The Journal of Emergency Medicine, Vol. 57, No. 6, pp. 772–779, 2019

0736-4679/$ - see front matter

https://doi.org/10.1016/j.jemermed.2019.08.028

Original Contributions

THE ASSOCIATION BETWEEN MAINTAINING AMERICAN BOARD OF EMERGENCY MEDICINE CERTIFICATION AND STATE MEDICAL BOARD DISCIPLINARY ACTIONS

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☐ **Abstract—Background: In certain medical specialties, board certification is associated with a lower risk of state medical board disciplinary actions. Objective: The association between maintaining American Board of Emergency Medicine (ABEM) certification and state medical disciplinary actions had not been studied. This study was undertaken to determine if maintaining ABEM certification was associated with a lower risk of disciplinary action. Methods: This investigation was a historical cohort study using Cox regression. Physicians who did not have a lapse in ABEM certification were compared with physicians who had a lapse to determine the risk of disciplinary action. Lapsing was determined at the expiration of the initial certificate. This study included all physicians who obtained initial ABEM certification from 1980–2005. Additional covariates of interest included the number of attempts on the ABEM Qualifying Examination (1 vs. >1), the geographic region of the physician's residence, and the country of medical school. Results: There were 23,002 physicians in the study cohort. Of these, 3370 (14.7%) let their certification lapse after initial certification. There were 701 (3.0%) physicians with disciplinary events. Lapsed physicians had higher rates of disciplinary actions than physicians who did not lapse (6.4% vs. 2.5%). ABEM-certified physicians who did not lapse were significantly less likely to be disciplined as physicians who let their certificate lapse (hazard ratio 0.50 [95% confidence interval 0.42–0.59]). Conclusions: The absolute incidence of physicians with a disciplinary action in this study cohort was low (3.0%). Maintaining ABEM certification was associated with a lower risk of state medical board disciplinary actions.** © 2019 Elsevier Inc. All rights reserved.

☐ **Keywords—certification; disciplinary action; licensure**

INTRODUCTION

Initial board certification is valued by emergency physicians and other stakeholders. Some physicians, however, suggest that there is insufficient evidence that continuing certification provides enough improvement in patient care or other benefits to warrant the cost and time investment (1,2). Since its recognition by the American Board of Medical Specialties in 1979, the American Board of Emergency Medicine (ABEM) has always had a continuing certification requirement at least every 10 years.

There is growing evidence that achieving and maintaining board certification is associated with higher-quality patient care and less risk of state medical board disciplinary actions (3–9). Although the association between higher-quality care and ABEM certification has been shown, the association between ongoing certification status and state medical disciplinary actions has not been studied (10).

The public relies on the medical profession to self-regulate and for specialties to establish standards in training, certification, and discipline (11–13). Although

Reprints are not available from the authors.

Received: 20 May 2019; Final submission received: 2 August 2019;
Accepted: 12 August 2019

receiving a state medical license is the minimum requirement for clinical practice, this license is undifferentiated, connoting no specialization or assurance of quality. Certification purports to the profession and public that a physician has completed the training and has acquired the skills needed to safely and independently practice in a specific field. Continuing board certification requires that a physician must meet rigorous professional standards. For the public, knowing that a physician has adhered to tenets of professionalism could further enforce the trust the public affords the profession of medicine. Though the public may not understand the details of ABEM certification, it expects physicians to stay up-to-date, and this expectation includes periodic testing (14).

The goal of this study was to determine if maintaining certification was associated with a lower risk of disciplinary action by a state medical licensing board when compared to not maintaining certification.

METHODS

Study Design

This was a historical cohort study using Cox regression to examine state medical board disciplinary risk over time for physicians who obtained initial ABEM certification. Physicians who completed requirements to maintain ABEM certification after their initial certificate expired (i.e., did not lapse) were compared with physicians who did not complete requirements to maintain ABEM certification upon the expiration of their initial certificate (i.e., lapsed).

Study Setting and Population

We included all physicians who obtained initial ABEM certification from 1980–2005. Physicians were not eligible for inclusion if they were disciplined by their state medical board ≤6 months of their initial certification expiration date or were living outside of the United States during the study period. This criterion was important because decertification could result from a state medical board disciplinary action.

Key Outcome Measures

Lapsing status was the principal independent variable of interest (lapsed vs. did not lapse). Physicians who reached the expiration date of their initial certificate without obtaining a new certificate were classified as lapsed, allowing for a grace period of 6 months after the expiration date (i.e., individuals who had a <6-month gap between certificate dates were not classified as lapsed in our study). A gap of <6 months might not represent a lapse in certification but could result from a delay in recertification because of unusual circumstances (e.g., unexpected acute illness) or taking a recertification examination outside of the normally scheduled testing window. Lapsing status was assessed at a single point in time—the expiration of initial certification—to ensure that the independent variable of interest preceded the outcome of disciplinary action. We followed study participants until they received a disciplinary action, or in the event of no action, until the study end date (December 31, 2017).

Our primary outcome measure was the incidence of state medical board disciplinary measures among physicians who did not lapse in board certification compared with physicians who had any lapse in their certification. Our primary dependent variable was time in years to disciplinary action by a state medical board. Data pertaining to state disciplinary actions were provided by the Federation of State Medical Boards. For the purpose of this study, we used only a physician's first disciplinary action, resulting in a single, nonrepeatable event (ever disciplined vs. never disciplined). A disciplinary action was defined as an adverse action issued by a state medical board against a physician that was reported to the Federation of State Medical Boards. Actions ranged from a written reprimand to the permanent removal of a medical license. We did not include local hospital-based disciplinary actions in this study.

We also included additional covariates of interest such as the number of attempts on the ABEM Qualifying Examination (1 vs. >1), the geographic region of the physician's residence (Midwest, Northeast, South, or West), and the country of medical school (U.S./Canada vs. international). The number of attempts on the ABEM Qualifying Examination was dichotomized as a proxy for passing status on the Qualifying Examination, thereby controlling for previous examination performance. Passing the Qualifying Examination is required to qualify to take the Oral Certification Examination, which is the final step in achieving ABEM certification. We chose study covariates and their classifications in the study (e.g., U.S./Canada vs. international) because of their significance in previous studies investigating the relationship between maintenance of certification (MOC) and disciplinary action (5,15,16). We also considered additional covariates, such as birth country, physician age, and certification pathway (residency training vs. practice pathway), but we excluded these variables based on a preliminary model for analysis. The final model was selected by conditioning on the inclusion of any new covariate given the 3 already mentioned, which remained in the model, using likelihood ratio tests to compare the models. We obtained all study data from the secure ABEM database, except for disciplinary action data,

which were obtained by the Federation of State Medical Boards. This study was reviewed and determined to be exempt research by the Rutgers New Jersey Medical School Institutional Review Board.

Data Analyses

We compared physicians who did not let their certification lapse after the expiration of their initial certificate to physicians with a lapse in certification for the risk of a state medical board disciplinary action using Cox regression. For the purpose of this model, person-time was calculated in years, from 6 months after the expiration of the initial ABEM certificate to the date of a physician's first disciplinary action or the study end date (December 31, 2017). For nondisciplined physicians, we assumed random censoring and fixed the end-date of censored observations to December 31, 2017, so that censor time would be independent of the group comparison measure, thereby making the inference from Cox regression valid.

To test whether the assumptions of a proportional hazards model were met, we performed visual and statistical examination of Martingale residuals, which showed a slight linear trend in residuals over time. A correlation between time and the residuals suggests that the assumption of proportional hazards was not met. To adjust for nonproportionality, we stratified physicians by the year of ABEM certification (i.e., cohort year) using 5-year intervals. This stratification resulted in 5 groups: 1980–1984, 1985–1989, 1990–1994, 1995–1999, and 2000–2005. These groups were used to define periods of changing risk. A difference in risk could occur from state medical boards applying stricter or more lenient standards from one year to the next. Stratifying on cohort years also allowed control for the varying exposure intervals experienced by different members of the study population.

The Cox regression model controlled for the number of attempts on the ABEM Qualifying Examination, geographic region, and the country of medical school. To visually depict the disciplinary risk over time by lapsing status, we plotted the cumulative proportion of disciplinary actions, adjusted for covariates (Figure 1).

We used multiple imputation to replace missing values in study covariates in order to reduce the risk of bias and avoid excluding study participants with incomplete data. The assumption of missing at random allowed us to use information from nonmissing auxiliary variables to predict values and account for extra variability because of the imputation procedure (17). We adjusted p values for multiple comparisons using the Hochberg adjustment. Given the large sample size, we defined statistical significance as $\alpha < 0.01$ to guard against type I errors. Analysis was conducted using SAS software (version 9.3; SAS Institute Inc., Cary, NC).

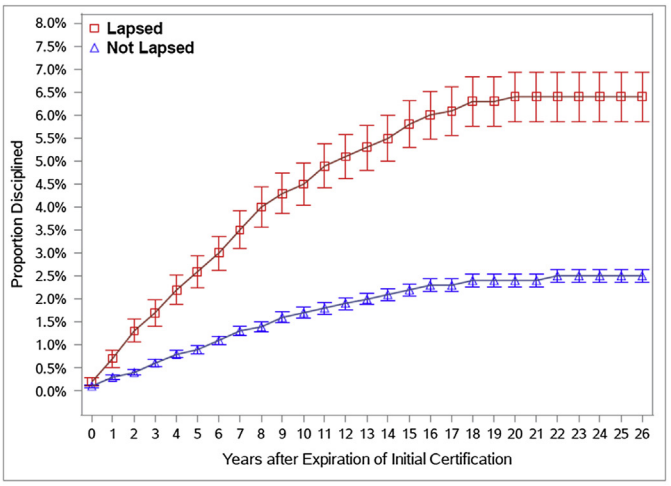
RESULTS

From 1980–2005, 23,993 physicians passed the initial ABEM Qualifying Examination. There were 991 (4.1%) physicians excluded because they were disciplined by their state medical board ≤6 months of the expiration date of their initial certification or living outside of the United States, yielding a final study population of 23,002 (Figure 2). Of the remaining 23,002 physicians in the study group, 3370 (14.7%) let their certification lapse after the expiration of their initial certificate. Table 1 displays the demographic, training, and performance characteristics of physicians included in this study. Overall, there were 701 (3.0%) physicians with disciplinary events. Lapsed physicians had higher rates of disciplinary actions than physicians who did not lapse (6.4% vs. 2.5%). This difference persisted over time (Figure 1).

Individuals who had a lapse in their certification were more likely to have attended medical school outside of the United States or Canada than those who did not lapse (13.8% vs. 5.0%). The 2 study groups had comparable distributions in terms of the physician's geographic region. On the other hand, the 2 study groups had different distributions in terms of cohort-year categories. Out of the 5-year categories, the 3 earliest cohorts made up 72% of physicians in the lapsed group but only 50% of physicians who did not lapse. Lapsed physicians also had a higher rate of multiple attempts on the ABEM Qualifying Examination compared with physicians who did not lapse (32.1% vs. 10.3%).

Table 2 presents adjusted hazard ratios (HRs) for disciplinary action from the Cox regression analysis. ABEM physicians who did not lapse were half as likely to be disciplined as physicians who let their certificate lapse (HR 0.50 [95% confidence interval {CI} 0.42–0.59]). In addition, individuals who attempted the ABEM Qualifying Examination more than once were about 40% more likely to be disciplined than physicians who passed on the first attempt (HR 1.38 [95% CI 1.14–1.67]).

Demographic differences were also observed between physicians whose certificate did not lapse and those who lapsed. Physicians living in the South or the West were more likely to be disciplined than those in the Northeast (HR 1.90 [95% CI 1.49–2.43] and HR 1.55 [95% CI 1.21–2.00], respectively); the ratio for physicians living in the Midwest compared to those in the Northeast was not statistically significant (HR 1.27 [95% CI 0.96–1.67]). Country of medical school was not significantly associated with disciplinary action in our model. Comparing internationally trained with U.S.- and Canadian-trained doctors yielded an HR of 0.86 (95% CI 0.64–1.15).



Cumulative Disciplines by Lapsing Status

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Lapsed	27	58	87	123	155	186	215	249	280	306	333	362	380	398	409	428	444	454	462	471	476	479	483	484	484	485	485
Not Lapsed	6	25	45	58	75	89	102	118	134	146	153	165	171	178	186	194	201	207	211	212	214	215	215	216	216	216	216

Figure 1. Cumulative proportion of disciplinary actions by American Board of Emergency Medicine (ABEM) lapsing status, from 1990 to 2017.

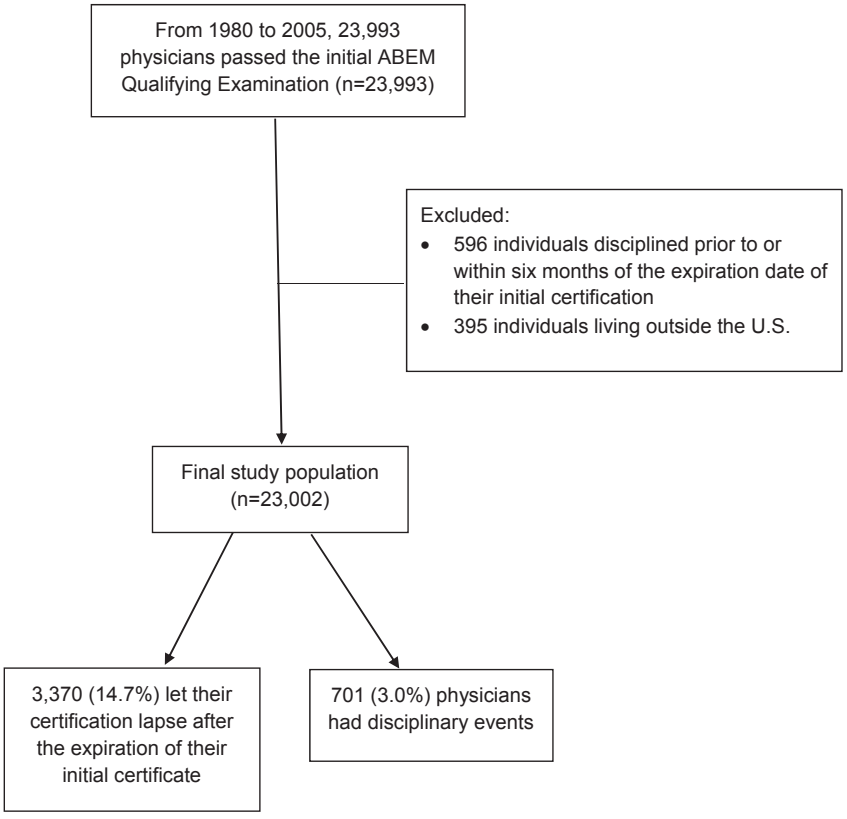


Figure 2. Selection of study participants. ABEM = American Board of Emergency Medicine.

Table 1. Demographic, Training, and Performance Characteristics of Physicians Initially Certified by the American Board of Emergency Medicine (ABEM) in 1980–2005, by Lapsing Status (N = 23,002)

Predictor Variables	Did Not Lapse (n = 19,632)	Lapsed (n = 3370)	*p* Value (Did Not Lapse vs. Lapsed)*
Medical school outside of U.S./ Canada, n (%)†	971 (5.0)	464 (13.8)	<0.001
Geographic region, n (%)‡			0.037
Midwest	4238 (21.6)	655 (19.5)	
Northeast	3681 (18.8)	626 (18.7)	
South	5960 (30.4)	1071 (32.0)	
West	5720 (29.2)	1000 (29.8)	
Cohort year, n (%)			<0.001
1980–1984	1936 (9.9)	632 (18.8)	
1985–1989	4061 (20.7)	937 (27.8)	
1990–1994	3799 (19.4)	861 (25.6)	
1995–1999	3602 (18.4)	471 (14.0)	
2000–2005	6234 (31.8)	469 (13.9)	
>1 attempt on ABEM qualifying examination, n (%)§	2018 (10.3)	1080 (32.1)	<0.001
Disciplined, n (%)	485 (2.5)	216 (6.4)	<0.001

* We used chi-square tests to compare individuals who did not lapse with those who lapsed, for each of the demographic, training, and performance variables.
† Eight missing from did not lapse group, 1 missing from lapsed group.
‡ Thirty-three missing from did not lapse group, 18 missing from lapsed group.
§ Eighteen missing from did not lapse group, 4 missing from lapsed group.

DISCUSSION

This is the first study to examine the association between maintaining ABEM certification and disciplinary actions. Of the 23,002 ABEM-certified physicians in this study, 701 (3.0%) had a disciplinary action. This number includes 2.5% of physicians who maintained certification and 6.4% who let their certification lapse, which represents almost a 2.5-fold increase of state medical board disciplinary actions for physicians who had a lapse in their certification. This low rate of disciplinary actions is similar to rates reported for other specialties (16,18,19).

Table 2. Stratified* Cox Regression Analysis Predicting Hazard Risk of Discipline, by Person Years in Study (N = 23,002)

Study Variables	Disciplined vs. Not Disciplined: Hazard Ratio†,‡ (95% Confidence Interval%)
Lapsed (no vs. yes)	0.50* (0.42–0.59)
No. of attempts on ABEM certification exam (>1 vs. 1)	1.38* (1.14–1.67)
Geographic region (MW vs. NE)	1.27 (0.96–1.67)
Geographic region (SO vs. NE)	1.90* (1.49–2.43)
Geographic region (WE vs. NE)	1.55* (1.21–2.00)
Country of medical school (international vs U.S./Canada)	0.86 (0.64–1.15)

ABEM = American Board of Emergency Medicine; MW = Midwest; NE = Northeast; SO = South; WE = West.
* Cohort years were used as the stratifier and not included in the model because the proportional hazards criteria were not met.
† The analysis used multiple imputation to replace missing values of the model's covariates. *p* values are corrected for multiple testing using the Hochberg procedure.
‡ All hazard ratios with an asterisk are statistically significant at $p < 0.01$. *p* values are as follows: lapsed, $p < 0.001$; number of attempts on ABEM certification examination, $p = 0.001$; MW vs. NE regions, $p = 0.091$; SO vs. NE regions, $p < 0.001$; WE vs. NE regions, $p = 0.001$; country of medical school, $p = 0.299$.

Other specialties have also found an association between maintaining certification and fewer adverse actions by state medical boards (16,18–20). Surgeons who recertified on time had the lowest rate of loss-of-license actions compared with surgeons in the lapsed certification group and surgeons who did not attempt recertification (20). The on-time certification group was akin to the ABEM cohort who did not have a lapse of certification.

There is evidence that ABEM certification is associated with higher-quality care. A study by Wilson et al. showed that ABEM-certified physicians more often accurately diagnosed acute myocardial infarction in older patients (10). Though there is growing evidence in many specialties that maintaining certification is associated with improved patient care, investigations in emergency medicine have been limited (21–23). Nonetheless, not all studies support the axiom that maintaining certification results in improved care. One study did not show a difference in admission rates of patients with ambulatory care–sensitive diagnoses between internists who were and were not required to participate in the American Board of Internal Medicine (ABIM) MOC program (24). However, the cost of care by physicians participating in MOC was lower while achieving similar admission results. A study involving the Veteran's Affairs system showed no difference in the adherence to quality

measures between internists who were initially certified with time-unlimited certification compared with internists with time-limited certification (25). Among the time-limited physicians, 63 had current certification and 8 had allowed their certification to lapse. Thus, the time-limited certification group was a blend of physicians maintaining certification and physicians who were not maintaining certification. Moreover, the number of physicians in this study was small and the setting might not be generalizable.

For emergency medicine, determining the benefit of maintaining certification is a complex issue because ABEM has always had a time-limited certificate requiring recertification. Accordingly, nearly any cohort of "ABEM-certified physicians" would be an amalgam of both initially certified and recertified physicians. A study that examined older patients with potential myocardial infarction showed that ABEM certification was associated with better diagnostic accuracy by emergency physicians (10). However, the ABEM-certified physicians in this study would have included physicians who had recertified and those who had not, limiting the ability to make any claims about the benefits of maintaining certification.

Physicians have their ABEM certification lapse for a variety of reasons. The most common reason for certification to lapse is a failure to take the ConCert Examination by the final year of certification. In 2017, there were 2878 diplomates in the final year of certification; of these, 536 had their certification lapse. There were 457 physicians (15.9%) who did not take the ConCert, and 66 (2.3%) who took the examination but did not pass. Most physicians who did not take ConCert were at the end of their clinical careers. There were 13 physicians who had certification lapse from failing to complete other certification requirements, of whom 9 later completed these requirements and regained certification (ABEM unpublished data, 2019).

Participating in an MOC program was also associated with a lower incidence of license actions for anesthesiologists. Of interest, previous work by the American Board of Anesthesiology showed that lower scores on the MOC examination were more likely to be associated with an adverse license action (26). Such a "dose-response" effect more strongly supports the possibility of causation.

The American Board of Family Medicine also found that completion of MOC requirements in a timely fashion was associated with a lower incidence of disciplinary actions (18). The American Board of Family Medicine further found that the highest risk was among family physicians who never become American Board of Family Medicine–certified.

The risk of disciplinary action among internists who did not pass the ABIM MOC examination within the 10-year period was more than double those who passed (16). These findings complement earlier research that showed that higher performance on the ABIM initial certification examination is strongly correlated with a decreased incidence of state medical board disciplinary actions (15). This study also showed a magnitude-response effect whereby higher scores on the ABIM MOC examination were associated with significantly lower disciplinary rates (16).

The ABIM study further found that there was no association between the magnitude of state medical board continuing medical education requirements and the risk of disciplinary action (16). This finding weakens the assertion that continuing medical education after initial board certification should be sufficient activity for maintaining professionalism and competency.

Limitations

Our study has several limitations. First, as an observational, population-based cohort study, there can be no determination of causality. However, the temporality of events was considered in the analysis, meaning that a lapse in certification must have occurred before a disciplinary event. Because the ConCert Examination has the largest impact on whether a physician continues certification, an analysis of performance on the ConCert compared with the risk of disciplinary action could establish a magnitude–response relationship. No analysis was attempted that would measure a magnitude–response relationship.

Second, lapse status is a one-time observation at the expiration of initial certification. Physicians in the study sample were heterogeneous and some of them went on to experience multiple cycles (i.e., multiple 10-year intervals) of maintenance of certification and therefore had multiple chances to lapse. In addition, some physicians lapsed by never returning after initial certification, while others who lapsed eventually came back. To address these concerns, we conducted a sensitivity analysis that examined physicians who are only far enough into their careers to have completed 1 cycle of MOC, thus allowing for physicians with similar lapse scenarios and histories. Therefore, we repeated our analysis with only the subset of the population who was initially certified from 1997–2005, which yielded a similar risk of disciplinary action (HR 0.54 [95% CI 0.32–0.92]). Similarly, the reasons behind disciplinary actions also vary from not meeting a continuing medical education requirement to criminal behavior.

Third, other factors not measured could have significantly contributed to the likelihood of a disciplinary action. However, numerous other characteristics that had limited impact in the model were accounted for and controlled for in the analysis.

Fourth, the impact of a physician's primary emergency department patient volume was unknown. Patient volume was recently identified as a factor for the likelihood of a medical malpractice event (27). How patient volume might affect the results of this study is uncertain but warrants further investigation.

Fifth, although the association between maintaining certification and state medical board disciplinary action has now been reported for multiple specialties, the results should not be generalized to other specialties.

CONCLUSIONS

The absolute incidence of a disciplinary action was low (3.0%) among ABEM-certified physicians. Maintaining ABEM certification was associated with a lower risk of state medical board disciplinary actions.

Acknowledgments—Abstract presented to the Society for Academic Emergency Medicine 2019 Annual Meeting, Las Vegas, Nevada, March 14–19, 2019. This work was funded by the American Board of Emergency Medicine. Dr. Nelson is on the Board of Directors for the American Board of Emergency Medicine, which offers ABEM certification. Ms. Duhigg and Dr. Lipner are employed by the American Board of Internal Medicine. Dr. Arnold was formerly employed by the American Board of Internal Medicine. Dr. Harvey was formerly employed by the American Board of Emergency Medicine, which offers ABEM certification. Dr. Reisdorff is employed by the American Board of Emergency Medicine, which offers ABEM certification. The authors wish to thank Ms. Frances Spring for her assistance with the manuscript preparation and submission.

REFERENCES

1. Teirstein PS. Boarded to death—why maintenance of certification is bad for doctors and patients. N Engl J Med 2015;372:106–8.
2. Cook DA, Blachman MJ, West CP, Wittich CM. Physician attitudes about maintenance of certification: a cross-specialty national survey. Mayo Clin Proc 2016;91:1336–45.
3. Lipner RS, Hess BJ, Phillips RL Jr. Specialty board certification in the United States: issues and evidence. J Contin Educ Health Prof 2013;33(suppl 1):S20–35.
4. Chen J, Rathore SS, Wang Y, Radford MJ, Krumholz HM. Physician board certification and the care and outcomes of elderly patients with acute myocardial infarction. J Gen Intern Med 2006;21:238–44.
5. 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;91:376–81.
6. Norcini JJ, Kimball HR, Lipner RS. Certification and specialization: do they matter in the outcome of acute myocardial infarction? Acad Med 2000;75:1193–8.
7. Silber JH, Kennedy SK, Even-Shoshan O, et al. Anesthesiologist board certification and patient outcomes. Anesthesiology 2002;96:1044–52.
8. Prystowsky JB, Bordage G, Feinglass JM. Patient outcomes for segmental colon resection according to surgeon's training, certification, and experience. Surgery 2002;132:663–70.
9. Haas JS, Orav EJ, Goldman L. The relationship between physicians' qualifications and experience and the adequacy of prenatal care and low birthweight. Am J Public Health 1995;85(8 pt 1):1087–91.
10. Wilson M, Welch J, Schuur J, O'Laughlin K, Cutler D. Hospital and emergency department factors associated with variations in missed diagnosis and costs for patients age 65 years and older with acute myocardial infarction who present to emergency departments. Acad Emerg Med 2014;21:1101–8.
11. ABIM Foundation; ACP-ASIM Foundation; European Federation of Internal Medicine. Medical professionalism in the new millennium: a physician charter. J Am Coll Surg 2003;196:115–8.
12. Starr P. The Social Transformation of American Medicine, 5. New York, NY: Basic Books; 1982:9–13. 15.
13. Horowitz R. In the Public Interest. New Brunswick, NJ: Rutgers University Press; 2013:32–3.
14. ABEM Online Harris Poll. Public opinion survey on how emergency physicians should keep up with medical knowledge. 2017. Available at: http://www.abem.org/public/docs/default-source/default-document-library/harris-poll-results-(moc).pdf?sfvrsn=2. Accessed October 22, 2018.
15. 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;148:869–76.
16. McDonald FS, Duhigg LM, Arnold GK, Hafer RM, Lipner RS. The American Board of Internal Medicine maintenance of certification examination and state medical board disciplinary actions: a population cohort study. J Gen Intern Med 2018;33:1292–8.
17. Allison PD. Missing Data. 2nd ed. Thousand Oaks, CA: Sage University; 2001:29–32. Papers Series on Quantitative Applications in the Social Sciences (07-136).
18. Peabody MR, Young A, Peterson LE, et al. Relationship between board certification and disciplinary actions against board-eligible family physicians. Acad Med 2019;94:847–52.
19. Zhou Y, Sun H, Macario A, et al. Association between performance in a maintenance of certification program and disciplinary actions against the medical licenses of anesthesiologists. Anesthesiology 2018;129:812–20.
20. Jones AT, Kopp JF, Malangoni MA. Association between maintaining certification in general surgery and loss-of-license actions. JAMA 2018;320:1195–6.
21. Nichols DG. Maintenance of certification and the challenge of professionalism. Pediatrics 2017;139:e20164371.
22. Price DW, Biernacki H, Nora LM. Can maintenance of certification work? Associations of MOC and improvements in physicians' knowledge and practice. Acad Med 2018;93:1872–81.
23. American Medical Association website. Report 2 of the Council on Medical Education (A-18). Available at: https://www.ama-assn.org/sites/ama-assn.org/files/corp/media-browser/public/council-on-med-ed/a18-cme-02.pdf. Accessed August 25, 2019.
24. Gray BM, Vandergrift JL, Johnston MM, et al. Association between imposition of a maintenance of certification requirement and ambulatory care-sensitive hospitalizations and health care costs. JAMA 2014;312:2348–57.
25. Hayes J, Jackson JL, McNutt GM, Hertz BJ, Ryan JJ, Pawlikowski SA. Association between physician time-unlimited vs time-limited internal medicine board certification and ambulatory patient care quality. JAMA 2014;312:2358–63.
26. Sun H, Culley DJ, Lien CA, Kitchener DL, Harman AE, Warner DO. Predictors of performance on the maintenance of certification in anesthesiology program® (MOCA®) examination. J Clin Anesth 2015;27:1–6.
27. Carlson JN, Foster KM, Pines JM, et al. Provider and practice factors associated with emergency physicians' being named in a malpractice claim. Ann Emerg Med 2018;71:157–64.

ARTICLE SUMMARY

1. Why is this topic important?

There is growing evidence that achieving and maintaining board certification is associated with higher-quality patient care and less risk of state medical board disciplinary actions. This study was undertaken to determine if maintaining American Board of Emergency Medicine (ABEM) certification was associated with a lower risk of disciplinary action.

2. What does this study attempt to show?

This study attempts to show whether there is an association between ongoing certification status and state medical disciplinary actions.

3. What are the key findings?

Physicians whose certification lapsed had higher rates of disciplinary actions than physicians whose certifications did not lapse (6.4% vs. 2.5%). ABEM physicians who did not lapse were significantly less likely to be disciplined as physicians who let their certificate lapse (hazard ratio 0.50 [95% confidence interval 0.42–0.59]).

4. How is patient care impacted?

It is reasonable to assume that patient care is compromised when the treating physician is subject to state medical board disciplinary action. Achieving and maintaining board certification is associated with a lower risk of disciplinary action. For the public, knowing that a physician has adhered to tenets of professionalism could further enforce the trust the public affords the profession of medicine and especially, ABEM-certified physicians.