medical Practice Study find results consistent with defensive medicine; Baldwin et al. do not. However, concerns about unobserved differences between providers and between small geographic areas qualify the results of all of these studies. These studies use frequency of claims or magnitude of insurance premiums at the level of individual doctors, hospitals, or areas within a single state over a limited time period to measure malpractice pressure. Because malpractice laws within a state at a given time are constant, the measures of malpractice pressure used in these studies arose not from laws but from primarily unobserved factors at the level of individual providers or small areas. 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 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.

More recent work seeks to address this problem by identifying the effects of malpractice pressure with variation across states and over time in tort reforms. This

technique yields unbiased assessments of the impact of malpractice pressure under the assumption that the adoption of malpractice law reforms is uncorrelated with unobserved differences across states in the characteristics of patients and providers (see Danzon 2000 for a critique of this assumption).

Much of this work has investigated the consequences of malpractice pressure for positive defensive medicine. Kessler and McClellan (1996) use longitudinal data on essentially all elderly Medicare beneficiaries hospitalized with serious cardiac illness from 1984, 1987, and 1990, matched with information on the existence of direct and indirect law reforms from the state in which the patient was treated. They 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 effects that are greater for ischemic heart disease (IHD) than for heart attack (AMI) patients.² 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 expenditure/benefit ratio associated with liability-pressure-induced intensive treatment was over \$500,000 per additional one-year survivor, with comparable ratios for recurrent AMIs and heart failure. Thus, treatment of elderly patients with heart disease does involve defensive medical practices, and limited reductions in liability can reduce this costly behavior.³

Two recent studies identify the mechanism through which direct reforms affect physician behavior, in order to help predict whether existing reforms under new market

² Because IHD is a less severe form of illness, IHD patients may have more “marginal” indications for intensive treatment, leading to a greater scope for defensive practices.

³ Dubay et al. (1999) confirm that defensive practices exist in nonelderly populations, although they report that the costs of defensive medicine in obstetrics are small.

conditions, or new and untried types of reforms, will have similar effects. Kessler and McClellan (2002b) 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. They report that direct reforms reduce defensive practices in areas both with low and with high levels of managed care enrollment. Managed care and direct reforms do not have long-run interaction effects that are harmful to patient health. However, at least for patients with less severe cardiac illness, managed care and direct reforms are substitutes, so the reduction in defensive practices that can be achieved with direct reforms is smaller in areas with high managed care enrollment.

Kessler and McClellan (2002a) 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 1984-1994) with data on law reforms; physician-level data on the frequency of malpractice claims from the American Medical Association's Socioeconomic Monitoring System (AMA SMS); and malpractice-claim-level data from the Physician Insurers Association of America on claim costs and claim outcomes. They report that although direct reforms improve medical productivity primarily by reducing malpractice claims rates and compensation conditional on a claim, other policies that reduce the time spent and the amount of conflict involved in defending against a claim can also reduce defensive practices substantially. For example, at least for elderly heart disease patients, an untried reform that reduced 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), which reports broad differences in physicians' perceptions of the impact of malpractice pressure in states with and without liability reforms.

Other work has investigated the consequences of malpractice pressure for negative defensive medicine. For example, Dubay, Kaestner, and Waidmann (2001) find that a decrease in malpractice premiums that would result from a feasible policy reform would lead to a decrease in the incidence of late prenatal care by between 3.0 and 5.9 percent for black women, and between 2.2 and 4.7 percent for white women. However, although they found evidence that malpractice pressure was associated with greater delay and fewer prenatal visits, they found no evidence that this negatively affected infant health. More recent work finds substantial evidence of negative defensive medicine. Hellinger and Encinosa (2003) report that the supply of physicians was approximately 12 percent greater in states with caps on noneconomic damages, as compared to states without them.

Future research should examine the effects of a new type of tort reform for both positive and negative defensive medicine: states' restrictions on the legal discoverability of information gathered as part of private, voluntary error reporting systems. States differ in the legal protection they give to analyses done by hospitals,

physician groups, and insurers that seek to identify the cause of medical errors; some states restrict the extent to which such analyses can be used as evidence against defendants in malpractice cases, and some states do not (e.g., Scheutzow 1999). Thus, the effects of strengthening "peer review protection" laws could be estimated with the same methods used to estimate the effects of conventional tort reforms.

There is some empirical evidence that existing laws provide less than the optimal amount of protection for voluntary error reporting systems. In "To Err is Human," the Institute of Medicine (IOM) (2000) examines the experience of a few error reporting systems. Although the scope of this study was limited (in that it examined protections in only a few states at a single point in time), it recommended that Congress pass legislation to extend peer review protections to data related to patient safety and quality improvement that are collected and analyzed by health care organizations for internal use or shared with others solely for purposes of improving safety and quality.

III. Empirical assessment of alternatives to tort

In this section, I discuss four alternatives to conventional, common-law tort systems: guidelines-based systems, enterprise liability, binding alternative dispute resolution, and no-fault.

A. Guidelines-based systems

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 the inform physicians of

best clinical practices; opponents argue that guidelines promote "cookbook medicine" that fails to account for the significant variation in patients' condition associated with even basic health problems. Guidelines have been developed by both public and private entities, including the U.S. Agency for Health Care Research and Quality (a division of the U.S. Department of Health and Human Services), state health departments, and large insurers. A recent survey of the health services literature (Cabana et al. 1999) suggests 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 third element of a malpractice claim – physician negligence -- is adjudicated. Under common law, physician negligence is an issue of fact for the jury, informed by expert testimony. Under a guidelines-based system, physicians and hospitals who complied with a clinical practice guideline would be presumed to be non-negligent. Although guidelines are 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. Guidelines are sometimes admitted under the "learned treatise" exception to the hearsay rule. 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 OTA 1994). Thus, adoption of a guidelines-based system would require legislative action.

Several states have already experimented with law 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 in to a guidelines-based malpractice system (see U.S. Congress OTA 1994 for a description). Under these guidelines-based systems, physicians who complied with the guidelines had an affirmative defense to malpractice, but plaintiffs could use noncompliance with guidelines as evidence of negligence.⁴ Deprez et al. (1997) evaluate the Maine demonstration project, and present two conclusions: 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 should further investigate the potential effects of such guideline-based reforms.

B. Enterprise liability

Enterprise liability is a term used to describe a wide range of systems in which health care 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 Federal of Jewish Philanthropies in New York and the Harvard Medical Institutions in Boston currently purchase malpractice insurance for their affiliated and employed physicians (Sage 1994). On the other end of the spectrum are changes to state or federal law that would vest

⁴ 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 (see Hyams et al. 1996).

physicians' malpractice liability for all or most claims in hospitals or health plans (e.g., Abraham and Weiler (1994)).

Proponents of enterprise liability emphasize how it would make the existing malpractice system more efficient (see Sage 1997 for an excellent summary of these arguments). According to this reasoning, enterprise liability would improve the deterrence incentives provided by the tort system by assigning the costs of liability to health care organizations such as hospitals or health plans. Because such organizations have the ability to monitor physicians at comparatively low cost, these organizations would 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 would lead to system-wide quality improvement as well. For the same reasons, imposing enterprise liability might also improve the functioning of the market for medical malpractice liability insurance.

Opponents emphasize that enterprise liability can already be implemented privately but is not widespread. They argue that this is evidence that gains from enterprise liability may be limited. Proponents have two responses to this criticism. First, they argue that there are increasing returns to private agreements that enhance efficiency in health care, e.g., that significant deterrence benefits 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 (see Baker 1999 for evidence of the spillover benefits of managed care). Second, they argue that bargaining failures inhibit

the ability of physicians and health care institutions to capture enterprise liability's gains. For example, hospitals rarely have financial relationships with physicians; indeed such relationships are restricted by anti-kickback laws that prevent hospitals from paying physicians for referrals. And, bargaining between doctors and hospitals would not include any 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.

Since no states have adopted law reforms to impose or facilitate enterprise liability, there is little systematic empirical evidence about its effects. However, two examples of voluntary enterprise liability deserve further empirical attention. First, the effects of enterprise liability could be identified by comparing the medical practices of physicians and hospitals that channel liability (such as the Harvard Medical Institutions) to the practices of otherwise similar physicians and hospitals that do not. Second, liability for the negligent acts of staff physicians is assumed expressly by some managed care organizations such as Kaiser-Permanente and government organizations such as the Veterans Administration (Sage 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.

C. Binding alternative dispute resolution (ADR)

Binding ADR refers to agreements between providers and patients to submit disputes over damages from alleged malpractice to a third party other than a court.

Proponents of binding ADR argue that it is more efficient and more equitable than are courts at administering a tort-based malpractice system. Binding ADR is alleged to compensate victims faster, more equitably, and with lower transaction costs. Binding ADR is also alleged to improve the deterrence signal to providers, due to its more informed, consistent decision-making process (see Rolph et al. 1997 for an excellent summary of these arguments). Opponents of binding ADR argue that its decisions are biased toward defendants, because firms that supply arbitrators and the arbitrators themselves are more likely to develop ties to the provider organizations that pay for their services than to individual plaintiffs. In addition, opponents criticize the fact that parties to a binding ADR generally have limited appeal rights, and thus limited ability to correct erroneous decisions (see Polzer 2000 for a summary of these arguments).

As with enterprise liability, a strong argument against binding ADR is that it can already be implemented privately, but has yet to supplant the conventional malpractice system. Based on a survey of California physicians and hospitals, Rolph et al. (1997) find that they are surprisingly uncommon. Only 9 percent of physicians and 9 percent of hospitals, accounting for 20 percent of hospital admissions, use ADR agreements to adjudicate malpractice claims. Based on a related survey by the California Association of Health Plans, only Kaiser-Permanente and six small plans used ADR to adjudicate malpractice claims; other plans used ADR to adjudicate contract disputes only (Rolph et al. 1997). Proponents of ADR respond that state legislative and judicial hostility to ADR agreements, even though such agreements are technically enforceable under Federal law, are key impediments to their implementation (Metzloff 1996). Specifically, the Federal Arbitration Act of 1925 (FAA) makes binding arbitration enforceable and preempts state

laws inconsistent with the FAA; nevertheless, state legislatures and courts have imposed limitations on arbitration that have been held upheld in the federal courts (see Polzer (2000) for a description of some of these limitations).

There is also a surprising lack of empirical evidence about the effects of binding ADR, especially in the realm of medical malpractice (see MacCoun (1991) and Rolph, Moller, and Peterson (1994) for empirical examinations of arbitration and mediation more broadly). Future work might compare the treatment of patients in a single integrated health plan that uses ADR for some patients but not for others, or compare the medical practices of physician and hospitals that are comparable but for their use of ADR versus the conventional malpractice system to resolve malpractice disputes.

D. No-fault

The most radical proposed change to the current malpractice system is no-fault compensation for medical injuries. No-fault systems use an administrative mechanism rather than the courts to compensate broad range of injuries without regard to provider negligence or fault; no-fault systems also generally compensate claimants less generously than the conventional malpractice system. No-fault systems are generally coupled with other policy changes that either mandate or encourage more strongly experience-rated malpractice insurance (e.g., Studdert and Brennan 2001) to mitigate any adverse effect of no-fault on incentives for precaution. Thus, adoption of a no-fault system would require legislative action.

Proponents of no-fault emphasize its superior performance on compensation goals and the savings in transaction costs that it would achieve. Opponents criticize no-fault on

two grounds. First, they argue that the broadening of the base of compensable injuries will lead to much higher compensation costs, even accounting for the savings in administrative costs and less generous compensation levels. Second, they argue that no-fault 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 universal medical no-fault, three types of studies can be used to assess its likely effects. First, several states have adopted no-fault compensation for automobile accidents. Studies from the auto context highlight both the strengths and weaknesses of no-fault compensation systems. According to Carroll et al. (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; this excludes the publicly-financed costs of administering the civil justice system, which are substantial (Kakalik and Robyn 1982). Under a typical no-fault plan, they find that transaction costs would be reduced by about 39 percent. Carroll et al. (1991) also show that no-fault would deliver compensation for auto accidents faster and make 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, or 36 percent faster. 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; 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. By comparison, under a typical no-fault system, only 22 percent of injured people receive more than their economic loss, and 16 percent receive less than their economic loss.

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 (see Kessler and Rubinfeld (2004) for a detailed review). This implies that the reduction in incentives from medical no-fault could be substantial, since the effect of medical no-fault on physicians' incentives could be larger than the effect of auto no-fault on drivers' incentives. Both auto and medical no-fault systems are generally accompanied by experience-rated accident insurance. However, in the auto context, drivers still face strong incentives to avoid accidents even under no-fault -- the personal cost of injuries and criminal penalties -- incentives that 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 (see Bovbjerg, Sloan, and Rankin (1997) for a thorough description). Both systems compensate claimants for medical and custodial expenses plus reasonable attorneys' fees. The Florida system also allows for a one-time 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 exclusive for qualifying claims, but at least in Florida, courts have allowed some claimants to pursue simultaneously tort and no-fault claims in spite of this.

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 benefits to claimants as tort (\$486,324 per case in the no-fault system, versus \$399,061 for a comparable tort claim (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), i.e., with more than a year's less delay. However, the small size of these no-fault programs – due to the limited number of injuries they cover or to the ongoing existence of a tort alternative – makes their results difficult to generalize to broader no-fault systems. In Florida, for example, the no-fault system covered only 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 (see Studdert et al. 1997; Studdert, Brennan, and Thomas 2000; and Studdert and Brennan 2001 for details). The researchers reviewed the medical records of a representative sample of 15,000 hospital discharges from Utah and Colorado in 1992. They classified a discharge as having a what they describe as a "no-fault compensable event" if the patient had a medical injury that resulted in significant disability and could have been avoided by more appropriate medical care. For each discharge with a no-fault compensable event, they calculated the damages that the patient

suffered according to a schedule resembling that underlying 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 (Studdert et al. 1997).

IV. Conclusion

Does the U.S. malpractice system lead doctors and hospitals to neglect to take appropriate precautions, or does it lead them to elect to take inappropriate precautions, and practice defensive medicine? In theory, the shortcomings of the system, combined with market failures in health care, could lead to either or both results. Because the social costs of distortions in precautionary behavior, in terms of loss of life and the financial costs of inappropriate care, could be substantial, assessing the effects of the malpractice system is an important empirical issue.

In this essay, I review existing empirical research on the effects of the malpractice system and reforms to the system on the compensation for medical injuries and the cost and quality of care. The literature presents three main findings. First, empirical evidence supports the hypothesis that doctors practice defensive medicine. Surveys indicate that physicians believe that the existing malpractice system leads to 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 with minimal medical benefit -- to decreases in health care costs, with no adverse consequences for health outcomes. Studies of the effects of malpractice pressure on negative defensive

medicine find that that decreases in malpractice pressure lead to increases in the supply of care, although there is no strong evidence that this additional care leads to improved 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 adverse health outcomes.

Third, alternative approaches that seek to supplant the tort system hold some promise for improving compensation of victims, better deterring negligence by providers, or both. 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 medical no-fault, the most radical of the alternative approaches, would lead to faster and more equitable compensation at lower transactions costs. However, medical no-fault has two important problems. First, there is no direct evidence of how a broad medical no-fault system would affect physicians' incentives to take appropriate care; evidence from the automobile tort context shows that auto no-fault increases the auto accident rate. Second, there is evidence that medical no-fault is politically difficult (if not 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.

Policy changes that enable doctors, hospitals, and patients to voluntarily opt out of the tort system offer another alternative route to reform (see Havighurst 1995 for a comprehensive general discussion of private contracts as instruments of health reform). For example, strengthening laws that allow patients and their physicians to agree resolve malpractice disputes by binding ADR may combine the efficiency gains of tort reform with the compensation improvements of no-fault in a politically feasible package. Empirical evaluation of these alternative reforms is an important area for future research.

References

- Abraham, Kenneth S. and Paul C. Weiler (1994), "Enterprise Medical Liability and Evolution of the American Health Care System," *Harvard Law Review* 108: 381-436.
- Baker, Laurence (1999), "Association of Managed Care Market Share and Health Expenditures for Fee-for-service Medicare Patients," *JAMA* 281: 432-7.
- Barker, D.K., (1992), "The Effects of Tort Reform on Medical Malpractice Insurance Markets: An Empirical Analysis," *J. of Health Politics, Policy and Law* 17: 143-161.
- Baldwin, L.M., et al. (1995), "Defensive Medicine and Obstetrics," *JAMA* 274: 1606-1610.
- Bovbjerg, Randall R., Frank A. Sloan, Peter J. Rankin (1997), "Administrative Performance of 'No-fault' Compensation for Medical Injury, *Law and Contemporary Problems* 60:2: 71-115.
- Cabana, Michael D., "Why Don't Physicians Follow Clinical Practice Guidelines? A Framework for Improvement" (1999), *JAMA* 282: 1458-65.
- Carroll, Stephen J. and Allan Abrahamse (1999), "The Effects of a Choice Automobile Insurance Plan on Insurance Costs and Compensation: An Analysis Based on 1997 Data," RAND Institute for Civil Justice.
- Carroll, Stephen J., James S. Kakalik, Nicholas M. Pace, and John L. Adams (1991), "No-Fault Approaches to Compensating People Injured in Automobile Accidents," RAND Institute for Civil Justice.
- Danzon, Patricia, (1982) "The Frequency and Severity of Medical Malpractice Claims," RAND R-2870-ICJ/HCFA.
- _____ (1986), "New Evidence on the Frequency and Severity of Malpractice Claims," *Law and Contemporary Problems* 5:57 -84.
- _____ (1991), "Liability for Medical Malpractice," *J. of Econ. Perspectives* 5: 51-69.
- _____ (2000), "Liability for Medical Malpractice," in chapter 26, *Handbook of Health Economics*, Vol. 1B, A.J. Culyer and J.P. Newhouse, eds., New York: Elsevier.
- _____ and Lee Lillard (1983), "Settlement out of Court: The Disposition of Medical Malpractice Claims," *J. of Legal Stud.* 12: 345-377.
- Deprez, Ronald D. et al. (1997), "Impact of Obstetric Practice Guidelines on Physician Behavior," final report for grant HS07294 to the Public Health Research

Institute from the Agency for Health Care Policy and Research, U.S. Department of Health and Human Services.

Dubay, L., R. Kaestner, T. Waidmann (1999), "The Impact of Malpractice Fears on Cesarean Section Rates," *J. of Health Econ.* 18: 491-522.

_____ (2001), "Medical Malpractice Liability and Its Effect on Prenatal Care Utilization and Infant Health," *J. of Health Econ.* 20: 591-611.

Farber, H.S. and White, M.J., (1991) "Medical Malpractice: An Empirical Examination of the Litigation Process," *RAND J. of Econ.* 22: 199-217.

_____ (1994) "A Comparison of Formal versus Informal Dispute Resolution in Medical Malpractice," *Journal of Legal Studies* 23: 777-806.

Harvard Medical Practice Study (1990), "Patients, Doctors, and Lawyers: Medical Injury, Malpractice Litigation, and Patient Compensation in New York," a report of the Harvard Medical Practice Study to the state of New York (Cambridge, MA: The President and Fellows of Harvard College).

Havighurst, Clark C. (1995), *Health Care Choices: Private Contracts as Instruments of Health Care Reform*, AEI Press: Washington, DC.

Hellinger F.J. and W.E. Encinosa (2003) "The Impact of State Laws Limiting Malpractice Awards on the Geographic Distribution of Physicians," Agency for Healthcare Research and Quality, Available from: <http://www.ahrq.gov>.

Horwitz, Jill and Troyen A. Brennan (1995), "No-fault Compensation for Medical Injury: A Case Study," *Health Affairs* 14: 164-79.

Hyams, Andrew L., David W. Shapiro, and Troyen A. Brennan, (1996) "Medical Practice Guidelines in Malpractice Litigation: An Early Retrospective," *Journal of Health Politics, Policy, and Law* 21: 289-313.

Institute of Medicine (2000), "To Err is Human: Building a Safer Health System," Washington, DC: National Academies Press.

Kakalik, James S. and Abby E. Robyn (1982), "Costs of the Civil Justice System: Court Expenditures for Processing Tort Cases," Rand Institute for Civil Justice.

Keeton, W.P., et al. (1984) *Prosser and Keeton on Torts*, 5th. ed., St. Paul, MN: West Publishing Co.

Kessler, Daniel P. and Mark B. McClellan (1996) "Do Doctors Practice Defensive Medicine?," *Quarterly J. of Econ.* 111: 353-390.

_____ (1997), "The Effects of Malpractice Pressure and Liability Reforms on Physicians' Perceptions of Medical Care," *Law and Contemporary Problems* 60: 81-106.

_____ (2002a), "How Liability Reform Affects Medical Productivity," *J. of Health Econ.* 21: 931-55.

_____ (2002b) "Malpractice Law and Health Care Reform: Optimal Liability Policy in an Era of Managed Care," *J. of Public Econ.* 84: 175-197.

Kessler, Daniel P. and Daniel Rubinfeld, (2004) "Empirical Effects of Civil Law," forthcoming in A. Mitchell Polinsky and Steven Shavell, eds., *Handbook of Law and Economics*, North-Holland.

Klingman, D. et al. (1996), "Measuring Defensive Medicine Using Clinical Scenario Surveys," *J. of Health Politics, Policy and Law* 21: 185-217.

Localio, A.R., et al. (1993) "Relationship Between Malpractice Claims and Cesarean Delivery," *JAMA* 269: 366-373.

MacCoun, Robert J. (1991), "Unintended Consequence of Court Arbitration: A Cautionary Tale From New Jersey," *Justice System Journal* 14 (2):229-256 (Institute for Court Management, Denver, CO)

Mello, Michelle M. and Troyen A. Brennan (2002), "Deterrence of Medical Errors: Theory and Evidence for Malpractice Reform," *Texas Law Review* 80: 1595-637.

Metzloff, Thomas (1996), "The Unrealized Potential of Malpractice Arbitration," *Wake Forest Law Review* 31: 203-230.

Moser, J. and R. Musaccio, (1991) "The Cost of Medical Professional Liability in the 1980s," *Medical Practice Management* 3-9.

Polzer, Karl (2000), "Emerging Issues in the Use of Binding Arbitration to Resolve Disputes Between Individuals and Health Plans," *George Washington University National Health Policy Forum Background Paper*.

Priest, George L. (1988), "Understanding the Liability Crisis, in *New Directions Liability Law*," Walter Olson, ed., *Proceedings of the Academy of Political Science*, New York 196-211.

Reynolds, R.A., J.A. Rizzo, M.L. Gonzales (1987), "The Cost of Medical Professional Liability," *JAMA* 257: 2776-2781.

Rock, S.M., (1988) "Malpractice Premiums and Primary Cesarean Section Rates in New York and Illinois," *Public Health Reporter* 58: 459-468.

Rolph, Elizabeth, Erik Moller, and Laura Peterson (1994), *Escaping the Courthouse: Private Alternative Dispute Resolution in Los Angeles* (RAND Institute for Civil Justice, Santa Monica, CA).

Rolph, Elizabeth, Erik Moller, and John E. Rolph, "Arbitration Agreements in Health Care: Myth and Reality," *Law and Contemporary Problems* 60:1: 153-184.

Sage, William M. (1997), "Enterprise Liability and the Emerging Managed Health Care System," *Law and Contemporary Problems* 60:2: 159-210.

Sage, William M., Kathleen E. Hastings, and Robert A. Berenson, (1994) "Enterprise Liability for Medical Malpractice and Health Care Quality Improvement," *American Journal of Law and Medicine* 20: 1-28.

Scheutzwow, Susan O., "State Medical Peer Review: High Cost But No Benefit -- Is It Time for a Change?" *American Journal of Law and Medicine* 25: 7-60.

Schwartz, Gary T. (1981), "The Vitality of Negligence and the Ethics of Strict Liability," *Georgia L. Rev.* 15: 963.

_____ (1992), "The Beginning and the Possible End of the Rise of Modern American Tort Law," *Georgia L. Rev.* 26: 601-702.

Shanley, Mark and M.A. Peterson (1987), "Posttrial Adjustments to Jury Awards," Santa Monica, CA: RAND Corporation.

Sloan, F.A., (1990) "Experience Rating: Does It Make Sense for Medical Malpractice Insurance?," *American Econ. Rev.* 80: 128-133.

Sloan, F.A. et al. (1993), *Suing for Medical Malpractice*, University of Chicago Press.

Sloan, F.A. and Chee-Ruey Hsieh, (1990) "Variability in Medical Malpractice Payments: Is the Compensation Fair?" *Law and Society Review* 24: 997-1039.

Sloan, F.A., P.M. Mergenhagen, and R.R. Bovbjerg, (1989) "Effects of Tort Reforms on the Value of Closed Medical Malpractice Claims: A Microanalysis," *J. of Health Politics, Policy and Law* 14: 663-689.

Studdert, David M. et al. (1997), "Can the United States Afford a 'No-fault' System of Compensation for Medical Injury?" *Law and Contemporary Problems* 60:2: 1-34.

Studdert, David M. et al. (2000), "Negligent Care and Malpractice Claiming Behavior in Utah and Colorado," *Medical Care* 38: 250-60.

Studdert, David M. and Troyen Brennan, (2001) "Toward a Workable Model of 'No-fault' Compensation for Medical Injury in the United States," *American Journal of Law and Medicine* 27: 225-52.

Studdert, David M., Troyen A. Brennan, and Eric J. Thomas (2000), "Beyond Dead Reckoning: Measures of Medical Injury Burden, Malpractice Litigation, and Alternative Compensation Models from Utah and Colorado," *Indiana Law Review* 33: 1643-86.

Studdert, David M., Y. Tony Yang, and Michelle Mello (2004), "Are Damages Caps Regressive? A Study of Malpractice Jury Verdicts in California," *Health Affairs* 23: 54-67.

Taragin, M.I. et al. (1992), "The Influence of Standard of Care and Severity of Injury on the Resolution of Medical Malpractice Claims," *Annals of Internal Medicine* 117: 780-4.

Thomas, Eric J. et al. (2000), "Incidence and Types of Adverse Events and Negligent Care in Utah and Colorado," *Medical Care* 38: 261-71.

U.S. Congress, Office of Technology Assessment (1993), "Impact of Legal Reforms on Medical Malpractice Costs," OTA-BP-H-119, Washington, DC: U.S. Government Printing Office.

_____ (1994), "Defensive Medicine and Medical Malpractice," OTA-H-602, Washington, DC: U.S. Government Printing Office.

U.S. Department of Justice, Bureau of Justice Statistics (1995), "Tort Cases in Large Counties," NCJ-153177.

_____ (1997), "Federal Tort Trials and Verdicts, 1994-95," NCJ-165810.

_____ (1999), "Federal Tort Trials and Verdicts, 1996-97," NCJ-172855.

_____ (2000b), "Tort Trials and Verdicts in Large Counties," NCJ-179769.

Weiler, P.C., et al. (1993), *A Measure of Malpractice: Medical Injury, Malpractice Litigation, and Patient Compensation*, Cambridge, MA: Harvard University Press.

Zuckerman, S., R.R. Bovbjerg, and F. Sloan, (1990) "Effects of Tort Reforms and Other Factors on Medical Malpractice Insurance Premiums," *Inquiry* 27: 167-182.