

# An Economic Analysis of the Medical Malpractice System

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## ABSTRACT

*The purpose of professional liability is viewed as the deterrence of negligence. Conditions necessary for the malpractice system to provide appropriate incentives for injury prevention are described. The operation of the system is compared to this theoretical ideal. Evidence is presented on the number of claims relative to injuries; the disposition of claims through the courts; the effects of tort reforms; the efficiency of insurance mechanisms; and causes and solutions of the 1975 malpractice insurance crisis. The overall efficiency of the system is evaluated and proposals for reform are discussed.*

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Economists are concerned with the efficiency or cost-effectiveness, from a social standpoint, of our institutions' capacity for handling medical malpractice, specifically, the tort system of liability for negligence and the associated liability insurance mechanisms. Although medical practitioners have been liable for professional negligence for centuries, malpractice actions were relatively rare until recently. In the early 1970s, the frequency of malpractice claims and the size of awards began to increase at unprecedented rates. In 1974-75 the malpractice insurance crisis broke. Premium increases of up to 500% were proposed. In some states the crisis in cost became a crisis in availability, as traditional insurers restricted coverage or withdrew from the market entirely.

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In response to the crisis, most states enacted laws designed to control the growth in claim costs and to ensure the availability of insurance. These measures were adopted under pressure for immediate action, with little analysis or empirical evidence to resolve conflicting views as to the causes of the crisis and, more generally, the likely effects of the changes on the overall efficiency of the tort system.

Nevertheless, the crisis abated. In the latter half of the seventies, claim frequency and insurance premiums levelled off or actually fell in some states. Two fundamental questions remain unanswered, however. First, did the changes adopted in the wake of the last crisis resolve its underlying causes sufficiently to prevent a recurrence, or is the subsequent lull unrelated to those changes? Second, even if current institutions are robust against shocks, do their benefits outweigh their costs? Could they be improved?

This paper summarizes findings from an ongoing study (Danzon, 1982b) that brings economic analysis and empirical evidence to bear on some of these questions. Part one lays out a framework for evaluating the tort system from the standpoint of economic efficiency. Part two reports empirical evidence on the operation of the system in practice, relative to the theoretical ideal. Part three discusses the causes and solutions of the 1974-75 insurance crisis. The final section evaluates the current system and proposed reforms.

The analysis is premised on the simplifying assumption that, on the average, individuals — patients, physicians, attorneys, insurers — pursue their rational self-interest, given the information, incentives and constraints they face. This does not deny the existence of irrational or altruistic behavior, but simply hypothesizes that rational self-interest can explain outcomes on the average or in the aggregate. For brevity, the analysis refers to physicians, but it applies equally to other individual and institutional providers.

## **I. TORT LIABILITY IN THEORY: A SYSTEM OF QUALITY CONTROL**

The tort system of liability for negligence performs two basic functions. First, it provides compensation to those injured as a result of the negligence of others. Second, by imposing sanctions on persons found negligent, it can serve as a deterrent to future negligence. If the tort system is to be evaluated on grounds of economic efficiency, then it must be justified if at all by its efficiency in the second function—deterrence of negligent behavior. Compensation could be accomplished at lower cost and arguably; more equitably through a system of first party insurance, such as health insurance or social security disability insurance, which compensate without regard to cause, thereby economizing on the costs of litigating over fault. This view of negligence liability as a system of quality control has been elaborated by others (for example, Posner, 1972; Schwartz and Komisar, 1978), so will be restated briefly here.

Why is any system of quality control necessary? Why are medical providers and other professionals exposed to tort liability for professional negligence,

while most other occupations are still exempt? The answer lies in the information gap between professionals and their clients. If the patient were as knowledgeable as the physician about the costs, benefits and risks of alternative treatments and the quality of care being received, the patient could protect his own interests. He would not choose to avoid all injuries, since to do so is prohibitively costly. But the rational, informed patient could weigh the costs and benefits of alternative treatment modes and qualities and choose those which are expected to yield benefits at least equal to cost, inclusive of risk. This level of care that would be chosen by a fully informed patient will be referred to hereafter as the efficient, optimal or cost-effective standard of care.

In practice, the consumer's ability to make informed choices is much more limited in medical care than in most other areas. Medical providers therefore have considerable discretion. Although most providers surely attempt to serve the patient's best interest, financial incentives and preferences for leisure conflict. The physician who skimps on the time and attention allocated to each patient can see more patients and hence enjoy more income or more leisure. This increases the risk of injury to the patient. If the patient were aware of the risks, he could react by transferring to another physician, thereby signalling to the negligent physician his preferred quality of care. Thus if patients were well informed, market forces would eliminate practitioners whose quality of care fell short of that preferred by patients. Because patients are not well informed, physicians face inadequate incentives to practice with care.

The tort system of liability for negligence, in principle, corrects this distortion in incentives by "internalising" to the physician the costs of injuries due to negligence. A precise definition of the legal standard of negligence was formulated by Judge Learned Hand in *U.S. v. Carroll Towing Co.*<sup>1</sup> By this definition, negligence occurs if there is a failure to take preventive measures that cost less than their expected benefit, i.e. the reduction in the probability of an injury times the damages suffered if it occurs. But this is precisely the economic definition of the efficient level of investment in injury prevention. Thus negligence is failure to take cost-effective precautions. If found negligent, the tort-feasor is liable for a "fine" equal to the damages suffered by the victim. Ideally, this liability rule transfers from the patient to the physician the expected costs of injuries which the patient would be willing to pay to prevent. It thereby creates incentives for the physician to provide the efficient quality of care. In the case of medical and other professional liability, courts usually defer to the customary practice of the profession to define the due standard of care, rather than apply a cost-benefit calculus to each case. The efficiency of the tort system is preserved to the extent customary practice is efficient.<sup>2</sup>

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1. 159 Federal Reporter 2d 169 (1947).

2. This is discussed elsewhere (Danzon, 1982b). Even if customary practice is not efficient, because of insurance and other factors, tort liability still deters deviations from the norms which patients have come to expect.

For the negligence system to provide incentives for efficient investment in loss prevention, without imposing undue risk, certain conditions must be met:

1. A claim should be filed and liability imposed in all cases of negligence, but not otherwise;
2. If found negligent, the physician should be liable for a fine equal to the damages to the plaintiff;
3. Liability insurance should be available to the physician on actuarially fair terms, i.e. the premium should precisely reflect the expected cost of claims implicit in the physician's standard of practice;
4. The liability and insurance systems should operate at zero cost.

How well the medical malpractice system actually conforms to these conditions for an efficient liability system is the subject of the next section.

## II. THE MALPRACTICE SYSTEM IN PRACTICE

### 1. Claims vs. Injuries

The data simply do not exist to evaluate accurately what proportion of injuries due to malpractice actually result in compensation to the patient, or how many invalid claims are filed and paid. However, rough estimates obtained by piecing together data from different sources suggest that only a small fraction of malpractice incidents result in a claim.

### Findings

A study of hospital records in 23 representative California hospitals in 1974 (CMA, 1977) found that roughly 1 in 126 hospital admissions resulted in an injury that would be compensable under current negligence law, in the opinion of the medical-legal experts conducting the study. If this risk were uniform nationwide, it would imply a total of 260,000 injuries per annum due to negligence from hospital care alone. A comparison of the estimated number of negligent injuries in California with the number of claims filed in the subsequent four year period (NAIC, 1980), suggests that at most one in ten incidents of malpractice result in a claim, and of these, less than half, or one in 25, receive payment (Danzon, 1982b). This estimate, that roughly one in 25 patients injured as a result of negligent care receives compensation through the malpractice system, is almost certainly an upper bound for several reasons.<sup>3</sup>

Why do so many potentially compensable claims go unreported? The data suggest two important factors. First, the patient may be unaware of the inci-

3. First, hospital records do not reveal that all negligent injuries and unnecessary treatments were intentionally not counted. Second, it is likely that malpractice in ambulatory care has less serious consequences, is less obvious and hence is pursued less frequently than malpractice in hospitals. Third, the frequency of claims, per capita or per physician, is higher in California than in most other states, so if the frequency of injury is no higher in California than in other states, the frequency of claims per negligent injury must be even lower in other states.

dent. One reason why claim frequency against surgeons is significantly higher than against non-surgical specialists, is surely that surgical errors are simply easier to detect. It is implausible that surgeons are negligent so much more frequently than other physicians.

Second, economic incentives play a role. The costs of bringing suit may exceed the expected payoff for injuries with small compensable damages, in particular for minor injuries (80% of injuries are categorized as temporary) and elderly patients (26% of injured patients are over 65). Consistent with this hypothesis, that economic incentives significantly affect the propensity to sue, the ratio of claims to injuries tends to increase with the severity of the injury (from roughly one in 13 for minor injuries, to one in six for injuries involving permanent disability). The ratio of claims to injuries also decreases with the age of the plaintiff. The determinants of claim frequency are discussed further below. The evidence reported here suffices to refute the common allegation that the number of claims far exceeds the number of injuries and that patients file suit whenever results are less than perfect. The same California study reports over five times as many adverse results as are attributed to normal risk. Thus the ratio of malpractice claims to *all* adverse results, including those attributed to negligence and those attributed to normal risk, is at most one in sixty.

## 2. The Disposition of Malpractice Claims

The second element of the ideal tort system is that physicians should be held liable for injuries due to negligence and that payment should equal damages. It is widely believed that in reality, the legal standard of negligence is relaxed in favor of compensation regardless of fault, particularly for severe injuries, and that malpractice awards are either random, excessive or both. Such allegations are apparently lent some credence by the observed outcome of the disposition process. For example, for claims closed in 1974 and 1976, less than 10% were tried to verdict; the remainder settled out of court. In cases tried to verdict, the plaintiff won 28% of the time, compared to 51% out of court. The average award at verdict was \$102,000, compared to \$26,000 at settlement. Roughly 50% of the total dollar payout was concentrated on 3% of all claims, or 5% of claims receiving some payment.

### Findings

A study of the disposition of malpractice claims (Danzon and Lillard, 1982) shows that the most extreme criticisms of the tort system are unfounded. In this study, a model of the bargaining process underlying claim settlement was applied to computerized data on over 6,000 malpractice claims closed in 1974 and 1976 by the leading malpractice liability insurers. The model adopts the simple premise, that each party acts (whether directly or through an attorney) to serve his own financial interest—the plaintiff to maximize his gain and the

defense to minimize its loss. Without denying that many other, non-rational factors affect claim disposition, the purpose of the model is to test how far the assumption of self-interested rational behavior can explain the observed outcome. Given the assumptions of the model, the methodology makes it possible to estimate certain facts not reported in the original data files, such as the potential or shadow verdict (what a case would have received, if pressed to verdict) for cases actually settled out of court. These estimates permit inferences about the relation between out of court settlements and potential outcomes at verdict.

At the most general level, the major finding of the study is that simple, self-serving rationalism largely explains the outcome of malpractice claims on the average. Consequently, there are reasonably stable relations between potential outcomes at verdict and actual settlement outcomes. More specific findings include the following:

—Court awards and out of court settlements are strongly influenced by the plaintiff's economic loss (wage loss, medical and other tangible costs) and by the law defining compensable damages. The data are inadequate to determine how much courts "mark-up" economic loss for pain and suffering and to determine whether small or large cases are systematically over or under-compensated relative to economic loss.

—Settlements average 74% of shadow verdicts, and the 26% difference is plausibly accounted for by anticipated litigation costs and discounting for uncertainty as to whether or not the plaintiff would win.

—The large discrepancy between average award for cases tried to verdict (\$102,000) and cases settled out of court (\$26,000) largely reflects differences in case characteristics. Cases litigated to verdict include a disproportionate number of those involving severe injury and hence large compensable damages, whereas cases settled include a disproportionate number of minor injuries.

—The heavy concentration of total dollars paid on a small fraction of claims is a reasonably accurate reflection of the concentration of injury severity: the majority of claims are for minor or temporary injuries and entail relatively small loss.

The data reveal far less on the issue of how far the courts adhere to the standard of finding liability only in cases of negligence. A plaintiff verdict is more likely in cases of severe injury. However, the data are inadequate to determine whether this reflects a relaxing of the negligence standard in cases of severe injury or whether it simply reflects the fact that severe injuries are more likely to be attributable to negligence rather than normal risk (CMA, 1977). The fact that over 50% of claims are dropped without payment clearly refutes the allegation that insurers can be forced to pay on any claim, no matter how specious, simply to avoid more costly litigation. Further, the estimates suggest that cases that are dropped without payment had a lower probability of winning in court (39%–53%) than did claims settled with payment (57%–77%). Thus, the outcome at settlement mirrors to some extent the likely outcome at

verdict. However, cases with low potential awards are more likely to be dropped without payment, presumably because the cost of pressing litigation exceeds the expected pay-off.

### 3. Overhead Costs

The malpractice system is extremely costly to operate. For every dollar that reaches plaintiffs as compensation, one dollar is spent on litigation and another on insurance overhead costs (Munch, 1977). In addition there are the public costs of operating the courts; the costs of defensive medicine; and the uninsured time and psychological costs of litigation borne by plaintiffs and defendants.

Why are litigation costs so high? The fundamental reason is that the outcome is uncertain and can be influenced. The parties to the dispute choose to expend resources on litigation in the hope of influencing the outcome. If standards of liability and damages, should the case go to verdict, were fixed and known with certainty, the parties would settle for the expected verdict, thereby avoiding further litigation expense. Consistent with this, cases involving obvious error are rarely litigated to verdict.

There is a common perception that contingent fees for plaintiff attorneys add excessive litigation costs. It is true that contingent fees on cases won, will, *ex post*, tend to exceed the value of the attorney's time, by a multiple that is the inverse of the probability of winning, *ex ante* (Danzon, 1981). Plaintiffs win less than one-third of malpractice cases tried to verdict. Thus for a case with an average probability of winning, the contingent fee will be 3 times the value of the attorney's time if he wins, but zero if he loses, so on the average, he covers his costs. Thus essentially the contingent fee offers an allocation of risk that is preferred by the plaintiff: he pays a fee only if he wins. The evidence suggests that on the average, contingent fees do not yield above-competitive returns (Danzon and Lillard, 1982; Dietz, Baird and Berul, 1973) and that defendants and plaintiffs spend roughly equal amounts on litigation (Munch, 1977).

### 4. Liability Insurance

The great majority of medical providers are fully insured against malpractice suits. Such insurance tends to insulate against the sanctions of the tort system, thereby nullifying its deterrent effect. Nevertheless, liability insurance need not impede deterrence, provided insurance premiums are perfectly experience rated. In other words, if the insurance premium were adjusted to reflect the increased risk of loss every time a physician was careless, incentives for efficient loss prevention would be preserved.<sup>4</sup> In practice, premiums are not closely related to the individual physician's experience. Premiums are rated primarily on the basis of medical specialty and locality. Individual surcharges

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4. Ehrlich and Becker, 1972; Shavell, 1982.

are uncommon, as are deductibles and coinsurance, which are other means of preserving the insured's incentives for injury prevention. Thus deterrence at the individual level currently depends on the selective underwriting practiced by some insurance programs and the uninsured costs of defending claims, such as lost time, embarrassment and loss of reputation.

Why physicians typically carry such complete insurance is the subject of ongoing research and the issues will only be mentioned here. In most lines of insurance, including other lines of professional liability insurance, policyholders choose less than complete coverage because preserving incentives for loss prevention results in lower premium costs. Complete insurance dulls incentives to take care, thereby increasing the number of injuries which ultimately results in higher premiums. Experience-rated premiums or deductibles are therefore common in most lines of insurance where the insured can affect the risk insured against.

Several factors may contribute to the low level of individual risk retention in most malpractice insurance policies. First, it has been widely argued that claims are random. If so, past claim experience would provide no guide to likely future claim experience, so rating individual premiums on the basis of past claim experience would be neither useful nor equitable. Note that if claims were sufficiently random to warrant full insurance, there would be little point in preserving the system of fault-based liability since, as argued above, determining fault is costly and only worthwhile if it is sufficiently accurate to provide an efficient signal for loss prevention. In fact, the limited evidence available suggests that claims are far from random. Past claim history is as good a predictor of future claim experience as medical specialty (Rolph, 1979). Nevertheless, to the extent that there are errors in the adjudication of liability, the optimal degree of experience rating is reduced.<sup>5</sup>

Second, the fee-for-service reimbursement system for medical services tends to distort the physician's choice between loss prevention and insurance. Insurance premiums can largely be passed on in the form of higher fees, at least in the long run. To the extent that prevention requires taking more time or more care in performing a procedure, for which the physician cannot charge a commensurately higher fee, he bears more of the cost of prevention than of insurance. The rational (but not the optimal) response to such distorted incentives is to substitute insurance for prevention.

### III. THE 1974-75 CRISIS AND ITS SOLUTIONS

#### 1. The Crisis in Claims

The early seventies witnessed an unprecedented surge in the frequency and

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5. The optimal liability insurance contract would provide full insurance against court error but no insurance against true negligence. Errors by the courts *may* explain why such experience rating as exists is often made on the basis of peer review rather than simply the outcome of the litigation process.



severity of malpractice claims. In Southern California, for example, claims per physician and average size of award both increased at about 18% a year, cumulating to yield an increase in claim costs per physician of roughly 40% a year. As striking as the growth over time, is the variation among states. For example, in 1976, there was an eighteen fold range across states in malpractice claim frequency, per capita or per physician, and a thirty fold range in severity (average size of award).

The explosion of claims has been attributed to many factors, including: growth in the number and complexity of medical treatments; pro-plaintiff trends in common law in general and erosion of traditional malpractice defenses, such as charitable immunity and the locality rule; an increase in the number of lawyers and passage of no-fault automobile legislation in some states; and such intangible factors as the erosion of the physician-patient relationship. At the same time, similar trends in other branches of tort law—notably product liability—suggest that the roots of malpractice litigation may go deeper than factors specific to medical care and malpractice law.

In response to the crisis, tort reforms were enacted in almost every state. These measures vary in detail from state to state, but their common purpose was to control claim costs by limiting the size of awards and the scope of liability of medical providers. After 1976, claim frequency countrywide actually fell, but severity continued to outpace the rate of inflation. I shall summarize here the results of an econometric analysis (Danzon, 1982) of the contribution of medical, legal and demographic factors to trends over time and the persistent disparity among states in claim frequency and severity. The study applied multivariate regression analysis to data on the frequency and severity of claims closed, by state, in 1970 and 1975-1978.

### Findings

Variation in medical exposure, as measured by the number of physicians per capita, contributes to but does not fully explain variation among states in claim frequency per capita. The measured effect of physician density is compounded with effect of the different mix of medical treatments associated with higher physician density. Because the number of physicians and the service intensity of medical care tend to be highly correlated, it is difficult to distinguish their net effects empirically.

Legal factors have also played a role. Contrary to widely held beliefs, the number of lawyers per capita and the passage of an automobile no-fault law have no significant effect on claim frequency, after controlling for number of physicians. By contrast, early adoption of pro-plaintiff doctrines had a significant effect. In particular, admission of informed consent as a cause of action appears to have had a larger effect than abolition of charitable immunity or expansion of the locality rule or *respondeat superior*. Because of the lag between filing and closing claims, which averages two years but may be as long as ten, early adoption of these doctrines still affected interstate variation in

claims in the mid-seventies, although by then most states had adopted these doctrines in some form.

Although the medical and legal factors identified account for a significant fraction of the variation among states and growth over time in malpractice claim frequency and severity, the single most powerful explanatory variable is the degree of urbanisation of the state. Attempts to identify further the characteristics of urban environments that influence litigation, after controlling for the high density of physicians and lawyers, were unsuccessful. Variables that were tested but proved insignificant, include: hospital admissions per capita, measures of the capital and labor intensity of hospital services, per capita income, the unemployment rate, percent of the population on welfare or over 65, and measures of litigation rates in other branches of tort law.

Estimates of the impact of the post-1975 tort reforms must be viewed as rough measures of their short run impact because of the limitations of the data available. Nevertheless it seems clear that although limits on recoveries, in particular, dollar caps on awards and mandatory offset of compensation from collateral sources, may have significantly reduced severity in states adopting such changes, none of the reforms explain the post-1975 downturn in frequency. Three hypotheses, not mutually exclusive, are worth suggesting but so far remain untested. First, the rate of injuries may indeed have fallen—in other words, the tort system may have had its intended effect of deterring negligence. Second, the post-1975 downturn may have been a temporary lull due to transitory changes in attitudes in response to the crisis. Third, the preceding peak may have been a temporary aberration, caused by the backlog of potential claims which became worth filing as a result of the pro-plaintiff shift in common law, combined with long statutes of limitations. Once this backlog had worked its way through the system, claims may have returned to a more normal level. Unfortunately, data are not available to test these hypotheses or to measure the longer run impact of the post-1975 tort reforms because systematic data collection ceased with the NAIC effort in 1978.

## 2. The Insurance Crisis and its Solutions

The surge in malpractice claim costs of the early seventies was not matched initially by a parallel increase in insurance premiums. In Southern California, for example, from December 1969 to December 1975, claim costs increased over six-fold, whereas premiums less than doubled. Rough estimates imply that by the end of 1975, a premium increase of over 300% was necessary simply to make up for the lag in premiums behind claim costs over the preceding five years (Munch, 1978). Experience in other states was similar, if less extreme.

At the same time, however, adverse investment and underwriting results on other lines coincided to make the insurance industry extremely reluctant to

take risks. In 1974, the Dow Jones Index of Industrial Stocks fell 400 points. Stock companies in the property-liability insurance industry reported a capital loss of \$10 billion on common stock alone and an underwriting loss of \$5 billion, four times as large as any previously on record. These adverse investment and underwriting results combined to reduce the value of insurers' capital by over 26%.

I am not suggesting that insurers raised malpractice premiums to recoup these losses. I am suggesting that rational insurers became much less willing to take risks. Insurer capital represents the reserves available to pay claims, should premiums prove inadequate. The ratio of premiums to capital is a rough indicator of the financial strength of an insurance firm. If every two dollars of premium is backed by one dollar of capital—a premium to capital ratio of 2:1, as was common in the 1960s—then a 10% error in setting premiums absorbs 20% of capital. At a premium to capital ratio of 4:1, as existed by December 1974 for the seven companies writing malpractice insurance in California (Doctors' Malpractice Insurance, 1975), a 10% undercharge eliminates 40% of surplus and a 25% undercharge implies bankruptcy. But errors of this magnitude were small compared to the inadequate premiums of the early 1970s and the extreme uncertainty in predicting future claim costs. Medical malpractice is far less predictable than most lines of insurance, for two reasons. First, the number of policyholders and claims is relatively small. Second, because injuries may be discovered and reported years after they occur and most states at that time allowed virtually unlimited time for discovery, ultimate claim costs would not be known until more than ten years after the policy is written—the infamous “long tail.”<sup>6</sup> At a time of rapidly changing social and legal standards and volatile monetary inflation, accurate prediction of the fair premium for an occurrence policy was simply impossible. Because of the vulnerability of their capital position by 1975, insurers made conservative estimates.

Thus by 1974-75, insurers sought huge premium increases, as a result of the lag in premiums behind rapidly rising claim costs over the previous five years, and risk aversion due to depletion of insurer capital. In some states the proposed premium increases were effected. In others, particularly where the large percentage increases meant very high absolute premium levels, such as New York, state insurance commissioners, under pressure from physicians, denied all or part of the proposed rate increases. Where the allowed rates were viewed by insurance carriers as severely inadequate, the carriers withdrew from the market and the crisis of price became a crisis of availability.

Several changes contributed to the resolution of insurance crisis. In some states, physicians established their own insurance companies that have continued to grow and now account for almost 40% of malpractice premium volume, nationwide. Second, in all but three states, some form of joint under-

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6. A discovery rule holds the running of the statute of limitations until the injury has or, with due diligence, should have been discovered.

writing authority (JUA) or assigned risk pool was established. Insurers were required to write medical malpractice as a condition of continuing to write other lines of insurance. Such pools are typically authorized to recoup losses either by assessment of policy holders but more often by a surcharge on other lines of insurance or a tax write-off. Thus malpractice coverage was made available by authorizing a subsidy from policyholders of other lines or taxpayers at large.

Third, some carriers have replaced the occurrence form of policy with a claims-made policy. A claims-made policy covers claims *filed* in the year the policy is written, whereas an occurrence policy covers claims *arising* out of practice in the year the policy is written. Because claims made require shorter projections, it can be priced with greater accuracy. Since it shifts risk from the insurer to the insured, who is guaranteed the availability but not the price of future coverage, claims-made coverage should cost less than occurrence coverage, in the long run (Munch, 1978). In addition to these changes in insurance institutions, tort reforms will contain awards and statutes of limitations will be shortened, all of which will reduce the uncertainty of future claim costs, thereby contributing to more smoothly functioning insurance markets.

## DISCUSSION

Let us return now to the questions posed at the start of this paper. First, did the changes adopted after the 1974-75 crisis resolve its underlying causes sufficiently to prevent a recurrence? This is particularly important in view of the evidence that a large volume of potential claims go unfiled. Severity has apparently been reduced by such measures as caps on awards and mandatory offset of collateral compensation (Danzon, 1982a). But the lull in claim frequency in the latter half of the seventies apparently cannot be attributed to the post-crisis tort reforms, so its durability remains questionable. The evidence that many potentially valid claims are not filed, and that the propensity to file is influenced by the expected payoff, implies the potential for a large increase in claim frequency, should the costs of filing fall or the expected pay-off increase, as occurred as a result of the pro-plaintiff legal changes of the sixties. However, the shorter statutes of limitations and limits on discovery periods that have now been adopted in most states, provide some safeguard against shocks of the magnitude of the early seventies.<sup>7</sup>

Because of the unexpected downturn in claim frequency, the insurance premium increases that precipitated the crisis proved more than adequate. Now that claims have caught up, there are signs that premium increases will soon be necessary and could be substantial, particularly if interest rates fall

7. The longer the statute of limitations, the greater the number of *potential* claims which become worth filing if a pro-plaintiff shift in law, costs or attitudes occurs (Danzon, 1982a).

significantly.<sup>8</sup> Thus the post-crisis insurance institutions have not yet been severely tested. However, the JUA mechanisms still in place in most states, the physician-owned mutuals, and the claims-made policy all protect against another availability crisis.

More fundamentally, are existing institutions cost-effective for handling the underlying problem of malpractice? As long as there remains great asymmetry of information between patient and physician, normal market forces do not guarantee that physicians will provide the quality of care that patients would choose, if fully informed. This creates a *prima facie* case for some form of intervention. Licensure and peer review can control the totally incompetent practitioner, but cannot deter the occasionally careless. All professions are notoriously reluctant to police their members for carelessness and typically lack the detailed information necessary to do so<sup>9</sup>. In principle, the tort system of liability can provide the necessary control of carelessness, without direct regulation. Tort liability can deter negligence simply by transferring to physicians the cost of injuries due to negligence, thereby providing appropriate incentives for injury prevention.

In practice, the evidence reported here indicates that the malpractice system departs significantly from this ideal of tort liability as a system of quality control, but that the most extreme criticisms of the system are unfounded. Far from being excessive, the number of claims falls short of the number of incidents of malpractice. The disposition process is far from random. Court awards are strongly influenced by the economic loss of the plaintiff and the law of compensable damages. Outcomes in settlement are in turn strongly influenced by the potential outcome at verdict. Liability insurance appears to provide too much insulation from the potential deterrent effect of tort sanctions, but this is a very tentative conclusion, pending further research on the optimal amount and the actual amount of risk retention by physicians.

Nevertheless, any measure which would improve deterrence for a given level of costs or reduce costs for a given level of deterrence would increase the cost-effectiveness of the malpractice system. The space available permits only a brief review of likely candidates. First, any measure which reduces the range of variability of possible court outcomes would reduce expenditure on litigation and, by making claim costs more predictable, reduce the cost of malpractice insurance. A strong case can be made for using a schedule of awards for different types of injury in place of the current rules of compensable damages, which attempt to estimate damages incurred by each individual patient. Individual determination of damages adds to litigation costs, while adding very little to deterrence, because awards are unpredictable, often occurring many years after the event causing the injury, and because such detail is currently

8. *Best's Insurance Management Reports*, Jan. 1982, reports loss ratios (the ratio of claim costs to premiums) in excess of 140% in 1981. Claim costs in excess of premiums are tolerable only to the extent that investment income makes up the difference.

9. For example, in California in 1976 there were 1500 paid malpractice claims, but only 6 disciplinary actions for incompetence or gross negligence. Bureau of Medical Statistics, 1978.

and is likely to remain nullified by the averaging process of rating insurance premiums. Although scheduled awards are usually associated with a no-fault liability rule, the proposal advanced here would adopt a schedule for damages but retain a fault-based liability rule.

A second reform that should reduce costs with little loss in deterrence is shorter statutes of limitations, with absolute limits on the time allowed to discover the injury. Many states have already enacted such changes. Long statutes of limitations magnify uncertainty in pricing insurance, particularly in times of volatile social and legal standards. Furthermore, to the extent providers are held to new standards retroactively, they are exposed to risk that serves no useful deterrent function, since they cannot be expected to predict future standards of care. Because shorter statutes may result in underdeterrence if injuries can be concealed, there is a case for imposing an uninsurable fine on a provider who knowingly conceals an injury.

With respect to insurance institutions, further research is needed on why experience rating of individual insurance premiums is so limited and whether imposing a greater degree of risk retention on physicians would be cost-effective. Of the post-crisis changes in insurance institutions, a strong efficiency rationale can be made for physician-owned companies and claims made policies (Munch, 1978). On the other hand, joint underwriting authorities (JUAs) with loss write-off provisions cannot be justified. By guaranteeing insurance at below cost to those who cannot obtain coverage through regular channels, JUAs subsidize precisely the "bad apples" the malpractice system is designed to deter.<sup>10</sup>

The reform most likely to reduce expenditure on litigation and the distortions it produces is one which would provide some means of adjudicating liability accurately and beyond the influence of the parties to the dispute. Whether panels of experts or arbitrators can perform such a function better than the adversary process of the court room is still an open question. However, procedural reforms which simply reduce the cost to the litigants of trying to influence the outcome may have complex and counterintuitive results, and may fail to reduce total expenditure on litigation. A reduction in the cost of litigating tends to increase the number of cases carried to settlement and to verdict, such that the increase in number of cases litigated, offsets the savings in cost per case (Danzon and Lillard, 1982). This is analogous to the "freeway phenomenon," that adding more lanes may fail to reduce traffic congestion because more people choose to travel as the costs of traveling are reduced. Similarly, regulation of contingent fees may have complex and possibly unintended effects. Theoretical analysis and empirical evidence suggest that ceilings on contingent fees do not simply reduce the fee to the attorney and increase the net recovery of the plaintiff by a commensurate amount. On the contrary, fee ceilings tend to reduce attorney effort and hence

10. In states where the JUA is the basic source of coverage for a large number of physicians, such as New York or Rhode Island, the objection is that a subsidized JUA permits the transfer of costs of medical injuries outside the medical sector, where they arise.

the plaintiff's probability of winning, the gross recovery and the net realized by the plaintiff.

In conclusion, the fault-based system is worth retaining if the savings, in terms of injuries deterred, exceed the costs of litigating over fault and associated costs, such as defensive medicine. Ignoring the latter costs temporarily, let us assume (conservatively) that the costs of administering compensation through some alternative, first party insurance system would be the same as through the liability system, but that litigation costs could be fully eliminated by dispensing with fault. Then, since litigation costs are currently roughly equal to outlay on compensation, determination of fault is worthwhile if for every injury currently compensated, at least one is prevented. If distortions in the delivery of medical care and other unmeasured costs are significant, then this is a lower bound on the deterrence necessary to justify the current system. Unfortunately, it is impossible to measure injuries prevented. But it is not implausible that the current non-trivial incidence of injury due to negligence would be at least 10% higher, were it not for the incentives for injury prevention created by the one in ten incidents of malpractice that result in a claim. If so, the malpractice system, despite its costs, is worth retaining.

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