Medical school attended as a predictor of medical malpractice claims

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See editorial commentary, pp 324–5


Objectives: Following earlier research which showed that certain types of physicians are more likely to be sued for malpractice, this study explored (1) whether graduates of certain medical schools have consistently higher rates of lawsuits against them, (2) if the rates of lawsuits against physicians are associated with their school of graduation, and (3) whether the characteristics of the medical school explain any differences found.

Design: Retrospective analysis of malpractice claims data from three states merged with physician data from the AMA Masterfile (n=30 288).

Study subjects: All US medical schools with at least 5% of graduates practising in three study states (n=89).

Main outcome measures: Proportion of graduates from a medical school for a particular decade sued for medical malpractice between 1990 and 1997 and odds ratio for lawsuits against physicians from high and low outlier schools; correlations between the lawsuit rates of successive cohorts of graduates of specific medical schools.

Results: Medical schools that are outliers for malpractice lawsuits against their graduates in one decade are likely to retain their outlier status in the subsequent decade. In addition, outlier status of a physician’s medical school in the decade before his or her graduation is predictive of that physician’s malpractice claims experience (p<0.01). All correlations of cohorts were relatively high and all were statistically significant at p<0.001. Comparison of outlier and non-outlier schools showed that some differences exist in school ownership (p<0.05), years since established (p<0.05), and mean number of residents and fellows (p<0.01).

Conclusions: Consistent differences in malpractice experience exist among medical schools. Further research exploring alternative explanations for these differences needs to be conducted.

Medical malpractice has been a major issue in the US for many years. In a development that has generated some international attention, both federal and state authorities in the US have made information on malpractice claims on physicians more accessible to hospitals, health plans, professional groups, and the public. The National Practitioner Data Bank (NPDB) requires any organisation making payments on behalf of a practitioner to report malpractice payments which it provides to hospitals, HMOs, group practices, licensing boards, professional societies, and other healthcare organisations (for example, clinics, nursing homes) who query the Data Bank. As many as 48 states also collect some malpractice claims data on claims opened or settled in their state (“State malpractice payment reporting requirements”, unpublished study, Division of Quality Assurance, Bureau of Health Professions, Health Resources and Services Administration, US Department of Health and Human Services, August 1995). These data are usually for use by state medical licensure boards but a few states make the data publicly available to differing degrees (box 1).

Underlying these developments is the belief that these data provide useful information about a physician, but there is a relative dearth of empirical studies indicating what the value of that information is. The Harvard Medical Practice Study has been interpreted as showing that a malpractice claim is not commonly related to medical negligence. Another study found that medical care was considered indefensible in about half the cases in which awards were paid, but awards were also made in about 21% of cases in which the care provided was considered standard. Other work suggests that a malpractice claim is a sign of poor communication between the patient or the patient’s family and the physician.

Box 1 US states which make physician medical malpractice information available to the public (or plan to do so in the near future)

- Arizona
- California
- Connecticut
- Florida
- Idaho
- Massachusetts
- Rhode Island
- Tennessee
- Texas
- Virginia

Whether indicative of inadequate care, defective communication, or other factors, malpractice claims continue to be a matter of great concern for physicians in the US and are receiving increasing attention across a wide range of healthcare and dispute resolution systems in the EU and elsewhere. In an effort to minimize such litigation, a significant amount of research has been devoted to exploring physician related factors that may be predictive of malpractice claims. Sloan et al found that physicians who were board certified were not less likely to be sued and, in some cases, were more likely to be sued. They also found that two specialty categories were most at risk for being sued. Taragin et al reported interspecialty differences of up to 12-fold in the number of claims per year. They found that anaesthesiology had the highest award rate (total number of awards/total claims filed), followed by obstetrics/gynecology and radiology. Sloan et al also
examined the impact of the medical school location and “statu-
ture” on the malpractice experience of the physician and found
only a modest influence of the medical school on the
frequency or amount of claims.

We have assessed the possible role of specific medical
schools in determining the likelihood that physicians will be
sued. The presence of such an association would suggest that
some alterations in medical education could ameliorate the
rate of malpractice claims. Such a finding could be of interest
to medical schools in countries other than the US. This study
uses the historical malpractice claims experience of medical
school graduates in previous decades and employs both prob-
ability theory and multivariate regression techniques to
explore the relationship between the medical school and phy-
sician probability of a malpractice claim in more detail. In
addition, a larger dataset than those previously employed,
combining data from three states (Florida, Indiana, and
Maryland), was used to test our hypotheses empirically.

We hypothesized that several characteristics of medical
schools could result in differential experience of physician
malpractice claims (box 2). Firstly, malpractice may be related
to the medical school attended if the quality of medical
education differs significantly between schools, leading to
“high quality” and “low quality” physicians with respect to
knowledge and technical prowess. It is also possible that the
training in interpersonal skills may vary significantly between
medical schools, as has already been shown for residency
programs. This would be consistent with the finding that
malpractice claims may be strongly related to the quality of
the communication between the physician and patient (or
patient family). Medical schools might also differ in the pre-
disposition of their students and graduates to engage in
behavior prone to lead to malpractice. For example, a study
from India noted the relatively high use of alcohol, tranquil-
izers, and psychedelic drugs among medical students, interns
and house physicians, a factor known to be associated with
malpractice exposure that might vary substantially from one
school to another. Finally, some schools might attract less
qualified students, students with other characteristics that
make them more likely to be sued, or disproportionate
numbers of students who end up in specialties or geographi-
cal areas where a lawsuit is more likely.

Irrespective of the outcome, malpractice lawsuits are
extremely painful for all parties involved and are costly to li-
tigate. In addition, based on the uncertainty and informational
asymmetries present in the tort system, the presence or mag-
nitude of settlements does not always reflect the merits of the
claim. Medical schools, physicians, and policy makers should
be interested in reducing all claims, whether or not they go to
trial (verdict) or result in payment. For this reason, we have
examined all claims against physicians, not just those that
resulted in payments.

Given the variety of reasons for a potential relationship
between malpractice claims experience and medical school
attended, we set out to resolve the following specific objec-
tives:

- Objective 1: To determine whether some medical schools have a relatively high (or low) proportion of graduates who
  are sued for medical malpractice and, if so, whether schools
  identified as high (or low) outliers for a particular period
  of time (years of graduation) are more likely to continue to
  be high (or low) outliers over time.
- Objective 2: Controlling for the observable physician
  characteristics available (age and specialty), to determine
  whether a physician’s probability of having a malpractice
  claim is positively (or negatively) related to graduating from
  a high (or low) outlier school.
- Objective 3: To explore whether the characteristics of the
  medical school explain any differences found.

METHODS

Data

Data on malpractice claims closed between 1 January 1990
and August 1997 were drawn from the databases of three
states (Florida, Maryland, and Indiana) in 1998. All three
states require that any malpractice claim, regardless of
payment amount, must be reported to the relevant state regu-
lar body when the claim is closed or settled. These
databases are publicly available or are available on request for
research purposes and contain detailed claim information
including defendant name, nature of the injury, payment (if
any), and dates of the lawsuit and closure. Malpractice claims
are defined as any formal written demand for payment
including—but not limited to—lawsuits filed in the state
court.

Data on malpractice claims were merged with the American
Medical Association’s (AMA) Physician Masterfile to obtain
medical school and demographic information on physicians
who did and did not have claims settled against them during
our reporting period. Since numerical identifiers such as social
security number or license number were not available, a
matching algorithm was developed using last name, first
name, date of birth, and current state of residence. This
matched some 50% of the claims with the appropriate physi-
cian. Manual examination of the data was necessary for
another 42% of the claims which contained errors in name
spelling or the state of residence, or multiple physicians
with the same name. For manual merges, all identifying
information—including address and specialty—were used to
find matches. Although approximately 8% of the claims could
not be merged with the Masterfile data, it is unlikely that
these unmatched claims are consistently related to any
particular school and therefore should not bias our results.

Claims rate measures

Measure 1

Our initial claims measure of interest was the percentage of
graduates from a medical school for a given period of gradua-
tion† who had a claim closed against them between 1 January
1990 and 31 August 1997. Because we had claims information
from just three states, we only looked at schools with at least
5% of their graduates living in these states during the time
periods in question. A total of 47 schools (out of 122) were
eliminated because of insufficient data. This approach avoided

*“High” and “low” outliers are defined as above the 90th percentile or
below the 10th percentile of the distribution of the percentage of
graduates sued. A second analysis adjusts the percentage of graduates
sued for various “risk factors” such as (eventual) specialty of the gradu-
ate and age.
†Time periods of graduation were defined as: pre-1960, 1960-9, 1970-9,
and 1980-9. Since physicians who had graduated from
medical school after 1990 would hardly have had a chance to be sued,
we omitted this time category from our analyses.
some of the problems associated with assigning outlier status to schools on which we had very little history on graduate claims.

**Measure 2**

Because there is some evidence that malpractice claims may be related to particular physician characteristics, we calculated a second claims measure that adjusted for some of these factors—that is, we constructed a “risk adjusted” measure of claims rates for each school’s graduates. Specifically, we calculated the difference between the observed rate of closed claims for each school/time period observation and the expected rate of closed claims by estimating the following physician specific equation using logistic regression:

$$Y = \alpha_0 + \alpha_1 \cdot \text{age} + \alpha_2 \cdot \text{specialty} + \epsilon(1)$$

where $Y$ was equal to 1 if a particular graduate had any closed claim between 1 January 1990 and 31 August 1997 or otherwise equal to 0. Specially comprised a series of dummy variables for the following (commonly sued) specialties: anesthesiology, obstetrics/gynecology, specialty surgery (orthopedic, neurosurgery, plastic, cardiothoracic), all other surgery, radiology, and emergency medicine. The omitted (comparison) category was all other specialties. Expected claims rates for each school/time period observation were calculated by entering the actual values of age and specialty of the graduates of a particular school/time period and deriving the predicted probability.‡

The difference between the observed (actual) and expected rate of claims for each school/time period was used as our second outlier measure. This variable is similar to those variables for the following (commonly sued) specialties: anesthesiology, obstetrics/gynecology, specialty surgery (orthopedic, neurosurgery, plastic, cardiothoracic), all other surgery, radiology, and emergency medicine. Thus, if a physician graduated from medical school in the 1980s, his or her medical school’s outlier status for the 1970s was used to predict the physician’s probability of malpractice claim. Therefore, if a physician’s own malpractice history contributes to his or her school’s outlier status, this definition raises an issue of endogeneity that must be addressed in the empirical estimation. In order to “break” this circular definition, we used lagged values of a school’s outlier status to predict physician probability of malpractice claim. Thus, if a physician graduated from medical school in the 1980s, his or her medical school’s outlier status for the 1970s was used to predict the physician’s probability of malpractice claim.

**Analyses**

The intention of our analyses was to examine the predictive power of measure 1 and measure 2 medical school outlier status (high or low). Our approach was twofold:

1. We calculated the transition probabilities between the various “states” for both outlier variables—that is, we examined the probability that a high outlier in one period remained a high outlier in the subsequent period compared with changing to a mid-range school or to a low outlier. Our null hypothesis was that the outlier status of a medical school was a completely random event. In this case, the probability of transitioning from a high (or low) outlier for a particular time period if the difference between the actual percentage of graduates sued and the predicted percentage of graduates sued exceeded the 90th percentile (or was less than the 10th percentile) of the time period specific distribution. From table 1, this definition implies that school B is a measure 2 low outlier for the period 1970–9 if the actual rate of claims per graduate for the time period was less than the predicted rate of claims by at least 0.064.

Given the available data, we restricted our study to US medical schools. In addition, allowing for the fact that schools and their curricula change over time and that recruiting foci also change, we divided a school’s malpractice claims record into four time periods (pre-1960, 1960–9, 1970–9, and 1980–9). The fact that a physician’s own malpractice history contributes to his or her school’s outlier status raises an issue of endogeneity that must be addressed in the empirical estimation. In order to “break” this circular definition, we used lagged values of a school’s outlier status to predict physician probability of malpractice claim. Thus, if a physician graduated from medical school in the 1980s, his or her medical school’s outlier status for the 1970s was used to predict the physician’s probability of malpractice claim.

**Table 1**

<table>
<thead>
<tr>
<th>Time period</th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
<th>10th percentile</th>
<th>90th percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-1960</td>
<td>58</td>
<td>0.053</td>
<td>0.048</td>
<td>0.015</td>
<td>0.096</td>
</tr>
<tr>
<td>1960–9</td>
<td>56</td>
<td>0.173</td>
<td>0.165</td>
<td>0.096</td>
<td>0.243</td>
</tr>
<tr>
<td>1970–9</td>
<td>70</td>
<td>0.172</td>
<td>0.165</td>
<td>0.083</td>
<td>0.269</td>
</tr>
<tr>
<td>1980–9</td>
<td>75</td>
<td>0.076</td>
<td>0.074</td>
<td>0.019</td>
<td>0.125</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time period</th>
<th>N</th>
<th>difference between actual and predicted probability of graduate having claim in time period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-1960</td>
<td>58</td>
<td>-0.006</td>
</tr>
<tr>
<td>1960–9</td>
<td>56</td>
<td>0.004</td>
</tr>
<tr>
<td>1970–9</td>
<td>70</td>
<td>0.027</td>
</tr>
<tr>
<td>1980–9</td>
<td>75</td>
<td>0.000</td>
</tr>
</tbody>
</table>

‡Inserting the actual values of the independent variables provides the value $x^\alpha$. The predicted probability is actually $e^\alpha/[1 + e^\alpha]$. |
Objective 1

The transition probabilities between the three “states” (below 10th percentile outlier, mid-range school, above 90th percentile outlier) do not support the null hypothesis that medical school outlier status is a random event (table 3). Specifically, medical schools that were classified as mid-range schools in the initial period were more likely to be mid-range schools in the subsequent period than high and low outliers were likely to become mid-range schools (measure 1: 81% v 68% (low outlier → mid-range) and 68% (high outlier → mid-range); measure 2: 79% v 68% and 68%). Conversely, medical schools that were classified as low outliers (below 10th percentile) in one period of graduates were more likely than mid-range schools to be low outliers in the subsequent period (measure 1: 32% v 9%; measure 2: 32% v 10%) and medical schools that were classified as high outliers (above 90th percentile) in one period were more likely than mid-range schools to be high outliers in the subsequent period (measure 1: 32% v 9%; measure 2: 32% v 11%). Most striking, perhaps, are the probabilities of low outlier schools becoming high outlier schools in the subsequent period and vice versa. In our analyses, none of the low outlier schools became high outlier schools and none of the high outlier schools became low outlier schools in the subsequent period. These results support the hypothesis that there is something consistent about the malpractice experience of graduates of high and low outlier schools over time.

To examine the statistical significance of lawsuit probabilities between medical school cohorts, we examined the correlations between the lawsuit rates of successive cohorts—for example, pre-1960 graduates with 1960–9 graduates, and all were statistically significant at p < 0.001. The correlation between the percentage of pre-1960 graduates and 1960–9 graduates sued was 0.49; between 1960–9 and 1970–9 graduates the correlation was 0.55; and between 1970–9 and 1980–9 graduates the correlation was 0.50.

Objective 2

Table 4 shows the results of our second set of analyses, predicting any claim for an individual physician (based on our database between 1 January 1990 and 31 August 1997). Explanatory variables included the observable characteristics derived from the AMA Masterfile (age, specialty), the percentage of a medical school’s graduates (for the decade) who live in the three states, and the dummy variables indicating whether the physician graduated from a school that was classified as a high or low outlier in the initial period and whether the physician graduated from a school that was classified as high or low outliers in the initial period were more likely than mid-range schools to be low outliers in the subsequent period (measure 1: 32% v 9%; measure 2: 32% v 10%) and medical schools that were classified as high outliers (above 90th percentile) in one period were more likely than mid-range schools to be high outliers in the subsequent period (measure 1: 32% v 9%; measure 2: 32% v 11%). Most striking, perhaps, are the probabilities of low outlier schools becoming high outlier schools in the subsequent period and vice versa. In our analyses, none of the low outlier schools became high outlier schools and none of the high outlier schools became low outlier schools in the subsequent period. These results support the hypothesis that there is something consistent about the malpractice experience of graduates of high and low outlier schools over time.

**RESULTS**

Approximately 11% of physicians in our sample were sued at least once during the study time period. Their mean age was 45 years and one third were international (outside the US and Canada) medical school graduates (IMGs). Using our medical school outlier classification scheme, 3.7% of physicians in the sample graduated from a “low outlier” medical school and 10.3% graduated from a “high outlier” medical school. These descriptive data, together with a breakdown by major specialty, are shown in table 2.

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### Table 2: Descriptive statistics of dependent and independent variables

<table>
<thead>
<tr>
<th>Independent variable(s)</th>
<th>Description</th>
<th>Frequency or mean (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sued</td>
<td>Physician ever sued 1 Jan 1990–31 Aug 1997</td>
<td>3423 (11.3%)</td>
</tr>
<tr>
<td><strong>Independent variable(s)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>Age of physician (at 31 Aug 1997)</td>
<td>45.4 (30–98)</td>
</tr>
<tr>
<td>Anesthesiology</td>
<td>Physician specialty = anesthesiology</td>
<td>1757 (6.8%)</td>
</tr>
<tr>
<td>OB/GYN</td>
<td>Physician specialty = OB/GYN</td>
<td>1636 (5.4%)</td>
</tr>
<tr>
<td>Surgical specialty</td>
<td>Physician specialty = orthopedic surgery, plastic surgery, neurosurgery</td>
<td>1908 (6.3%)</td>
</tr>
<tr>
<td>Other surgery</td>
<td>Physician specialty = other surgery</td>
<td>1030 (3.4%)</td>
</tr>
<tr>
<td>Radiology</td>
<td>Physician specialty = radiology</td>
<td>1545 (5.1%)</td>
</tr>
<tr>
<td>Emergency medicine</td>
<td>Physician specialty = emergency medicine</td>
<td>1121 (3.7%)</td>
</tr>
<tr>
<td>Primary care</td>
<td>Physician specialty = family practice, internal medicine, pediatrics (with no subspecialty)</td>
<td>10056 (33.2%)</td>
</tr>
<tr>
<td>IMG</td>
<td>International (outside US and Canada) medical school graduate</td>
<td>10086 (33.3%)</td>
</tr>
<tr>
<td>Graduate of medical school outlier (≤90th percentile)</td>
<td>Physician is a graduate of a US medical school classified as a low outlier</td>
<td>1121 (3.7%)</td>
</tr>
<tr>
<td>Graduate of medical school outlier (&gt;90th percentile)</td>
<td>Physician is a graduate of a US medical school classified as a high outlier</td>
<td>3120 (10.3%)</td>
</tr>
</tbody>
</table>

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§This variable was included to control for any selection bias that might result from over-representation of certain schools in the dataset (e.g. more University of Florida graduates than University of Utah graduates in the three states)
Table 3  Probabilities of moving from high, mid-range, and low status in one period to high, mid-range, and low status in the subsequent period

<table>
<thead>
<tr>
<th>Status in initial period</th>
<th>Status in subsequent period</th>
<th>Measure 1 probability</th>
<th>Measure 2 probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 10th percentile</td>
<td>Below 10th percentile</td>
<td>0.32</td>
<td>0.32</td>
</tr>
<tr>
<td>Mid-range school</td>
<td>Above 90th percentile</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Mid-range school</td>
<td>Below 10th percentile</td>
<td>0.09</td>
<td>0.10</td>
</tr>
<tr>
<td>Mid-range school</td>
<td>Mid-range school</td>
<td>0.81</td>
<td>0.79</td>
</tr>
<tr>
<td>Mid-range school</td>
<td>Above 90th percentile</td>
<td>0.10</td>
<td>0.11</td>
</tr>
<tr>
<td>Above 90th percentile</td>
<td>Below 10th percentile</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Above 90th percentile</td>
<td>Mid-range school</td>
<td>0.68</td>
<td>0.68</td>
</tr>
<tr>
<td>Above 90th percentile</td>
<td>Above 90th percentile</td>
<td>0.32</td>
<td>0.32</td>
</tr>
</tbody>
</table>

Measure 1 outliers: a medical school is classified as a measure 1 high (or low) outlier for a particular time period if the percentage of its graduates for that time period who were sued exceeded the 90th percentile (or was below the 10th percentile) of the time period specific distribution.

Measure 2 outliers: a medical school was classified as a measure 2 high (or low) outlier for a particular time period if the difference between the actual percentage of graduates sued and the predicted percentage of graduates sued exceeded the 90th percentile (or was less than the 10th percentile) of the time period specific distribution.

Table 4  Probability of having any malpractice claim*

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Odds ratio</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (in years)</td>
<td>3.95</td>
<td>2.71 to 5.75</td>
</tr>
<tr>
<td>Age</td>
<td>0.985</td>
<td>0.981 to 0.989</td>
</tr>
<tr>
<td>Anesthesiology</td>
<td>0.966</td>
<td>0.689 to 1.355</td>
</tr>
<tr>
<td>OB/GYN</td>
<td>3.14</td>
<td>2.42 to 4.07</td>
</tr>
<tr>
<td>Surgical specialty</td>
<td>3.08</td>
<td>2.40 to 3.96</td>
</tr>
<tr>
<td>General surgery</td>
<td>2.95</td>
<td>2.10 to 4.13</td>
</tr>
<tr>
<td>Radiology</td>
<td>1.77</td>
<td>1.31 to 2.37</td>
</tr>
<tr>
<td>Emergency medicine</td>
<td>1.55</td>
<td>1.06 to 2.25</td>
</tr>
<tr>
<td>Primary care (FP, IM, Pediatrics)</td>
<td>1.22</td>
<td>0.99 to 1.49</td>
</tr>
<tr>
<td>Percentage of medical school’s students in 3 states</td>
<td>0.81</td>
<td>0.58 to 1.12</td>
</tr>
<tr>
<td>Graduates of medical school outlier (&lt;10th percentile)</td>
<td>0.48</td>
<td>0.34 to 0.67</td>
</tr>
<tr>
<td>Graduates of medical school outlier (&gt;90th percentile)</td>
<td>1.80</td>
<td>1.46 to 2.23</td>
</tr>
</tbody>
</table>

*Logistic regression predicting any claim for 30288 physicians in Florida, Indiana, and Maryland during the period 1 January 1990 to 31 August 1997. OB/GYN=obstetrics/gynecology; FP=family practice; IM=internal medicine.
DISCUSSION

We have shown a consistent difference in the malpractice claims history of physicians who graduate from certain schools. Because of the implications for medical school student selection and training, this finding warrants attention. Previous studies have shown strong links between physician characteristics and specialty and malpractice experience, but were unable to find any significant relationship between medical school attended and rate of claims or payments. By profiling medical schools by the claims experiences of their graduates, we were able to detect a relationship.

There are a number of possible explanations for these findings. One potential explanation is that some schools do, in fact, provide a lower quality of medical education than others, leaving a predictable proportion of their graduates not as well prepared for the practice of medicine. Perhaps somewhat less disturbing would be that we have simply discovered student heterogeneity with a non-random distribution of students between schools. Certain schools might attract students who are more likely to be sued, either as a result of their inherent characteristics or as a result of the specialties they enter. More detailed data on physician characteristics would provide better insight into this possible explanation and would help to understand whether schools that consistently produce graduates who are relatively prone to malpractice lawsuits fall below some threshold of adequate quality among the students they accept. Moreover, the institutional culture of schools may be a factor which is separate from the content of education in influencing student behavior and choices of specialty. Alternatively, some medical schools may be more effective in teaching their students to deal with the demands placed on them by patients and their families. The wealth of knowledge and skills to be imparted during a medical education, coupled with the array of tools we now have to communicate that information, present considerable challenges.

A rapidly changing healthcare environment with increasing financial pressures may increase malpractice claims as patients are under the care of more physicians, providing more technologically sophisticated care, in less personal environments. However complex the factors that lead to malpractice claims, examining the differences between high and low outlier medical schools may lead to methods for improving the education of physicians with the goal of improving the care that they provide. If we can identify what curricular elements or what teaching methods contribute to a medical school’s malpractice experience, we may be able to document “best practices” in medical education, improve that education, and eventually improve patient outcomes.

The strength of our findings is limited by the available data. Our data on malpractice claims come from only three states because most states either do not collect the data, do not make the data publicly available, or only allow inquiries regarding specific individual physicians. Several national databases exist but are not publicly available. We have tried to minimize the impact of this limitation by restricting our analysis to medical schools with at least 5% of their graduates in the three states studied. In addition, we explored alternative empirical specifications that included the physician’s probability of being in our sample (based on AMA Masterfile data) as a “selection correction factor” in the logistic regressions. Our results were unchanged. We were also limited in our ability to compare medical schools across a number of meaningful dimensions and over time. Because of the dearth of information, our research cannot address what underlying differences between medical schools might be responsible for the differences we have found.

Our research does highlight one important relationship—namely, that graduates of medical schools that have been previously identified as high or as low “malpractice claims risk” outliers are significantly more or less likely, respectively, to be sued. This finding is important in our quest to understand why certain physicians get sued. Further research exploring alternative explanations for these differences needs to be conducted. Are there (or have there been) significant differences in the curricula or admission policies between high and low outlier schools? Are there organizational characteristics or cultural differences that might explain the observed differences? This research could prove particularly challenging because of the difficulties associated with collecting information about curricula, culture, and characteristics of medical schools dating back to the 1960s and 1970s. The costliness of medical malpractice claims, combined with the implications of potential findings for quality of care, make further investigations in this area of critical importance.

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Table 5 Comparative information for mid-range, high outlier, and low outlier schools, 1989*

<table>
<thead>
<tr>
<th>Variable</th>
<th>All schools</th>
<th>High outlier</th>
<th>Mid-range</th>
<th>Low outlier</th>
</tr>
</thead>
<tbody>
<tr>
<td>% public</td>
<td>52.0</td>
<td>75.0</td>
<td>52.4</td>
<td>25.0</td>
</tr>
<tr>
<td>Years since school was established</td>
<td>104.2 (20–233)</td>
<td>67.6 (24–140)</td>
<td>110.9 (20–233)</td>
<td>94.8 (24–173)</td>
</tr>
<tr>
<td>% of female students</td>
<td>33.8 (17.9–54.0)</td>
<td>31.3 (22.2–42.6)</td>
<td>34.1 (21–50.5)</td>
<td>33.8 (17.9–54.1)</td>
</tr>
<tr>
<td>Mean enrollment per year</td>
<td>552.2 (192–1293)</td>
<td>523.8 (250–878)</td>
<td>560.9 (227–1293)</td>
<td>516.3 (192–808)</td>
</tr>
<tr>
<td>Mean number of basic science students</td>
<td>200.8 (23–636)</td>
<td>143.9 (55–374)</td>
<td>217.4 (23–636)</td>
<td>136 (27–278)</td>
</tr>
<tr>
<td>Mean number of residents and fellows</td>
<td>548.5 (0–1926)</td>
<td>493.6 (203–774)</td>
<td>585.0 (0–1926)</td>
<td>334.1 (20–620)</td>
</tr>
</tbody>
</table>

Values are percentage or mean (range).
*Based on measure 2 outliers.
\(p<0.05\) (\(z\)-test); \(p<0.05\) (\(t\)-test); \(p<0.01\) (\(t\)-test).

Key messages

- The malpractice claims experiences of physicians who graduated from the same medical school are strongly related to each other.
- Graduating from a medical school whose graduates are often sued significantly increases an individual physician’s likelihood of being sued.
- Although consistent differences between high and low outlier medical schools were difficult to identify, we found that high outlier schools were more recently established and were more likely to be public institutions. Low outlier schools had fewer total residents and fellows.
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REFERENCES

1. Jossoxt D. Patients may gain access to doctors’ disciplinary data. BMJ
2000;321:592.
2. I s r o e l i A, Althalo s J. An international practitioner data bank as a quality
3. Bosch X. Patients’ group to publish names of negligent doctors. BMJ
2000;321:587.
malpractice claims and adverse events due to negligence: results of the
11. Hickson GB, Clayton EW, Githens PB, et al. Factors that prompted
families to file medical malpractice claims following perinatal injuries.
13. Coyte PC, Dewees DN, Trebilcock MJ. Canadian medical malpractice
liability: an empirical analysis of recent trends. J Health Econ
14. Fileni A, Magnavita N. Malpractice claims against radiologists. Analysis
15. Saucedo Gonzalez LF, Tinoco Jaramillo G, Mendez Ramirez JJ.
Lawsuits against gynecologists-obstetricians in the National Commission
16. Towe A, Danzon P. Medical negligence and the NHS: an economic
17. Wilson LL. Fulton M. Risk management: how doctors, hospitals and
MDOs can limit the costs of malpractice litigation. Med J Aust
18. Bernat E. Liability risks in gynaecology and obstetrics under German
20. Richmond C. Cost of malpractice protection on rise in UK, too. Can
experience of physicians: predictable or haphazard? JAMA
performance explain interspecialty differences in malpractice claims
23. Lefevre F, Waters TM, Budetti PP. A survey of physician training in risk
management and communication skills for malpractice prevention. J Law
24. Kuma r P, Bass D. Substance abuse by medical students and doctors. J
25. Anon. FLorida medical professional liability closed claims. Tallahassee,
FL Florida Department of Insurance, 1998.
26. Maryland Board of Physician Quality Assurance, Department of
Health and Mental Hygiene, Baltimore, MD.
27. Medical Malpractice Division, Indiana Department of Insurance,
Indianapolis, IN.
physiology and chronic health evaluation. III. Predictions of hospital
endarterectomy mortality in the Medicare population: trial hospitals,
arising from gas delivery equipment: a closed claims analysis.
Anesthesiology 1997;87:741–8.
31. Gild WM. Risk management in cardiac anesthesia: the ASA Closed
Claims Project perspective. J Cardiothorac Vasc Anesth 1994;8(1 Suppl
32. Wilkerson L, Iby DM. Strategies for improving teaching practices: a
comprehensive approach to faculty development. Academ ic Med
33. Novack DH, Volk G, Dressman DA, et al. Medical interviewing and
interpersonal skills teaching in US medical school. Progress, problems,

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