

# Use of the Physician Insurers Association of America Database as a Surveillance Tool for Diabetes-Related Malpractice Claims in the U.S.

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**OBJECTIVE** — To examine the available national surveillance data on malpractice claims associated with diabetes and to determine the medical specialties having the highest number of claims and the classes and costs of filed claims relating to diabetes.

**RESEARCH DESIGN AND METHODS** — Data was abstracted from the Data Sharing Reports (DSRs) of the Physicians Insurers Association of America (PIAA), as well as a search of the PIAA's computerized database for the period spanning 1 January 1985 to 31 December 1996. Data on numbers of claims, medical causes of loss, indemnity paid, demographics of claimants and physicians, severity, and medical specialties with diabetes-related claims were available.

**RESULTS** — A total of 906 diabetes claims were reported to PIAA, and the total indemnity paid was \$26,892,848. A significant downward trend ( $P = 0.004$ ) was noted for the period between 1993 and 1996. Diabetes claimants were older and predominately male, relative to all claimants. Ophthalmology, internal medicine, and general and family practice had the highest rates of reported claims at 16.5, 13.6, and 13.4 diabetes claims per 1,000 claims, respectively. Of the diabetes-related injuries, 44% occurred in the practitioner's office, as compared with 27% for all claims. A greater proportion of diabetes claims were associated with the highest level of severity of injury with respect to all claims compiled by the PIAA.

**CONCLUSIONS** — The database of the PIAA can be a useful resource to monitor trends in diabetes-related malpractice. Further study into whether claims result from lack of adherence to practice guidelines is needed. Prevention programs designed to reduce the liability among high-risk specialties may also lead to improved care for the patient with diabetes.

Diabetes continues to be a major public health problem, exacting a high toll on personal health and on the health care system (1,2). The economic burden of diabetes in the U.S. exceeds \$90 billion per year (1). Several clinical studies have demonstrated the efficacy of specific interventions in preventing or delaying the complications of diabetes (3–6). In addition, the American Diabetes Association

each year publishes guidelines for patient care (7).

Despite the existence of available guidelines, recent data indicate that there is considerable room for those who provide care to the patient with diabetes to improve compliance with practice recommendations (8–11). Recent initiatives have been launched to try to raise the level of provider adherence to recommended standards of

care (12,13). In addition, the utility of clinical practice guidelines in malpractice litigation is under extensive review in the medicolegal community (14–16). One route to increase awareness of practice guidelines on diabetes would be through educational programs sponsored by the medical liability insurance industry. Adoption of recommended diabetes standards of care by health care personnel has been proposed as a potential means of reducing medical injury associated with diabetes and improving the quality of litigation and compensation for negligence (16–28).

Other than a few state-specific reports (19,20), little information on diabetes-related liability is available. Data on the numbers and types of claims and the physician specialties at highest risk for malpractice suits could provide information on specific groups and areas that could be targeted for risk reduction, and at the same time, potentially improve the care of the diabetes patient. The purpose of this report is to examine available information using data accrued in the national data bank of the Physician Insurers Association of America (PIAA) on malpractice claims associated with diabetes and to determine the medical specialties that had the highest number of claims and the claims in which diabetes was given as the primary condition.

## RESEARCH DESIGN AND METHODS

Descriptive data on malpractice trends generally are gathered through searches of centralized data banks (21–24). For this study, data were abstracted from 12 years of cumulative data contained in the Data Sharing Reports (DSRs) of the PIAA (25). In addition, a search of the PIAA database, specifically for diabetes, was undertaken. Over the course of the reporting period, claims have been submitted from companies represented in 46 states and the District of Columbia. Organized in 1977, the PIAA is an association of physician-owned or -controlled malpractice insurance carriers that collec-

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**Abbreviations:** ALAE, Allocated Loss Adjustment Expense; DSR, Data Sharing Reports; PIAA, Physicians Insurers Association of America.

**Table 1—Interpretation of National Association of Insurance Commissioner Severity Codes**

Severity	Definition
1	Emotional injury
2	Insignificant
3	Minor temporary
4	Major temporary
5	Minor permanent
6	Significant permanent
7	Major permanent
8	Grave
9	Death

tively insure over 60% of all private practicing physicians and dentists in the U.S. and represent a nationally centralized database. Participating companies represent physicians from both rural and urban areas. Data on medical malpractice are gathered and reported by participating member companies according to protocols developed by the PIAA (26). Other studies that have used or quoted data from the PIAA have been reported elsewhere (24,27–30).

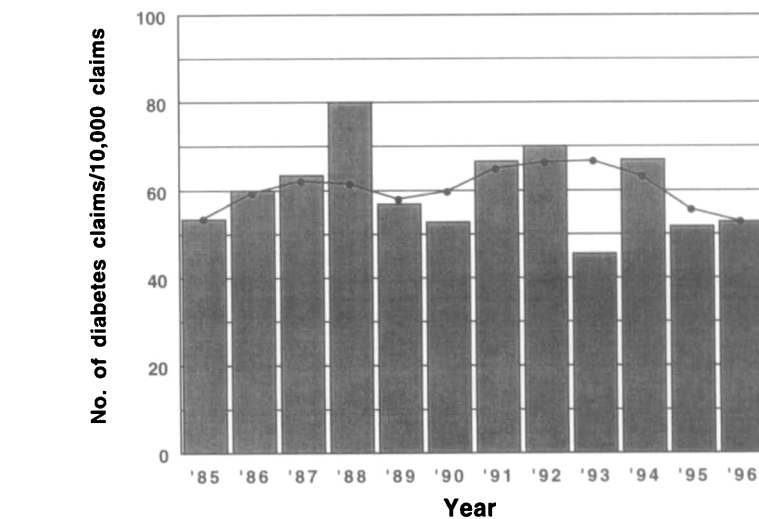
A descriptive analysis was performed examining demographic characteristics of claimants and physicians, rates of diabetes claims per 1,000 claims by specialty, rates of diabetes claims per 10,000 claims by year (using 3-year moving averages), amount of indemnities paid, and severity of injury according to the scale developed by the National Association of Insurance Commissioners (Table 1). The nature of the misadventure was also included.

## RESULTS

### Demographic characteristics of claims

The DSRs contained cumulative data for a 144-month period from 1 January 1985 to 31 December 1996. A total of 156,373 claims were contained in the DSRs. Of these, 84% (131,092) were closed by the end of the reporting period, and 32% of the closed files (41,582) resulted in indemnity payments. Search of the PIAA database for diabetes revealed 906 reported diabetes-related files, with 789 (87%) having been closed. Among the closed files, 246 (31%) resulted in an indemnity payment.

The rate of reported diabetes claims per 10,000 claims by year is shown in Fig. 1. Analysis of the period between 1985 and 1992 did not reveal a significant trend;



**Figure 1—Rates of diabetes claims per 10,000 claims, 1985–1996. Solid bar depicts moving average (31). A significant  $\chi^2$  trend ( $P = 0.004$ ) was detected for 1993–1996.**

however, between 1993 and 1996, a significant downward trend was detected ( $\chi^2$  for trend = 8.09,  $P = 0.004$ ).

### Demographic features of the insured and claimants and the location of incidents

The demographic features of the insured involved with diabetes claims were similar to those for all the claims in the DSRs. A majority (93%) of the insured were men, 73% were board-certified, 94% were practicing full time, 45% were in a group setting, and 53% were in solo practice. Among the claimants, men constituted 55% of the diabetes claimants, whereas women were the majority (55%) among all claimants in the DSRs. The median age of diabetes claimants was 50 years versus 39 years for the claimants in the entire DSR database (data not shown).

When comparing location of loss, there were 40.6 hospital-based diabetes-associated incidents per 10,000 hospital-based incidents versus 93.1 office-based diabetes incidents per 10,000 office-based incidents. The distribution of alleged hospital- versus office-based diabetes-related injury was similar (40 of 906 [45%] in the hospital setting versus 399 of 906 [44%] in the practitioner's office).

### Distribution of diabetes files by specialty

A total of 22 specialties tracked by the PIAA had diabetes-related files. The 10 specialties with the highest rates of diabetes claims per 1,000 claims were ophthalmology (16.5), internal medicine (13.6), general and fam-

ily practice (13.4), emergency medicine (12.0), physical medicine and rehabilitation (10.9), pediatrics (7.6), cardiovascular and thoracic surgery (4.7), general surgery (4.2), neurology (2.1), and orthopedics (1.7) (Table 2).

When paid files were examined (excluding physical medicine, which had the highest rate of paid files but only two paid files for the entire 12-year reporting period), internal medicine had the highest rate of paid files at 16.3 paid diabetes files per 1,000 paid files, followed by family practice at 15.6 per 1,000, pediatrics at 13.2 per 1,000, emergency medicine at 9.2 per 1,000, and ophthalmology at 7.0 per 1,000. General surgery, cardiovascular and thoracic surgery, and orthopedic surgery had <5 paid diabetes files per 1,000 paid files (Table 2).

The above-mentioned specialties accounted for 92% (835 of 906) of the reported, 92% (725 of 789) of the closed, and 93% (229 of 246) of the paid diabetes-related files (Table 2). Internal medicine had the most reported and closed diabetes files, at 325 and 284, respectively, and family medicine had the highest number of claims with an indemnity paid (Table 2).

### Costs attributable to diabetes liability cases

The total indemnity paid for diabetes injury claims was \$26,892,848 for the reporting period. The 10 specialties listed in Table 2 accounted for 94% of the total diabetes-related indemnity paid during the reporting period (Table 3). The amount of indemnity paid for family practice and internal medi-

Table 2—Total, closed, and paid claims, and rates of diabetes claims for top 10 specialties, 1985–1996

Specialty	Total claims (n)			Diabetes claims (n)			Diabetes claims/1,000 claims		
	Reported	Closed	Paid	Reported	Closed	Paid	Reported	Closed	Paid
Cardiovascular/thoracic surgery	4,255	3,553	862	20	15	2	4.7	4.2	2.3
Emergency medicine	2,251	1,897	542	27	22	5	12.0	11.6	9.2
General and family practice	17,781	15,268	5,693	239	210	89	13.4	13.8	15.6
General surgery	17,165	14,487	5,240	72	62	16	4.2	4.3	3.1
Internal medicine	23,992	19,790	5,220	325	284	85	13.6	14.4	16.3
Neurology	2,345	1,907	395	5	4	0	2.1	2.1	NA
Ophthalmology	4,612	3,844	1,149	76	64	8	16.5	16.7	7.0
Orthopedic surgery	16,015	13,711	4,093	27	24	6	1.7	1.8	1.5
Pediatrics	5,004	4,162	1,217	38	34	16	7.6	8.2	13.2
Physical medicine and rehabilitation	551	433	69	6	6	2	10.9	13.9	29.0

NA, not applicable.

...ine was similar and accounted for almost two-thirds of the total indemnity paid for diabetes (Table 3). Orthopedic surgery had the highest average indemnity paid per file, followed by general surgery, emergency medicine, and cardiovascular surgery (Table 3). Although ophthalmology had the highest rate of diabetes claims, it had one of the lowest total and average indemnity payments (Table 3). The Allocated Loss Adjustment Expense (ALAE), defined as monies paid in the claims resolution process (defense attorney, expert witness, court costs, other administrative expenses) was \$11,869,085 (data not shown). The total liability cost (indemnity + ALAE) for diabetes among those companies reporting data to the PIAA for 1985–1996, therefore, was \$38,761,933.

**Most prevalent and expensive misadventures**

Errors in diagnosis (defined as failure to diagnose or incorrect diagnosis) was the most prevalent diabetes-associated misadventure among family practice, internal medicine, pediatrics, emergency medicine, and neurology specialties (Table 3). For general and cardiovascular surgery, the most prevalent category of claim was improper performance of a procedure (Table 3). Among orthopedic surgery and ophthalmology, the most prevalent misadventure was no misadventure (defined as no medical mishap but felt to have legal merit). For physical medicine, failure to recognize a complication of treatment was the most prevalent misadventure. With the exception of family practice, internal medicine, and pediatrics, the most common misadventure did not necessarily translate into the most expensive misadventure (Table 3).

**Severity of injury**

The percentage of paid diabetes claims by severity level, in descending order, was 9, 6, 4, 5, 7, 3, 8, 2, and 1, and for all claims in the DSRs was 9, 3, 4, 5, 6, 8, 7, 2, and 1 (Fig. 2). Of all paid diabetes claims, 43% (105 of 246) were associated with severity index 9 versus 23% (9,757 of 41,582) of all paid claims in the DSRs (Fig. 2).

**CONCLUSIONS**

— We have explored the utility of a national administrative database developed by the PIAA as a surveillance tool to monitor trends in diabetes-related litigation. Prior studies on liability in diabetes have been restricted to a few state-specific analyses or individual case reports (19,20). Analyses of rates of diabetes claims over the 1985–1996 period indicate a significant

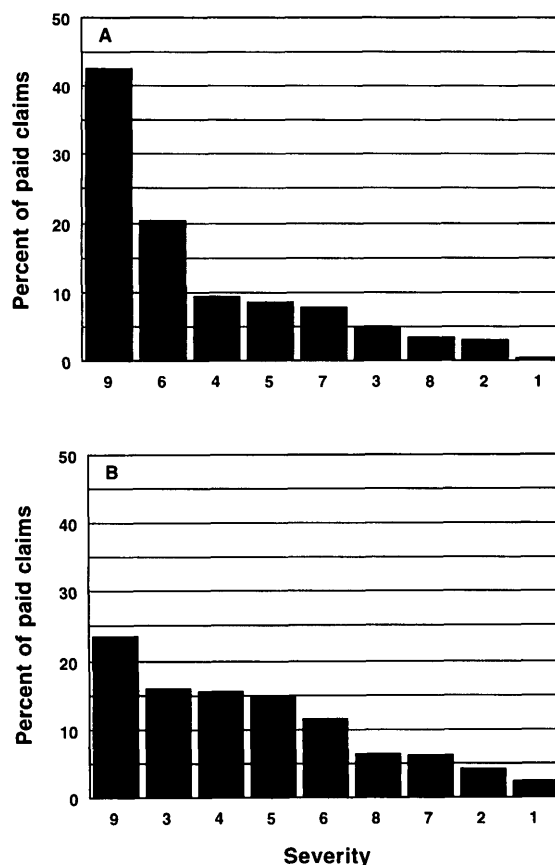


Figure 2—Pareto charts showing the percentage of paid claims by severity index for diabetes (A) and all claims (B), 1985–1996.

Table 3—Diabetes-related indemnity payments and classes of misadventures for top 10 specialties

Specialty	Indemnity paid (\$)	Indemnity		Most prevalent and expensive misadventures	
		% total diabetes indemnity*	Average indemnity paid (\$)	Most prevalent misadventure	Most expensive misadventure
Cardiovascular and thoracic surgery	300,000	1.1	150,000	Improper performance	Failure to recognize a complication of treatment
Emergency medicine	817,978	3.0	163,596	Errors in diagnosis	No misadventure
General and family practice	8,316,610	30.9	93,445	Errors in diagnosis	Errors in diagnosis
General surgery	3,026,399	11.3	189,150	Improper performance	Medication errors
Internal medicine	8,548,582	31.8	104,619	Errors in diagnosis	Errors in diagnosis
Neurology	NA	0	NA	Errors in diagnosis	NA
Ophthalmology	609,188	2.3	76,149	No misadventure	Delay in performance
Orthopedic surgery	1,504,165	5.6	250,694	No misadventure	Failure to supervise
Pediatrics	2,161,673	8.0	135,105	Errors in diagnosis	Errors in diagnosis
Physical medicine and rehabilitation	29,250	0.1	14,625	Failure to recognize a complication of treatment	Failure to recognize a complication of treatment

\*Total indemnity paid for diabetes equals \$26,892,848. NA, not applicable.

downward trend between 1993 and 1996 in the rate of claims reported to the PIAA, and continued surveillance will be required to determine if this decline is sustained. The reason for the decrease in the rates of diabetes claims cannot be ascertained from the database; however, possible explanations could be individual state liability reforms or improved awareness of diabetes standards of care such that outcomes are improved. When compared with the cumulative data on all claims reported to the PIAA, the claimants involved with diabetes tended to be predominately men and older. Relative to all claims in the DSRs, a greater proportion of injury associated with diabetes occurred in the practitioner's office, and suggests that this would be an important setting to target for liability risk reduction.

Internal medicine and family practice had the highest number of reported diabetes files, and ranked a close second and third, respectively, for overall rates of reported and paid claims (Table 2). That these specialties rank this high may not be unexpected, given that most visits for diabetes are to primary care physicians, and that the higher rates of diabetes claims among these specialties may relate to the numbers of patients with the disease they see (32). Whatever the explanation, these primary care specialties would make prime targets for liability risk reduction for diabetes. These two specialties also accounted for the greatest proportion of the total diabetes indemnity paid (Table 3). Although ophthalmology had the highest rate of reported diabetes files, this did not translate into a high rate of paid claims or indemnity

paid (Tables 2 and 3). While their rates of reported and paid claims were lower than internal medicine and family practice, the average indemnity paid per file for the surgical specialties and emergency medicine were among the highest (Tables 2 and 3). The actual numbers of files are likely too small to correlate average indemnity paid with severity of injury for these latter specialties, but one might speculate that the higher average indemnity was due to a greater severity of injury. While physical medicine and neurology were among the top 10 specialties for rates of diabetes claims, the small numbers of actual files precludes any definite conclusions regarding the relationship between these specialties and diabetes.

When the amount of the indemnity paid and the ALAE are taken together, the legal costs of diabetes-associated claims was close to \$40 million over the 12-year period for those agencies providing data to the PIAA. As the PIAA DRSs do not include information on all claims in the U.S., the legal cost for the nation as a whole was likely higher. The percentage of paid diabetes files associated with severity index 9 was twofold higher than that found for all claims in the DSRs (Fig. 2).

Only broad categories of medical causes of loss could be determined through the PIAA database. The most prevalent and expensive misadventures reported for internal medicine, family practice, and pediatrics that led to a medical mishap were related to errors in diagnosis. How many of these misadventures resulted from failure of the physician to adhere to clinical practice

recommendations would be one important area of future investigation. One approach would be to prospectively examine claims as they are resolved to determine the medical malpractice experience that pertain to diabetes standards; such an approach has been used in other nondiabetes-related studies (33,34).

While the use of administrative databases for research into clinical outcomes or quality of care poses certain limitations, this has not precluded their utility (35). Medical malpractice databases do not typically contain information on individuals who do not sue, or the number of patients a provider may see with a particular disease. Despite the limitations, however, data gathered through analysis of malpractice claims has yielded important empirical information to identify areas for quality improvement (24). The analysis here includes data reported only by PIAA-affiliated companies, and hence, may not be generalizable to nonparticipating health care providers. Nonetheless, information gathered by PIAA does contain the largest amount of available data on malpractice in the nation, and the select companies reporting to the PIAA represent a broad geographic range. In addition, information generated through the PIAA database has been useful in identifying important trends in other specific diseases and specialty areas (26–28). The data shown here, although not inclusive of all the malpractice information in the nation, may have been useful in identifying potentially important trends in rates of diabetes claims, the specialties with the highest rates of diabetes-related litigation, the major settings

where injuries are alleged to have occurred, the costs attributable to litigation, and the broad categories of reported misadventures that underly claims.

The use of practice guidelines to reduce liability risk is an area that has been receiving much attention (14–16,19). Practice guidelines, however, can be used by both the defendant and plaintiff to their advantage (14,23). The use of practice guidelines to change physician practice patterns and reduce liability costs is being piloted in Maine, although not specifically for diabetes (36). Diabetes, with its clear outcomes and practice recommendations, would be ideally suited for the development of educational programs designed to reduce risk of liability related to the disease. More detailed information on what underlies diabetes-associated suits would be required before preventative programs, designed to reduce the risk of liability, could be developed. The need for such programs will increase as the prevalence of diabetes and other chronic illnesses, and potentially the risk of injury and liability, continues to rise in the U.S. (37). A collateral effect of such risk-reduction programs could be improved care for the diabetic patient.

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