Training Matters: A Retrospective Study of Physician Disciplinary Actions by the Louisiana State Board of Medical Examiners, 1990–2010

Susan H. Allen, DrPH, MBA; Robert L. Marier, MD, MHA;
Cecilia Mouton, MD; Arti Shankar, PhD

ABSTRACT: Currently, the majority of medical boards require only one year of post-graduate training (PGT) for full and unrestricted licensure. This study analyzes the association between years of PGT, board certification and the risk of being disciplined by the Louisiana State Board of Medical Examiners (LSBME) to assess whether training requirements for physician licensure in Louisiana should be revised. 624 physicians who were sanctioned between 1990 and 2010 were compared to a random sample of 6,552 physicians who were not disciplined during the study period. Statistical methods included chi-squared tests of independence and logistic regression analysis. After controlling for demographics, specialty, years of training, board certification status and changing training requirements over time, physicians who had completed more than one year but less than three years of PGT were more than twice as likely to be disciplined (O.R. 2.24, $p<.005$), while non board-certified physicians were more than four times as likely to be disciplined (O.R. 4.64, $p<.0001$). Of all physicians sanctioned for findings of substandard practices/medical incompetency, 21% had fewer than three years PGT, and 46% of physicians with less than three years training were sanctioned for this reason. Our study indicates that physicians who do not complete a minimum of three years post-graduate training are more likely to be the subject of a disciplinary action, and that these physicians are more likely to be sanctioned for competency/standards-related issues. Because medical knowledge and training expectations have increased over time, licensing authorities may want to delay full licensure status until applicants have had a minimum of three years PGT in an ACGME or AOA-accredited training program.

Introduction

One of the primary duties of a medical licensing board is to examine candidates for licensure to assure the public that the physicians practicing medicine under its jurisdiction are qualified and competent to do so. Since 1993, the Louisiana State Board of Medical Examiners (LSBME) has required, as do 32 other physician licensing boards in this country, successful completion of a minimum of one year of post-graduate training (internship-PGY 1) as a condition of initial licensure. In Louisiana, physicians who graduate from non-US or Canadian medical schools are required to complete a minimum of three years of post-graduate training (PGT) in a residency program accredited by the Accreditation Council for Graduate Medical Education (ACGME) or the American Osteopathic Association (AOA). The experience of Board staff over many years suggested an association between physicians who did not complete a residency program and a higher risk of disciplinary action. This study was designed to test the hypothesis that there was such an association.

Every year a small percentage of the physician population is sanctioned by the 70 medical licensing boards in the United States and its territories.[1] Recent studies have examined the association of medical specialty, degree type, specialty board certification status, years in practice, gender, and behaviors during residency training with the risk of sanctions.[2-10] This study examines the association of these variables (excepting degree type) as well as years of post-graduate training with the risk of being disciplined, in order to provide information that may be used by medical boards and to inform public policy on the requirements for physician licensure.

THE EXPERIENCE OF BOARD STAFF OVER MANY YEARS SUGGESTED AN ASSOCIATION BETWEEN PHYSICIANS WHO DID NOT COMPLETE A RESIDENCY PROGRAM AND A HIGHER RISK OF DISCIPLINARY ACTION.

Copyright 2016 Federation of State Medical Boards. All Rights Reserved.

Methods

Data and classifications

The data consists of disciplinary and other information on physicians who were licensed by the LSBME from 1990 to 2010. The 652 physicians who were publicly sanctioned during the period were originally compared to a non-sanctioned sample of 6,977 physicians who were licensed in Louisiana at the same time. Physicians given a letter of concern or confidential counseling were not included in this analysis. Physicians sanctioned during residency, physicians presumed to be still in residency, and observations with missing data were dropped from the analysis. The final analyses utilized 624 sanctioned and 6,552 non-sanctioned physicians for a total of 7,176 observations. The study protocol was approved for exemption by the Institutional Review Board of the Louisiana State University Health Sciences Center.

ACCESS TO PROPRIETARY INVESTIGATION AND LICENSING FILES ALLOWED US TO ASCERTAIN THAT 9.5% OF THE 652 PHYSICIANS SANCTIONED DURING THE PERIOD HAD NOT COMPLETED A RESIDENCY PROGRAM.

The data were extracted from the board's licensing and investigation files and merged with training and certification information from the AMA Master Datafile obtained in December 2011. Using information from proprietary board files, the American Board of Medical Specialties, and practice-specific websites, training information was verified before the data was de-identified.

Access to proprietary investigation and licensing files allowed us to ascertain that 9.5% of the 652 physicians sanctioned during the period had not completed a residency program (8.7% of the physicians who were eventually included in the analysis). We used a minimum of three years PGT for the 6,977 physicians in the non-sanctioned group as a proxy for residency completion. The three-year minimum was selected because that is what is required to complete an accredited residency program in Internal Medicine, the largest physician specialty, and because the Federation of State Medical Boards (FSMB) endorses a minimum of three years PGT for full and unrestricted licensure.[11] Physicians in the non-sanctioned group with less than three years PGT were further reviewed with respect to self-reported specialty and years of training—observations with seeming inconsistencies (i.e., a self-described surgeon with only internship training) were verified before de-identification took place. It is important to note that while completion of an ACGME or AOA residency is now required to be board eligible, this was not always the case. Pathways to board eligibility for various specialties have changed over the years.[12-15]

A power calculation was performed to ascertain how large the non-sanctioned sample should be in order to obtain a confidence interval of 95%. This analysis indicated that a 10:1 ratio of non-sanctioned to sanctioned physicians would be sufficient for the analysis. All non-sanctioned physicians from the study period were stratified by self-declared primary specialty and randomly sampled to create a comparison group. LSBME data contained 108 different self-designated specialties, which were reclassified into the basic categories in Table 1. Different types of surgeons were classified as such, pediatric and adult non-surgical specialists were classified as medical specialists. The many kinds of pathologists and radiologists, those self-described as practicing legal medicine, administration and other specialties that do not spend the majority of their time with patients were classified as "non-prescribe/other. Because Doctors of Osteopathy (DOs) represent less than 2% of the entire Louisiana physician population as well as the sample population, degree type (MD/DO) was not included in the study.

Normative changes over time

A control variable was created to reflect changes in medical training norms over time. This time variable classified physicians into four groups based on their year of graduation from medical school: before 1950, 1950–1976, 1977–1989, and 1990 or later. This variable was created to reflect changes in: 1) the required length of internal medicine and other common residencies accredited by the ACGME; 2) pathways to board eligibility; and 3) modifications in hospital accreditation policies and training and certification expectations brought about by managed care.[12-19]

Statistical methods

The data was divided into two groups based on disciplinary status by the LSBME. The groups are described in demographic variables as well as other covariates: international medical graduate (IMG) status, specialty, graduation year by category, years of post-graduate training, and board certification

Copyright 2016 Federation of State Medical Boards. All Rights Reserved.

(Table 1). All covariates were plotted against each other to check for multicollinearity. Bivariate associations between the response variables (years of PGT and board certification) and relevant covariates were assessed through chi-square tests of independence using STATA 12. Binomial logistic regression was used to develop predictive models for disciplinary action. Disciplinary actions were further categorized by specific cause of action for substandard practices/medical incompetency, commission of a crime, fraud/lying, improper prescribing, and substance abuse.

Over-dispersion was tested through the Deviance and Pearson tests and statistical adjustments were performed to account for heteroscedasticity and to assure goodness of fit. These tests as well as those for multicollinearity and regression analyses were performed using SAS 9.3.

Results

Overall 652 of 29,728 (2.2%) physicians licensed between 1990 and 2010 were disciplined, of whom 624 were eventually included in this analysis.

Table 1
Characteristics of Physicians in the Study, 1990–2010

	Sanctioned n=624 (%)	Non-sanctioned n=6,552 (%)	All Licensed N=29,728
Sex			
Male	542 (87)	5,067 (77)	22,797 (77)
Female	82 (13)	1,485 (23)	6,790 (23)
Age at first sanction			
<40	102 (16)	—	—
40–60	397 (64)	—	—
>60	125 (20)	—	—
Race/ethnicity			
White/non-Hispanic	495 (79)	5,083 (78)	22,091 (77)
Other	129 (21)	1,469 (22)	7,637 (23)
Medical School			
International Graduate	75 (12)	1,071 (16)	Data Incomplete
US Graduate	549 (88)	5,481 (84)	Data Incomplete
Self-Designated Specialty			
Internal Medicine	97 (16)	634 (10)	5,219 (20)
General Practice	50 (8)	172 (3)	350 (1)
Pediatrics (non-specialist)	18 (3)	421 (6)	2,227 (9)
Family Medicine	94 (15)	487 (7)	2,349 (9)
Obstetrics & Gynecology	50 (8)	417 (6)	1,352 (5)
Psychiatry	58 (9)	339 (5)	1,356 (5)
Anesthesiology	18 (3)	334 (5)	1,308 (5)
Emergency Medicine	32 (5)	284 (5)	1,107 (4)
Surgeon	96 (15)	1,124 (17)	4,604 (17)
Other/non-prescribe	34 (6)	763 (12)	2,911(11)
Medical specialists	77 (12)	1,577 (24)	3,569(14)
Med School Grad Year			
Before 1950	20 (3)	247 (4)	Data Incomplete
1950–1976	260 (42)	1849 (28)	Data Incomplete
1977–1989	242 (39)	2047 (31)	Data Incomplete
1990–2007	102 (16)	2409 (37)	Data Incomplete
Years of training <3	79 (13)	268 (4)	Data Incomplete
Board Certification			
Certified	335 (54)	5,510 (84)	Data Incomplete
Not Certified	289 (46)	1,042 (16)	Data Incomplete

Note: Not all data was available for all physicians who were licensed during the period in terms of graduation year or IMG status, because of changes in the LSBME database. Verifiable Board Certification status was requested only for physicians in the sample. Percentages have been rounded.

Copyright 2016 Federation of State Medical Boards. All Rights Reserved.

Although only 347 (4.8%) of physicians in the study had fewer than three years of post-graduate training, 23% of this group was disciplined by the board, compared to 8% of those with 3+ years of PGT. Of the sanctioned group, 8.7% had not completed a residency program. The demographic and other characteristics of the sanctioned, non-sanctioned and "all licensed" groups are presented in Table 1.

Causes of action and disciplinary history

Table 2 lists the predominant reasons why Louisiana physicians were subject to disciplinary action after violating one or more of the 31 provisions of the Medical Practice Act (MPA). Two thirds of the sanctioned physicians had only one formal board action during the study period, 22% had two actions, 6% had three, and approximately 5% of the sanctioned study subjects had four or more. One third of the sanctioned physicians lost their license and ability to practice medicine either immediately through revocation or voluntary surrender (22%) or eventually (11%) as a result of being disciplined by the board. Revocations are typically reserved for the most egregious violations of the MPA, but are also used in those cases where a physician continues to engage in behaviors that violate the MPA after previous board actions. Sanctioned physicians with less than three years PGT were significantly ($p<.05$) more likely to lose their licenses than physicians with more training. This could mean that physicians with less training may be less likely to have the skills or wherewithal to correct the deficiency which caused them to be disciplined.

SANCTIONED PHYSICIANS WITH LESS THAN THREE YEARS PGT WERE SIGNIFICANTLY MORE LIKELY TO LOSE THEIR LICENSES THAN PHYSICIANS WITH MORE TRAINING.

Table 2
Common Causes of Disciplinary Actions

Cause of Action	N=624 no. (%)
Improper prescribing	222 (36)
Substance abuse	216 (35)
Failure to meet standards of practice	171 (27)
Incompetence	117(19)
Fraud/lying	163 (26)
Unprofessional conduct	143 (23)
Mental health not related to substance abuse	99 (16)
Committed crime	74 (12)
Sexual/boundary violation	60 (10)

Percentages have been rounded.

Half of the physicians in the study who were sanctioned for improper prescribing were also sanctioned for violating practice standards, as set forth in Louisiana's "pain rules"[20] enacted in 1998. Approximately one third of the physicians sanctioned for improper prescribing were also involved in drug diversion. Of the 216 physicians disciplined for substance abuse, 119 of them (55%) were sanctioned because of a relapse in the use of one or more substances.

The adjusted odds ratios (OR) associated with being sanctioned after controlling for demographics, time and specialty characteristics are presented in Table 3. Because of the strong association between years of PGT and board certification status ($p<.0001$) two separate models were run with the same covariates. In both Model 1 and Model 2, male sex (OR 1.64, $p<.0008$; OR 1.78, $p<.0001$) was significantly associated with being disciplined, while practicing as a pediatrician, a surgeon, a medical subspecialist or in a non-prescribing specialty such as pathology was not. Physicians with less than three years of PGT (OR 1.74, $p<.01$) or those who were never board certified (OR 4.24, $p<.0001$) were significantly more likely to be sanctioned.

A categorical variable for graduation year was included in all models to adjust for changes in medical training expectations over time. As expected this was found to be a significant predictor of the likelihood of sanction for physicians graduating between 1950 and 1989. Physicians graduating before 1950 served as the control group. Those graduating in 1990 or later were not as likely to be sanctioned as the study period began in that year. The average age at first sanction was 51, with a range from 29–87; average years in practice was 23.6. As many previous studies have found, most physicians are sanctioned after having been in practice for at least 20 years or more.[2,3,5,7,21,22] In many cases, it takes years for a pattern of behavior to emerge that would initiate disciplinary action,[21] or for substance-use disorders and the resulting impairment to develop and become problematic.[23] Interestingly, the average age at first sanction was higher for those with less training, (58 compared to 49), which was not expected. This finding

Copyright 2016 Federation of State Medical Boards. All Rights Reserved.

Table 3

Association between Residency Completion, Board Certification and Disciplinary Action

Characteristic	Model 1 <3 Years PGT Adjusted Odds Ratios, (95% CI)	P value	Model 2 No Board Certification Adjusted Odds Ratios, (95% CI)	P value
Sex				
Male	1.64 (1.23-2.19)	.0008	1.78 (1.35-2.36)	<.0001
Female*	–	–	–	–
Medical School				
INT Graduate	0.63 (0.45-0.88)	.NS	0.60 (0.43-0.82)	<.0012
US Graduate*	—	—	—	—
Self-Designated Race/Ethnicity				
Other	1.31(1.00-1.72)	NS	1.15 (0.88-1.50)	NS
White, Non-Hispanic*	—	—	—	—
Self-Designated Specialty				
Family Medicine	1.18 (0.82-1.69)	NS	1.47 (1.02-2.10)	.0343
Psychiatry	1.06 (0.71-1.60)	NS	0.97 (0.64-1.45)	NS
General Practice	1.06 (0.64-1.76)	NS	0.70 (0.45-1.10)	NS
OBGYN	0.72 (0.47-1.09)	NS	0.84 (0.56-1.28)	NS
Emergency Med	0.68 (0.41-1.11)	NS	0.74 (0.46-1.21)	NS
Surgery	0.49 (0.35-0.70)	<.0001	0.61 (0.43-0.86)	.0050
Pediatrics	0.31 (0.17-0.55)	<.0001	0.40 (0.22-0.71)	.0019
Anesthesiology	0.32 (0.18-0.58)	.0002	.038 (0.21-0.68)	.0011
Other/non prescribe	0.28 (0.17-0.44)	<.0001	0.36 (0.23-0.56)	<.0001
Medical specialist	0.31 (0.22-0.45)	<.0001	0.41 (0.30-0.60)	<.0001
Internal Medicine*	—		—	
Med School Grad Year				
Before 1950*	2.30 (1.32-4.01)	.0032	2.63 (1.54-4.50)	.0004
1950–1976	2.23 (1.26-3.93)	.0056	3.01(1.74-5.21)	<.0001
1977–1989	0.79 (0.44-1.44)	NS	0.95 (0.54-1.69)	NS
1990–2007	100 (4)	367 (15)	846 (34)	1188 (48)
Years of Training				
<3 Years of Training	1.74 (1.18-2.56)	.0053	—	
More than 3 years*	—	—	—	—
Board Certification				
Not Certified	—	—	4.24 (3.44-5.24)	<.0001
Certified*	—	—	—	—

*= statistical reference group

may be more a function of what types of practice settings physicians with less training were able to pursue with fewer qualifications. General Practice settings involve the management of patients with lower levels of acuity and complexity. In addition, because residency completion is *de rigueur* in more recently licensed cohorts, physicians disciplined during this study period with less training would probably be older.

A closer look at changes in training expectations and norms over time supports our hypothesis regarding the relationship between years of training and the likelihood of sanction. Not surprisingly, physicians graduating from medical school before 1950 were somewhat less likely to have completed three years of PGT — 26% of study physicians in this category had not done so. These numbers decline to 9% for those who graduated between 1950–1976, 3% of those graduating between 1977 and 1989, and only 1% of those who graduated in 1990 or later.

The increase in numbers of physicians with 3+ years PGT over time is not surprising given the growth of medical knowledge, medical specialization, and related training expectations. What is unexpected is what the frequencies showed when we compared

Copyright 2016 Federation of State Medical Boards. All Rights Reserved.

sanctioned and unsanctioned physicians over time. Only 12% of physicians who graduated before 1950 with fewer than three years PGT were sanctioned, and the association between PGT and likelihood of sanction was not significant for that group of physicians. For the three more recent graduation periods in the study, significant relationships were found between less training and being disciplined. More importantly, the percentage of physicians with less training who were sanctioned remained constant: 25%, 27% and 25%. Lack of residency completion in recent cohorts of physicians in training is increasingly unusual. As expectations increased for a greater number of years in training, one quarter of those with less than three years PGT were sanctioned.

MODEL 3 EXPANDS THE PGT VARIABLE INTO FOUR LEVELS: COMPLETION OF INTERNSHIP ONLY; COMPLETION OF AT LEAST TWO BUT LESS THAN THREE YEARS OF PGT; COMPLETION OF THREE YEARS OF PGT; AND COMPLETION OF FOUR OR MORE YEARS OF PGT.

In Table 4, we further scrutinized physicians who did not complete three years PGT. Model 3 expands the PGT variable into four levels: completion of internship only; completion of at least two but less than three years of PGT; completion of three years of PGT; and completion of four or more years of PGT. When we used this more specific model to fit the data, an interesting result emerged: physicians who completed one year but less than three were more than twice as likely to be sanctioned (OR 2.64, p<.005). Physicians with one year of training were 8.6% of the sanctioned group but only 3% of the non-sanctioned, while those with two but less than three years were 4.6 % compared to less than 1% of the comparison group. It is worth noting that although the number of physicians with two but less than three years training is small (89 physicians), 28% of them were sanctioned. Of the 258 physicians who completed only an internship year, 54 (21%) of them were sanctioned.

Table 4

Association between Years of Post-graduate Training and Disciplinary Action — 4 levels

Characteristic	Model 3 Years of Training, 4 Levels Adjusted Odds Ratios, (95% CI)	P value
Sex		
Male	1.65 (1.22-2.23)	.0011
Female*	—	—
Medical School		
INT Graduate	0.63 (0.44-0.89)	.0092
US Graduate*	—	—
Self-Designated Race/Ethnicity		
Other	1.31 (0.98-1.74)	NS
White, Non-Hispanic*	—	—
Self-Designated Specialty		
Family Medicine	1.21 (0.82-1.77)	NS
Psychiatry	1.06 (0.69-1.63)	NS
General Practice	1.08 (0.64-1.85)	NS
OBGYN	0.72 (0.46-1.12)	NS
Emergency Med	0.69 (0.41-1.16)	NS
Surgery	0.49 (0.34-0.72)	.0003
Pediatrics	0.31 (0.17-0.57)	.0002
Anesthesiology	0.32 (0.17-0.59)	.0003
Other/non prescribe	0.28 (0.17-0.45)	<.0001
Medical specialist	0.31 (0.21-0.46)	<.0001
Internal Medicine*	—	
Med School Grad Year		
Before 1950*	—	
1950–1976	2.33 (1.30-4.16)	.0043
1977–1989	2.25 (1.24-4.08)	.0075
1990–2007	0.80 (0.43-1.49)	NS
Years of Training		
More than 3 years*	—	—
3 years	1.00 (0.73-1.36)	NS
2–<3 years	2.64 (1.42-4.93)	.0022
Internship only	1.46 (0.91-2.34)	NS

*= statistical reference group

Cause of sanction for physicians with less training

Further scrutiny of the physicians with only one or two years of training showed that these physicians were more likely to be sanctioned for issues pertaining to medical competency or violating standards of practice and for improper prescribing than physicians with more training. Of the 222 physicians who were sanctioned for improper prescribing, 18% had fewer than three years PGT. Of the 172 physicians disciplined for issues pertaining to incompetence/substandard practices, 21% of them had fewer than three years PGT. Conversely, of the 79 sanctioned physicians with fewer than three years PGT, 51% were sanctioned for improper prescribing, and 46% were sanctioned for incom-

Copyright 2016 Federation of State Medical Boards. All Rights Reserved.

petency. Physicians with less training were substantially overrepresented compared to their proportion in the general physician population when analyzing two very important causes of disciplinary action. Years of PGT was not significantly associated with the likelihood of being sanctioned for substance abuse.

Issues during post-graduate training

Of the 652 physicians who were disciplined during the study period, 52 (8%) of them had difficulties while completing or attempting to complete a residency training program. Issues included a delay of completion for personal reasons, a disciplinary issue of any kind from the training program, or problems with substance abuse that were noted in some of their investigations files, but for which they were not sanctioned. Twenty-eight of those who had complications during residency were in fact disciplined by the board during their training, and were later dropped from the study after a sensitivity analysis was performed. The remaining 24 physicians were sanctioned when they were first licensed in Louisiana because of reciprocal sharing of data: specifically, issues were reported from other state medical boards that caused the LSBME to put a temporary restriction on their licenses in the form of one to three years of probation before granting them full and unrestricted licensure. Of these 24 individuals, 15 were later sanctioned for substance abuse issues, six for improper prescribing, eight for lying about previous problems in training, three for unprofessional conduct and four for professional competency or standards of practice violations — some for a combination of these.

33 OF THE 50 STATES IN THE U.S. REQUIRE ONLY A ONE-YEAR INTERNSHIP AS A TRAINING REQUIREMENT FOR FULL AND UNRESTRICTED LICENSURE.

Role of other state boards

One quarter of all physicians disciplined by the LSBME were sanctioned in response to an action from another state board. The most common reason that physicians were disciplined in this category pertained to fraud or lying (37%) — most of those because doctors failed to report previous actions from other states on their application for Louisiana licensure. Of the other physicians whose action by another board was tracked by Louisiana, 30% pertained to professional competency or violation of practice standards, 26% involved substance abuse, 23% pertained to improper prescribing, 14% referred to a substance abuse relapse, and 8% were sanctioned for committing a crime.

Discussion

Completion of a residency training program is the norm for physicians in the United States today and is a requirement for board certification by the ABMS, AOA, as well as the credentialing department of many healthcare organizations.[19,24,25] Depending upon the specialty, at least three years of graduate medical education is required to complete an accredited residency program. Although the completion of an accredited residency is now an almost universal requirement for physicians in most professional appointments, 33 of the 50 states in the U.S. require only a one year internship as a training requirement for full and unrestricted licensure. Fourteen states require two years, two states require three years, and one state requires residency completion.[26]

The Accreditation Council on Graduate Medical Education states that "residency is an essential dimension of the transformation of the medical student to the independent practitioner along the continuum of medical education. It is physically, emotionally, and intellectually demanding, and requires longitudinally-concentrated effort on the part of the resident."[27] Residency programs involve a process that enables not only the acquisition and assessment of the knowledge and skills required to practice medicine, but also an assessment of personal attributes that are needed such as diligence, honesty, sensitivity to the needs of others, ability to communicate with patients and families of varying backgrounds and a willingness to place what is in the best interest of a patient ahead of other interests. These personal attributes may only be evaluated over time in the context of various types of experiences with patients.

Some medical educators have argued that objective competency measurements rather than training time *per se* should provide the basis for competency assessments.[28] Others have discussed the difficulty of assessing the competency of residents.[29] We agree that objective measurements are necessary, but would also argue that time matters as well. All of the required competencies and especially those that relate to personal attributes may only be learned and/or assessed over time in the context

Copyright 2016 Federation of State Medical Boards. All Rights Reserved.

of multiple and varied patient encounters under the supervision of faculty and more senior residents.

Although only 4.8% of the study subjects had less than three years PGT, 22.8% of them were sanctioned. We hypothesized that the greater the years of training, the lower the risk of disciplinary action. This hypothesis was generally true, with the exception of the small group of physicians with more than one but less than three years of training (Table 4). Currently, the relatively few physicians who begin medical practice after only an internship year may be in between programs or in transition if they were not able to match in a specialty residency program of choice, or in the military, or have financial issues.[24] Physicians who start a second year but do not finish a training program are uncommon and likely had health problems or other issues that delayed their progress and eventually affected their performance. Substance abuse and/or mental illness were frequent explanations for this scenario in the LSBME data. According to the ACGME's most recently released statistics, only 2% of residents did not graduate from their residency program,[30] indicating just how rare it is for physicians not to complete this phase of their training. Non-completion of residency training, besides curtailing the additional years of experiences and knowledge generated in the supervised training environment, may in some cases track physicians into lower earning and/or less desirable work settings in which they are tempted or pressured into improper prescribing schemes, fraudulent billing, or other behaviors that may lead to disciplinary action.

ACCORDING TO THE ACGME'S MOST RECENTLY RELEASED STATISTICS, ONLY 2% OF RESIDENTS DID NOT GRADUATE FROM THEIR RESIDENCY PROGRAM, INDICATING JUST HOW RARE IT IS FOR PHYSICIANS NOT TO COMPLETE THIS PHASE OF THEIR TRAINING.

Board Certification

Board certification status was arguably the most important variable in the analysis. As with previous studies,[4-8, 10,18] we found that physicians who had not attained initial board certification were significantly more likely to be the subject of a disciplinary action. In the general physician population in the United States and Louisiana, approximately 85–89% of all physicians have at least one board certification;[18] for more recent medical graduates the percentage may be higher.[19,31,32]

The study also found that certain physician specialties are under- represented in the sanctioned group; this was not our primary focus. Unlike some studies, we did not find that international medical graduates are more likely to be disciplined by the board when controlling for other characteristics. This may be because in Louisiana, IMGs (excepting those from LCME-accredited schools) are required to complete three years PGT in an accredited residency program as a condition of licensure.

It is clear that the effect of not achieving board certification is a stronger association than having fewer than three years of training. It is also undeniable that without a minimum of three years PGT for some of the more common specialties, board certification is currently not possible and was not possible for much of the study period. Not all physicians will seek certification and not all will pass the examinations when they do. But given the current training expectations in the U.S. and accompanying hiring practices, lack of residency completion in a recent graduate may signal that something is amiss, with few exceptions.

Moonlighting

Any discussion that contemplates changing training requirements for full licensure to a minimum of three years PGT inevitably leads to the topic of moonlighting by medical residents. It is certainly possible that a percentage of the physicians in our study who did not complete a residency began moonlighting for financial reasons, and then left their training programs. Before the 2011 ACGME-mandated changes in hourly work week limitations, there was presumably more moonlighting by physicians-in-training than currently occurs. The research literature on this subject since the ACGME policy changes is quite sparse. Although one recent article involving a survey of Family Medicine practitioners from two medical schools suggested that moonlighting was beneficial for the residents,[33] the article did not include issues of patient safety in terms of appropriate supervision and sufficient training for more complex cases. Far more telling on this issue is a 2001 article in which less than a quarter of emergency medicine residents surveyed would themselves want to be treated by one of their own in the case of a major injury or illness.[34] Another survey from 2000 depicts the association between amount of debt and likelihood of moon-

Copyright 2016 Federation of State Medical Boards. All Rights Reserved.

lighting, and also mentions that substantial numbers of the respondents were in violation of work hour regulations, while working solo in emergency rooms.[35] More systematic research on the quantity and quality of moonlighting residents, how many hours they spend moonlighting, and the results on patient care is greatly needed.

Study Limitations

The study does have various limitations. Any use of the AMA Master Datafile may include errors in the data. Extensive efforts using proprietary board files as well as outside sources were employed to correct this. Although we had complete access not only to the investigation files of physicians who were disciplined and to the investigating officers involved in most of the disciplinary actions, over a 20-year period the change in professional and social mores and the change in board members probably affected the consistency and severity of the disciplinary actions taken. In addition, the sanction rate for medical boards, in particular for more serious actions, is highly variable.[36] Although the most frequent causes of action are similar to other states mentioned in the literature,[2,5-8] our results may not be generalizable to the rest of the country.

...GIVEN THE CURRENT TRAINING EXPECTATIONS IN THE U.S. AND ACCOMPANYING HIRING PRACTICES, LACK OF RESIDENCY COMPLETION IN A RECENT GRADUATE MAY SIGNAL THAT SOMETHING IS AMISS, WITH FEW EXCEPTIONS.

Additionally, for physicians graduating from medical school prior to 1977, some Internal Medicine residencies had a two-year rather than a three-year accreditation requirement, which varied by individual program.[12] Other common specialties, such as Family Medicine, Pediatrics, and Emergency Medicine, also changed their residency requirements and pathways to board certification over the years, with all of them now requiring at least three years for completion.[13-15]

Conclusion

Physicians are disciplined by licensing authorities for many reasons that pertain to both personal and professional issues. Very few physicians are sanctioned by licensing authorities (<2% per year), and few of those physicians have less than three years of post-graduate training. It is also important to add that many physicians who entered practice during an era when it was not almost compulsory to complete a full residency may be excellent physicians.

The purpose of this study was to determine how years of training and board certification mattered with respect to the risk of being sanctioned by a state medical board. Limitations in the data used makes it difficult to say whether the training itself or other factors such as perseverance, sobriety or changing personal circumstances account for the associations we found. Accordingly we do not conclude that more training would make a difference for the individuals in question but only that persons with more training are less likely to be disciplined.

While we cannot attest to a causal relationship between less than three years of PGT, lack of residency completion or failing to achieve certification in a specialty and being sanctioned, we can say that individuals who lack these credentials are at greater risk of disciplinary action by licensing authorities than those who have them. While there may be a multiplicity of factors involved, physicians with less than three years of training were substantially over-represented in the group of disciplined physicians, compared to their numbers in the larger non-sanctioned comparison group. Given the increasing expectations of board certification for many physicians, and the requirement of board eligibility for most positions, licensing authorities may want to consider these findings when confronted with applicants without such achievements. In an era when greater levels of medical knowledge may be required for competent care, medical boards must be sure that physicians practicing independently with full licensure are able to practice medicine with the expected level of skill and safety to patients. ■

About the Authors

Susan H. Allen, DrPH, MBA, is Research Analyst at the Louisiana State Board of Medical Examiners and Adjunct Associate Professor at Tulane University School of Public Health and Tropical Medicine.

Robert L. Marier, MD, MHA, is Chairman, Department of Hospital Medicine, Ochsner Health System of Louisiana, New Orleans, LA, and served as Executive Director of the Louisiana State Board of Medical Examiners from 2006–2014.

Cecilia Mouton, MD, is Director of Investigations, Louisiana State Board of Medical Examiners.

Arti Shankar, PhD, is Clinical Associate Professor, Department of Biostatistics, Tulane University School of Public Health and Tropical Medicine.

Copyright 2016 Federation of State Medical Boards. All Rights Reserved.

Acknowledgements

The authors wish to thank Natalie Sparrow, MPH for her assistance in data collection and definition of variables for analysis; Ashley McEachern, MPH for her assistance in editing; Grace Hammons for answering many questions pertaining to individual case investigations; and Drs. Charles Hilton and Richard DiCarlo of the Louisiana State University School of Medicine for sharing their expertise in residency training and related issues.

The Louisiana State Board of Medical Examiners performed this research as part of its mission to protect the public's health and safety. The AMA provided raw data with no charge to the Board for research purposes.

References

1. Federation of State Medical Boards. *US Medical Regulatory Trends and Actions. http://www.fsmb.org/M*edia/Default/PDF/FSMB/Publications/us_medical_regulatory_trends_actions. Published May 2014. Accessed December 2014.
2. Cardarelli R, Licciardone JC. Factors associated with high-severity disciplinary action by a state medical board: A Texas study of medical license revocation. *J Am Osteopath Assoc.* 2006; 106(3):153-156.
3. Elkin KJ, Spitall MJ, Elkin DJ, Studdert DM. Doctors disciplined for professional misconduct in Australia and New Zealand, 2000-2009. *Med J Aust* 2011; 194(9):452-456.
4. Alam A, Lemensberg J, Griesman J, Bell CM. The characteristics of physicians disciplined by professional colleges in Canada. *Open Medicine,* 2011; 5(4): e166-e172.
5. Morrison J, Wickersham P. Physicians disciplined by a state medical board. *JAMA.* 1998; 279(23):1889-1893.
6. Khaliq AA, Dimassi H, Huang CY, Narine L, Smego RA Jr. Disciplinary action against physicians: who is likely to get disciplined? *Am J Med* 2005; 118(7):773-777.
7. Clay SW, Conatser RR. Characteristics of physicians disciplined by the State Medical Board of Ohio. *J Am Osteopath Assoc.* 2003; 103(2):81-88.
8. Kohatsu ND, Gould D, Ross LK, Fox PJ. Characteristics associated with physician discipline: a case-control study. *Arch Intern Med.* 2004; 164(6):653–658.
9. Papadakis MA, Arnold GK, Blank LL, Holmboe ES, Lipner RS. Performance during internal medicine residency training and subsequent disciplinary action by state licensing boards. *Ann Intern Med.* 2008; 148(11):869-876.
10. Lipner RS, Young A, Chaudhry HJ, Duhigg LM, Papadakis MA. Specialty Certification Status, Performance Ratings, and Disciplinary Actions of Internal Medicine Residents. *Acad Med.* 2016; 91(3):376-381.
11. Federation of State Medical Boards, 1998. Position of the Federation of State Medical Boards: In Support of Postgraduate Training and Licensure Standards. Euless, TX.
12. Personal communication with Michael Melfe, American Board of Internal Medicine, September 24, 2014.
13. American Board of Family Medicine. History and Requirements. Https://www.theabfm.org. Accessed September 25, 2014.
14. Personal communication with Christina Tisdale, American Board of Emergency Medicine, September 21, 2015.
15. American Board of Pediatrics. https://www.abp.org/content/general-pediatrics. Accessed September 18, 2015.
16. Cassel CK, Holmboe, ES. Professionalism and accountability: The Role of Specialty Board Certification. *Transactions of the American Clinical and Climatological Association*, 2008; 119, pp. 295-304.
17. American College of Graduate Medical Education. Chapter 2: A brief history of duty hours and resident education in *The ACGME 2011 Duty Hour Standards*. 2011. Chicago, IL: American College of Graduate Medical Education.
18. Jeffe DB, Andriole DA. Factors associated with American Board of Medical Specialties member board certification among US medical school graduates. *JAMA.* 2011; 306(9):961-970.
19. Xu G, Veloski JJ, Hojat M. Board certification: associations with physicians' demographics and performances during medical school and residency. *Acad Med.* 1998; 73(12):1283-1289.
20. La. Adm. C. 46:XLV.101, §6915 *et seq.*
21. Jung P, Lurie P, Wolfe SM. U.S. Physicians Disciplined for Criminal Activity. *Health Matrix*, 2006; 16(2): 335-350.
22. Dehlendorf CE, Wolfe SM. Physicians Disciplined for Sex-Related Offenses. *JAMA* 1998; 279(23): 1883-1888.
23. Berge KH, Seppala MD, Schipper AM. Chemical Dependency and the Physician. *Mayo Clinic Proc* 2009; 84(7): 625–631.
24. Schierhorn C. Practicing after one year of GME: Is it feasible? Should it be? *The DO/News and Features about Osteopathic Medicine.* Chicago, IL: American Osteopathic Association, February 5, 2014. http://thedo.osteopathic.org, Accessed February 14, 2014.
25. American Medical Association. Requirements for becoming a physician. http://www.ama-assn.org/ama/pub/education-careers/becoming-physician.page. Accessed February 14, 2014.
26. American Medical Association. *State Medical Licensure Requirements and Statistics.* 2014. Chicago, IL: American Medical Association.
27. *ACGME Program Requirements for Graduate Medical Education in Internal Medicine*, Accreditation Council on Graduate Medical Education, Approved September 16, 2008. www.acgme.org/acgmeweb/Portals/0/PFAssets/2013-PR-FAQ-PIF/140_internal_medicine_07012013. Accessed February 14, 2014.
28. Long, DM. Competency-based Residency Training: the next advance in graduate medical education. *Academic Medicine* 2000; 75(12):1178-1183.
29. Sklar, DP. Competencies, Milestones and Entrustable Professional Activities: What they are, what they could be. *Academic Medicine* 2015; 90(4):395-397.
30. Accreditation Council for Graduate Medical Education (ACGME) 2015. *ACGME Data Resource Book: Academic Year 2014-2015*. http://www.acgme.org/About-Us/Publications-and-Resources/Graduate-Medical-Education-Data-Resource-Book 2014-2015. Accessed 8/22/2016.
31. Brennan TA, Horwitz RI, Duffy DF, Cassel CK, Goode LD, Lipner RS. The role of physician specialty board certification status in the quality movement. *JAMA.* 2004; 292(9):1038-1043.
32. Young A, Chaudhry HJ, Pei X, Halbeselben K, et. al. A Census of Actively Licensed Physicians in the United States, 2014. *Journal of Medical Regulation*, Vol. 101, No. 2: 8-23, 2015.
33. Vogt HB, Huntington MK. Influence of Resident Physician "Moonlighting" Activities on Education Experience and Practice Choice. *S D Med.* 2015; 68(8):351-5.
34. Larkin GL, Kantor W, Zielinski JJ. Doing unto others? Emergency medicine residents' willingness to be treated by moonlighting residents and nonphysician clinicians in the emergency department. *Acad Emerg Med.* 2001; 8(9):886-92.
35. Li J, Tabor R, Martinez M. Survey of moonlighting practices and work requirements of emergency medicine residents. *Am J Emerg Med.* 2000; 18(2):147-51.
36. Public Citizen. Public Citizen's Health Research Group Ranking of the Rate of State Medical Boards' Serious Disciplinary Actions, 2009-2011. Washington, DC: Public Citizen, May 17, 2012.

Copyright 2016 Federation of State Medical Boards. All Rights Reserved.