

Maintenance of Certification: Ethics and Conflicts of Interest

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ABSTRACT

Physicians are under increasing pressure to subscribe to Maintenance of Certification (MOC) programs, the proprietary product of the American Board of Medical Specialties, Inc., (ABMS) and its 24 affiliates. This is promoted as a necessary means to assure physician competence. The publications cited to support MOC are generally authored by corporate employees and hired subcontractors, without consistent disclosure of conflicts of interest.

Ethical Guidelines Violated

In December 2013, the International Committee of Medical Journal Editors (ICMJE) revised, renamed, and published online its new Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals.¹ These guidelines outline requirements for disclosure of conflicts of interest, including appropriate declaration by authors and responsibilities of editors. ICMJE's guideline states: "Financial relationships (such as employment, consultancies..., and paid expert testimony) are the most easily identifiable conflicts of interest and the most likely to undermine the credibility of the journal, the authors, and of science itself." Individual journals may have higher ethical requirements, while many have none, fail to impose them, or are inadequately informed by the authors.^{2,3,4}

Numerous articles are authored by executives of the American Board of Medical Specialties, Inc., (ABMS) and its 24 affiliates in medical journals concerning proprietary products of Board Certification (BC) and Maintenance of Certification (MOC). These ABMS corporate executives frequently do not disclose their significant employment income from this commercial enterprise, and may even state: "Competing Interests: The authors are not supported by, nor maintain any financial interest in, any commercial activity that may be associated with the topic of this article."^{5,6} Yet ABMS and its affiliates are corporations with clear business prerogatives, despite their tax-exempt status.⁷

Review of publications by several ABMS executives reveals that these authors may disclose or fail to disclose employment as a conflict of interest in an almost random fashion. Some will state "no conflicts to declare"⁸⁻¹¹ in one publication, while elsewhere disclosing employment.¹²⁻¹⁷ They may provide disclosure that omits mention of conflicts that suggest service to a company,¹⁸⁻²⁰ provide no conflict-of-interest disclosure,^{21,22} or isolate disclosure to internet sites, which must be actively sought, without publication in the PDF files typically read or distributed.^{14,23} Authors were asked to disclose employment in

the journal that published original research and editorials, yet failed to do so in the same journal's supplement, which ABMS sponsored. This suggests that both authors and journals may be responsible.^{16,19} Authors may state "nothing to disclose" while ignoring employment, sponsorship in supplement publication, and direct funding of the symposium involved.⁹⁻¹¹ This inconsistency suggests author awareness of employment and other significant matters as real conflicts of interest, with selective failure to comply.

For example, in two back-to-back articles in the *Journal of the American Board of Family Medicine (JABFM)*,^{24,25} one author who contributed to both papers failed to consistently declare conflicts, while another, James C. Puffer, is also executive editor of the journal. Despite the statement, "Conflicts of interest: none declared,"²⁴ Puffer earns more than \$600,000 per year as chief editor of JABFM and president and chief executive officer of the ABFM, according to IRS documents.

ABMS funds journal supplements promoting its proprietary products, BC and MOC programs,^{26,27} spending as much as \$50,000 per issue. See, for example, the 66-page Fall 2013 supplement to the *Journal of Continuing Education in the Health Professions*. Recently, the National Quality Forum (NQF), with a long history of American Board of Internal Medicine (ABIM) leadership interactions and personnel exchanges, has been involved in questionable conflicts of interest, leading to congressional investigation and strong allegations of misconduct by an NQF official and inadequate policy to prevent conflicts.^{28,29}

British and Canadian programs emulate the current individual physician's self-directed Continuing Medical Education (CME) and lifelong learning documentation programs founded in the U.S.^{30,31} under the American Medical Association's Physician Recognition Award program (AMA-PRA) in the 1960s-1970s.³² Harrison and Olson write: "Researchers, practitioners, and policymakers in continuing education in the health professions need to be aware of the history, current status, and future directions for MOC in these 3 countries."²⁷ This is particularly important for American physicians, because the historical process and purpose of certification was not designed to serve the financial interests of the contemporary political and corporate entities involved in MOC.

ABMS publications actively prescribe an urgent need to test, control, and validate lifelong learning of physicians, the most trusted and educated of professionals, through its proprietary programs. ABMS implies an international support of its particular certification, falsely asserting that its program is voluntary, despite the significant consequences of expiration of certification. ABMS holds a virtual monopoly on medical specialty certification in the U.S., without any appreciable

market presence anywhere else in the world.

Assertions of outcome-based scientific evidence, public demand, or demonstrated need for ABMS's corporate programs are unfounded. ABMS leaders extol the virtues of MOC.³³ Influential mainstream medical journal publications repeatedly echo this view,³⁴ without including equal opportunity for opposing views. Journal editorial boards are aligned with MOC. ABMS, the Federation of State Medical Boards (FSMB), and the national medical societies are uniting behind MOC, which has become the certification industrial complex, to capture and expand the current \$2.5 billion CME market to meet corporate goals.³⁵ Patients rarely inquire regarding BC status.³⁶ BC is a "niche" index, remaining unfamiliar and unimportant to the general public and patient populations, while increasingly deemed obligatory for employment, clinical privileging, and licensing.³⁷

ABMS leaders have historically not voluntarily followed their own program certification guidelines.^{33,34,38,39} Many board examiners have left the ranks rather than recertify to remain as examiner. Attestations in specialty journals by members of the certification industrial complex, who themselves have enjoyed lifelong certification, now praise Continuous MOC for others.^{34,39} While "MOC updates" and promotional articles are repeatedly published, articles critical of MOC are hard to publish in medical journals infiltrated with paid industry supporters, although formal physician polling and publications not controlled by MOC advocates document widespread opposition.⁴⁰⁻⁴⁴

ABMS Myths vs. Facts vs. Associations

ABMS executives frequently author and contract for retrospective chart reviews, using database mining to demonstrate favorable "associations" without conclusive "outcome based" proof.⁴⁵ Their very marginal "findings" are undermined by conflicts of interest and lack of reproducible independent data or meta-analysis.⁴⁶ Repeated corporate publication of previously published data is used to buttress claims about the importance of MOC, which they themselves subsequently refute.⁴⁷⁻⁵⁰ The use of propensity scores and similar tools is recognized to be susceptible to the introduction of systematic corporate bias. Risk-adjustment factors used to reach/adjust/enable their conclusions are not subjected to critical evaluation in the final report.^{51,52}

In 2002, ABMS executives attempted a meta-analysis of more than 1,200 studies published from 1966 to 1999, concluding that "few published studies (5%) used research methods appropriate for the research question, and among the screened studies more than half support an association between board certification status and positive clinical outcomes." With only 13 papers meeting criteria for inclusion, meta-analysis was impossible.⁴⁶

ABMS remains unable to provide clear outcomes data validating certification, much less MOC!^{35,46} ABMS has no presence in Europe, where clearly superlative care is evident in the absence of ABMS programs.

ABMS uses regulatory capture in its effort to conscript all U.S. physicians into ABMS's rapidly changing, increasingly expensive

monopolistic corporate programs, in order to maintain its revenue stream.^{46,53,54} Regulatory capture occurs when special interests co-opt policymakers or political bodies—regulatory agencies, in particular—to further their own ends.

ABMS produces no teaching, just testing, without objective transparency or any opportunity for external review. The ABIM recertification failure rate recently reached 28%. In 2010 and 2011, family practice recertification failure rates reached 33%.⁵⁵ Yet less than 0.01% of physicians are thought to be incompetent based on state board actions, which typically do not even list incompetence as a singular cause for actions.³⁵ Thus, it is likely that the test falsely classifies thousands of physicians as incompetent for every truly incompetent one that it possibly could identify—assuming that state boards tabulate this data accurately and that the worst-case scenario is true. The ABIM's own "Choosing Wisely" program⁵⁶ would reject a test with such poor specificity, were it not ABIM's own revenue source.

Adverse Effects

Failure to maintain certification can produce severe consequences for physicians and their patients, including termination of hospital staff privileges and exclusion/reductions from/in insurance reimbursements. The very high failure rates in the two main primary care specialties will worsen the shortages of such physicians. How can patients benefit from the exclusion of large numbers of experienced practicing American physicians from hospitals by decertification? How are patients better off by replacing physicians with nonphysicians such as physician assistants, nurse practitioners, and nurse anesthetists? Simply stated: They are not!

From Board Certification to Continuous Maintenance of Certification

BC once meant "attainment of consultant status" for life. It is now a mere entry requirement into lifelong subscription to Continuous Maintenance of Certification (CMOC) programs.

While ABMS continues to maintain that certification is "valuable and voluntary," it determined in 1986 that voluntary recertification would not be accepted by the targeted professionals, and therefore pressed for time limitations on certificates as the only alternative, enabling the introduction of MOC.⁵⁷ The validity of certifications was decreased to 10-year periods for all specialties in 2000, and continues to be progressively limited at will by ABMS executives. Decisions regarding MOC occur behind closed doors and without meaningful input from practicing professionals. Several affiliates tried to decline to introduce time-limited certification but were required to do so under ABMS copyrights or "lose the franchise" (off-the-record communications from six different board members).

The certifying boards can impose potentially unlimited demands, to which physicians must agree before participation in MOC is allowed. See, for example, the "Additional Period of Board Qualification Application" for the American Board of Pathology, available at its website www.abpath.org, or review the multiple pages of "general policies of the ABIM" at:

<http://www.abim.org/certification/policies/general-policies-requirements.aspx#evaluations>.

One 2014 certificate that reads “valid for 10 years” above the Board’s signatures, but also reads “valid through December 31, 2023, contingent upon participation and completion of MOC” in the lower right-hand corner. This past year, the concept of CMOC has resulted in limitation of ABIM’s decade-long certification validity to those who participate and pay each year to maintain their certificates. Lifelong certification will become meaningless after 2023 under ABMS rules.

The slow pace of introduction of time limits and the “grandfathering” of older physicians served to minimize physician resistance.

ABMS offers BC in more than 130 specialties, invalidating any “standard competency” across all physician specialties. Maintaining multiple certificates will become increasingly difficult, limiting the individual physician’s scope of practice and patient opportunity for specialist care.

ABMS lobbied Congress to pass the “Physician Quality Reporting System-MOC” (PQRS-MOC), to tax MOC non-compliant physicians up to 2% of gross earnings starting in 2015-2016.^{58,59} Physicians participating in PQRS-MOC are expected to pay more for the certification program than reimbursement will ever recoup.⁵⁹ Discrimination against MOC non-participants is now possible, because the government or insurance provider is free to designate MOC as a “quality indicator,” even without evidence.⁶⁰

What Does MOC Certify?

ABMS tests typically minimize the importance of clinical ability and professional experience.⁶¹ Adherence to the newest guidelines, modern technologies, etc., becomes the marker of “ABMS-defined competence.” The hundreds of guidelines now in print are tainted by significant conflicts, yet are generally formulated without conflict-of-interest disclosure.⁶²⁻⁶⁴ Guidelines are outdated and redundant. They use weak evidence, including “expert (polls) opinion” and non-randomized trials.^{63,64} Hundreds of overlapping and divergent guidelines exist from multiple specialties, sometimes contradicting each other, making it difficult to determine “best answers” on ABMS tests.⁶⁵⁻⁶⁷

Recently, the process of “medical reversal” has led to rejection of many guidelines and standard practices upon rigorous review.^{68,69} Here are two examples: Perioperative beta blockade, which was strongly promoted in the 2007, was countermanded in 2008, after the POISE study findings appeared, demonstrating its dangers.⁷⁰ The reversal of tight intraoperative glucose control also followed upon publication of the NICE-sugar trial. Both practices documented increased deaths, only shortly after the “new/initial guideline/study” appeared with high praise.⁷¹

Publication or sponsorship by ABMS of articles favoring MOC and BC represents a clear conflict of interest, typically not explicitly declared in any article. Ethically, such paid publications should be clearly labeled as advertisements, and an ethical journal that publishes them must provide for equal-

opportunity publication of opposing viewpoints.⁷² An ABMS-reported relative improvement of 100% may in reality only represent a spurious improvement from 1 in 1,000 to 2 in 1,000.⁷³ Similarly, ABMS retrospective data mining efforts produce “associations” of great value to ABMS in selling its products to uninformed politicians, who lack formal understanding of or ability to review these spurious findings.^{51,52,73}

What does MOC accomplish? The board certification and re-certification industry is quite simply selling confidence to those without specialty knowledge. BC or MOC is at best one indication of competence. It may be a false promise, as openly admitted by ABMS: “FACT: ABMS recognizes that there is no certification that guarantees performance or positive outcomes.”^{45,74} These certification programs arose and have been criticized for decades as a guild phenomenon that serves to limit competition.⁵³ This is the basis for an antitrust action filed by the Association of American Physicians and Surgeons (AAPS).⁷⁵

Without MOC, What?

Doctors are overseen by numerous agencies. It is unnecessary to impose additional waste created by ABMS programs. As Crosby and Cully write: “Licensing and regulatory bodies are too numerous to count, much less understand. There are hospital credentialing committees, state Boards of Medicine, the National Board of Medical Examiners, Accreditation Council for Graduate Medical Education, Accreditation Council for Continuing Medical Education, Residency Review Committee, 24 specialty boards, ABMS, and The Joint Commission on Accreditation of Health Care Organizations to mention just a few. Testing and paperwork are seemingly endless.”⁷⁶

There is no need to test 850,000 physicians to uncover 85 (0.01%) of questionable competence, while failing 33% of the competent physicians in the process. It is not even clear that testing can find incompetents who are not detected by other means, nor is MOC suited for finding the alcohol or drug abuse that is the predominant reason for medical board sanctions.³⁵ Despite lack of provable value, ABMS certification costs \$360 million annually.⁷⁷ Most likely, MOC is as meaningless as “Top Doctor” full-page advertisements found in every airline magazine.⁷⁸

The Federation of State Medical Boards (FSMB) is nonetheless striving to implement its lifelong Maintenance of Licensure (MOL) program in every state.⁷⁷ Every practicing physician should read the FSMB document that plans to couple licensure to MOC.⁷⁹

Conclusion

BC emerged as a sign of personal achievement and relative quality of individual residency training programs, while making residency more than mere “on-the-job training.” MOC and CMOC need to be distinguished from BC. They are proprietary programs that rely on regulatory capture. They are promoted

through ethically dubious means, as in sponsored publications without adequate disclosure of conflicts of interest. A high percentage of practicing physicians fail the examinations and suffer enormous damage to their careers, without any evidence that performance on these examinations is related to clinical competence or patient outcomes. MOC and CMOC appear to provide a revenue stream to ABMS and its affiliates, while delivering no demonstrable net value to physicians or patients. Lifelong learning is an integral part of the profession of medicine, and does not require proprietary programs imposed by a guild.

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REFERENCES

- International Committee of Medical Journal Editors. Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals. Updated December 2013. Available at: <http://www.icmje.org/icmje-recommendations.pdf>. Accessed Aug 3, 2014.
- Siwek J. AFP's conflict of interest policy: disclosure is not enough. *Am Fam Physician* 2014; 89:161-167.
- Kassirer JP, Angell M. Financial conflicts of interest in biomedical research. *N Engl J Med* 1993;329:570-571.
- Drazen JM, Curfman GD. Financial associations of authors. *N Engl J Med* 2002;346:1901-1902.
- Rathmell JP, Lien C, Harman A. Objective structured clinical examination and board certification in anesthesiology. *Anesthesiology* 2014;120:7-9.
- Lynn LA. A dual-energy x-ray absorptiometry scan—need to know vs nice to know [published online Dec 13, 2013]. *JAMA Int Med*. doi 10.1001/jamainternmed.2013.12819.
- American Board of Anesthesiology, Inc. Maintenance of Certification and Physician Quality Reporting System Requirements. Available at: http://www.theaba.org/pdf/MOC_PQRS.pdf. Accessed Feb 12, 2014.
- Conway PH, Cassel CK. Engaging physicians and leveraging professionalism: a key to success for quality measurement and improvement. *JAMA* 2012;308:979-978.
- Miles PV, Moyer VA. Quality improvement and Maintenance of Certification. *Acad Pediatr* 2013;13:S14-S15.
- Lannon CM, Miles PV, Stockman JA. The path forward: collaborative networks and the future for children's health care. *Pediatr* 2013;131:S226-S227.
- Miles PV, Conway PH, Pawlson LG. Physician professionalism and accountability: the role of collaborative improvement networks. *Pediatr* 2013;131(Suppl 4):S204-S209.
- Lipner RS, Bylsma WH, Arnold GK, et al. Who is maintaining certification in internal medicine—and why? A national survey 10 years after initial certification. *Ann Intern Med* 2006;144:29-36.
- Lipner RS, Lelieveld C, Holmboe ES. Performance of physicians trained through the research pathway in internal medicine. *Acad Med* 2012;87:1594-1599.
- Graber ML, Wachter RM, Cassel CK. Bringing diagnosis into the quality and safety equations. *JAMA* 2012;308:1211-1212.
- Holmboe ES. Maintenance of certification, revalidation, and professional self-regulation. *J Contin Educ Health Prof* 2013;33(S1):S63-S66.
- Arnold GK, Hess BJ, Lipner RS. Internists' views of Maintenance of Certification: a stages-of-change perspective. *J Contin Educ Health Prof* 2013;33:99-108.
- Nora LM. Professionalism, career-long assessment, and the American Board of Medical Specialties' Maintenance of Certification: An introduction to this special supplement. *J Contin Educ Health Prof* 2013;33(S1):S5-S6.
- Shaw K, Cassel CK, Black C, et al. Shared medical regulation in a time of increasing calls for accountability and transparency: comparison of recertification in the United States, Canada, and the United Kingdom. *JAMA* 2009;302:2008-2014.
- Lipner RS, Hess BJ, Phillips RL. Specialty board certification in the United States: issues and evidence. *J Contin Educ Health Prof* 2013;33(S1):S20-S35.
- Hawkins RE, Lipner RS, Ham HP, et al. American Board of Medical Specialties Maintenance of Certification: theory and evidence regarding the current framework. *J Contin Educ Health Prof* 2013;33(S1):S7-S19.
- Hawkins RE, Lipner RS, Ham HP, et al. American Board of Medical Specialties Maintenance of Certification: theory and evidence regarding the current framework. *J Contin Educ Health Prof* 2013;33(S1):S7-S19.
- Cassel CK, ES Holmboe, Slass LB. Professional responsibility and certifying examinations. *Mayo Clin Proc* 2013;88:425-427.
- Cassel CK, Reuben D. Specialization, subspecialization, and subspecialization in internal medicine. *N Engl J Med* 2011;364:1169-1173.
- Schulte BM, Mannino DM, Royal KD, Brown SL, Peterson LE, Puffer JC. Community size and organization of practice predict family physician recertification success. *J Am Board Fam Med* 2014;27:383-390.
- Elward K, Blackburn B, Peterson LE, Greenawald M, Hagen MD. Improving quality of care and guideline adherence for asthma through a group self-assessment module. *J Am Board Fam Med* 2014;27:391-398.
- Lannon CM, Miles PV. Pediatric collaborative improvement networks: bridging the gap to improve child health outcomes. *Pediatr* 2013;131(suppl 4):S187-S188.
- Harrison RV, Olson CA. Evolving health care systems and approaches to Maintenance of Certification. *J Contin Educ Health Prof* 2013;33:S1-S4. doi: 10.1002/chp.21207.
- Grassley C. Committee on the Judiciary: Letter to C Cassel, MD, CEO Nat. Quality Forum; Feb 3, 2014. Available at: <http://www.propublica.org/documents/item/1012872-2014-02-03-ceg-to-nqf-chloraprep-kickback>. Accessed Feb 12, 2014.
- Allen M. Payments to CEO raise new conflicts at top health quality group. *ProPublica*, Feb 12, 2014. Available at: <http://www.propublica.org/article/payments-to-ceo-raise-new-conflicts-at-top-health-quality-group>. Accessed Feb 12, 2014.
- Archer J, de Bere SR. The United Kingdom's experience with and future plans for revalidation. *J Contin Educ Health Prof* 2013;33(suppl 1):S48-S53.
- Campbell CM, Parboosingh J. The Royal College experience and plans for the Maintenance of Certification program. *J Contin Educ Health Prof* 2013;33(suppl 1):S36-S47.
- American Medical Association. The Physician's Recognition Award and credit system information for accredited providers and physicians—2010 edition. Available at: <http://www.ama-assn.org/resources/doc/cme/prabooklet.pdf>. Accessed Jan 2, 2014.
- Wachter R. On Becoming Chair of the ABIM: Why the Board Matters More than Ever. Available at: <http://community.the-hospitalist.org/2012/08/14/on-becoming-chair-of-the-abim-why-the-board-matters-more-than-ever/>. Accessed Jan 2, 2014.
- Brennan TA. Recertification for internists—one 'grandfather's' experience. *N Engl J Med* 2005;353:1989-1992.
- Kempen PM. Maintenance of Certification (MOC), Maintenance of Licensure (MOL) and Continuing Medical Education (CME): the regulatory capture of medicine. *J Am Phys Surg* 2012;17:72-75.
- Kempen PM. Why do patients select and stay with their doctor? Implications regarding board certification and Maintenance of Certification and of Licensure (MOC/MOL). *J Am Phys Surg* 2012;17:53-56.
- Ipsos Public Affairs poll for American Academy of Family Physicians (AAFP). Ipsos Survey on Health Care and Health Care Providers. November 2013. Available at: <http://ipsos-na.com/download/pr.aspx?id=13294>. Accessed Jan 2, 2014.

38. Buscemi D, Wang H, Phyl M, et al. Maintenance of Certification in internal medicine: participation rates and patient outcomes. *J Community Hosp Int Med Persp* 2013;2(4). doi: 10.3402/jchimp.v2i4.19753.
39. Johnson DH. Maintenance of Certification: confession of a grandfather. *J Oncol Pract* 2012;8:203-204.
40. Kempen PM. Maintenance of Certification must go: one physician's viewpoint. *Medical Economics*, Jan 23, 2014. Available at: <http://medicaleconomics.modernmedicine.com/medical-economics/news/maintenance-certification-must-go-one-physicians-viewpoint?page=0,0#sthash.Ga9yWqyz.dpuf>. Accessed Feb 12, 2014.
41. Levinson W, King TE Jr, Goldman L, Goroll AH, Kessler B. Clinical decisions. American Board of Internal Medicine Maintenance of Certification program. *N Engl J Med* 2010;362:948-952.
42. Kritek PA, Drazen JM. Clinical decisions. American Board of Internal Medicine Maintenance of Certification program—polling results. *N Engl J Med* 2010;362:e54. doi: 10.1056/NEJMcld1003227.
43. Fisher W. Does board recertification do more harm than good? Available at: <http://www.kevinmd.com/blog/2013/10/board-recertification-harm-good.html>. Accessed Feb 12, 2014.
44. Pittman D. AMA house disses recertification programs. *MedPage Today*, Jun 18, 2013. Available at: <http://www.medpagetoday.com/MeetingCoverage/AMA/39949>. Accessed Aug 4, 2014.
45. ABMS: *Myths and Facts*. Available at: http://www.abms.org/MOC_Myths_And_Facts/. Accessed Aug 4, 2014.
46. Sharp LK, Bashook PG, Lipsky MS, Horowitz SD, Miller SH. Specialty board certification and clinical outcomes: the missing link. *Acad Med* 2002;77:534-542.
47. Norcini JJ, Kimball HR, Lipner RS. Certification and specialization: do they matter in the outcome of acute myocardial infarction? *Acad Med* 2000;75:1193-1198.
48. Norcini J, Lipner R, Kimball H. The certification status of generalist physicians and the mortality of their patients after acute myocardial infarction. *Acad Med* 2001;76 (suppl 10):S21-S23.
49. Norcini JJ, Lipner RS, Kimball HR. Certifying examination performance and patient outcomes following acute myocardial infarction. *Med Educ* 2002;36:853-859.
50. 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;21:238-244.
51. Yentis SM. Lies, damn lies, and statistics. *Anaesthesia*. 2012;67:455-456.
52. Nuttall GA, Houle TT. Liars, damn liars, and propensity scores. *Anesthesiology* 2008;108:3-4.
53. Wallace DA. Occupational licensing and certification: remedies for denial. *William & Mary Law Rev* 1972;14(1). Available at: <http://scholarship.law.wm.edu/wmlr/vol14/iss1/3>. Accessed Jan 2, 2014.
54. Thierer A. Regulatory capture: what the experts have found. *Technology Liberation Front*, Dec 19, 2010. Available at: <http://techliberation.com/2010/12/19/regulatory-capture-what-the-experts-have-found/>. Accessed Jan 2, 2014.
55. Royal KD, Puffer JC. A closer look at recertification candidate pass rates. *Ann Fam Med* 2013;11:389-390.
56. American Board of Internal Medicine Foundation. Choosing Wisely®. Available at: <http://www.abimfoundation.org/Initiatives/Choosing-Wisely.aspx>. Accessed May 18, 2014.
57. Wasserman SI, Kimball HR, Duffy FD. Recertification in internal medicine: a program of continuous professional development. Task Force on Recertification. *Ann Intern Med*. 2000;133:202-208.
58. American Medical Association. Physician Quality Measure Reporting. Available at: <https://www.ama-assn.org/ama/pub/physician-resources/clinical-practice-improvement/clinical-quality/physician-quality-reporting-system.page>. Accessed Jan 2, 2014.
59. American Board of Anesthesiology. Maintenance of Certification and Physician Quality Reporting System Requirements 2010. Available at: http://www.theaba.org/pdf/MOC_PQRS.pdf. Accessed Jan 2, 2014.
60. Title 42. The Public Health and Welfare. Chapter 6a. Public Health Service Subchapter XXV. Requirements Relating to Health Insurance Coverage. Part A. Individual and Group Market Reforms, subpart 1. General Reform, § 300gg-5. Non-discrimination in Health Care. Available at: <http://www.law.cornell.edu/uscode/text/42/300gg-5>. Accessed Jan 2, 2014.
61. Iglehart JK, Baron RB. Ensuring physicians' competence—is Maintenance of Certification the answer? *N Engl J Med*. 2012;367:2543-2449.
62. Talwalkar J. Improving the transparency and trustworthiness of subspecialty-based clinical practice guidelines. *Mayo Clin Proc* 2014;89:5-7.
63. Feuerstein JD, Gifford AE, Akbari M, et al. Systematic analysis underlying the quality of the scientific evidence and conflicts of interest in gastroenterology practice guidelines. *Am J Gastroenterol* 2013;108:1686-1693.
64. Feuerstein JD, Gifford AE, Akbari M, et al. Underlying the quality of the scientific evidence and conflicts of interest in interventional medicine subspecialty guidelines. *Mayo Clin Proc* 2014;89:16-24.
65. American Society of Anesthesiologists. Practice advisory for the perioperative management of patients with cardiac implantable electronic devices: pacemakers and implantable cardioverter-defibrillators: an updated report by the American Society of Anesthesiologists Task Force on Perioperative Management of Patients with Cardiac Implantable Electronic Devices. *Anesthesiology* 2011;114:247-261.
66. Crossley GH, Poole JE, Rozner MA, et al. The Heart Rhythm Society (HRS)/American Society of Anesthesiologists (ASA) Expert Consensus Statement on the perioperative management of patients with implantable defibrillators, pacemakers and arrhythmia monitors: facilities and patient management this document was developed as a joint project with the American Society of Anesthesiologists (ASA), and in collaboration with the American Heart Association (AHA), and the Society of Thoracic Surgeons (STS). *Heart Rhythm* 2011;8:1114-1154.
67. Stone ME, Salter B, Fischer A. Perioperative management of patients with cardiac implantable electronic devices. *Br J Anaesth* 2011;107(Suppl 1):i16-26.
68. Prasad V, Vandross A, Toomey C, et al. A decade of reversal: an analysis of 146 contradicted medical practices. *Mayo Clin Proc* 2013;88:790-798.
69. Garner S, Littlejohns P. Disinvestment from low value clinical interventions: NICEly done? *BMJ* 2011;343:d4519.
70. POISE Study Group, Devereaux PJ, Yang H, Yusuf S, et al. Effects of extended-release metoprolol succinate in patients undergoing non-cardiac surgery (POISE trial): a randomised controlled trial. *Lancet* 2008;371:1839-1847.
71. NICE-SUGAR Study Investigators, Finfer S, Liu B, Chittock DR, et al. Hypoglycemia and risk of death in critically ill patients. *N Engl J Med* 2012;367:1108-1118.
72. Kempen PM. Maintenance of Licensure. *Ann Intern Med* 2013;158:219.
73. Grimes DA, Schulz KF. False alarms and pseudo-epidemics: the limitations of observational epidemiology. *Obstet Gynecol* 2012;120:920-927.
74. Kempen PM. Maintenance of Certification—important and to whom? *J Community Hosp Intern Med Perspect*, 2013;3(1):1-4. Available at: <http://www.jchimp.net/index.php/jchimp/article/view/20326/html>. Accessed Aug 5, 2014.
75. *AAPS vs ABMS in the United States District Court for the District of New Jersey*. No. 3:13-cv-2609-PGS-LHG. Available at: <https://ia601704.us.archive.org/33/items/gov.uscourts.njd.288693/gov.uscourts.njd.288693.1.0.pdf>. Accessed Jan 2, 2014.
76. Crosby G, Culley DJ. Anesthesia & analgesia by the numbers: then & now. *Anesth Analg* 2012;115:1265-1267.
77. Kempen PM. Maintenance of Certification and Licensure: regulatory capture of medicine. *Anesth Analg* 2014;118:1378-1386.
78. Abdelmalek M, Cuomo C, Wagschal G, Rhee J, Doytchinova K. ABC News investigates top doctor awards: are they always well deserved? ABC News, July 14, 2012. Available at: <http://abcnews.go.com/Health/top-doctor-awards-deserved-abc-news-investigation/story?id=16771628>. Accessed Jan 2, 2014.
79. Federation of State Medical Boards. Report from the Maintenance of Licensure Implementation Group; 2011. Available at: <http://www.fsmb.org/pdf/mol-implementation.pdf>. Accessed Jan 2, 2014.