

Federation of
STATE
MEDICAL
BOARDS

A PUBLICATION OF THE FEDERATION OF
STATE MEDICAL BOARDS OF THE UNITED STATES

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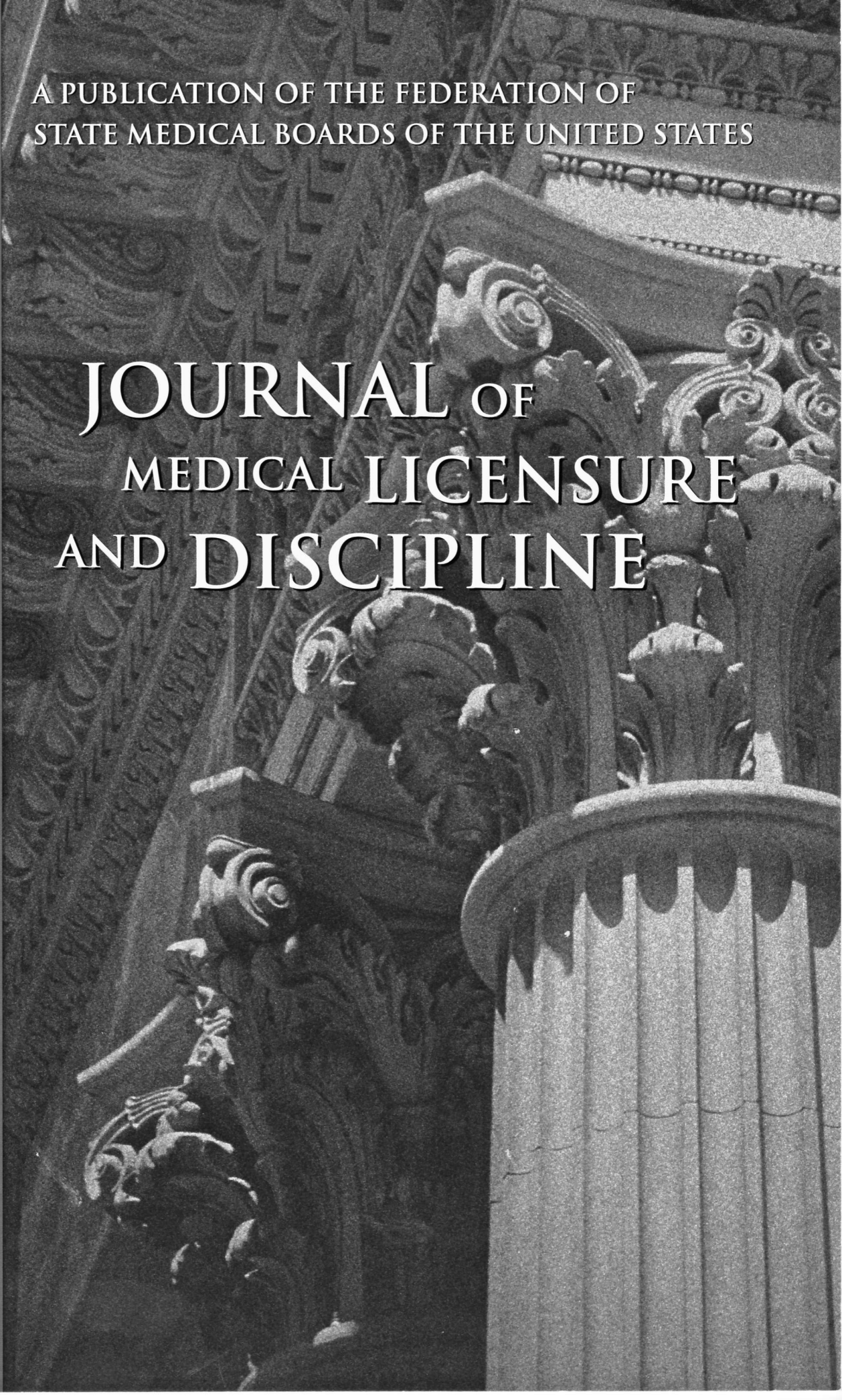
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JOURNAL OF
MEDICAL LICENSURE
AND DISCIPLINE

VOLUME 95
NUMBER 2
2009



DOES THE EMPLOYMENT OF PHYSICIAN ASSISTANTS AND NURSE PRACTITIONERS INCREASE LIABILITY?

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ABSTRACT

We assessed whether physician assistant (PA) and nurse practitioner (NP) utilization increases liability. In total, 17 years of data compiled in the United States National Practitioner Data Bank (NPDB) was used to compare and analyze malpractice incidence, payment amount and other measures of liability among doctors, PAs and advanced practice nurses (APNs).

From 1991 through 2007, 324,285 NPDB entries were logged, involving 273,693 providers of interest. Significant differences were found in liability reports among doctors, PAs and APNs. Physicians made, on average, malpractice payments twice that of PAs but less than that of APNs. During the study period the probability of making a malpractice payment was 12 times less for PAs and 24 times less for APNs. For all three providers, missed diagnosis was the leading reason for malpractice report, and female providers incurred higher payments than males. Trend analysis suggests that the rate of malpractice payments for physicians, PAs and APNs has been steady and consistent with the growth in the number of providers.

There were no observations or trends to suggest that PAs and APNs increase liability. If anything, they may decrease the rate of reporting malpractice and adverse events. From a policy standpoint, it appears that the incorporation of PAs and APNs into American society has been a safe and beneficial undertaking, at least when compared to doctors.

INTRODUCTION

Physician assistants (PAs) and nurse practitioners (NPs) were introduced in the United States health care system to improve the delivery of health care services and assist the overburdened primary care doctor.¹² This was considered a medical experiment at the time as a means to extend

health care services to a growing population. During four decades, a series of federal policies has ensconced the PA and NP in American society; they are considered effective in the services they provide, and patient satisfaction does not appear to differ from that of physicians.¹³ They are located throughout the American system and in all roles traditionally occupied by physicians, often at higher levels in underserved locations.¹¹ Patients and other health care providers nationwide recognize PAs and NPs. They are licensed to practice and prescribe in all states, and receive compensation for their services through Medicare, Medicaid and most all insurance companies. Yet little is known about disciplinary actions and malpractice claims when patients are injured by PAs and NPs.

The nurse role has evolved into a spectrum of providers: NPs, clinical nurse specialists (CNSs), certified nurse midwives (CNMs) and certified registered nurse anesthetists (CRNAs). Collectively these semi-autonomous nurses are known as advance practice nurses (APNs). PAs and APNs are often counted as a body of health care workers that provide clinical services traditionally provided only by doctors.¹² We set out to investigate if PAs and NPs negate any of their cost effectiveness by examining a national registry of malpractice and adverse action reports.

Only a few studies have examined whether PA/NPs invoke liability differently than doctors.^{3,4,10} All studies concluded that the liability of an NP or PA was less than that of a doctor in terms of malpractice payments or number of citations. The source of data for these small studies, undertaken in the early 1990s, was the nascent National Practitioner Data Bank (NPDB). Since the inception of the NPDB in 1990, a great deal of experience and data has accumulated. According to the NPDB 2005 Annual Report:

Less than one percent of all medical malpractice pay-

ment reports are related to PAs. Among medical malpractice, diagnosis-related problems and treatment-related payments were the greatest. The second largest payments, both cumulatively and in 2005, were due to PAs. Approximately 2 percent of malpractice payment reports were for professional nurses. Most of them related to monitoring, treatment and medication problems; proportions of payments were 61.9 percent for non-specialized registered nurses, 20.0 percent for nurse anesthetists, 9.3 percent for nurse midwives, and 8.8 percent for nurse practitioners. The ratio of nurse payment reports to physician payment reports varied from 0.02 percent in Vermont to 9.0 percent in Alabama.

The National Practitioner Data Bank

The National Practitioner Data Bank (NPDB) was established under Title IV of Public Law 99-660 of the Health Care Quality Improvement Act of 1986. It receives federally required reports of malpractice payments and adverse actions on health care practitioners. This federal registry has recorded actions reported on physicians, dentists, pharmacists and other licensed health care practitioners in the United States since September 1990. Medicaid and Medicare “exclusions” were included in 1997. These include actions wherein a provider was found guilty of a malpractice claim and was excluded from filing for reimbursement from the federal government for further health care of patients. Adverse actions can involve licensure, clinical privileges, professional society membership and exclusions from Medicare and Medicaid participation. Reports can involve health care-related criminal convictions, civil judgments and other adjudicated actions or by any civil or criminal court system. Malpractice refers to misconduct, unprofessional conduct, mismanagement or negligence. Liability refers to legal responsibility, accountability responsibility or charge.

As of January 2008, the NPDB data consists of more than 414,404 cases and 51 variables, including information about characteristics of health care practitioners with medical malpractice payments and adverse actions. The list of actions includes license actions, clinical privileges actions, professional society membership actions, Drug Enforcement Administration (DEA) actions and Medicaid/Medicare program exclusions. Four report types were reclassified into adverse action reports, consisting of data with format used before and after November 1999, and malpractice payment, consisting of data with format used before and after January 2004.

Health care providers in this study were selected and reclassi-

fied into three types: (1) physicians, including allopathic physicians (MD/MBBS), osteopathic physicians (DOs) and physician interns/residents; (2) PAs; and (3) APNs. The number of active physicians was obtained from the *Physician Characteristics and Distribution in the U.S.*, 2008 edition, a report published by the American Medical Association (AMA). The number of PAs was obtained from the American Academy of Physician Assistants Information Update.^{1,2} The number of APNs was obtained from the National Nursing Survey Report (NNSR) of the U.S. Health Resources and Services Administration.^{6,7} NNSR data includes both active and non-active APNs. The number of APNs is known only generally because there is no centralized registry of graduates and clinically active nurses.

METHOD

The NPDB maintains a website with data available for downloading.⁵ Data recorded from 1 January 1991 through 31 December 2007, were identified for analysis. Independent variables were PAs, APNs and doctors (MD, DO, MBBS). Dependent variables included medical malpractice payment incidence, payment amount, ratios of payments to provider type, state licensure and professional society membership actions, federal program exclusions, age and time-in-practice of provider and patient and provider gender. Compensation for damages includes averages (mean and median) of payments, total of payments (current value of dollars in millions) and total amount of payments (which was adjusted for inflation). For comparison purposes, all payments were changed to 2008 dollars using the percent inflation for each year based on a calculated formula from the Consumer Price Indexes of the U.S. Department of Labor, Bureau of Labor Statistics (BLS).⁸ Data for active physicians was taken from *Physician Characteristics and Distribution in the U.S.*, 2008 edition, American Medical Association (received from the Data Coordinator, Survey & Data Resources, American Medical Association: personal communication, AMA, 14 May 2008). Data for active PAs was obtained from the *American Academy of Physician Assistants Information Update*.^{1,2} Data for APNs was derived from the National Nursing Survey Reports (NNSR) of the U.S. Health Resources and Services Administration.^{6,7} NNSR data includes both active and non-active APNs. Nonparametric statistics include Chi-square and Sheffe’s method of one-way ANOVA for comparison among three types of health care providers.

RESULTS

Spanning 17 years (01 January 1991 through 31 December 2007) the NPDB recorded 324,285 total entries for the three

providers of interest: doctors, PAs and APNs. The number of physician reports was 320,034 while the number of PA reports was 1,535 and APN reports were 2,715 (Table 1). A total of 273,693 providers were involved (a few providers had multiple reports).

The mean age of physicians, PAs and APNs at the time of an event leading to the report entered in the NPDB were 43 (± 11), 37 (± 9) and 41 (± 11) years, respectively (Table 2). For adverse action reports, the mean age of doctors, PAs and APNs at the time of adverse action leading to report was 48 (± 11), 41(± 9) and 43 (± 9) years, respectively.

The top five reasons for malpractice payments among physicians were diagnosis (33.9 percent), surgery (27.1 percent), treatment (18.0 percent), obstetrics (8.6 percent) and medication (5.5 percent). The top five reasons among PAs were diagnosis (55.5 percent), treatment (24.6 percent), medication (8.5 percent), surgery (4.6 percent) and miscellaneous (3.1 percent). For APNs, the top five reasons for payments were anesthesia (38.7 percent), obstetrics (22.2 percent), diagnosis (14.8 percent), treatment (10.5 percent) and medication (4.8 percent). A chi-square test shows a significant association between reasons for malpractice payment and type of health care provider ($\chi^2 = 11525.38$ and $p < 0.0001$). In the aggregate, for the same

Table 1.

National Practitioner Databank Entries by Provider Type: 1991 – 2007				
Type of Provider	Total Entries	Malpractice Reports		
		Number of Malpractice Payments	Number of Adverse Actions Reported	Number of Involved Providers
Physician	320,034	245,267	74,767	268,919
PA	1,536	1,222	314	1,509
APN	2,715	2,608	107	3,265
Total	324,285	249,097	75,188	273,693

Total entries: $\chi^2 = 576.67$; $df = 2$; $p < 0.0001$; effective sample size $n = 324,285$.

Malpractice Payment field: $\chi^2 = 181.36$; $df = 2$; $p < 0.0001$.

Adverse action field: $\chi^2 = 565.66$; $df = 2$; $p < 0.0001$.

Table 2.

Provider Characteristics: National Practitioner Databank 1991 – 2008					
Provider	Reports by Provider			Mean Age (years) at Time of Event Leading to Report	
	Number of Reports	Average Number of Providers per Report	Number of Providers	Adverse Action*	Malpractice \ddagger
Physician	320,034	1.10	268,919	48 (± 11)	43 (± 11)
PA	1,536	1.24	1,509	41 (± 9)	37 (± 9)
APN	2,715	1.26	3,265	43 (± 9)	41 (± 9)

$\ddagger F = 280.19$ and $p < 0.0001$

* $F = 65.44$ and $p < 0.0001$

\pm Standard Deviation

reporting period, physicians totaled 245,153 medical malpractice payments while PAs had 1,222 payments and APNs had 2,608. The leading category of reason for medical practice payment for physicians (83,130 of 245,153) and PAs (678 of 1,222) was diagnosis error.

Malpractice payments for all of the study years for all providers exceeded \$74 billion. PA payments comprised just 0.003 percent of the total; APN payments comprised only 0.007 percent of the total. Mean and median payments, for each provider were: APNs at \$350,540 and \$190,898; physicians at \$301,150 and \$150,821; PAs at \$173,128 and \$80,003. The adjusted mean payment for doctors was 1.7 times higher than PAs and 0.9 that of APNs. The adjusted median payment for doctors was 1.9 times that of PAs and 0.8 that of APNs. Among providers, the APN adjusted mean payments were 2.0 times that of PAs, and median payments were 2.4 times that of PAs.

The mean malpractice payments by year for the study period for all three provider types adjusted for inflation to 2008 dollars are displayed in Figure 1. Statistical significance was preserved by year. Mean payment amounts increased throughout the study period for all three-provider groups. The mean payment amounts of APNs were higher than that of physicians and PAs.

When the slopes of malpractice payments are compared, physicians have a lower increase in inflation-adjusted payments per year than PAs and APNs. Mean payments for physicians increased by \$5,620 per year during the study period while that of PAs increased by \$8,993 and APNs by \$8,706. Although APN malpractice payments are higher than physicians and PAs, the payment amount rate was parallel to the rate of PAs during the same study period.

Figure 2 displays the mean and median payments for malpractice reports by gender for the full 17-year study period in 2008 dollars. The data reveals that female providers, regardless of clinician type, had larger malpractice payments on average than males when aggregated or by provider (with the median slightly lower for PAs).

Malpractice reports and adverse action reports by year for all three providers are displayed in Table 3. The year with the largest number of physician malpractice reports was 2001. Physician malpractice reports remained fairly consistent between 1991 and 2005, then decreased in 2006 and 2007. PA malpractice reports increased, peaking at 135 in 2004 with a jump from 81 in 2001 to 123 in 2002, but decreased from 2004 to 2007. The number of APN malpractice reports ranged between 90 and 140, but increased from 111 in 2000 to 183 in 2001, and increased

Figure 1. Mean Malpractice Payment by Year from 1991–2008

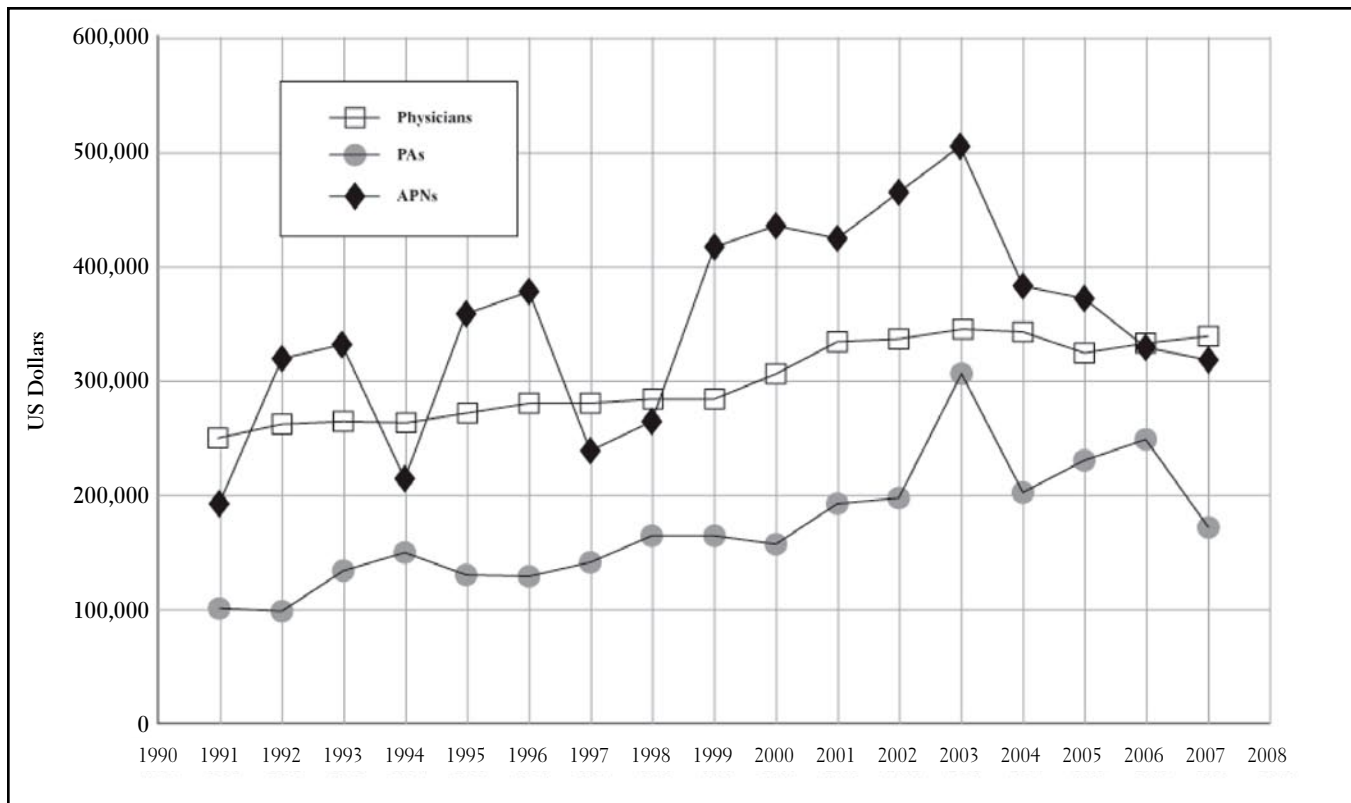
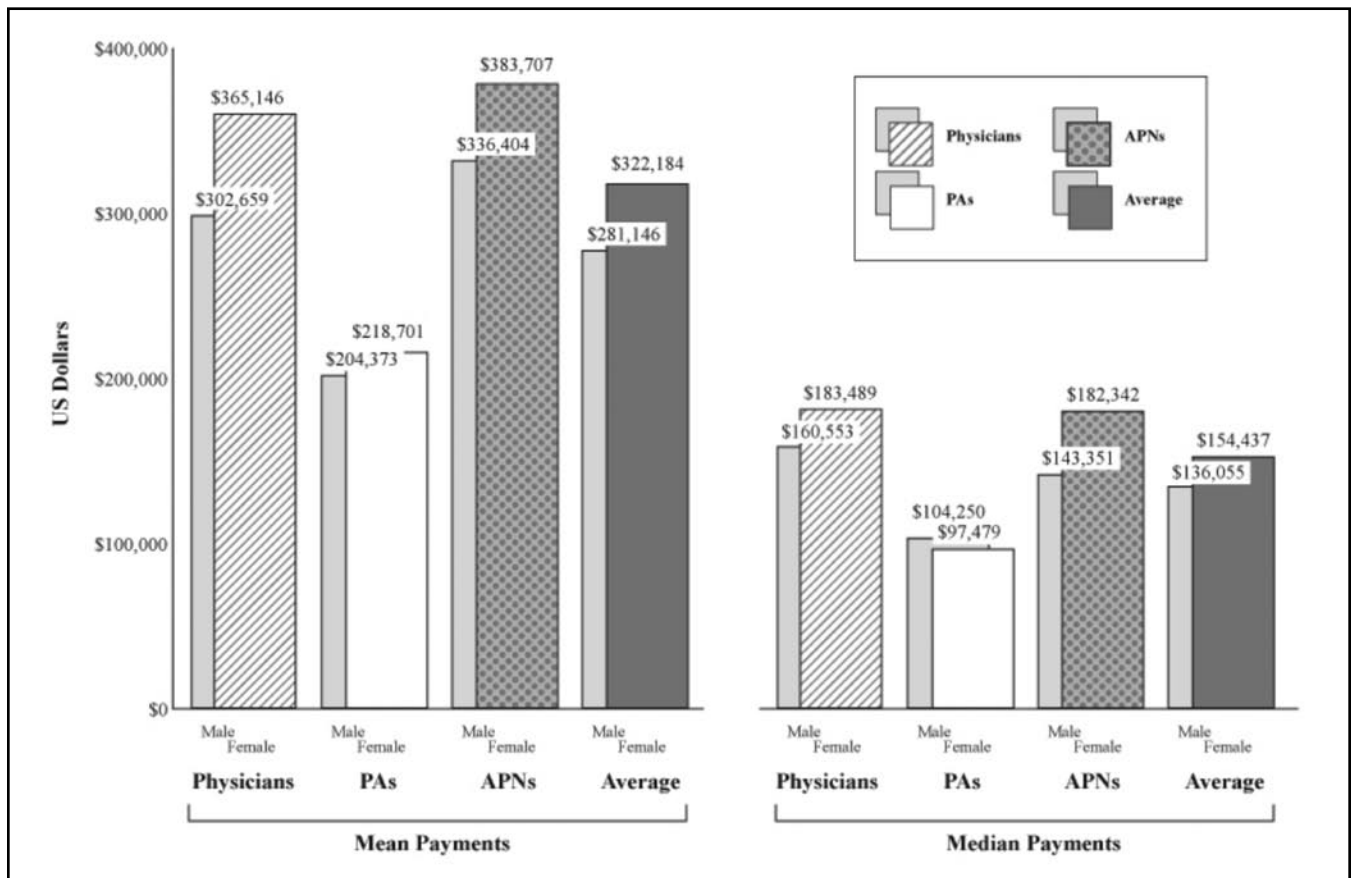


Figure 2. Mean and Median Malpractice Payment by Provider Gender for 1999–2008



again in 2004, 2005 and 2006 (from 168 in 2003 to 264 in 2006). The largest percent change in malpractice reports for physicians was a decrease in 1995 of 11.4 percent; for PAs an increase in 2002 of 51.1 percent; and for APNs an increase in 2001 of 61.3 percent.

The rate and amount of malpractice payments was compared. A ratio of malpractice payments per total number of active providers in 2006 (the most recent year that demographic data was available for all provider groups) for each provider type is displayed in Table 4. There were 12,495 payments for 774,883 physicians, 113 payments for 63,609 PAs and 264 payments for 268,293 APNs. These ratios were 1:62, 1: 563 and 1:1,016, respectively.

The number of malpractice payments during the 17-year period per average number of active providers within the 17-year study period is provided in Table 5. There was one payment report for every 2.7 active physicians, one for every 32.5 active PAs and one for every 65.8 APNs (combined active and non-active). Assuming one malpractice payment per provider, 37 percent of physicians, 3.1 percent of PAs and at least 1.5 percent of APNs would have made a malpractice payment during the 17-year period.

The most common bases for adverse action reports since reporting began (Nov. 22, 1999 to Dec. 31, 2007) are licensing action by federal, state or local licensing authorities. For physicians there were 10,336 events. For PAs there were 107 events and for APNs there was one event.

Medicare and Medicaid are federal health care programs for the elderly and poor. A violation occurs when a practitioner is found guilty of fraud, abuse or some other violation in providing these services and results in an exclusion from these service reimbursements. Exclusions from Medicare and Medicaid programs constituted 9.9 percent of all adverse actions reported. There were 6,311 physicians excluded from Medicare and Medicaid Programs in the study period, or 0.8 percent of the active physician population in 2006, and 219 PA exclusions, or 0.3 percent of the active PA population in 2006. There were no APN exclusions.

Patients' age and gender, stratified by malpractice claims for only the four years available (Jan. 31, 2004, through Dec. 31, 2007) were analyzed (Table 6). There were 47,457 patients involved in malpractice payments by physicians during this period; 26,483 females (55.8 percent) and 20,974 males (44.2 percent). PAs and APNs were involved with less

Table 3.

Number of Malpractice and Adverse Action Reports by Year and Type of Provider			
Year	Provider	Malpractice Payment Report	Adverse Action Report
1991	Total	13,522	3,487
	Physicians	13,399	3,480
	PAs	14	6
	APNs	109	1
1992	Total	14,839	3,570
	Physicians	14,692	3,549
	PAs	30	16
	APNs	117	5
1993	Total	14,771	3,910
	Physicians	14,629	3,896
	PAs	33	11
	APNs	109	3
1994	Total	15,258	4,293
	Physicians	15,124	4,266
	PAs	44	24
	APNs	90	3
1995	Total	14,120	4,692
	Physicians	13,988	4,676
	PAs	39	12
	APNs	93	4
1996	Total	15,336	4,882
	Physicians	15,186	4,873
	PAs	44	8
	APNs	106	1
1997	Total	14,696	4,920
	Physicians	14,531	4,892
	PAs	46	22
	APNs	119	6
1998	Total	14,103	4,998
	Physicians	13,944	4,971
	PAs	49	22
	APNs	110	5
1999	Total	15,151	4,742
	Physicians	14,945	4,720
	PAs	75	20
	APNs	131	2
2000	Total	15,631	4,300
	Physicians	15,447	4,274
	PAs	73	23
	APNs	111	3
2001	Total	16,831	4,504
	Physicians	16,571	4,471

	PAs	81	26
	APNs	179	7
2002	Total	15,506	4,278
	Physicians	15,200	4,251
	PAs	123	22
	APNs	183	5
2003	Total	15,520	4,376
	Physicians	15,233	4,338
	PAs	119	27
	APNs	168	11
2004	Total	14,722	4,484
	Physicians	14,373	4,440
	PAs	135	23
	APNs	214	21
2005	Total	14,380	4,342
	Physicians	14,011	4,319
	PAs	110	12
	APNs	259	11
2006	Total	12,872	4,240
	Physicians	12,495	4,210
	PAs	113	20
	APNs	264	10
2007	Total	11,839	3,744
	Physicians	11,499	3,722
	PAs	94	14
	APNs	246	8

than 2 percent of patients relating to malpractice payments. For PAs, 203 (47.7 percent) female patients and 223 (52.3 percent) male patients were involved in malpractice payment reports. For APNs, 536 (59.2 percent) female patients and 369 (40.8 percent) male patients involved in malpractice payment reports. The chi-square test revealed a significant association between patients' age and gender with the type of care provider ($p < 0.0001$ for each provider). For all provider types, the total number of females involved was 27,322 or 56 percent of the total.

DISCUSSION

The NPDB is the nation's repository of reports on liability and adverse actions, including payments, for a spectrum of health care providers. An entry in the NPDB must be a report about a case in which adjudication had been reached and the case closed. The information is gained through federal oversight agencies, the courts, statewide medical licensing boards and professional societies. For the most part, it is a "malpractice system that performs reasonably well in its function of separating claims without merit from those with merit and compensating the latter".¹⁶

Table 4.

Ratio of Payment Entries Per Active Provider in 2006		
Provider	Category	Amount
Physicians (includes MD, MBBS, DO, interns/residents)	Mean Payment	\$308,838
	Number	12,495
	Median Payment	\$175,000
	Total doctors in 2006	774,883
	Payment Ratio for Physicians	1:62
Physician Assistants (PAs)	Mean Payment	\$232,066
	Number	113
	Median Payment	\$97,500
	Total PAs in 2006	63,609
	Payment Ratio for PAs	1:563
Advanced Practice Nurses (APNs predominantly NPs, but includes CRNA, CNM and CNS)	Mean Payment	\$306,310
	Number	264
	Median Payment	\$145,000
	Total APNs in 2006	268,293
	Payment Ratio for APNs	1:1016

*ANOVA (Scheffe) $F=35.58$; $DF=2$; and $p<0.0001$; effective sample size $n=249,072$

Data for active physicians is from the *Physician Characteristics and Distribution in the U.S.*, 2008 edition, American Medical Association received from Judy Torres, Data Coordinator, Survey & Data Resources, American Medical Association, personal communication, May 14, 2008.

Data for active physician assistants from the American Academy of Physician Assistants Information Update posted at <http://www.aapa.org/research/06number-clinpractice06.pdf> Retrieved May 13, 2008.

Data for APNs from the National Nursing Survey Report of the U.S. Health Resources and Services Administration posted at <http://bhpr.hrsa.gov/healthworkforce/nursing.htm>. Retrieved July 12, 2008. NNSR data includes both active and non-active APNs.

Overall Incidence

Significant differences in liability reports exist between doctors, PAs and APNs. Doctors had the highest number of malpractice reports, followed by APNs and PAs. Adverse actions were similar across the three provider groups with doctors leading, followed by PAs and APNs. While liability report incidence is partially explained by differences in number of providers in each group, the ratio of liability reports and the size of the payments make PAs and APNs distinctly less visible in liability exposure when compared to doctors.

Gender

Female patients comprised 56 percent of the total reports in this analysis. For PAs, 48 percent of female patients were involved in malpractice payment reports and for APNs, 59 percent of female patients were involved in malpractice payment reports. These findings may mean that women are slightly more likely to litigate than men against their health care provider. However, it may also account for the fact that women are more likely to see a health care provider than men and, therefore, have a greater number of health care visits.⁹ As the greatest difference between gender payments occurred with APNs, who are predominantly women, it is also possible that women have a higher expectation or are more likely to litigate against women. Clinically active PAs are predominately female (having surpassed males in 2000) but were not the predominant gender in PA reports.^{1,2}

Reason for Payments

Among reasons for payments in a liability case, four-fifths (79 percent) of physician malpractice payments were for diagnosis, surgery and treatment. For PAs, four-fifths (80.1 percent) were for diagnosis and treatment. For APNs, three-quarters (75.7 percent) of the payments were for anesthesia, obstetrics and diagnosis. Anesthesia and obstetrics were high-ranking reasons (first and second) for payments among APNs, which may be due to the higher proportion of APNs than PAs employed in these areas. If these two reasons were excluded, the ranking of the top four PA and APN reasons for payment would be the same: diagnosis, treatment, medication and surgery. Anesthesia and obstetrics ranked seventh and eighth for PAs and is consistent with PA census reports; few PAs work in anesthesia and obstetrics compared to APNs. According to the 2007 AAPA census, only 0.3 percent of PAs were employed in anesthesia and 2.4 percent in obstetrics and gynecology.¹

Medication-Related Payments by Reason for Payment

The most common type of medication errors was the same for all three providers: 1) improper management of

Table 5.

Ratio of Malpractice Payments per Provider Type 1991-2007				
Type of Provider	Number of Malpractice Payments	Average Number of Providers	Ratio of Payments to Providers	Percent Probability
Total	249,097	875,241	-	41.6%
PA	1,222	39,751	1:32.5	3.08%
APN*	2,608	171,562	1:65.8	1.52%
Physician	245,267	663,928	1:2.7	37%

medication regimen, and 2) improper technique. Other common errors were consent issues, failure to order appropriate medication, wrong medication ordered and wrong dosage of the correct medication. Errors in administration of medication were ranked third for PAs and APNs and eighth for physicians. One interpretation is that PAs and APNs administer medication orders more frequently than physicians since, historically, doctors tend to delegate the administration of medications to nurses.

Malpractice and Adverse Action Incidence by Year

The reports of malpractice and adverse actions by year for all three providers (albeit small numbers of PA and APN reports compared to physicians), in terms of both percent and absolute number changes, demonstrate an upward trend during the period of study. However an apogee in this trend may have been reached. When malpractice is separated from adverse events, the physician malpractice reports remained flat (<1 percent change in number of reports per year) between 1991 and 2005 and then decreased from 2003 to 2007. A literature search for policy explanations or social phenomena did not reveal why this shift occurred.

The number of PA malpractice reports saw a continual increase, peaking at 135, until 2004 when a jump occurred from 81 in 2001 to 123 in 2002. PA reports have decreased from 2004 to 2007. However, the overall slope of PA malpractice incidence reports from 1991 to 2007 indicated an average change of 12.1 percent per year, indicating an upward trend.

The number of APN malpractice reports was fairly consistent from 1991 to 2000 hovering between 90 and 140, but then saw a large increase from 111 in 2000 to 183 in 2001, with more increases in 2004, 2005 and 2006 (from 168 in 2003 to 264 in 2006). The overall slope of APN malpractice incidence reports from 1991 to 2007 indicated a 7.4 percent average increase per year, producing an upward

trend similar to PAs. The slopes for PA and APN malpractice incidence should not be over-interpreted, as the actual number of reports was comparatively small to that of physicians. The largest change in malpractice reports for these three provider types was a 10 percent decline, including a 10.8 percent physician report decline, in 2006.

This analysis documents that litigation and malpractice payments for PAs and APNs from 1991 to 2007 have been rising overall, especially since 2000. In contrast, the number of physician malpractice reports has been steady overall and on a downward slope since 2003. The overall slope providing the rate of change in malpractice incidence for the three provider types combined is flat but skewed by the comparatively large number of physician reports.

Seeking Interpretations for the Results

Explanations for the increase in total number of PA and APN malpractice payment is: there has been a substantial increase in the number of PA and APN providers entering the workforce during the period observed. The workforce of PAs and NPs more than doubled from 1991 to 2007.¹² The number of active PAs went from 20,628 in 1991 to 68,124 in 2007, a 230 percent increase.^{1,2} Extrapolation from nursing survey reports conducted by the U.S. Health Resources and Services Administration (HRSA) in 1992 and 2004 suggest that the number of APNs in the workforce rose by approximately 143 percent between 1991 and 2004, from 118,761 to 288,960.^{6,7} Combined, the increase in PA and APN practitioners from 1991-2007 was 156 percent. The overall increase in malpractice payments for PAs and APNs from 1991 to 2006 was 176 percent (123 in 1991 to 340 in 2007). This figure approximates the 156 percent percent increase in the PA and APN workforce. According to data from the BLS, the number of physicians increased by only 14.8 percent between 1991 and 2006.⁸ The small increase in doctor NPDB report rates may explain why the incidence of malpractice reports for physicians has remained compar-

Table 6.

Malpractice Claims by Patients' Age and Gender, 2004 through 2007				
	Physician	PA	APN	Total
Fetus				
Male	609	1	25	635
Female	438	1	25	464
Under 1 Year				
Male	1,868	2	92	1,962
Female	1,264	5	71	1,340
1-9 Years				
Male	745	4	25	774
Female	619	12	15	646
10-19 Years				
Male	1,062	14	18	1,094
Female	993	14	26	1,033
20-29 Years				
Male	1,294	16	21	1,331
Female	2,829	23	71	2,923
30-39 Years				
Male	2,616	29	24	2,669
Female	5,180	32	105	5,317
40-49 Years				
Male	3,831	55	46	3,932
Female	5,365	49	67	5,481
50-59 Years				
Male	3,985	45	48	4,078
Female	4,357	28	69	4,454
60-69 Years				
Male	2,834	36	37	2,907
Female	2,842	15	41	2,898
70-79 Years				
Male	1,688	18	23	1,729
Female	1,865	11	28	1,904
80 and Over				
Male	442	3	10	455
Female	731	13	18	762
TOTAL	47,457	426	907	48,788
Total Male	20,974	223	369	21,566
Total Female	26,483	203	536	27,222

actively steady. Second, since the slopes for PA and APN malpractice incidence were increasing compared to physicians, this could be attributed to the fact that PAs and APNs are being held more independently accountable for their provision of medical care. As each profession matures, they see more patients (accounting for 11 percent of all outpatient visits in 2005).⁹ Furthermore, the courts tend to treat PAs and APNs as directly liable and separate from their super-

vising physicians are considered the norm. The inclination is to hold each individual accountable to the community standards and not hold the supervising doctor responsible. Some states have adopted regulations requiring peer review of malpractice claims against PAs and NPs.

PA malpractice payments have decreased since 2004 and may be consistent with the downward slope of all reports during this same period; yet are considered more closely tied to their supervising physicians than APNs. Whether a PA's supervising physician is liable for the actions of their PA has not been reported in any systematic fashion, although they may share the same malpractice insurance policy. Medical practice regulations and state laws inextricably link both PAs and physicians, whereas APNs are governed by nursing boards which legal relationship with, and liability of, a collaborating physician are not as clear and vary by state.

Ratio of Payments by Provider Type

The ratio of malpractice payments per total number of active providers in 2006 for each provider type was 12,495 payments for 774,883 physicians, 113 payments for 63,609 PAs, and 264 payments for 268,293 APNs. Overall the ratios were 1:62, 1:563 and 1:1,016, respectively. The number of malpractice payments does not necessarily equate with the number of providers with payments because, in a few instances, some providers had more than one malpractice payment in 2006 and more than one provider may have been identified with a single payment. Controlling for multiple payments by a single provider was not possible with the aggregated data. Nevertheless, the data indicate that PAs in 2006 were 9.1 times *less likely* to make malpractice payments than physicians, and APNs were 16.4 times *less likely*.

Examining the average number of providers and malpractice reports during the 17-year study period, the ratios of payment reports per provider was 1:2.7 for physicians, 1:32.5 for PAs, and 1:65.8 for APNs. During the same 17-year period, PAs were 12.0 times *less likely* to make malpractice payments than physicians, and APNs were 24.4 times *less likely*.

LIMITATIONS

All studies of this magnitude have limitations and this study is no exception. First, granularity has been sacrificed for anonymity in how the data is reported, analyzed and presented. Second, malpractice claims and adverse actions that are settled out of court generally do not reach the NPDB. Estimates of this percentage vary by jurisdiction

and incident but may be as high as 10 percent. Third, the number of PAs and APNs grew substantially during the last two decades, thus the denominator grew faster than the numerator. Fourth, because there is not a national database for APNs, and the tendency for different APN professional groups to count clinically-active heads differently (aggregating some NPs, CNSs and CNMs as NPs), we were left with using the best source at the time which produced an aggregate number of APNs that included inactive APN providers. The NP role in this analysis had to be part of the aggregate for APNs. Clearly, a national registry of all providers in clinical practice would help refine the numbers presented here. Finally, we are left without understanding the judgment rendered in each case. For example, did the claim have merit and did it meet a standard of negligence, or was it a successful but a frivolous litigation?

The issue of differences in litigation and malpractice payments by specialty is not possible in this study due to the confidential nature of the data. It is not currently possible to control for specialty with data from the NPDB. Comparing the incidence among providers working in the same medical specialty would improve comparison studies of malpractice incidence and payments between provider types.

These findings support perceptions that PAs and NPs pose a low risk of malpractice liability to the public in general and to employers in particular. One reason postulated for this observed low risk is the communication skills that NPs and PAs may provide in patient encounters.⁴ Whether PA/NPs have communication skills that reduce liability remains to be researched. Another explanation is that PAs in particular may be risk-adverse and avoid procedures that have high liability profiles such as births and anesthesia.

Important work is needed to further understand the rate of litigation and malpractice by number of visits and types of visits that are managed by physicians, PAs, APNs and other types of providers. The strength of the NPDB is that these violations affect all providers equally under federal law. This analysis of the existing data should offer some reassurance that the delegated responsibility of patient care from the physician to the PA and NP is a relatively safe one. Insurance premiums have not been reported as high as doctors in comparable settings.

The data indicated that, in 2006, PAs had a probability of making a malpractice payment that was 9.1 times *less* than physicians; APNs had a probability that was 16.4 times *less*. For the full 17-year study period, those prob-

abilities were 12.0 and 24.4 times *less*, respectively. Please note that the APN demographic data included both active and inactive practitioners. Therefore the ratio of payments to APN may be misleadingly low. Also, physicians may assume inherently higher malpractice risk than PAs or APNs because of differences in role and autonomy. We may not conclude that PAs and APNs are safer providers of care than physicians with this analysis, only that they appear to have a lower probability of being rendered malpractice payments.

CONCLUSION

The intent of this study was to assess whether PAs and APNs negate any of their cost effectiveness by increasing liability. Seventeen years of observation suggests that, if anything, they may decrease liability, at least as viewed through the lens of a national reporting system. During the first 17-year study period, there was one payment report for every 2.7 active physicians, one for every 32.5 active PAs and one for every 65.8 active and inactive APNs. In percentage terms, 37 percent of physicians, 3.1 percent of PAs and at least 1.5 percent of APNs would have made a malpractice payment during the study period. The physician mean payment was 1.7 times higher than PAs and 0.9 times that of APNs, suggesting that PA employment may be a cost savings for the health care industry along with the safety of patients. When liability occurs, the reasons for disciplinary action against PAs and APNs is largely the same as doctors. Trend analysis suggests that average malpractice payments and total payments may be on a downward trend, with PA and APN trends declining more than doctors. Finally, authority for medical task delegation is based on the legal doctrine of *respondent superior*, which holds that the physician is ultimately accountable for the actions of his or her employees as a supervisor. From a policy standpoint, it appears that the incorporation of PAs and APNs into society has been a beneficial undertaking and liability has not increased, at least compared to doctors. Understanding the finer issues regarding each case will help test the hypothesis that PAs and APNs are in America's best interest.

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