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BACKGROUND

In its *Principles of Medical Ethics*, the American Medical Association (AMA) declares that "[a] physician shall respect the law" and "report physicians deficient in character or competence, or engaging in fraud or deception."[1] The AMA may deny membership to physicians convicted of criminal activity, including physicians convicted of crimes in other countries.[2] In reference to applications for licensure, the Federation of State Medical Boards, the association of state medical boards responsible for disciplining doctors, recommends that "all state medical boards conduct criminal record checks as part of the licensure application process . . . [and] any applicant with a criminal history . . . appear before the board for questioning to evaluate the applicant's . . . fitness for licensure."[3]

Recent well-publicized examples of physicians engaged in criminal behavior have shed light on criminal activity by physicians. Allan Zarkin, a New York gynecologist, was charged with first-degree assault for carving his initials into the abdomen of a woman who had

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[1] AM. MED. ASS'N, PRINCIPLES OF MEDICAL ETHICS (2001), http://www.ama-assn.org/ama/pub/category/2512.html.

[2] D. TED LEWERS, AM. MED. ASS'N, AMA PARTICIPATION IN THE WORLD MEDICAL ASSOCIATION (1999), http://lobby.la.psu.edu/081_Physician_Antitrust_Waiver/Organiztional_Statements/American_Medical_Association/AMA_Reports_of_Board_of_Trustees.pdf.

[3] FED'N OF STATE MED. BDS., PUBLIC POLICY COMPENDIUM 9 (2005), http://www.fsmb.org/pdf/GRPOL_public_policy_compendium.pdf.

just delivered her baby by caesarean section; he surrendered his license, received five years probation in a plea agreement, and is barred from applying for a medical license for five years.[4] Michael Swango is serving three life sentences for fatally poisoning three patients under his care in a Long Island, New York hospital.[5] Harold Shipman, a British general practitioner, who was serving consecutive life sentences for murdering fifteen patients when he committed suicide, has been implicated in the deaths of at least 215 patients.[6]

A large number of physicians convicted of crimes find employment within the federal government.[7] Deaths of prison inmates under the care of physicians who had previously lost their licenses for criminal convictions have raised the question of such physicians' fitness for delivering medical care.[8]

Although criminal activity by physicians is of great concern both to the medical profession and the general public, state medical boards vary in their monitoring and discipline of criminal activities by licensed physicians. State medical boards do not consistently conduct criminal background checks on all physicians applying for a medical license,[9] and medical licensing boards in thirteen states and jurisdictions do not consider a felony conviction related to the practice of medicine to be sufficient grounds in and of itself for a board review, hearing or action.[10]

We searched MedLine using the terms "physician" and "criminal" and found no published papers that provide a systematic assessment of physicians who have engaged in criminal activity. The medical literature regarding criminal conduct by physicians deals largely with physicians who engage in sex with patients, whether consensual or not.[11]

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[4] David Rohde, *Doctor Who Carved Initials Gets Probation*, N.Y. TIMES, Apr. 26, 2000, at B3.

[5] Charlie LeDuff, *Prosecutors Say Doctor Killed to Feel a Thrill*, N.Y. TIMES, Sept. 7, 2000, at B1.

[6] Lizette Alvarez, *'Dr. Death,' British Serial Killer, Kills Himself*, N.Y. TIMES, Jan. 14, 2004, at A8.

[7] Matt Kelley, *Doctors Still Working After Medical, Criminal Wrongdoings; Many Turn to Federal Government for Jobs*, ADVOCATE (Baton Rouge, La.) Apr. 15, 2002, at 7-B.

[8] Andrew A. Skolnick, *Prison Deaths Spotlight How Boards Handle Impaired, Disciplined Physicians*, 280 JAMA 1387 (1998).

[9] Jay Greene, *Few Licensing Boards Conduct Criminal Background Checks*, AM. MED. NEWS, Nov. 5, 2001, at 12.

[10] Fed'n of State Med. Bds. of the U.S., Inc., 1 EXCHANGE 47-48, tbl.36 (2003).

[11] *See, e.g.*, James Morrison & Theodore Morrison, *Psychiatrists Disciplined by a State Medical Board*, 158 AM. J. PSYCHIATRY 474, 475-77 (2001); Christine E. Dehlendorf & Sidney M. Wolfe, *Physicians Disciplined for Sex-Related Offenses*,

This article presents a descriptive study of all physicians convicted of crimes and disciplined by state medical boards or the federal government between 1990 and 1999.

METHODS

In 1989, Public Citizen's Health Research Group began requesting information on all disciplinary actions (for criminal and noncriminal offenses) that state medical boards and federal agencies (the U.S. Department of Health and Human Services, the Drug Enforcement Administration, and the Food and Drug Administration) had taken against both doctors of medicine (MDs) and osteopathy (DOs).

Data were entered in a standardized format using a detailed data-entry protocol. There are three basic units of analysis: entries, orders, and physicians. An entry is the basic data unit and contains the following items: the agency that disciplined the physician, physician name, license number, address, birth date, date of the disciplinary order, the two most serious orders issued by the disciplinary board, the offense responsible for the disciplinary orders (ten possible codes), and any additional notes provided by the disciplinary body. Orders represent each disciplinary action taken by the medical board for each entry; there may be more than one order per entry as some boards may determine that a single offense warrants multiple disciplinary actions. There is only one physician per entry, but there may be more than one entry and order per physician.

The database includes only final disciplinary orders and does not include information on charges brought against physicians that do not result in disciplinary orders. Any additional relevant information provided by the boards was entered into a "Notes" field. Because the database does not include details on actions taken by the criminal justice system, the data do not necessarily reflect the total punishment delivered to a physician for a particular offense. However, the database does include any modifications (including reversals) received by May 31, 2000.

The database included 31,110 disciplinary entries against 20,125 physicians taken between January 1, 1990 and December 31, 1999. In 29,310 (94.2 percent) of these entries, information was provided in the "Notes" field. In about one-third (34.3 percent) of the entries in the database, state medical boards imposed more than one order in a single disciplinary entry. Overall, 79 percent of entries had an offense, and 97 percent had an order.

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279 JAMA 1883, 1886-88 (1998).

Based on information provided by the boards and federal agencies, Public Citizen assigned each entry one or more of thirteen types of orders. We considered six orders to be severe; in descending order, these were revocation, surrender, suspension, emergency suspension, probation, and restriction of licensure. There were seven non-severe orders; in descending order, fine, reprimand, education, enrollment into a program for alcohol or drug treatment, cease and desist orders, monitoring of a physician's practice, and participation in community service. The categorization of orders as "severe" and "non-severe" was the same as in our previous publication.[12]

Using board and federal government data, we categorized each entry as having one or more of eighteen offenses, one of which is criminal conviction. To create a database of disciplinary entries specifically related to criminal offenses, we searched the offense field for entries marked "conviction." Searches in the "Notes" field for the terms "guilt" or "guilty," "convict" or "convicted," "no contest," "nolo contendere," "crime" or "criminal," "plea," "sentence," "fraud," "indict" or "indicted" or "indictment," "violated," "trial," or "tried" resulted in no further entries.

We then determined whether the offense was related to the medical system. We defined "medical" as a case that clearly involved a patient or patient-care (e.g., having sex with an anesthetized patient), and "health-related" as a case involving the health care system, but not necessarily involving patients or patient care (e.g., Medicare fraud).

All cases considered "medical" were also automatically coded as "health-related" but not vice-versa. Three of the ten offense codes (prescribing violations, practicing without a license, and criminal misconduct related to the practice of medicine) were automatically categorized as both "medical" and "health-related." For the other seven offense codes (sex offenses, murder, insurance fraud, alcohol-related convictions, tax offenses, criminal misconduct, and other or unspecified convictions), we coded each entry based on detailed inspection of the "Notes" field.

We did not code cases as "medical" or "health-related" unless there was clear evidence that patients or the health-care system were involved. For example, an entry with "[c]onviction relating to fraud" as its only description in the "Notes" field would be coded as neither health-related nor medical because it did not explicitly indicate health-care fraud. However, if the disciplining body was the Medicare program, insurance fraud was considered health-related. Similarly, an entry from a state medical board indicating only "[n]egligence on more than one occasion" would also be coded as neither medical nor health-related since it did not explicitly indicate negligence in the

course of medical practice. Drug-use cases were not considered "medical" or "health-related" unless it was clear that the drug was a prescribed pharmaceutical or that the physician had practiced under the influence. The three authors coded each entry separately based on these definitions and conferred to resolve any coding disagreements by consensus.

To obtain demographic, specialty, and practice information for physicians, we submitted our dataset of physicians disciplined for criminal activity to Medical Marketing Services (MMS, Inc., Carol Stream, IL) which matched our physicians with the American Medical Association Physician Masterfile. MMS uses a physician's name, address, date of birth, and state medical license number for matching purposes. This process resulted in a match for 1,398 physicians (62.2 percent). Typically, the lack of a match resulted from states not providing dates of birth.

We compared the characteristics of disciplined physicians obtained from MMS (e.g., age, specialty, major professional area, and board certification) with the characteristics of the national U.S. physician population using the American Medical Association's Physician Characteristics and Distribution in the United States.[12] The age of the physicians at the time of their first disciplinary order was calculated using the date of the first order and the date of birth. Only specialties that had fifteen or more disciplined physicians were analyzed. We used linear regression to assess trends over time in the percentage of physicians with discipline related to criminal activity and the proportion of entries with severe orders. For physician specialty, we calcu-

[12] Data for total number of physicians obtained from the following sources: GENE ROBACK ET AL., AM. MED. ASS'N, PHYSICIAN CHARACTERISTICS AND DISTRIBUTION IN THE U.S. 8 (1990 ed. 1990); GENE ROBACK ET AL., AM. MED. ASS'N, PHYSICIAN CHARACTERISTICS AND DISTRIBUTION IN THE U.S. 8 (1992 ed. 1992); GENE ROBACK ET AL., AM. MED. ASS'N, PHYSICIAN CHARACTERISTICS AND DISTRIBUTION IN THE U.S. 8 (1993 ed. 1993); GENE ROBACK ET AL., AM. MED. ASS'N, PHYSICIAN CHARACTERISTICS AND DISTRIBUTION IN THE U.S. 10 (1994 ed. 1994); LILLIAN RANDOLPH ET AL., AM. MED. ASS'N, PHYSICIAN CHARACTERISTICS AND DISTRIBUTION IN THE U.S. 10 (1995-96 ed. 1996); LILLIAN RANDOLPH ET AL., AM. MED. ASS'N, PHYSICIAN CHARACTERISTICS AND DISTRIBUTION IN THE US 10 (1996-1997 ed. 1997); LILLIAN RANDOLPH, AM. MED. ASS'N, PHYSICIAN CHARACTERISTICS AND DISTRIBUTION IN THE US 9 (1997-1998 ed. 1998); THOMAS PASKO & BRADLEY SEIDMAN, AM. MED. ASS'N, PHYSICIAN CHARACTERISTICS AND DISTRIBUTION IN THE US 9 (1999 ed. 1999); THOMAS PASKO ET AL., AM. MED. ASS'N, PHYSICIAN CHARACTERISTICS AND DISTRIBUTION IN THE US 323 (2000-2001 ed. 2000); THOMAS PASKO & BRADLEY SEIDMAN, AM. MED. ASS'N, PHYSICIAN CHARACTERISTICS AND DISTRIBUTION IN THE US 316 (2002-2003 ed. 2002). For 1991, we used the average of 1990 and 1992. To calculate the average number of physicians between 1990 and 1999, we added yearly totals and divided by 10.

lated a risk ratio, dividing the percentage of physicians in each specialty who were disciplined for criminal activity by the percentage of all physicians who were disciplined for criminal activity. We calculated the risk ratios for age, major professional activity, and board certification using an analogous method. Because our data are comprised of the entire population of U.S. physicians who were disciplined for criminal activity from 1990 to 1999, other than for trends over time, we did not perform statistical calculations that presume only a sample of the entire population.

RESULTS

Our database contained 2,903 criminal conviction-related entries for 2,247 physicians between 1990 and 1999. There were a total of 3,500 disciplinary orders taken in those entries. Some examples of criminal behavior by physicians resulting in only lenient action by state medical boards include:

- A general surgeon convicted in New Jersey for knowingly and willfully preparing and delivering two false medical reports concerning AIDS test results to the U.S. Immigration and Naturalization Service. He received a two-year probation, which was stayed, a $2,500 fine, and fifty hours of community service.
- An obstetrician-gynecologist sanctioned in New York for failure to treat an emergency room patient in need of emergency assistance in the delivery of her child and falsifying medical records in an attempt to conceal his conduct. His suspension was stayed pending completion of all conditions imposed by the New York Supreme Court.
- An emergency physician from California who was convicted of felony possession of cocaine, self use of cocaine, furnishing cocaine to addicts, gross negligence in attempting to render unassisted emergency resuscitation of his girlfriend who overdosed, and delaying a timely call to 911 for help. This physician received a stayed revocation and three years probation, 180 days in county jail, and fines and assessments. This physician is currently licensed to practice in California.

Physicians in our database had an average of 1.29 entries and received 1.56 orders each. These entries represented 9.4 percent of all board entries in the ten-year period (Table 1). The highest percentage of entries for conviction-related offenses was 1992 (11.5 percent) declining to 8.0 percent of all entries in 1999. There was a statistically significant upward trend in the total number of disciplinary entries

from 1990 (2631) to 1999 (3384; linear regression, p=0.01313), but the number of entries related to criminal activity remained the same (linear regression, p=0.8990), producing a statistically significant decline in the percentage of criminal entries that were related to convictions (linear regression, p=0.0004).

The number of physicians who committed criminal acts and were disciplined remained stable from 1990 to 1999 except for a rise in numbers in 1994 and 1995. The total number of physicians in the United States during these ten years increased steadily, resulting in a decrease in the percentage of physicians with discipline related to convictions from 0.04 percent to 0.03 percent. However, this decrease was not statistically significant (p=0.1301).

Physicians disciplined for criminal offenses were older than the national physician population. Among all physicians, 51.9 percent were forty-five or older, whereas 70.7 percent of criminally convicted disciplined physicians were older than forty-five. Physicians between the ages of fifty-five and sixty-four had the highest risk ratio (1.69) for disciplinary orders for criminal activity of any age group. Physicians in the age categories of younger than thirty-five, age thirty-five to forty-four, and older than age sixty-four were underrepresented among physicians disciplined for criminal convictions (risk ratio = 0.21, 0.87 and 0.83, respectively). General practice was the most overrepresented of the specialties, with a relative risk of being disciplined for criminal activity of 4.93, followed by psychiatry (risk ratio = 2.24), family practice (1.97), and child and adolescent psychiatry (1.75).

Of the 1,398 physicians with matching demographic data, 717 (51.3 percent) had inactive licenses in 2002. Of the remaining 681 physicians, 627 physicians (92.1 percent) reported direct patient care as their major professional activity, higher than the 81.2 percent of all U.S. physicians (risk ratio = 1.13). Whereas 61.5 percent of all U.S. physicians are board-certified, only 41.5 percent of disciplined physicians were board-certified (risk ratio = 0.67).

In 24.8 percent of conviction-related entries, the most severe order was a license revocation or surrender, in 21.9 percent it was a suspension or emergency suspension, in 12.4 percent it was a probation or restriction, and 40.9 percent of entries contained only non-severe or unspecified orders (Table 2). Among orders, 20.5 percent were license revocations or surrenders, 18.4 percent were suspension or emergency suspension, 18.4 percent were probation or restriction, and 42.7 percent were non-severe. Of the physicians disciplined in these entries, 30.7 percent had revocation or surrender as their most severe order, 25.4 percent had suspension or emergency suspension, 15.1 percent

had probation or restriction, and 28.9 percent only had non-severe orders imposed upon them.

Table 2 shows the percentage of entries that received severe orders for particular offenses by year. The categories of sex abuse (93.6 percent), murder (93.1 percent), and alcohol use (88.1 percent) received the highest percentage of severe orders, whereas insurance fraud (32.8 percent) and criminal misconduct related to the practice of medicine (54.5 percent) received the lowest percentage of severe orders. These data show that the percentage of offenses receiving severe orders remained relatively stable over the ten-year period (linear regression, $p=0.45$).

Table 3 displays the most severe disciplinary order, stratified by the type of conviction-related offense. The final column shows the number of physicians disciplined for each offense. Medicare, Medicaid, insurance fraud, and prescribing violations each account for more than 25 percent of orders. Medicare, Medicaid, and insurance fraud typically received non-severe orders (67.2 percent), but criminal misconduct related to medicine (45.5 percent) and prescribing violations (36.2 percent) also had high rates of non-severe actions. By contrast, based on small numbers, high percentages of murders (69.0 percent) and sex offenses (40.4 percent) led to license revocations. Of the twenty-five physicians with discipline for murder-related convictions, we obtained matching licensure information for eight (32.0 percent) through MMS. We performed an Internet search of state medical boards where these eight physicians held licenses in the past and found that none of them have currently active licenses to practice.

Among physicians disciplined for drug-related offenses, the specialties of general practice and family practice were overrepresented (risk ratios of 3.39 and 1.35, respectively). For physicians disciplined for fraud, general practice and psychiatry were overrepresented with risk ratios of 3.68 and 2.44, respectively. Only the specialty of family practice had more than fifteen physicians disciplined for criminal misconduct related to the practice of medicine (risk ratio 1.71).

Of the 2,903 entries, 1,268 (43.7 percent) involved patients and were also by definition health-related, an additional 953 (32.8 percent) were only health-related, and 682 entries (23.5 percent) involved neither patients nor the health care system (Table 4). As noted in the methods, prescribing violations, practicing without a license, and criminal misconduct related to the practice of medicine by definition involved patients. Also by definition, all health insurance fraud cases involved the health care system. However, 40.4 percent of sex-related entries, 13.8 percent of murder entries, and 22.4 percent of alcohol-related entries also involved patients directly.

Over 50 percent of suspensions, emergency suspensions, and restrictions involved patients. For all types of offenses, entries that involved patients tended to receive more severe disciplinary action than those that did not involve patients (data not shown). The overall relative risk of a severe order from an entry that involved a patient was 1.31.

For the 1,398 matched physicians, comparing the 572 physicians whose offenses involved patients against the 826 (36.8 percent) whose offenses did not involve patients, we found the physicians' average age (fifty-one and fifty-two years), percentage board-certified (42.1 percent and 41.0 percent), and percentage involved in direct patient care (92.3 percent and 91.9 percent) to be similar. Those physicians who specialized in family practice (20.3 percent of offenses involved patients, 13.3 percent did not) and emergency medicine (4.6 percent and 2.1 percent) had larger percentages of offenses that involved patients whereas psychiatrists had a larger percentage of offenses that did not involve patients (7.0 percent and 15.4 percent).

DISCUSSION & CONCLUSION

Our data show that over a ten-year period, a small but steady number of physicians received disciplinary orders for criminal activity. Factors related to such criminal activity included older age, lack of board certification, and direct patient care as a professional activity. Certain specialties were also disproportionately represented among physicians disciplined for all crimes (general practice, psychiatry, child psychiatry, and family practice) and for particular common crimes (general practice and family practice for drug-related criminal convictions; general practice and psychiatry for fraud-related convictions). There is no obvious explanation for these findings. Unlike our previous study,[13] in which overrepresentation of psychiatry, child psychiatry, obstetrics and gynecology, and family and general practice among those disciplined for sex-related offenses could be related to access to patients, activities leading to criminal offenses (access to narcotics or prescriptions, ability to commit fraud, etc.) are not uniquely related to any of the specialties mentioned.

With regards to our finding that criminal activity is related to age, younger physicians may not have practiced long enough to develop a tendency toward criminal behavior or to find opportunities to engage in criminal behavior. The older age of disciplined physicians likely

[13] Dehlendorf & Wolfe, *supra* note 11, at 1886.

also reflects the time to investigate and conclude such a case, as well as a tendency for Boards to act against repeat offenders.

In general, we found that more severe orders were issued for offenses that involved patients. However, offenses in categories that involve the health-care system resulted in a wide range of orders of differing severity.

We acknowledge that physicians can be criminally prosecuted only to the extent of the law, and that these laws differ from state to state. However, examples from our dataset illustrate the often-modest sanctions by state medical boards even after the physicians have been criminally convicted. Based on the data in Table 3, less than 80 percent of physicians who committed sex-related offenses had their licenses revoked, surrendered, or suspended. Only 53.6 percent of physicians convicted of criminally prescribing, using, or possessing controlled substances and only 40.1 percent of physicians guilty of criminal misconduct related to the practice of medicine had their licenses revoked, surrendered, or suspended. These data exemplify a system that allows questionable physicians to continue practicing medicine after exhibiting clearly unprofessional and dangerous behavior.

This analysis has several limitations. Because the Masterfile match process did not provide us with a complete demographic data for every physician in our database, the demographic data in our analysis may not fully reflect the characteristics of the disciplined physician population. Although all fifty states and three federal agencies disciplined at least one physician in an entry involving criminal conduct, the Masterfile matching process provided a range of matches, from 0.0 percent to 100.0 percent (median 33.3 percent) of physicians per state. There may be state-by-state differences in disciplinary procedures and as such, there may be systematic biases in the demographic data presented here.

We were unable to find national data for criminal activity to assess the overall criminal activity rate of physicians compared to the general population. However, the unique power of the physician in society as well as the influence that one physician may have on many patients' lives justifies particular attention to criminal physicians. Privileges extended to physicians (e.g., ability to prescribe medications, permission to touch private parts of the body) make some criminal opportunities more easily available and the related criminal conduct even more unacceptable.

Our analyses are limited by the amount of data provided by state reports of disciplined physicians. Some conviction-related orders may have been missed in the search of our database, as the state board or federal agency may not have indicated that a criminal offense was a

cause of the order. In addition, there may be criminal convictions not discovered by state boards and therefore not the subject of board discipline at all. Therefore, we have most likely underestimated the amount of disciplinary activity against physicians for conviction-related offenses. Conversely, much criminal activity goes undetected.

Some offenses in the notes field did not appear in the offense field. Of the 2,903 entries, 1,109 (38 percent) included more than one offense, including non-criminal ones. It was not clear in all cases whether the physician was punished primarily for the criminal conduct, for another offense described in the narrative, or for all the offenses taken together. It is likely, however, that criminal convictions would have played a major role in determining discipline. This limitation could have led to an over-estimation of the severity of discipline applied in criminal cases.

The U.S. Congress authorized the National Practitioner Data Bank (NPDB) in 1986 "to prevent incompetent practitioners from moving state to state without disclosure or discovery of previous damaging or incompetent performance."[14] After data for this paper were collected, information in the NPDB became available online at http://www.npdb-hipdb.com. However the NPDB is prohibited from divulging information on individual practitioners to the general public; only state licensing boards, hospitals, professional societies or health care organizations have access to the NPDB. In addition, NPDB public data files provide information on actions and offenses for a given entry, but do not provide identifying information such as specialty and major professional activity (e.g., patient care, research, administrative).

Notwithstanding the limitations in this study, our study does show that physicians engage in criminal activity and that this activity often involves patients. Patient protections may be significantly enhanced through increased scrutiny of physicians at various points in the licensure and certification process. In addition, open public hearings and public disclosure of information related to medical board deliberations on disciplinary actions would likely lead to stronger disciplinary actions.

States should apply stiffer penalties for physicians who are found to have broken the law. Possible improvements include a uniform licensing and disciplinary system with an interstate tracking system (within the limits imposed by variations in state laws) preventing the movement of disciplined physicians between jurisdictions and "under

[14] U.S. Dep't of Health & Human Servs., National Practitioner Data Bank, http://www.npdb-hipdb.com/timeline.html (last visited Feb. 25, 2005).

the radar."[15] Perhaps a national licensing system or a shared licensing data system among states, with strict data controls and uniform national guidelines for enforcement, would further alleviate this problem.

The ability of some physicians to escape significant punishment and continue practice stems from the inconsistencies in state-level regulation of physicians that have been demonstrated elsewhere.[16] Law enforcement agencies should be required to report criminal convictions to state medical boards so that boards are informed of such activity that may warrant disciplinary action, and medical boards should police self-reported physician "profiles" available on many state medical board websites, which do not always contain all disciplinary actions. At a minimum, states should provide more resources for the disciplinary review of physicians accused of criminal conduct.

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[15] Editorial, *Towards a Global Partnership to Prevent Misconduct*, 356 LANCET 351, 351 (2000).

[16] Sidney M. Wolfe & Peter Lurie, *Ranking of the Rate of State Medical Boards' Serious Disciplinary Actions in 2003*, Public Citizen Health Research Group HRG Publication #1696, Apr. 14, 2004, *available at* http://www.citizen.org/publications/release.cfm?ID=7308.

Table 1. U.S. Criminal Convictions of Physicians, 1990-1999.

Year	No. of entries related to convictions	No. of orders related to convictions	Average no. of orders per entry	Total no. of entries (both conviction- and non-conviction-related) in database[17]	Conviction-related entries as % of total entries§§[18]	No. of physicians associated with conviction-related entries	Number of entries with severe orders (% of conviction-related entries)	Physicians disciplined for criminal activity as % of all physicians	Avg. no. of entries per physician disciplined for criminal activity	Avg. no. of orders per physician disciplined for criminal activity[19]
1990	266	310	1.17	2631	10.11%	248	116 (43.6)	0.0403%	1.07	1.25
1991	254	314	1.24	2391	10.62%	239	137 (53.9)	0.0377%	1.06	1.31
1992	276	348	1.26	2403	11.49%	253	162 (58.7)	0.0387%	1.09	1.38
1993	280	350	1.25	2699	10.37%	249	159 (56.8)	0.0371%	1.12	1.41
1994	347	424	1.22	3465	10.01%	321	221 (63.7)	0.0469%	1.08	1.32
1995	343	416	1.21	3547	9.67%	307	227 (66.2)	0.0426%	1.12	1.36
1996	294	353	1.20	3657	8.04%	263	195 (66.3)	0.0356%	1.12	1.34
1997	300	345	1.15	3421	8.77%	284	169 (56.3)	0.0375%	1.06	1.21
1998	271	321	1.18	3439	7.88%	250	178 (65.7)	0.0321%	1.08	1.28
1999	272	319	1.17	3384	8.04%	246	154 (56.6)	0.0308%	1.11	1.30
Overall[20]	2903	3500	1.21	31037	9.35%	2247	1718 (59.2)	0.3188%	1.29	1.56

[17] $p<.01$ for linear regression of total entries on year.

[18] $p<.005$ for chi-square test of actual % conviction-related entries compared to expected total.

[19] Data for total number of physicians obtained from the following sources: Gene Roback et al., Am. Med. Ass'n, Physician Characteristics and Distribution in the U.S. 8 (1990 ed. 1990); Gene Roback et al., Am. Med. Ass'n, Physician Characteristics and Distribution in the U.S. 8 (1992 ed. 1992); Gene Roback et al., Am. Med. Ass'n, Physician Characteristics and Distribution in the U.S. 8 (1993 ed. 1993); Gene Roback et al., Am. Med. Ass'n, Physician Characteristics and Distribution in the U.S. 10 (1994 ed. 1994); Lillian Randolph et al., Am. Med. Ass'n, Physician Characteristics and Distribution in the U.S. 10 (1995-96 ed. 1996); Lillian Randolph et al., Am. Med. Ass'n, Physician Characteristics and Distribution in the US 10 (1996-1997 ed. 1997); Lillian Randolph, Am. Med. Ass'n, Physician Characteristics and Distribution in the US 9 (1997-1998 ed. 1998); Thomas Pasko & Bradley Seidman, Am. Med. Ass'n, Physician Characteristics and Distribution in the US 9 (1999 ed. 1999); Thomas Pasko et al., Am. Med. Ass'n, Physician Characteristics and Distribution in the US 323 (2000-2001 ed. 2000); Thomas Pasko & Bradley Seidman, Am. Med. Ass'n, Physician Characteristics and Distribution in the US 316 (2002-2003 ed. 2002). For 1991, we used the average of 1990 and 1992. To calculate the average number of physicians between 1990 and 1999, we added yearly totals and divided by 10.

[20] Because one physician may have an action taken against them more than once in each year and in more than one year, number of physicians in this row are based on unduplicated physicians for the ten-year period.

Table 2. Percentage of entries receiving severe orders by offense and year.

Offense	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Totals
Rape, sexual assault, sexual misconduct, indecency with a child, public indecency or any sex-related conviction	77.8	94.1	100.0	87.5	97.0	95.2	100.0	100.0	94.7	88.9	**93.6**
Murder, manslaughter, or involuntary manslaughter convictions	100.0	100.0	100.0	75.0	100.0	100.0	75.0	100.0	100.0	100.0	**93.1**
Any prescribing violations as well as any use, possession, or distribution of controlled dangerous substance convictions	36.0	63.8	65.8	58.8	63.0	67.3	77.9	70.8	83.7	72.9	**64.0**
Medicare, Medicaid or insurance fraud	27.5	19.8	30.9	33.7	36.4	48.5	28.4	33.7	36.9	27.6	**32.8**
Alcohol, including public drunkenness, driving under the influence (DUI), or any other alcohol-related conviction	100.0	100.0	100.0	100.0	100.0	90.0	100.0	80.0	76.9	71.4	**88.1**
Practicing without a license	--	--	--	0.0	--	66.7	--	--	100.0	--	**60.0**
Income tax evasion, failure to file income taxes, or any tax-related conviction	66.7	85.7	100.0	54.5	57.1	83.3	90.0	87.5	69.2	77.8	**76.5**
Criminal misconduct such as theft, bribery, forgery, disorderly conduct, unspecified fraud	70.0	70.0	70.0	50.0	100.0	88.2	84.2	72.7	84.6	79.2	**78.5**
Criminal misconduct related to the practice of medicine such as assisting an unlicensed person to practice medicine, fraudulent misrepresentations, conspiracy to receive kickbacks, altering or falsifying medical records and failure to report suspected child abuse	57.1	56.3	60.0	65.2	50.0	53.8	62.5	44.1	56.5	44.0	**54.5**
Convictions not described above or those left unspecified	61.8	68.8	82.0	82.1	69.6	78.7	82.2	56.6	76.9	70.6	**72.8**
Overall[21]	**43.6**	**53.9**	**58.7**	**56.8**	**63.7**	**66.2**	**66.3**	**56.3**	**65.7**	**56.6**	**59.2**

[21] Linear regression for total percentages over ten-year time period was not significant (p=0.46).

Table 3. Most severe disciplinary orders given to physicians with each conviction-related entry. Percent figures in columns 2-8 represent offense-specific row percentages. Percent figures in column 9 are column percentages.

Offense	Revocation (%)	Surrender	Suspension	Emergency suspension	Probation	Restriction	No serious action or not indicated	Total Entries	Physicians[22]
Rape, sexual assault, sexual misconduct, indecency with a child, public indecency or any sex-related conviction	69 (40.4%)	22 (12.9%)	29 (17.0%)	16 (9.4%)	22 (12.9%)	2 (1.2%)	11 (6.4%)	171 (5.9%)	153 (6.8%)
Murder, manslaughter, or involuntary manslaughter convictions	20 (69.0%)	2 (6.9%)	3 (10.3%)	1 (3.4%)	1 (3.4%)	0 (0.0%)	2 (6.9%)	29 (1.0%)	25 (1.1%)
Any prescribing violations as well as any use, possession, or distribution of controlled dangerous substance convictions	161 (19.3%)	36 (4.3%)	178 (21.3%)	73 (8.7%)	84 (10.0%)	2 (0.2%)	301 (36.2%)	835 (28.8%)	649 (28.9%)
Medicare, Medicaid and insurance fraud	94 (11.1%)	39 (4.6%)	77 (9.1%)	11 (1.3%)	56 (6.6%)	2 (0.2%)	571 (67.2%)	850 (29.3%)	730 (32.5%)
Alcohol, including public drunkenness, driving under the influence (DUI), or any other alcohol-related conviction	10 (14.9%)	5 (7.5%)	10 (14.9%)	5 (7.5%)	29 (43.3%)	0 (0.0%)	8 (11.9%)	67 (2.3%)	60 (2.7%)
Practicing without a license	0 (0.0%)	0 (0.0%)	1 (20.0%)	0 (0.0%)	2 (40.0%)	0 (0.0%)	2 (40.0%)	5 (0.2%)	5 (0.2%)
Income tax evasion, failure to file income taxes, or any tax-related conviction	14 (16.5%)	6 (7.1%)	20 (23.5%)	5 (5.9%)	20 (23.5%)	0 (0.0%)	20 (23.5%)	85 (2.9%)	74 (3.3%)
Criminal misconduct such as theft, bribery, forgery, disorderly conduct, unspecified fraud	40 (27.8%)	10 (6.9%)	38 (26.4%)	0 (0.0%)	25 (17.4%)	0 (0.0%)	31 (21.5%)	144 (5.0%)	138 (6.1%)
Criminal misconduct related to the practice of medicine such as assisting an unlicensed person to practice medicine, fraudulent misrepresentations, conspiracy to receive kickbacks, altering or falsifying medical records and failure to report suspected child abuse	26 (10.7%)	15 (6.2%)	44 (18.2%)	12 (5.0%)	33 (13.6%)	2 (0.8%)	110 (45.5%)	242 (8.3%)	235 (10.5%)
Convictions not described above or those left unspecified	127 (26.7%)	24 (5.1%)	89 (18.7%)	26 (5.5%)	77 (16.2%)	3 (0.6%)	129 (27.2%)	475 (16.4%)	440 (19.6%)
Totals	**561 (19.3%)**	**159 (5.5%)**	**489 (16.8%)**	**149 (5.1%)**	**349 (12.0%)**	**11 (0.4%)**	**1185 (40.9%)**	**2903 (100%)**	**2247[23]**

[22] Since a physician may be found in more than one disciplinary entry, physicians are categorized in this column by the most severe order received.

[23] This total does not equal the sum of the column because one physician may be associated with more than one entry.

Table 4. Number of conviction-related entries by offense and patient or health system involvement. Percent figures in columns 2-4 indicate row percentages.

Offense	Involves Patients	Involves Health System Only[24]	Neither	Totals
Rape, sexual assault, sexual misconduct, indecency with a child, public indecency or any sex-related conviction	69 (40.4%)	4 (2.3%)	98 (57.3%)	**171**
Murder, manslaughter, or involuntary manslaughter convictions	4 (13.8%)	0 (0.0%)	25 (86.2%)	**29**
Any prescribing violations as well as any use, possession, or distribution of controlled dangerous substance convictions	835 (100.0%)	0 (0.0%)	0 (0.0%)	**835**
Medicare, Medicaid or insurance fraud	0 (0.0%)	850 (100.0%)	0 (0.0%)	**850**
Alcohol, including public drunkenness, driving under the influence (DUI), or any other alcohol-related conviction	15 (22.4%)	4 (6.0%)	48 (71.6%)	**67**
Practicing without a license	5 (100.0%)	(0.0%)	0 (0.0%)	**5**
Income tax evasion, failure to file income taxes, or any tax-related conviction	5 (5.9%)	2 (2.4%)	78 (91.8%)	**85**
Criminal misconduct such as theft, bribery, forgery, disorderly conduct, unspecified fraud	9 (6.3%)	18 (12.5%)	117 (81.3%)	**144**
Criminal misconduct related to the practice of medicine such as assisting an unlicensed person to practice medicine, fraudulent misrepresentations, conspiracy to receive kickbacks, altering or falsifying medical records and failure to report suspected child abuse	242 (100.0%)	0 (0.0%)	0 (0.0%)	**242**
Convictions not described above or those left unspecified	84 (17.7%)	75 (15.8%)	316 (66.5%)	**475**
Totals	**1268 (43.7%)**	**953 (32.8%)**	**682 (23.5%)**	**2903**

[24] As described in the Methods section, this column only includes those entries that do not involve patients.