INTRODUCTION

Several studies have addressed the important issue of whether various medical malpractice reforms adopted by certain States during the mid-1970s and mid-1980s (discussed in depth in the preceding chapter) helped restrain the apparent surge in malpractice costs during those periods. This chapter examines studies that employed systematic empirical methods to address the question of whether these reforms reduced the frequency of medical malpractice claims, the amount of payment per paid claim, and/or the levels of medical malpractice insurance premiums (hereinafter collectively referred to as the "malpractice cost indicate. Most of these studies used data derived from companies that sold medical malpractice insurance to providers in one or more States during the periods in which the reforms were adopted. As will be summarized in the subsections that follow, however, the studies' methods and findings differed greatly.

Certain empirical studies in the field of medical malpractice were not included in this review. Some studies have focused on single States that have adopted various tort reforms, and a few of these studies have included comparisons of one or more of the malpractice cost indicators before and after adoption of these reforms. Our review here covers only studies that examined the impacts of tort reforms in two or more States. [1] We also excluded studies whose data predated the major wave of State medical malpractice reforms adopted in the mid- 1970s (e. g., 42) and those that used data for only a few years following those reforms (28.34,124). Some of these studies were subsequently updated by the same authors, and those later studies (30. 129) are included in our review. Finally, we excluded studies that only used data descriptively and/or reviewed other empirical studies (32.33.94, 142) or developed theoretical models of the malpractice cost indicators (31).

The following summary describes six studies that employed multiple regression analysis or similar statistical methods to analyze the impact of various State tort reforms on one or more of the malpractice cost indicators (2,9, 12,30.129,161). [2] These studies provide analytical as well as descriptive information on the impacts of State tort reforms while controlling for the effects of other important influences on malpractice cost indicators. For example, all of the studies reviewed here controlled for the independent effect of interest rates on malpractice insurance premiums, which reflects insurance companies expected rates of return from investment income.

STUDY METHODS

Definitions of' Reforms

The six empirical studies reviewed in this chapter employed quite different definitions of a given malpractice reform; and even when they used common definitions, each combined widely differing specific reforms into a single category. None of the studies examined the impact of any alternative dispute resolution (ADR) reforms except for voluntary, binding arbitration. Nor did they investigate the effects of the recent no-fault programs for compensating newborn neurologic injuries in Florida and Virginia.

The usual approach to measuring State tort reforms was to record whether or not a given type of reform was in effect in a given State at a given point in time. The malpractice reforms examined in these studies can be classified into 16 categories. Table 3-1 shows which reforms were addressed in

Table 3-l--State Tort Reforms Examined in Six Empirical Studies on Medical Malpractice Reform

Reform	Study					
	Adams	Barker	Blackmon	Danzon	Sloan	Zuckerman
Restrict the **statute of limitations:**						
a. Use date of event, not discovery	X	–	–	–	–	–
b. Shorten basic statute of limitations for medical malpractice	X	X	X	X	X	X
c. Shorten statute of limitations for minors	–	–	–	–	–	X
d. Shorten extension of statute of limitations from date of discovery	–	–	–	–	X	X
Establish pretrial **screening panels:**						
a. Mandatory		–	–	X	X	–
b. Results admissible in trial	–	–	–	–	X	–
c. Any type	–	–	–	X	X	X
Limit **attorney fees**	–	–	*X*	*X*	X	X
Modify the **standard of care:**						
a. Codify the standard of care	–	X	–		–	–
b. Do not adopt the "expanded locality rule"	X	–	•	–	–	–
c. Establish qualifications for expert witnesses	–	–	–	–	X	–
Require or allow awards to be reduced by amount of **collateral payments:**						
a. Require	–	–	–	X	X	X
b. Allow		–	–	–	X	X
c. Either require or allow	–	X	X	X	–	–
Impose **caps on damage awards:**						
a. Total damages	–	–	X	-	X	X
b. Noneconomic damages only	–	–	–	–	X	X
c. Punitive damages only	–	–	–	–	X	–
d. Noneconomic or punitive damages	–	–	X	-	–	–
e. Any type	–	X	–	X	–	–

Table 3-l--State Tort Reforms Examined in Six Empirical Studies on Medical Malpractice Reform (Continued)

Reform	Study					
	Adams	Barker	Blackmon	Danzon	Sloan	Zuckerman
Require or allow periodic payments:						
a. Require		–	–		X	–
b. Allow	–	–	–	–	X	–
c. Either require or allow	–	–	X	–	–	
Restrict the joint and several liability doctrine		–	X		–	–
Allow voluntary, binding arbitration:						
a. Codify the option of arbitration for medical malpractice	–	X	–	X	–	–
b. Allow pre-injury agreements to arbitrate	–	–	–		X	X
Restrict the use of res ipsa *loquitur*	X	*x*	–	–	X	–
Restrict the use of ***ad damnum*** **clauses**	–	–	–		X	–
Limit the doctrine of informed consent	*x*	–	–	–	X	–
Allow costs awardable in frivolous suits		–	–		X	X

SOURCES: E.K. Adams, and S. Zuckerman, "Variation in the Growth and Incidence of Medical Malpractice Claims," Journal of Health Politics, Policy and Law 9(3):475-488, Fall 1984; D.K. Barker, "The Effects of Tort Reform on Medical Malpractice Insurance Markets: An Empirical Analysis," Journal of Health Politics, Policy and Law, 17(1): 143-161, Spring 1992; G. Blackmon, and R. Zeckhauser, "State Tort Reform Legislation: Assessing Our Control of Risks," in Tort Law and the Public Interest, Peter H. Schuck (cd.) (New York: W.W. Norton & Co., 1991); P.M. Danzon, "The Frequency and Severity of Medical Malpractice Claims: New Evidence, " Law and Contemporary Problems 49(2):57-84, Spring 1986; F.A. Sloan, P.M. Mergenhagen, and R.R. Bovbjerg, "Effects of Tort Reforms on the Value of Closed Medical Malpractice Claims: A Microanalysis," Journal of Health Politics, Policy and Law 14(4):663-689, Winter 1989; S. Zuckerman, R.R. Bovbjerg, and F. Sloan, "Effects of Tori Reforms and Other Factors on Medical Malpractice Insurance Premiums, " Inquiry 27(2):167-182, Summer 1990.

each study (referenced by the first author's last name). Each kind of reform was usually measured as a binary variable whose value was set equal to 1 if the reform was in place in the State, and O if it was not. In the only departure from this approach, three studies measured the length of a State's basic statute of limitations as a continuous variable (i. e., number of years) (30,129, 161).

Malpractice Cost Indicators

The focus of all six empirical studies was to measure the impact of different State malpractice laws on one or more of the malpractice cost indicators: (a) the frequency of malpractice claims, (b) the payment per paid claim, and (c) malpractice insurance premiums or losses. In general, the reforms studied would be expected to reduce these indicators. Table 3-2 contains a summary of the measures used in each study:

- Claim Frequency: The number of medical malpractice claims, typically measured as the average number of claims per insured physician (or per 100 physicians).[4] Claims against several defendants involving the same alleged malpractice event are usually treated as a single claim.
- Payment Per Paid Claim: The amount of payment for medical malpractice claims, usually measured as an average payment per paid claim. One study used both payment amounts for individual claims and a measure of the probability that an individual claim resulted in payment to the plaintiff (129).
- Insurance Premiums or Losses: The premium charged for medical malpractice insurance, measured either in total or as an average per insured physician. Two studies used insurance company losses, or funds placed in reserve to pay current and future medical malpractice claims (excluding expenses for underwriting. sales, and claims adjustment) (9, 12). Losses can be interpreted as an indicator of expected insurance premiums.

Data

The malpractice claims and premium data used in the six empirical studies fall into four general categories:

- Physician-Reported Malpractice Claims: One study used information on the malpractice claims experience from 1976 to 1981 recalled by 3,817 self-employed physicians in a single survey conducted by the American Medical Association (2).
- State-Level Malpractice Premiums and Losses: Two of the studies obtained insurance company data on medical malpractice premiums and losses from the A.M. Best Company,[5] and aggregated those data to the State level. Blackmon and Zeckhauser used the percentage change in premiums and losses from 1985 to 1988 (before and after adoption of selected tort reforms by certain States in 1986) (12), Barker used the mean of each State's ratio of losses to premiums (loss ratios) over a 10-year period (1977-1986) (9).
- Company-State-Year Claims Data: Two studies aggregated claims data from seven insurance companies operating in 49 States for the years 1975 through 1984, supplemented in the later study by data for 1985 and 1986 (30,161). When more than one company operated in a given State, Danzon aggregated the companies' data to the State-year level, yielding about 450 observations (30), (Data were missing for some companies in certain States and

Table 3-2--Summary of Data and Methods Used in Six Empirical Studies on State Medical Malpractice Reform

Reform	Adams	Barker	Blackmon	Danzon	Sloan	Zuckerman
Malpractice cost indicators:						
Claim frequency	X	-	-	X		X
Payment per paid claim:						
Amount of payment	-	-		X	X	X
Probability of payment	-	-	-	-	X	-
Insurance premiums or losses	-	X	X			X
Unit of Observation:						
Physicians	X	-		-	-	-
States-	X	X	-	-		
Company-State-year combinations	-	-	-	X		X
Claims	-	-	-		X	-
Data sources:						
AMA/SMS survey[a]	X	-	-	-	-	
A.M. Best Company[b]	-	X	X	-	-	
Insurance companies		-	-	X		X
NAIC[c] and GAO[d]		-	-	-	X	-

[a]American Medical Association Socioeconomic Monitoring Survey
[b]A.M. Best Company is a private insurance rating service
[c]National Association of Insurance Commissioners
[d]U.S. General Accounting Office

SOURCES: E.K. Adams, and S. Zuckerman, "Variation in the Growth and Incidence of Medical Malpractice Claims," Journal of Health Politics, Policy and Law 9(3):475-488, Fall 1984; D.K. Barker, "The Effects of Tort Reform on Medical Malpractice Insurance Markets: An Empirical Analysis, " Journal of Health Politics, Policy and Law, 17(1): 143-161, Spring 1992; G. Blackmon, and R. Zeckhauser, "State Tort Reform Legislation Assessing Our Control of Risks," in Tort Law and the Public Interest,, Peter H. Schuck (cd.) (New York: W.W. Norton & Co., 1991); P.M. Danzon, "The Frequency and Severity of Medical Malpractice Claims: New Evidence," Law and Contemporary Problems 49(2):57-84, Sprint 1986; F.A. Sloan, P.M. Mergenhagen, and R R. Bovbjerg, "Effects of Tort Reforms on the Value of Closed Medical Malpractice Claims: A Microanalysis, " Journal of Health Politics, Policy and Law 14(4):663-689, Winter 1989; S. Zuckerman, R.R. Bovbjerg, F. and Sloan, "Effects of Tort Reforms and Other Factors on Medical Malpractice Insurance Premiums, " Inquiry 27(2)' 167-182, Summer 1990.

years.) In contrast, Zuckerman, Bovbjerg, and Sloan retained separate company-State-year observations, yielding 713 such observations (161). The largest multistate insurance company (the St. Paul Company) supplied Zuckerman, Bovbjerg, and Sloan (16 1) with corrected data for the years covered in Danzon's study (30). The degree of inaccuracy in the original data supplied to Danzon is unknown.

- National Samples of Claims: One study (129) used a sample of closed medical malpractice claims collected nationwide by the National Association of Insurance Commissioners (NAIC) from 1975 through 1978 and another such sample collected by the U.S. General Accounting Office (GAO) for 1984 (142). These samples yielded about 1,700 claims for each of the 5 years.

Methodological Issues

All six of the empirical studies suffer from methodological problems and limitations that make interpretation and comparison of their results difficult. Below we discuss some general problems with the way State tort reforms and the malpractice cost indicators were measured.

Tort Reform Measures

The studies identified State tort reforms either from direct examination of the relevant State statutes and regulations or from various published surveys of those laws, The specificity and accuracy of these surveys may have varied, and most did not reflect whether a reform had been challenged in court, as many had been. A court challenge can delay the actual implementation of a reform and affect the accuracy of the study findings. For example, the California tort reform package, which included a cap on noneconomic damage awards, was not upheld by the State Supreme Court until 1985, 10 years after it was enacted into law (Fein v. Permanence Medical Group, 695 P.2d 665 (Cal. 1985)).

For simplicity, the studies usually grouped often complex reforms into single categories, thereby obscuring important variations in those reforms. For example, most of the studies examined the effects of changes in State statutes of limitations. States have taken widely differing approaches to this reform (see ch. 2), For example. some States have limited the period of time within which injured minors have to file suit, while other States allow the suit to be brought many years after the incident. Similarly, some States allow suits involving foreign bodies left in a patient following surgery to be brought years after the incident, while other States do not. Many of the reforms that shortened statutes of limitations carved out such exceptions, which may significantly limit the effects of the reform (1 15),

States have taken equally diverse approaches to other tort reforms. including pretrial screening panels and voluntary, binding arbitration (see ch. 2 and app. A for details). These nuances cannot be fully captured in simple binary variables. The inferences that can be derived from the results of the empirical studies are thus limited to general patterns associated with the presence or absence of broad categories of reforms.

More importantly, collapsing different approaches to the same reform into a single binary variable will bias (toward zero) the estimated impacts of the truly effective approaches, because the weaker approaches will "water down" the effects of the stronger ones. Consequently, finding a significant effect of such a watered-down variable

suggests that the stronger approaches might have had even greater impacts than the finding indicates. However, it is impossible to deter-mine, based on these studies, which specific approaches might have had the more significant impacts.

Malpractice Cost Indicators

It is difficult to measure malpractice claim frequency accurately on a State-by-State basis. It is not known to what extent the different States and insurance companies that supplied the claims data for these studies may have used varying standards in defining a "claim. " First, in addition to claims filed in court. insurers may also include reports of adverse events from providers to insurers, informal complaints from patients to insurers or providers, or notices of intent to sue from attorneys to insurers or providers. Second, the "opening" date of a claim is ordinarily used in measuring claim frequency for a given time period. However, different States and insurance companies may have specified the "opening" date as being the date of injury, the date of initial contact with the insurer. or the date a lawsuit was filed. Third, for malpractice claims against institutions (i. e., hospitals), States and insurers may not always distinguish between claims for general liability (unrelated to health care -- e.g., an accident in the parking lot or a wrongful termination of employment) and claims for professional (physician and nurse) malpractice (51).

In addition, measuring trends in malpractice claim frequency may be distorted by changes in State malpractice laws. Certain tort reforms themselves may have led to changes in the way malpractice claims were recorded and counted, thereby creating illusory trends in claim patterns.[6] All of these variations in the nature of malpractice claims may have reduced the reliability of the studies' malpractice cost indicators, particularly claim frequency.

A final issue regarding three of these selected studies is the potential impact of other influences on malpractice insurance premiums. notably interest rates. Although they directly affect insurance companies investment income (which augments their premium income), at any given point in time interest rates tend to affect all companies equally. That is, the variation in interest rates occurs mainly over time rather than across companies or States. By using either cross-sectional research design or direct statistical adjustment, the studies examined here effectively control led for the effects of interest rates on malpractice premiums.

Another important determinant of the variation across States in malpractice premiums is State regulation of insurance premium increases. Of the three studies of insurance premiums or losses examined here. only one statistically controlled for this factor (161); the other two studies did not (9,12). Along with the other methodological limitations discussed above, this problem should be kept in mind when interpreting the results of these studies.

RESULTS

Based on the findings of these six empirical studies, OTA assessed the impact of each reform on the malpractice cost indicators: claim frequency, payment per paid claim. and insurance premiums or losses. Across the six studies, payment per paid claim and insurance premiums or losses were studied more comprehensively than was claim frequency. Consequently, claim frequency had less of an opportunity to show statistically significant results than did the other measures. That is, the more often the effect of a given reform is assessed (using separate but similar measures), the more likely it is that a significant effect will be found. Unless adjustments are made for such multiple comparisons, the results are biased in favor of finding a statistically significant effect.

The collective results of these six studies, detailed in appendix C, are summarized in table 3-3. In the table, the following symbols are used to represent the statistically significant findings of the six studies. (Two or more symbols separated by slashes indicate that two or more studies found significant results .)7

- A minus sign (–) means that a State tort reform showed the expected effect of reducing the malpractice cost indicator.
- A plus sign (+) indicates that the reform showed the unexpected effect of increasing the malpractice cost indicator.
- A zero (0) denotes results that were not statistically significant.
- A dot (.) means that the relationship was not examined in any of the six studies.

Caps on Damage Awards

Overall, caps on damage awards were the only type of State tort reform that consistently showed significant results in reducing the malpractice cost indicators. The most consistently observed effects of damage caps were in reducing payment per paid claim, observed in three studies that employed several different variables for the tort reform of damage caps and different measures of payment per paid claim (30, 129, 161). However, the only study that examined the impact of damage caps on claim frequency 8 found no significant effect of either a cap on total damages or a cap on noneconomic damages only (161).

Even though caps on damages directly affect only a small minority of cases, this minority often accounts for a disproportionate share of total malpractice payments (49, 142). In addition, it is the large, unexpected claim that makes it difficult for insurers to plan reserves. Minimizing these large awards may allow insurers to better match premiums to risk.

Sloan, Mergenhagen, and Bovbjerg found that, among the many State reforms they examined, caps on damage awards--whether for total damages or only for noneconomic damages--had the greatest impact on reducing payment per paid claim (129). However, neither type of damage cap affected the probability that a claim would result in payment. Caps on punitive damages alone showed no significant impacts on either payment per paid claim or the probability that the claim would result in payment.

Curiously, Zuckerman, Bovbjerg, and Sloan found that caps on noneconomic damages sign ificantly lowered malpractice payment per paid claim, whereas caps on total damages did not (161). One possible explanation is that statutes enacting a total cap on damages were most likely to be immediately challenged in court because limiting economic damages (e.g., medical expenses) regardless of the severity of injury has a potentially greater adverse impact on plaintiffs than does limiting only damages for pain and suffering.[9] Only eight States have passed caps on total damages (see ch. 2). If these statutes were challenged immediately after enactment, they might not have had their full potential effect.

Zuckerman, Bovbjerg, and Sloan also found that a cap on `total` damages was the most effective reform in reducing malpractice insurance premiums (161). Similarly, Blackmon and Zeckhauser found that limits on overall liability significantly reduced premiums as well as malpractice insurers' losses (12). The results for caps on noneconomic damages were less consistent, however. Blackmon and Zeckhauser found

that limits on only noneconomic and punitive damages significantly reduced malpractice premiums as well as insurers' losses (12). [10] In contrast, Zuckerman, Bovbjerg, and Sloan found no significant effect of noneconomic damage caps on premiums (161). Barker, however, found that any cap on damages significantly reduced the mean of the malpractice insurance loss ratio in the State (an indicator of expected premiums) (9).

To summarize. these five studies suggest that caps on damages are effective in lowering payment per paid claim and, hence, malpractice insurance premiums. The only study that assessed the effects of a damage cap on the frequency of claims failed to find such an effect.

Statutes of Limitations

The evidence regarding the impact of shorter statutes of I imitations on medical malpractice claim frequency was mixed. Danzon found that shortening the basic statute of limitations significantly reduced claim frequency (30). In contrast, both Adams and Zuckerman (2) and Zuckerman, Bovbjerg, and Sloan (161) found that shorter statutes of limitations raised claim frequency. A possible explanation is that shorter statutes of limitations force more plaintiffs to file their suits earlier, thereby raising claim frequency in the short run. In addition, Zuckerman, Bovbjerg, and Sloan found no significant effects of shorter "discovery periods" or shorter statutes of limitations for minors (161). Adams and Zuckerman examined the problem from the opposite perspective. i.e., whether the use of the discovery rule--which lengthens the time period for bringing a suit--affected claim frequency (2). They found no significant effect.

Adams and Zuckerman also compared the frequency of claims before 1976, when statutes of limitations were generally longer, to the frequency of claims brought between 1976 and 1981 (2). The initial upsurge in frequency in the first five years is not only consistent with the findings of Zuckerman, Bovbjerg, and Sloan (161), but it is also consistent with one of the objectives of lowering the statute of limitations: to force plaintiffs to tile claims closer to the date of injury. Whether shortening the statute of limitations reduces the overall number of claims filed in the long run, however, has not been adequately studied.

Reform of statutes of limitations showed no significant effect on payment per paid claim in the two studies that examined this question (129, 161).[11] Also, the claim-level analysis by Sloan, Mergenhagen, and Bovbjerg found no significant effect of shorter statutes of limitations on the probability that a claim would result in payment (129).

Two studies examined whether shorter statutes of limitations lowered malpractice insurance premiums, with mixed results. Zuckerman, Bovbjerg, and Sloan found that shorter statutes of limitations (except those for minors) significantly reduced such premiums (161). Blackmon and Zeckhauser, on the other hand, found no significant effect of shorter statutes of limitations on either premiums or losses for malpractice insurance (12), In addition, Barker found no significant impact of shorter statutes of limitations on the mean of the malpractice insurance loss ratio in the State (9).

Pretrial Screening Panels

As mentioned earlier, the numerous varieties of pretrial screening panels cannot easily be lumped into a single binary variable, so it is not surprising that the results of the empirical studies were so mixed regarding this reform. The two studies that examined the impact of screening panels (of any type) on the frequency of medical malpractice claims

Table 3-3--Summary of Results of Six Empirical Studies on State Medical Malpractice Reform[a]

Reform	Claim frequency	Payment per paid claim	Insurance premiums
Restrict the **statute of limitations:**			
a. Use date of event, not discovery	0	•	•
b. Shorten basic statute of limitations for medical malpractice	- / + / +	0/0	- / 0 / 0
c. Shorten statute of limitations for minors	0	0	0
d. Shorten extension of statute of limitations from date of discovery	0	0/0	–
Establish pretrial screening panels:			
a. Mandatory	0	0/+	•
b. Results admissible in trial	•	–	•
c. Any type	0/0	0/0/ +	
Limit contingent **attorney fees**	0/0	0/0/+	0/0
Modify the **standard of care:**			
a. Codify the standard of care	•	•	0
b. Do not adopt the "expanded locality rule"	0	•	•
c. Establish qualifications for expert witnesses	•	0	•
Require or allow awards to be reduced by amount of **collateral payments:**			
a. Require	0/0	- / - / -	0
b. Allow	0	0/0	0
c. Either require or allow	–	–	0/0
Impose **caps on damage awards:**			
a. Total damages	0	- / 0	–
b. Noneconomic damages only	0	- / -	0
c. Punitive damages only	•	0	•
d. Noneconomic or punitive damages	•	•	
e. Any type	•	–	
Require or allow **periodic payments:**			
a. Require	•	0	•
b. Allow	•	0	•
c. Either require or allow	•	•	0
Restrict the **joint and several** liability doctrine	•	•	

Table 3-3--Summary of Results of Six Empirical Studies on State Medical Malpractice Reform[a] (Continued)

Reform	Claim frequency	Payment per paid claim	Insurance premiums
Allow voluntary, binding arbitration:			
a. Codify the option of arbitration for medical malpractice	+	-/0/0	0
b. Allow pre-injury agreements to arbitrate	0	0	0
Restrict the use of ***res ipsa loquitur***	0	0	0
Restrict the use of ***ad damnum*** **clauses**	•	0	•
Limit the doctrine of **informed consent**	–	0	•
Allow **costs awardable** in frivolous suits	0	-/0	0

[a] Key to symbols:
– Results statistically significant and in expected direction (reducing direct malpractice costs)
+ Results statistically significant and in unexpected direction (increasing direct malpractice costs)
O Results not statistically significant
. Not examined in the studies reviewed here

NOTE: Each symbol (-, + ,0, or .) corresponds to the result of a single study. For example, " +/-/0" means that the reform was examined by three studies. Symbols based on the study by Danzon (Danzon, 1986) refer to her two-stage least-squares (TSLS) regression analysis (see text).

SOURCES: E.K. Adams, and S. Zuckerman, "Variation in the Growth and Incidence of Medical Malpractice Claims," Journal of Health Politics, Policy and Law 9(3):475-488, Fall 1984; D. K. Barker, "The Effects of Tort Reform on Medical Malpractice Insurance Markets: An Empirical Analysis, " Journal of Health Politics, Policy and Law, 17(1): 143-161, Spring 1992; G. Blackmon, and R. Zeckhauser, "State Tort Reform Legislation: Assessing Our Control of Risks," in Tort Law and the Public Interest, Peter H. Schuck (cd.) (New York W.W. Norton & Co., 1991); P.M. Danzon, "The Frequency and Severity of Medical Malpractice Claims: New Evidence," Law and Contemporary Problems 49(2):57-84, Spring 1986; F.A. Sloan, P.M. Mergenhagen, and R.R. Bovbjerg, "Effects of Tort Reforms on the Value of Closed Medical Malpractice Claims: A Microanalysis," Journal of Health Politics, Policy and Law 14(4):663-689, Winter 1989; S. Zuckerman, R.R. Bovbjerg, and F. Sloan, "Effects of Tort Reforms and Other Factors on Medical Malpractice Insurance Premiums," Inquiry 27(2):167-182, Summer 1990.

found no significant result (30,161). However, one of those studies found that such panels significantly increased payment per paid claim (161). Sloan, Mergenhagen, and Bovbjerg found that pretrial screening panels--whether their use was mandatory or voluntary, or whether the screening results could be admitted as evidence in a subsequent trial--had no significant impact on the probability that a claim would result in payment (129). However, mandatory screening panels significantly increased payment per paid claim, whereas voluntary screening panels significantly reduced one measure of payment per paid claim (amount of indemnity payment only, without "loss-associated expenses").

A possible explanation of these mixed findings is that pretrial screening successfully weeds out smaller malpractice claims. perhaps because of the added cost of taking the claim through the pretrial screening procedure, leaving only cases with higher potential awards in the universe of cases. Some defense attorneys believe that pretrial screening panels may result in better trial preparation, thereby allowing plaintiffs to better develop their cases, hence leading to larger awards (48,121). On the other hand, such panels could raise the cost of pursuing a claim and thereby force the plaintiff to settle for less.

The difference in results depending on whether the use of screening panels was mandatory or voluntary is more difficult to interpret. however, First, of the 26 States that had pretrial screening panels in 1980, only eight made the use of such panels voluntary. Many of these were relatively small States, and when screening is discretionary it tends to be used infrequently (20). Consequently, the sample size of paid claims from States with voluntary panels was probably small.

Only one study examined whether pretrial screening panels (of any type) reduced malpractice insurance premiums, finding a significant effect only on obstetrics/gynecology premiums, but not on general practice or general surgery premiums (161).[12]

Standard of' Care

During the 1970s, a number of States passed laws codifying the standard of medical care. These laws did not really alter the legal standard used in medical malpractice cases but instead merely documented that physicians' conduct must meet the customary care provided in their profession, as defined in the physicians locality or similar localities (see ch. 2). Some States also set qualification requirements for expert witnesses who testify as to what is the prevailing standard of care. In addition, some States allowed the standard of care to be established by practices outside the immediate locality where the defendant physician practiced (the "expanded locality rule").

None of the empirical studies examined the impact of codifying the standard of care on the frequency of medical malpractice claims. One study examined the effect on claim frequency of adopting an expanded locality rule, but found no significant results (2). Regarding payment per paid claim, Sloan, Mergenhagen, and Bovbjerg found no significant impact of establishing qualifications for expert witnesses on either payment per paid claim or the probability that the claim would result in payment (129). Finally, in the only study related to malpractice insurance premiums, Barker found no significant effect of codifying the standard of care on the mean of the malpractice insurance loss ratio in the State (9).

The measures of standard of care reforms used in these three studies, however, may not have been accurate enough to detect any significant effects. First, with respect to adopting an expanded locality rule, by the time these reforms were enacted, many courts were already using such a rule (see ch. 2). Furthermore, moving

to an expanded locality would probably have affected rural areas to a greater extent than urban ones, because rural localities had much more limited expert witness pools under the strict locality rule. Because rural areas have fewer malpractice cases, the studies would have had difficulty detecting anything but very large effects. Second, codification of the existing standard of care did not alter the legal definition of negligence, and it is debatable whether mere codification had a significant impact on malpractice claim activity.

Collateral Source Offsets

The adoption of collateral source offsets should reduce average awards; and if the expected payment declines, fewer claims should be filed. Together, lower awards and fewer claims should reduce premiums.

The two studies that examined the effect of collateral source offsets on the frequency of medical malpractice claims (30, 161) found that **mandatory** offsets had no significant et'feet . However, Danzon's measure that included discretionary as well as mandatory offsets showed a significant reduction in claim frequency. Both of these studies also found that mandatory collateral source offsets significantly reduced payment per paid claim. Danzon's more general measure (including discretionary as well as mandatory offsets) also showed a significant impact in reducing payment per paid claim.

Sloan, Mergenhagen, and Bovbjerg found that one measure of payment per paid claim (indemnity payment plus "loss-associated expenses") was significantly lower in States with mandatory collateral source offsets (129). However, that study found no significant impacts of either mandatory or discretionary collateral source offsets on the probability that a claim would result in payment.

Blackmon and Zeckhauser (12) as well as Zuckerman, Bovbjerg, and Sloan (161) found no significant impact of collateral source offsets on malpractice insurance premiums. Nor did Blackmon and Zeckhauser find any significant effect of such offsets on insurers losses (12). Moreover, Barker found no significant impact of collateral source offsets on the mean of the malpractice insurance loss ratio in the State (9).

Limits on Attorney Fees

Neither of the two studies that examined the impact of limitations on attorney fees on the frequency of medical malpractice claims found significant effects (30,161). Ironically, one of these studies found that limits on attorney fees resulted in significantly higher levels of payment per paid claim (161). This could reflect a tendency for plaintiffs attorneys to turn down cases with low expected payment which would increase the average payment per paid claim. However, Danzon found no significant effect of attorney fee limits on payment per paid claim (30). Moreover, the claim-level analysis by Sloan, Mergenhagen, and Bovbjerg found no significant impact of such limits on either payment per paid claim or the probability that the claim would result in payment (129).

Studies of the impact of these limits on malpractice insurance premiums also failed to find significant effects. Neither Zuckerman, Bovbjerg, and Sloan (161) nor Blackmon and Zeckhauser (12) found any significant effects of limiting attorney fees on premiums. and Blackmon and Zeckhauser found no significant impact of such 1 imitations on insurers losses (an indicator of expected malpractice premiums) (12).

These results do not necessarily mean that limits on attorney fees won't affect malpractice claims or premiums. Many of the specific reforms of this type have not placed absolute limits on attorney fees, but instead give the courts discretion in adjusting contingent fees. As one commentator noted, lawyers may have expected judges to be liberal (1 15). The empirical studies, however, present no evidence as to how the courts regulated attorney fees. Even where courts set limits, in certain cases those limits were close to 33 percent, the average contingency fee without a limit. [13]

Voluntary, Binding Arbitration

Arbitration is rarely used in medical malpractice cases. Therefore, it is difficult to draw conclusions regarding this type of reform from the studies reviewed here, especially since they produced mixed results. Danzon found that arbitration provisions significantly increased the frequency of malpractice claims, but significantly reduced payment per paid claim (30). In contrast, Zuckerman, Bovbjerg, and Sloan found no significant impact of allowing pre-injury arbitration agreements on the frequency of malpractice claims, the amount of payment per paid claim, or the level of malpractice insurance premiums (161). Similarly, Sloan, Mergenhagen, and Bovbjerg found no significant impact of such provisions on either payment per paid claim or the probability that a claim would result in payment (129). Finally, Barker found no significant effect of codifying the option of arbitration on the mean of a State's loss ratio for medical malpractice insurance (9).

Because arbitration as implemented in the States has been voluntary and rarely used, the power of the studies to pick up significant effects is severely restricted. Also, the details of an arbitration scheme may be important in determining its effect on payment per paid claim (and, hence, frequency and premiums). Danzon recognized that her findings regarding claim frequency may have been anomalous. "since arbitration would probably only be adopted by a minority of patients and providers even in states with enabling legislation" (30). Her measure captured only those 15 States that developed specific legislation governing arbitration of malpractice claims. In most other States arbitration was already an option once an injury occurred. The enforceability of pre-injury arbitration contracts was thus addressed in some States by malpractice arbitration statutes, but in others it was often governed by case law (see ch. 2),

Res Ipsa Loquitur

The only empirical study that examined the effects of restricting the use of *res ipsa loquitur* on malpractice claim frequency found no significant results (2). Similarly, Sloan, Mergenhagen, and Bovbjerg found no significant impact of restricting this doctrine on either payment per paid claim or the probability that the claim would result in payment (129). And Barker found no effect of this reform on the mean malpractice insurance loss ratio in the State (9).

Informed Consent

The study by Adams and Zuckerman was the only one that examined the effects on malpractice claims frequency of using an expansive (i. e., patient-oriented) doctrine of informed consent (2). It found that, in States that required physicians to give patients sufficient information to enable them to make an informed decision, 14 there was a significantly greater number of medical malpractice claims. However, Sloan, Mergenhagen, and Bovbjerg found that statutory limits on this broader doctrine (i.e., specifying the type of information that

must be disclosed or mandating that the requirements for disclosure be determined by professional custom) did **not** have a significant impact on either payment per **paid** claim or the probability that a claim would result in payment (129). None of the empirical studies examined the impact of changes in informed consent requirements on malpractice insurance premiums or losses.

Costs Awardable

Only two studies examined the effect of State laws that allowed the judge in medical malpractice suits to make the losing party pay all attorney fees when the suit is frivolous or fraudulent. Zuckerman, Bovbjerg, and Sloan found no significant impacts of such "costs awardable" provisions" on medical malpractice claim frequency, payment per paid claim, or premiums (161). Sloan, Mergenhagen, and Bovbjerg found no significant impact of this type of reform on the probability that a claim would result in payment (129). However, that study did find that payment per paid claim was significantly lower in States that had enacted such a provision (129). With the exception of this one finding, the results are predictable because it is likely that few suits were judged frivolous or fraudulent.

Periodic Payments

Only two empirical studies examined the impact of mandatory or discretionary periodic payments on payment per paid claim (12. 129). Sloan, Mergenhagen, and Bovbjerg found no significant impact either on payment per paid claim or on the probability that the claim would result in payment (129). Similarly, Blackmon and Zeckhauser found no significant impact on malpractice insurance premiums or insurers' losses (12). Neither study examined the effect of this type of State tort reform on medical malpractice claim frequency.

Other Reforms

Each of the remaining State tort reforms [1]5 was examined by only one study, so no corroboration of results is possible. These one-study results are summarized briefly below.

- Blackmon and Zeckhauser found that restricting a State's law regarding joint and ***several*** **liability** (which traditionally allows a winning plaintiff to recover damages from all defendants or the entire amount from a single defendant) significantly reduced medical malpractice insurance premiums (1 2).
- Sloan, Mergenhagen, and Bovbjerg found that restricting the use of ad ***damnum*** clauses (which specify at the outset of a lawsuit the amount of damages demanded by the plaintiff) had no significant impact on either payment per paid claim or the probability that the claim would result in payment (129).

SUMMARY

Our review demonstrates that empirical evidence regarding the impact of State tort reforms on the malpractice cost indicators is quite limited. We focused on six studies that used empirical methods to systematically *analyze* the impacts of State tort reforms while controlling for nontort influences on the malpractice cost indicators. All of these studies had serious methodological flaws. For example, two of the three studies of malpractice premiums or losses failed to control for State regulation of insurance premium increases. Moreover, as usually happens when multiple measures of the same concepts are used in one or more studies, significant results tended to occur more often among the measures that were examined more often. Not surprisingly. the

six studies often produced conflicting results. Nevertheless, the limited available evidence suggests the following tentative conclusions.

Reforms that Significantly Reduced Direct Malpractice Costs

The following tort reforms showed consistent, significant impacts in reducing one or more of the malpractice cost indicators:

- Caps on damage awards
- Mandatory collateral source offsets.

Reforms with Mixed or Isolated Effects

The following reforms showed either mixed effects (i. e., some significant results in the positive direction and some in the negative direction) or isolated effects (i. e., only one significant result) on one or more of the malpractice cost indicators:

- Restricting the statute of limitations
- Establishing pretrial screening panels
- Limiting the doctrine of informed consent
- Allowing costs awardable in frivolous suits.

Reforms that Were Not Found to Significantly Reduce Direct Malpractice Costs

The following tort reforms showed no significant impacts in reducing one or more of the malpractice cost indicators:

- Limits on attorney fees[16]
  Modifying the legal standard of care
- Mandatory or discretionary periodic payments
- Restricting the use of ***res** ipsa loquitur*

Reforms Examined Only by Single Studies

As noted earlier, each of the following reforms was examined by only one study, so no corroboration of results is possible:

- Restricting the joint-and-several liability doctrine
- Restricting the use of *ad damnum* clauses.

Reforms Not Yet Systematically Studied

None of the empirical studies reviewed in this report examined the impact of two of the more recent types of State tort reform on the malpractice cost indicators: (a) alternative dispute resolution (although four studies examined the effects of voluntary, binding arbitration); and (b) the use of practice guidelines as legal standards of care.

Alternative Dispute Resolution

Alternative dispute resolution (ADR) is an approach to avoiding formal litigation that includes both voluntary, binding arbitration (see the preceding section) and a variety of nonbinding approaches. The latter include neutral evaluation, court-annexed arbitration, summary jury trials (SJTs), and mediation (see ch. 2 for a description of ADR approaches). None of these approaches has been extensively used in medical malpractice cases. Thus, few opportunities are likely to arise in the near future for using systematic empirical methods to examine the effects of ADR on medical malpractice claim frequency, payment per paid claim, and insurance premiums or losses.

Of course, the fact that ADR has not been extensively used does not preclude the possibility that it could have a significant impact on the malpractice cost indicators if it were used. The direction of that impact, however, is unknown, Arbitration may reduce the administrative costs of resolving certain claims, but a reduction in the cost of resolving a claim could lead to an increase in malpractice claim frequency. For now, the reluctance to use ADR when it is not

mandatory, coupled with questions about its constitutionality when mandatory, suggests that binding ADR is unlikely to have much of an impact on direct malpractice costs.

Use of Practice Guidelines as the Legal Standard of Care

It will be some time before even anecdotal evidence is available regarding the impact of guideline-oriented tort reforms in Maine, Minnesota. and Vermont on the malpractice cost indicators. However, given the limited number of guidelines likely to be adopted and the small percentage of claims they would be likely to affect. a significant impact of these reforms on overall malpractice costs does not seem likely.

A number of factors involved in guidelines development and use may limit both the feasibility and potential impact of tort reforms that adopt specific guidelines as legal standards of care (see ch. 2). However, as their development continues, guidelines are likely to play an increasingly important role in determining the standard of care under the existing system, absent specific tort reform.

CONCLUSION

Based on the six empirical studies reviewed in this chapter, only caps on damage awards and collateral source offsets appear to consistently reduce one or more of the malpractice cost indicators. As predicted, both reforms reduce payment per paid claim, and caps on damages also lead to lower insurance premiums. The hypothesized effect that limiting potential claim payments would discourage medically injured patients from filing suit is not supported by these studies. It may be surprising that other reforms did not show the predicted effect of reducing one or more of the malpractice cost indicators. Problems with malpractice claims data make any conclusions on claim frequency tentative at best. However, the paucity of evidence regarding other approaches to tort reform, particularly novel alternatives to the present litigation system, suggests that these conclusions on other reforms should be tempered with a good deal of caution.

In this paper, OTA focused its assessment of the impact of tort reforms on the indicators that best reflect direct malpractice costs. They may also act as malpractice "signals" that influence physicians' practice patterns. However, it is by no means certain that these measures influence health care costs indirectly, through signals to physicians. OTA's larger study of "defensive medicine" will address this broader question of whether physicians alter their clinical choices (most importantly, by ordering more diagnostic tests than may be medically indicated) at least in part out of fear of malpractice suits. It will also attempt to shed more light on which malpractice signals affect physician behavior and the potential impact of tort reform on these signals.

Even if tort reforms do reduce medical malpractice costs, does this mitigate the deterrent effect on physician behavior, removing the incentive for more thorough diagnostic assessment of patients? If so, does this jeopardize the overall quality of patient care? And finally, do reduced malpractice costs really contribute significantly to restraining overall health care costs? These are the ultimate questions to be addressed in assessing the variety of tort reforms that have been tried in the States or proposed for national action.

Footnotes for Chapter 3

[1] The final report of OTA's assessment of defensive medicine will contain a review of the major single-State studies. That review will include the recent study by Gronfein and Kinney (49), which compares three States but focuses on the impact of a single tort reform (a cap on total damage awards coupled with a patient compensation fund) in Indiana.

[2] The study by Adams and Zuckerman did not examine tort reforms, but instead asked whether certain common-law doctrines -- which were used more frequently in malpractice cases during the 1970s -- were associated with higher claim frequency during that same period (2). For the sake of consistency, our tables that summarize the results of these six studies have recast Adams and Zuckerman's measures so that the expected result would be to reduce malpractice claim frequency.

[3] Barker used a binary variable to indicate whether or not the State's statute of limitations was greater than 3 years (9).

[4] We excluded another measure employed by Danzon: the logarithm of the raw number of malpractice claims filed (30). This measure of the sheer volume of claims tends to be higher in larger States because it does not take into account the number of insured physicians in the State as a denominator.

[5] The A.M. Best Company is a private insurance rating service.

[6] In several States (e.g., California, New York, Indiana, and Florida), the malpractice reform package included a requirement that malpractice insurers report all malpractice claims to the State department of insurance or the medical licensing board (141).

[7] Although Danzon used both ordinary least-squares (OLS) and two-stage least-squares (TSLS) regression analysis, she noted that the latter results "were probably more reliable" (30), Accordingly, our summary of her results here are based only on her TSLS analysis. However, both her OLS and TSLS results are presented in appendix C.

[8] Danzon examined the impact of damage caps on payment per paid claim, but not on claim frequency (30).

[9] Caps on total damages have been overruled more often than caps on noneconomic damages (105).

[10] Because punitive damages are rarely awarded in malpractice suits (see ch. 2), this reduction is probably due to caps on noneconomic damages.

[11] Danzon examined the effect of statutes of limitations on malpractice claim frequency, but not on payment per paid claim (30).

[12] Zuckerman, Bovbjerg, and Sloan hypothesized that pretrial screening may be particularly good at screening out nonmeritorious obstetric cases or encouraging settlement (161). obstetric cases are unique because of the emotional impact of having a severely impaired baby and the tendency to assume that the birthing process was to blame, especially if there was no prior indication of any impairment.

[13] GAO found that in 52 percent of claims the average attorney fee was between 31 and 40 percent. In about 96 percent of claims, attorney fees represented 40 percent or less of the indemnity payment (142), See also (127).

[14]It is not clear from the study whether this is an objective (i.e., reasonable patient) standard or a subjective (i.e., particular patient) standard, or whether medical custom is relevant in determining adequacy of consent.

[15]One study did not examine tort reforms, but instead asked whether certain common-law doctrines were associated with higher malpractice claim frequency (2). That study found no significant impacts for the following doctrines:

- Allowing the usc of the *respondeat superior* doctrine (under which a hospital can be sued for the actions of the physicians who practice at that hospital);
- Restricting the use of charitable immunity as a defense by hospitals based on [heir non-profit status; and
- Restricting the usc of government immunity as a defense by hospitals based on their public ownership.

[16]One study found that limits on attorney fees significantly **increased** malpractice payment per paid claim (161).