

The US Medical Liability System: Evidence for Legislative Reform

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ABSTRACT

BACKGROUND Despite state and federal efforts to implement medical malpractice reform, there is limited evidence on which to base policy decisions. The National Practitioner Data Bank (NPDB) offers an opportunity to evaluate the effects of previous malpractice tort reforms on malpractice payments and premiums.

METHODS For every state and the District of Columbia, we calculated the number of malpractice payments, total amount paid, and average payment from NPDB data reported from 1999 through 2001. We analyzed 44,913 claims using logistic regression to study associations between payments, physician premiums, and 10 state statutory tort reforms.

RESULTS Wide variations exist in malpractice payments among states. The reforms most associated with lower payments and premiums were total and noneconomic damage caps. Mean payments were 26% lower in states with total damage caps (\$196,495.34 vs \$265,554.50, $P = .001$). Mean payments were 22% less in states with noneconomic damage caps (\$219,225.98 vs \$279,849.86, $P = .010$). Total damage caps were associated with lower mean annual premiums, especially for obstetricians (\$22,371.57 vs \$42,728.68, $P < .001$). Hard noneconomic damage caps were associated with premium reductions for obstetricians (30,283.75 vs 45,740.88; $P = .039$).

CONCLUSIONS Significant reductions in malpractice payments could be realized if total or noneconomic damage caps were operating nationally. Hard noneconomic damage and total damage caps could yield lower premiums. If tied to a comprehensive plan for reform, the money saved could be diverted to implement alternative approaches to patient compensation or be used to achieve other systems reform benefiting patients, employers, physicians, and hospitals.

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INTRODUCTION

Recent increases in malpractice premiums, exorbitant malpractice awards, and physicians' fear of litigation have been reported as factors driving rising health care costs and threatening access to medical care in the United States.¹ By no means is the United States unique; several countries have begun to see sharp rises in malpractice payments and premiums threatening malpractice insurers' solvency and patients' access to services.²⁻⁵ During each medical malpractice crisis of the past 3 decades, stakeholders have debated the causes and proposed legislative solutions.⁶ Wide disparities have been documented in rates of malpractice claims filed, average payments per claim, and maximum claim payments among states.⁷ Although cost containment is only one goal of medical liability reform, it remains a major driver of policy debates.

Studies analyzing data from the crises in the 1970s and 1980s have shown that state statutory reforms, specifically caps on noneconomic damages and collateral source offsets, are associated with lower total payments, although some of these studies have shown mixed results.⁸⁻¹¹ Noneconomic

damage caps and limitations on time to file suits have been associated with lower malpractice premiums.¹² Most studies were conducted more than a decade ago, however, and were limited to samples of insurance companies. Given contemporary medical liability concerns, it is important to learn from recent experience and use more complete data to assess the associated effects of state tort reform on the state malpractice payment and premium variability that frame our current crisis.

We analyzed all payments made to settle claims or satisfy malpractice judgments on behalf of physicians in the United States for the years 1999 through 2001 as reported to the National Practitioner Data Bank (NPDB). These dates were chosen because many states instituted reforms in the mid-1990s, and we sought to capture subsequent claims data taking into account delays in data reporting, as well as lags in application of these reforms (eg, possible delays because of appeals). We also sought to capture a period after the first wave of reforms but before the second wave of reforms that occurred after 2001. We evaluated malpractice payments and medical liability premiums in relation to 10 common state tort statutes that originally were intended to curb claims. We also assessed the potential direct economic impact of implementing effective statutory reforms nationwide.

METHODS

In 1986 Congress enacted legislation to create the NPDB as a repository of medical malpractice payments and adverse actions related to limitations on licensure, clinical privileges, professional society membership, and participation in federal programs.¹³ According to this legislation, malpractice carriers, hospitals, professional societies, and state licensing boards are mandated to report to the NPDB all malpractice payments made to settle claims or satisfy judgments against individual nurses, dentists, and physicians. The original intent of the databank was to improve health care by encouraging licensing boards, health care facilities, and professional societies not only to identify and discipline those who provide incompetent care, but also to limit the ability of those clinicians to change locations without making known any previous medical malpractice payment and adverse action history.¹⁴

We analyzed the 44,913 paid medical malpractice claims reported on behalf of physicians to the NPDB between January 1999 and December 2001 (public use data files). To standardize these total claims for numbers of physicians and people in each state, we used information from the 2000 American Medical Association (AMA) Physician Masterfile¹⁵ and the 2000 US Decennial Census.¹⁶ We calculated the reported

number of medical malpractice payments, total dollar amount payments, mean dollar amount per payment, payments per 1,000 practicing physicians, and payments per 100,000 population. The payments were divided by the number of practicing physicians based on the state in which the physicians practiced. Likewise, we standardized payment amount by state population to provide an estimate of payments per person living in each state. State statutes were assessed as of January 1999 and were obtained from the AMA,¹⁷ Physician Insurers of Association of America,¹⁸ and American Tort Reform Association.¹⁹ We developed a coding scheme to categorize each state and the District of Columbia by the presence or absence of specific malpractice statutory reform. Two teams (one team included an attorney) independently coded state tort reform statutes, and the teams decided on the final coding by consensus.

Bivariate analysis was performed to study associations between malpractice payment rates/payments and physician liability premiums (dependent variables) and 10 common state tort reform statutes (independent variables). These state statutory reforms included total damage caps, noneconomic damage caps, joint liability reform, attorney fee caps, mandatory arbitration, excess coverage funds, permitted periodic payments, collateral source reform, certificate of merit requirements, and statute of limitations. Total damage caps are limits on total damages, which include economic damages (ie, medical bills, lost income, direct cost of injury) and noneconomic damages (ie, caps for "pain and suffering"). "Hard" noneconomic damage caps are those without any exceptions; "soft" noneconomic damage caps are those with exceptions (including adjustment for inflation, exceptions for particular injuries). (Supplemental Appendix 1, available online-only at <http://www.annfammed.org/cgi/content/full/4/3/240/DC1>, displays a complete list of statute definitions.) Because total damage caps showed a consistent and strong relationship across multiple payment characteristics, we controlled for the presence of total damage caps for all statutes that showed significant associations across one or more payment characteristics. We performed a multivariate analysis (with regression equations using each variable individually and then using all variables in combination); this multivariate analysis did not add further explanation to our model of the association between caps, payments, and premiums. Statute variables (other than total and noneconomic damage caps) did not obscure the effects of caps, nor did they add explanation to the model. We therefore report results from the bivariate analysis. We used the source for state medical premium information commonly cited by US General Accounting Office

and US Congressional Budget Office and extracted annual premiums for 3 specialties for which information was available: internal medicine, obstetrics, and general surgery.²⁰ Pearson's coefficient was calculated for associations between payment characteristics and premiums. To calculate reductions in liability payments associated with certain statutes, we standardized the rates where we applied payment and premium characteristics of states with a specific statute to those states without that statute.

RESULTS

Payments

Wide variations in mean malpractice payment characteristics exist among the states (Table 1). For the years 1999 through 2001, the average dollar amount per payment ranged from \$113,695 in Michigan to

\$560,059 in the District of Columbia. Total payments for the 3-year period ranged from \$15.4 million in Wyoming to more than \$1.8 billion in New York. Payment characteristics of all 50 states and the District of Columbia are displayed in Supplemental Table 1, available online-only at <http://www.annfammed.org/cgi/content/full/4/3/240/DC1>.

When the 10 different state statutory reforms were studied using bivariate analysis, associations were found between 2 reforms—total damage caps and noneconomic damage caps—and payments. Total damage caps were negatively associated with the mean dollar amount per payment, payment per practicing physician, and payment per person in the population (Table 2). The mean dollar amount per payment was 26% lower in those 7 states having total damage caps compared with those 44 states not having total damage caps (\$196,495.34 vs \$265,554.50, $P = .001$). Total



Table 1. States with the Lowest and Highest Dollar Amount per Payment, 1999-2001

State	Average Malpractice Payment (\$)	Total Payments 1999-2001 (\$)	Payment per Person* (\$)	Payments per 1,000 Physicians† No.	Payments per 100,000 Population‡ No.
Michigan	113,695	243,762,850	24.53	89.28	21.57
Kansas	150,592	68,670,050	25.54	80.32	16.96
California	151,744	647,035,900	19.10	56.44	12.59
Nebraska	160,882	35,233,100	20.59	60.13	12.80
New Mexico	172,666	54,389,750	29.90	85.32	17.32
Alabama	379,261	72,818,100	16.37	22.26	4.32
Massachusetts	382,324	343,709,250	54.14	39.95	14.16
Illinois	418,087	664,341,000	53.49	51.10	12.79
Connecticut	472,984	222,775,300	65.42	44.08	13.83
District of Columbia	560,059	104,731,000	183.08	53.69	32.69

* Mean payment amount per person in general population in each state (2000 Census Bureau Data).

† Number of payments per 1,000 practicing physicians in each state (AMA 2000 Masterfile).

‡ Number of payments per general population in each state (2000 Census Bureau Data).

Table 2. Payment Characteristics of States With and Without Total Damage Caps, 1999-2001

States	Payments per 1,000 Physicians* No.	Payments per 100,000 Population† No.	Average Malpractice Payment (\$)	Payment per Physician‡ (\$)	Payment per Person§ (\$)
States with total caps (n = 7)					
Median	60.13	12.80	190,174.62	10,833.56	20.95
Mean	60.58	12.86	196,495.34	11,504.69	24.38
States without total caps (n = 44)					
Median	55.06	12.74	248,349.27	13,629.10	30.55
Mean	61.05	14.40	265,554.50	15,501.78	38.73
P value for mean differences	.958	.451	.001	.015	.006

*Number of payments per 1,000 practicing physicians in those states (AMA 2000 Masterfile).

†Number of payments per general population in those states (2000 Census Bureau Data).

‡ Total payment dollar amount per number of practicing physicians in those states (AMA 2000 Masterfile).

§ Total payment dollar amount per general population in those states (2000 Census Bureau).

damage caps were not associated with fewer numbers of payments per physician or per person.

Noneconomic damage caps were significantly associated with lower payments, including lower mean dollar amounts per payment, payment per practicing physician, and payment per person in the population (Table 3). The average amount per payment was 22% less for those states with noneconomic caps than it was for those states without noneconomic caps (\$219,225.98 vs \$279,849.86, $P = .010$). Controlling for the presence of total damage caps, this association remained statistically significant ($P = .029$). When payments were divided by the state population, the dollar amount per person in the population was one-third less in states having noneconomic caps compared with states not having noneconomic caps (\$28.60 vs \$42.02 per person, $P = .047$). When controlled for total damage caps, these differences in number of payments per person were not statistically significant, $P = .226$. As with total caps, there was no difference between states with and without noneconomic damage caps in the number of payments made per physician or per person in the population. We then split noneconomic damage caps into hard and soft caps to see whether this distinction mattered. The amount per claim differed significantly between states not having a noneconomic damage cap and those having a hard noneconomic damage cap (\$279,849.86 vs \$194,543.66; $P = .008$).

Of the other 8 tort reform statutes, we found that states with periodic payments had higher dollar amounts per payment, and states with excess coverage funds had lower dollar amounts per payment. When controlled for whether a state had total damage caps, however, these associations lost statistical significance.

After rate standardization for mean payment rate and amount, had those 31 states without noneconomic

damage caps adopted the payment characteristics of those 20 states with noneconomic damage caps, we estimated a \$1.3 billion reduction in malpractice payments during the 3-year period (1999-2001). Likewise, had those 44 states without total damage caps adopted the payment characteristics of those states with total damage caps, we estimated a potential \$2.4 billion payment reduction during the 3 years. The estimated reductions during the 3-year period could be \$1.0 billion, \$2.8 billion, and \$5.1 billion if total caps of \$1 million, \$500K, and \$250K, were applied, respectively, to all payments.

Liability Premiums

Bivariate analysis for each of the 10 state statutes and physician malpractice premiums showed the strongest associations between total damage caps and lower premiums (Table 4). Total damage caps were associated with lower mean annual premiums for all 3 specialties, with obstetricians having the greatest savings (\$22,371.57 vs \$42,728.68, $P < .001$). Although undifferentiated noneconomic damage caps showed a trend toward lower physician liability premiums, this trend was not statistically significant (Table 4). When we further differentiated hard from soft noneconomic damage caps, we found that the premiums for obstetricians varied significantly (\$30,283.75 vs \$45,740.88; $P = .039$) (Table 5).

If those 44 states without total caps had premium rates of states with total caps, the potential annual premium savings for internists, general surgeons, and obstetricians could be \$711 million, \$270 million, \$815 million, respectively. Likewise, for those 31 states without noneconomic damage caps, the potential annual premium savings for internists, general surgeons, and obstetricians could be \$539 million, \$127 million, \$350 million, respectively.

Table 3. Payments in States With and Without Noneconomic Damage Caps, 1999-2001

States	Payments per 1,000 Physicians* No.	Payments per 100,000 Population† No.	Average Malpractice Payment (\$)	Payment per Physician‡ (\$)	Payment per Person§ (\$)
States with noneconomic caps (n = 20)					
Median	56.79	13.38	217,406.03	11,464.87	25.79
Mean	62.74	13.84	219,225.98	12,711.68	28.60
States without noneconomic caps (n = 31)					
Median	54.08	12.65	254,058.74	16,940.11	31.25
Mean	59.85	14.42	279,849.86	16,399.28	42.02
P value	.691	.776	.010	.028	.047

*Number of payments per 1,000 practicing physicians in those states (AMA 2000 Masterfile).

†Number of payments per general population in those states (2000 Census Bureau Data).

‡Total payment dollar amount per number of practicing physicians in those states (AMA 2000 Masterfile).

§Total payment dollar amount per general population in those states (2000 Census Bureau Data).

Table 4. Mean Annual Premiums by Specialty for States With and Without Total and Noneconomic Caps, 2000

Specialty	States With Total Caps (n = 7)	States Without Total Caps (n = 44)	P Values	States With Noneconomic Caps (n = 20)	States Without Noneconomic Caps (n = 31)	P Values
	\$	\$		\$	\$	
Internal medicine	4,519.86	7,447.00	.015	6,461.65	7,421.74	.427
General surgery	16,912.14	24,516.93	.051	22,244.62	24,092.16	.665
Obstetrics	22,371.57	42,728.68	.001	36,051.81	42,171.97	.371

Table 5. Mean Annual Premiums by Specialty for States With and Without Hard or Soft Noneconomic Caps, 2000

Specialty	States With Hard Noneconomic Caps* (n = 12)	States With Soft Noneconomic Caps* (n = 8)	States Without Noneconomic Caps (n = 31)	P Values†	
	\$	\$	\$	Hard vs Soft Caps	Hard vs No Caps
Internal medicine	5,814.75	7,432.00	7,421.74	.157	.430
General surgery	20,653.08	25,304.50	24,092.16	.157	.446
Obstetrics	30,283.75	45,740.88	42,171.97	.039	.081

Note: P values for soft vs no caps >.1.

* Hard caps = caps without any exceptions; soft caps = caps with exceptions.

† Mann-Whitney U test for hard vs soft caps and hard vs no caps.

DISCUSSION

This study is the first to use the most comprehensive national medical liability payment data available to investigate the relationships between 10 specific state tort statutory reforms and malpractice payments and premiums. For the years 1999 through 2001, total and noneconomic damage caps were associated with lower dollar amounts per payment, confirming findings from smaller and less-recent studies.⁸⁻¹⁰ An important new finding is the association between total caps and lower insurance premiums; there is a suggestion that hard noneconomic damage caps are also associated with lower insurance premiums. This association is not surprising and calls into serious question the argument that recent increases in medical liability premiums are unrelated to payments. Currently, there remains considerable discourse regarding the multiple factors influencing the financial losses seen by malpractice carriers (eg, market cycle, claims severity and frequency, investment returns) and associations with rises in premiums.²¹

It is important to begin a discussion of limitations of this study by stating the controversies that surround the NPDB.²² In 2000, the General Accounting Office made recommendations regarding the limitations of the NPDB, especially with regard to its findings of delayed submissions (more than 30-day delays), miscoding of information, lack of information about nonphysician clinicians, and systems' use of the corporate shields to avoid reporting. Our use of aggregate data from a 3-year period minimizes issues around submission

delays, we did not use specific claims information (subject to coding errors), and we were interested only in payments by physician clinicians. NPDB data represent payments made only on behalf of individual practitioners; therefore, we were unable to include payments made on behalf of corporations (eg, corporate shield technicality) or errors in double reporting. Despite these limitations of the NPDB, it remains the most complete source of payment data available.

None of the tort statutory reforms we studied was associated with lower rates of payments (ie, fewer payments per physician or per population). Because the NPDB is a repository for payments and not claims, claims that do not result in payments are not reported. Accordingly, some reforms may be associated with lower claims rates, an association that cannot be tested using the NPDB. There are instances in which the NPDB may report multiple payments for one claim (ie, by the insurance company as well as a state fund) in those states that have excess coverage funds. To ensure that mean dollar amounts per payment were not falsely decreased in states with excess coverage funds and caps, we repeated the analysis removing all 10 states with excess coverage funds and found that the same relationships between total caps and noneconomic caps and lower mean claim payment remained significant. Likewise, the association between total caps and lower premiums for obstetricians remained significant.

Conclusions of causation must be made cautiously because of complex, interacting, and other unmeasured

factors. For example, the nonsignificant tendency for states mandating periodic payments to have higher malpractice payments might not mean that this reform leads to higher payments; rather, it might mean that states with high payouts have acknowledged a need to allow defendants to pay large awards over time. The lower payments and premiums in the 7 states that had total caps show a strong association between payments and caps despite a small sample size. Using dichotomous variables to describe other laws with subtle variations and major exceptions, however, may actually bias against finding significant associations where they may in fact exist, as any outcome differences are averaged.²³ As a result of this concern, we chose to define and analyze hard and soft noneconomic damage caps separately.

Although other tort reform statutes showed tendencies toward lower payments, significance vanished when we controlled for total damage caps. This finding may reflect an overwhelming effect of total damage caps on payments. Alternatively, as argued in a June 2004 Congressional Budget Office report, analyzing the effects of individual statutes is complicated by an inherent difficulty in controlling for other unmeasured differences between states; these differences may have important effects on premiums.²⁴ In fact, Thorpe's recent analysis showed that the presence of caps is associated with lower physician malpractice premiums.²¹

Our estimates of payment reductions were limited to the direct savings, probably underestimating the financial impact of caps. Reductions in other indirect costs of litigation could generate considerable savings, as payments represent only a fraction of the total costs of medical liability.²⁵ Our analysis supports the Congressional Budget Office estimates that tort reforms could increase federal revenues by \$3 billion and save \$14.9 billion over the next 10 years while reducing physician premiums by 25% to 30%.²⁶

Given a sample size of 51, this study is at risk of poor power to detect significant associations. We chose to use a traditional standard of 95% certainty but recognize that policy makers may not need such a rigorous standard and may be comfortable with a lower threshold of certainty, in which case other associations between reforms and malpractice payments might bear further scrutiny.

Time lags also presented a limitation; time from statute enactment to effective date varied from immediately to several months, and time from a statute's effective date to actual legal application could be years. Because most statutory reforms in the 1990s were enacted in the few years before 1999, we coded statute enactment as of January 1999 and analyzed payments made during the 3 subsequent years (1999-2001) in an

effort to capture paid claims most likely affected by the statute. Future analyses could quantify payments and premiums before and after statute enactment to establish trends that may be explained by statute application.

Cost containment is certainly not the only goal of tort reform. The current medical liability tort system has failed clinicians and patients as a mechanism of rational compensation for injury and of improving the quality of care.²⁷ The wide state-to-state variations in payments imply a lack of equitable compensation for injured patients. Previous studies have substantiated this failing and proposed innovative options for the malpractice tort system to promote justice and improve care.²⁸ The United States could also learn from international models. In Spain, for example, the medical society and regional health service worked together to institute new systems to provide insurance coverage, professional education, and advice for physicians while continuing to protect and respect the rights of patients.²⁹ Sweden has a no-fault system, which has been considered a model for US reform.³⁰ For the United States, the sizable financial savings associated with total and noneconomic damage caps accrue not only to physicians but also to insurers, employers, and patients who ultimately bear these costs. Moving the current policy debates toward finding a broader solution to the inequities in our current liability system would mean that reform efforts would include strategies aimed at improving the quality and safety of the health system.

To read or post commentaries in response to this article, see it online at <http://www.annfam.org/cgi/content/full/4/3/240>.

Key words: Liability, legal; malpractice; legal liability, premiums; cost control; insurance, liability

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