

Clinical Excellence in Cardiology

Roy C. Ziegelstein, MD*

A recent study identified 7 domains of clinical excellence on the basis of interviews with “clinically excellent” physicians at academic institutions in the United States: (1) communication and interpersonal skills, (2) professionalism and humanism, (3) diagnostic acumen, (4) skillful negotiation of the health care system, (5) knowledge, (6) taking a scholarly approach to clinical practice, and (7) having passion for clinical medicine. What constitutes clinical excellence in cardiology has not previously been defined. The author discusses clinical excellence in cardiology using the framework of these 7 domains and also considers the additional domain of clinical experience. Specific aspects of the domains of clinical excellence that are of greatest relevance to cardiology are highlighted. In conclusion, this discussion characterizes what constitutes clinical excellence in cardiology and should stimulate additional discussion of the topic and an examination of how the domains of clinical excellence in cardiology are related to specific patient outcomes. © 2011 Elsevier Inc. All rights reserved. (Am J Cardiol 2011;108:607–611)

On the basis of interviews with 24 academic physicians deemed “clinically excellent,” Christmas et al¹ identified 7 domains of clinical excellence relevant to all disciplines in medicine: (1) communication and interpersonal skills, (2) professionalism and humanism, (3) diagnostic acumen, (4) skillful negotiation of the health care system, (5) knowledge, (6) taking a scholarly approach to clinical practice, and (7) having passion for clinical medicine. What follows is a discussion of clinical excellence in cardiology that identifies aspects within each of the 7 domains that are of particular relevance to this specialty.

Is Clinical Excellence in Cardiology Different from Clinical Excellence in Other Specialties?

In no other field of medicine has there been so much work on performance measures and guidelines, with numerous statements published by the American Heart Association and the American College of Cardiology. Performance measures in cardiology have been created for the treatment of acute cardiac conditions in the inpatient setting² and for outpatient management of coronary artery disease, heart failure, and atrial fibrillation.^{3–5} Compliance with these performance measures has been monitored in the inpatient setting (i.e., with the National Cardiovascular Data Registries⁶ and Get With the Guidelines^{7,8}) and outpatient arenas (Practice Innovation and Clinical Excellence⁹). Despite the effort that has gone into developing guidelines and consensus statements in cardiology, the link between compliance

and clinical excellence has not been clearly demonstrated. For example, the compliance of hospitals with performance measures is not associated with improved heart failure outcomes.^{10,11} The speed with which an interventional cardiologist achieves reperfusion of the culprit vessel, the so-called door-to-balloon time, is an important performance measure in the treatment of patients with acute ST-segment elevation myocardial infarctions. However, a recent study of 8,771 patients with ST-segment elevation myocardial infarctions who underwent primary percutaneous coronary intervention showed that although median door-to-balloon time decreased, and the percentage of patients with door-to-balloon times <90 minutes increased from 2003 to 2008, in-hospital mortality did not change during that time period, even after controlling for baseline characteristics.¹²

Excellence in clinical cardiology may differ from clinical excellence in other specialties because the things cardiologists do are different from the things other physicians do. Like other specialists, cardiologists use their medical knowledge and skill to improve the health of their patients, but cardiologists also “have the tools to alter the course of the disease.”¹³ Cardiologists perform or supervise a variety of invasive and noninvasive procedures not generally performed by other specialists. Differences in scope of practice and the plethora of guidelines and consensus statements in the field of cardiology create a different context for clinical excellence in this specialty. The 7 domains of clinical excellence previously described¹ are discussed individually with this special context in mind.

Communication and Interpersonal Skills

Communication and interpersonal skills are critical to many aspects of the patient-physician interaction in cardiology, as they are in other disciplines. These skills are particularly relevant to behavioral counseling in preventive cardiology. One of the main roles of the cardiologist is to advise patients to adopt behaviors that promote heart health and to avoid others that do not in a way that is clear, useful, and respectful. Unfortunately, cardiologists may be lacking in their interpersonal skills and often demonstrate only mod-

Department of Medicine, Johns Hopkins Bayview Medical Center, Johns Hopkins University School of Medicine, Baltimore, Maryland. Manuscript received February 2, 2011; revised manuscript received and accepted March 29, 2011.

Dr. Ziegelstein was supported by the Miller Family Scholar Program of the Johns Hopkins Center for Innovative Medicine, Baltimore, Maryland, and is an inaugural member of the Miller-Coulson Academy of Clinical Excellence at Johns Hopkins, made possible through the support and generosity of the Miller-Coulson family.

*Corresponding author: Tel: 410-550-0523; fax: 410-550-1094.

E-mail address: rziegel2@jhmi.edu (R.C. Ziegelstein).

erate interest in educational interventions that pertain to cardiovascular risk reduction.¹⁴ Hayes et al¹⁴ concluded that “cardiologists demonstrate areas of weakness in core competencies as reflected by the American Board of Medical Specialists that involve patient care and interpersonal communication skills.” Particularly disappointing is the finding that cardiologists often lack knowledge, interest, and commitment to communicating with patients about smoking cessation.¹⁵ Indeed, many cardiologists do not consider themselves the most appropriate individuals to communicate with patients about quitting. Clinical excellence in cardiology is dependent on communication and interpersonal skills in all patient encounters, something that is perhaps most evident when making recommendations to reduce cardiovascular risk.

Professionalism and Humanism

As is true of other specialties, professionalism and humanism are critical aspects of clinical excellence in cardiology and central to the public trust in cardiologists. However, the benefits that clinicians in this specialty derive from having “the tools to alter the course of the disease”¹³ are accompanied by unique threats to professionalism that may be posed by purveyors of those tools. The pharmaceutical and device-manufacturing industries are major sponsors of research in cardiovascular disease and spend large sums of money promoting their products to cardiologists. In 2005, 73% of medical device funding targeted cardiovascular disease,¹⁶ and stories about how relations with industry may affect the practice of cardiologists and erode the public trust are now common in the lay press. In a recent national survey of physicians, most respondents surveyed reported physician-industry relations, and cardiologists led the way.¹⁷ In a recent poll conducted by *Consumer Reports*, >3 in 4 individuals reported that they would be “very” or “somewhat” concerned about receiving the best treatment or advice from a doctor who accepted drug company money.¹⁸ Several years ago, the American College of Cardiology Foundation and the American Heart Association jointly published a document based on a conference that highlighted potential conflicts of interest facing cardiologists.¹⁹ The authors of the document asked the question, “What are the issues in modern cardiovascular care that create real or potential problems of conflict of interest for our members and for the organizations themselves?” They compiled several task force reports that addressed issues related to professionalism of special relevance to cardiologists. Given the unique threats to professionalism in cardiology, as well as the special trust patients place in us to protect such a critical aspect of their health, professionalism and humanism are certainly important domains of clinical excellence in this specialty.

Diagnostic Acumen

A recent report by Hector Ventura²⁰ in *The American Journal of Cardiology* memorializes Dr. Kenneth Baughman, who died in an accident on an early morning run while attending an American Heart Association meeting. It is hard to think of diagnostic acumen in cardiology without his

image coming to mind. Cardiologists with great diagnostic acumen are those who demonstrate superb skill at integrating information from the history and physical examination and solving the clinical puzzles that confront them. They are the individuals whom other cardiologists turn to with diagnostic dilemmas or when they just do not know what to do. The report on clinical excellence by Christmas et al¹ suggests that an important part of diagnostic acumen is being “right.” Almost all cardiologists can think of someone whom they routinely turn to for help and who always seems to be “right.” For many, Ken Baughman was that person.

Skillful Negotiation of the Health Care System

Like other specialists, cardiologists must have an understanding of the health care system to deliver appropriate care to their patients. Health insurance benefits, medication costs, and disability determinations are all important to the care of patients with cardiovascular disease. Skillful negotiation of the health care system is a particularly critical aspect of clinical excellence in cardiology to demonstrate when treating older patients with heart failure and multiple co-morbidities, especially near the end of life. Although heart failure guidelines recommend that patients with the most advanced stage of heart failure be considered for hospice care,²¹ patients with heart failure are rarely referred to hospice. Only about 1 of every 10 patients in hospice has a primary diagnosis of heart failure.²² Compared to other subspecialists who regularly deal with patients at the end of life, cardiologists appear to have little skill in negotiating the health care system to the advantage of their patients. Cardiologists are less likely than oncologists or primary care physicians to report having working relations with hospice.²³ This may be because cardiologists may have neither training nor comfort with end-of-life care.²⁴ Clinical excellence in cardiology most certainly involves skillful negotiation of the health care system for all patients, and this is particularly important when caring for patients with refractory heart failure who are near the end of life.

Knowledge

Superior knowledge is a “requirement” of clinical excellence that involves knowledge of the research in one’s specialty and also in related fields.¹ Cardiology is replete with practice guidelines and a mass of published research reporting the results of clinical trials, but the knowledge that forms the foundation of clinical excellence in cardiology must go beyond simply demonstrating a command of the published medical research.

Approximately 10 years ago, Dr. Carl Leier, a renowned heart failure expert, was asked to be a guest editor and to select a theme for an issue of the journal *Congestive Heart Failure*. Acknowledging the plethora of reports already in existence on heart failure guidelines and evidence-based cardiology, and recognizing the wisdom that can be derived from master clinicians, Dr. Leier noted that “it is remarkable how much of the day-to-day medical care of the patient with heart failure has not yet been addressed by statistically powered (i.e., evidence-based) trials.”²⁵ Dr. Leier sent a note to a group of master clinicians in heart failure man-

agement, asking them to contribute “helpful tips, suggestions, maneuvers, and approaches that have been helpful to you (and your patients) over the years in the evaluation, management, and therapy of [congestive heart failure].” His invitation “targeted physician-scientists with at least 2 decades of heart failure experience, a significant publication record of peer-reviewed investigation in heart failure, and known, masterful clinical expertise in human heart failure at the bedside.” From the responses to his invitation came clinical “nuggets, pearls, and vignettes” that are extremely insightful and helpful to individuals who provide care for patients with heart failure.²⁵ Most of the information contained in the quotations from these master clinicians would not be able to be gleaned from heart failure trials or clinical guidelines. It is the wisdom gained from experience caring for patients with heart disease over many years that is a critical aspect of clinical excellence in cardiology.

Taking a Scholarly Approach to Clinical Practice

Cardiologists must regularly apply knowledge gleaned from randomized clinical trials to the care of patients. The sheer number of trials in cardiology makes this challenging enough, but those who take a scholarly approach to clinical practice also ensure that their patient care is responsive to changing paradigms in cardiology and to rapidly evolving concepts in the field. This is particularly important when one considers the frequency with which the results of major clinical trials in cardiology are subsequently contradicted. Ioannidis²⁶ published an analysis of highly cited (>1,000 times) clinical research studies published in 3 major general clinical journal or high-impact specialty journals from 1990 to 2003. Of 49 such studies, 45 claimed that the intervention studied was effective. Of these, 7 (16%) were contradicted by subsequent studies. That 1 of every 6 highly cited trials published in major journals would subsequently be refuted is remarkable; that 5 of the 7 were cardiovascular studies should be especially sobering to cardiologists. Another 7 of the studies (16%) found effects that were stronger than those of subsequent studies; all but 1 of these was a cardiovascular study.

There have been many instances in which the prevailing understanding of appropriate patient care in cardiology was subsequently turned on its head. Perhaps 3 of the most significant examples in recent memory are that (1) inotropic therapy improves the survival of patients with heart failure due to left ventricular systolic dysfunction, (2) antiarrhythmic drugs improve the survival of heart attack survivors with frequent ventricular ectopy, and (3) cardioversion improves the survival of patients with atrial fibrillation. In each instance, an understanding that appeared to be self-evident was challenged and proved to be incorrect. Numerous clinical trials showed that despite improvement in hemodynamics, inotropic agents increase, rather than decrease, mortality in patients with chronic heart failure due to left ventricular systolic dysfunction.²⁷ The Cardiac Arrhythmia Suppression Trial (CAST) showed that antiarrhythmic drugs increased, rather than decreased, mortality in patients whose ventricular ectopy could be suppressed with antiarrhythmic therapy after a myocardial infarction.²⁸ Most recently, the Atrial Fibrillation Follow-Up Investigation of Rhythm Man-

agement (AFFIRM) trial showed that cardioversion of atrial fibrillation offers no survival advantage over rate control for this arrhythmia.²⁹

Perhaps the antithesis of a scholarly approach to clinical practice is when cardiologists allow their judgment to be influenced by the so-called oculostenotic reflex,³⁰ which leads providers to recommend percutaneous coronary intervention to reduce the risk for acute myocardial infarction in patients with stable coronary disease, although most acute coronary syndromes are due to thrombosis of coronary lesions that had <50% stenosis before plaque rupture.³¹ It is clear that even when possessing the requisite knowledge, cardiologists often recommend such intervention when it is not indicated.³² The scholarly approach to clinical practice in cardiology therefore involves not only knowing the published research but also critically appraising that research and being able to change practice in light of new findings.

Having Passion for Clinical Medicine

A passion for clinical medicine was mentioned by the fewest number of respondents (21% of total) as an important quality for clinical excellence in the work by Christmas et al.¹ Nevertheless, a passion for patient care seems to be an important aspect of clinical excellence in cardiology. Most cardiologists can think of individuals who influenced them greatly and whose enthusiasm and passion for medicine were inspirational. An interview in *The American Journal of Cardiology* with James Thornton Willerson,³³ 1 of the great leaders in our specialty, captures passion for clinical medicine and for cardiology in particular. Indeed, Dr. William Roberts, the editor of the *Journal*, who interviewed Dr. Willerson for that article, noted that his purpose was “to delve into you a bit to see where that passion to excel, to stand above the pack, came from.”³³ In 1 exchange after Dr. Willerson noted that he arrived to work at 5 in the morning, Dr. Roberts asked, “What time would you leave the hospital at night? Dr. Willerson replied, “When the work was done.” Although that response may have reflected work ethic or professionalism, it is Dr. Willerson’s passion for clinical medicine that is so critical to clinical excellence in cardiology that comes across clearly in the article.

Clinical Experience

Clinical experience is an important part of several of the dimensions of clinical excellence defined by Christmas et al,¹ but it was not identified as a distinct domain. With respect to clinical excellence in cardiology, it should be, and for clinical care that is dependent on the expert deployment of technology, it must be. The 7 domains of clinical excellence defined by Christmas et al¹ were identified by interviewing faculty members in the top 10 departments of medicine in the United States. They therefore reflect the perspective of academia, and whether they reflect the domains of clinical excellence in other settings is not clear. There has been some debate about whether cardiovascular care in academic medical centers is superior to cardiology care delivered elsewhere. In 1 study, Allison et al³⁴ reported that the processes of care and outcomes for elderly (Medicare) patients with acute myocardial infarction admitted to

teaching hospitals were better than in other venues of care. However, a report by Thiemann et al³⁵ based on an analysis of the same Cooperative Cardiovascular Project found no relation between teaching and nonteaching status and outcomes. Instead, Thiemann et al³⁵ reported that hospital volume was an important predictor of outcome for patients with acute myocardial infarctions. Patients admitted to hospitals with the lowest volumes were more likely to die within 30 days of admission than patients admitted to higher volume hospitals. This suggests an important dimension of clinical excellence in cardiology, namely, clinical experience. This may be particularly important given the role that the judicious application of technology plays in patient outcomes in cardiovascular medicine.

Conclusions

What constitutes clinical excellence in cardiology has not previously been defined. The 7 domains of clinical excellence previously described for academic medicine¹ are a reasonable framework to describe clinical excellence in cardiology, whether in academia or private practice. Specific aspects of the 7 domains of particular relevance to the practice of cardiology are important to consider. Further study of the elements of clinical excellence in cardiology and how they relate to patient outcomes appears warranted.

1. Christmas C, Kravet SJ, Durso SC, Wright SM. Clinical excellence in academia: perspectives from masterful academic clinicians. *Mayo Clin Proc* 2008;83:989–994.
2. Bonow RO, Masoudi FA, Rumsfeld JS, DeLong E, Estes NA III, Goff DC Jr, Grady K, Green LA, Loth AR, Peterson ED, Piña IL, Radford MJ, Shahian DM; American College of Cardiology; American Heart Association Task Force on Performance Measures. ACC/AHA classification of care metrics: performance measures and quality metrics: a report of the American College of Cardiology/American Heart Association Task Force on Performance Measures. *J Am Coll Cardiol* 2008;52:2113–2117.
3. American College of Cardiology, American Heart Association. Clinical performance measures: chronic stable coronary artery disease. Available at: <http://acc.org/qualityandscience/clinical/measures/CAD/cadmeasures.pdf>. Accessed January 30, 2011.
4. Bonow RO, Bennett S, Casey DE Jr, Ganiats TG, Hlatky MA, Konstam MA, Lambrew CT, Normand SL, Piña IL, Radford MJ, Smith AL, Stevenson LW, Bonow RO, Bennett SJ, Burke G, Eagle KA, Krumholz HM, Lambrew CT, Linderbaum J, Masoudi FA, Normand SL, Ritchie JL, Rumsfeld JS, Spertus JA; American College of Cardiology; American Heart Association Task Force on Performance Measures (Writing Committee to Develop Heart Failure Clinical Performance Measures); Heart Failure Society of America. ACC/AHA clinical performance measures for adults with chronic heart failure: a report of the American College of Cardiology/American Heart Association Task Force on Performance Measures (Writing Committee to Develop Heart Failure Clinical Performance Measures). *J Am Coll Cardiol* 2005;46:1144–1178.
5. Estes NA III, Halperin JL, Calkins H, Ezekowitz MD, Gitman P, Go AS, McNamara RL, Messer JV, Ritchie JL, Romeo SJ, Waldo AL, Wyse DG, Bonow RO, DeLong E, Goff DC Jr, Grady K, Green LA, Hiniker A, Linderbaum JA, Masoudi FA, Piña IL, Pressler S, Radford MJ, Rumsfeld JS; American College of Cardiology; American Heart Association Task Force on Performance Measures; Physician Consortium for Performance Improvement. ACC/AHA/Physician Consortium 2008 clinical performance measures for adults with nonvalvular atrial fibrillation or atrial flutter: a report of the American College of Cardiology/American Heart Association Task Force on Performance Measures and the Physician Consortium for Performance Improvement (Writing Committee to Develop Clinical Performance Measures for Atrial Fibrillation) Developed in Collaboration with the Heart Rhythm Society. *J Am Coll Cardiol* 2008;51:865–884.
6. Nallamothu BK, Wang Y, Bradley EH, Ho KK, Curtis JP, Rumsfeld JS, Masoudi FA, Krumholz HM. Comparing hospital performance in door-to-balloon time between the Hospital Quality Alliance and the National Cardiovascular Data Registry. *J Am Coll Cardiol* 2007;50:1517–1519.
7. Lewis WR, Peterson ED, Cannon CP, Super DM, LaBresh KA, Quealy K, Liang L, Fonarow GC. An organized approach to improvement in guideline adherence for acute myocardial infarction: results with the Get With the Guidelines quality improvement program. *Arch Intern Med* 2008;168:1813–1819.
8. Nallamothu BK, Krumholz HM, Peterson ED, Pan W, Bradley E, Stern AF, Masoudi FA, Janicke DM, Hernandez AF, Cannon CP, Fonarow GC; D2B Alliance and the American Heart Association Get-With-the-Guidelines Investigators. Door-to-balloon times in hospitals within the Get-With-the-Guidelines registry after initiation of the Door-to-Balloon (D2B) Alliance. *Am J Cardiol* 2009;103:1051–1055.
9. Chan PS, Oetgen WJ, Buchanan D, Mitchell K, Fioocchi FF, Tang F, Jones PG, Breeding T, Thrutchley D, Rumsfeld JS, Spertus JA. Cardiac performance measure compliance in outpatients: the American College of Cardiology and National Cardiovascular Data Registry's PINNACLE (Practice Innovation and Clinical Excellence) program. *J Am Coll Cardiol* 2010;56:8–14.
10. Fonarow GC, Abraham WT, Albert NM, Stough WG, Gheorghiadu M, Greenberg BH, O'Connor CM, Pieper K, Sun JL, Yancy C, Young JB; OPTIMIZE-HF Investigators and Hospitals. Association between performance measures and clinical outcomes for patients hospitalized with heart failure. *JAMA* 2007;297:61–70.
11. Patterson ME, Hernandez AF, Hammill BG, Fonarow GC, Peterson ED, Schulman KA, Curtis LH. Process of care performance measures and long-term outcomes in patients hospitalized with heart failure. *Med Care* 2010;48:210–216.
12. Flynn A, Moscucci M, Share D, Smith D, LaLonde T, Changezi H, Riba A, Gurm HS. Trends in door-to-balloon time and mortality in patients with ST-elevation myocardial infarction undergoing primary percutaneous coronary intervention. *Arch Intern Med* 2010;170:1842–1849.
13. Parnley WW. Why would anyone want to become a cardiologist these days? *J Am Coll Cardiol* 1997;30:843–844.
14. Hayes SM, Dupuis M, Murray S. Issues and challenges in the assessment, diagnosis and treatment of cardiovascular risk factors: assessing the needs of cardiologists. *BMC Med Educ* 2008;8:30.
15. Aboyns V, Thomas D, Lacroix P. The cardiologist and smoking cessation. *Curr Opin Cardiol* 2010;25:469–477.
16. Dorsey ER, Thompson JP, Carrasco M, de Roulet J, Vitticore P, Nicholson S, Johnston SC, Holloway RG, Moses H III. Financing of U.S. biomedical research and new drug approvals across therapeutic areas. *PLoS One* 2009;4:e7015.
17. Campbell EG, Rao SR, DesRoches CM, Iezzoni LI, Vogeli C, Bolcic-Jankovic D, Miralles PD. Physician professionalism and changes in physician-industry relationships from 2004 to 2009. *Arch Intern Med* 2010;170:1820–1826.
18. Consumer Reports National Research Center. Doctor promotional activities survey. Available at: <http://propublica.s3.amazonaws.com/assets/docs/ConsumerReportsDoctorSurveyOct2010.pdf>. Accessed January 30, 2011.
19. Popp RJ, Smith SC Jr, Adams RJ, Antman EM, Kavey RE, DeMaria AN, Ohman EM, Pitt B, Willerson JT, Bellande BJ, Fonarow GC, Nishimura RA, Shah PM, Hirshfeld JW Jr, Messer JV, Peterson ED, Pystowsky EN, Anderson JL, Cheitlin MD, Goldstein LB, Grant AO, Beller GA, Hines EF Jr, Livingston DW, McEntree CW; American College of Cardiology Foundation; American Heart Association. ACCF/AHA consensus conference report on professionalism and ethics. *Circulation* 2004;110:2506–2549.
20. Ventura HO. Kenneth Baughman, MD: a personal reflection. *Am J Cardiol* 2011; 107:139–140.
21. Hunt SA, Abraham WT, Chin MH, Feldman AM, Francis GS, Ganiats TG, Jessup M, Konstam MA, Mancini DM, Michl K, Oates JA, Rahko PS, Silver MA, Stevenson LW, Yancy CW; American College of Cardiology Foundation; American Heart Association. 2009 Focused update incorporated into the ACC/AHA 2005 guidelines for the diagnosis and management of heart failure in adults: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines developed in collaboration

- with the International Society for Heart and Lung Transplantation. *J Am Coll Cardiol* 2009;53:e1–e90.
22. National Hospice and Palliative Care Organization. NHPCO facts and figures: hospice care in America. Available at: http://www.nhpc.org/files/public/Statistics_Research/Hospice_Facts_Figures_Oct-2010.pdf. Accessed January 30, 2011.
 23. Carter CL, Zapka JG, O'Neill S, DesHarnais S, Hennessy W, Kurent J, Carter R. Physician perspectives on end-of-life care: factors of race, specialty, and geography. *Palliat Support Care* 2006;4:257–271.
 24. Goodlin SJ. End-of-life care in heart failure. *Curr Cardiol Rep* 2009;11:184–191.
 25. Leier CV, Silver MA, Massie BM, Young JB, Fowler MB, Ventura HO, Hershberger RE. Nuggets, pearls, and vignettes of master heart failure clinicians. Part 1—the medical history. *Congest Heart Fail* 2001;7:245–249.
 26. Ioannidis JP. Contradicted and initially stronger effects in highly cited clinical research. *JAMA* 2005;294:218–228.
 27. Gheorghide M, Benatar D, Konstam MA, Stoukides CA, Bonow RO. Pharmacotherapy for systolic dysfunction: a review of randomized clinical trials. *Am J Cardiol* 1997;80(suppl):14H–27H.
 28. Echt DS, Liebson PR, Mitchell LB, Peters RW, Obias-Manno D, Barker AH, Arensberg D, Baker A, Friedman L, Greene HL, Huther ML, Richardson DW; CAST Investigators. Mortality and morbidity in patients receiving encainide, flecainide, or placebo. *N Engl J Med* 1991;324:781–788.
 29. Wyse DG, Waldo AL, DiMarco JP, Domanski MJ, Rosenberg Y, Schron EB, Kellen JC, Greene HL, Mickel MC, Dalquist JE, Corley SD; Atrial Fibrillation Follow-Up Investigation of Rhythm Management (AFFIRM) Investigators. A comparison of rate control and rhythm control in patients with atrial fibrillation. *N Engl J Med* 2002;347:1825–1833.
 30. Topol EJ, Nissen SE. Our preoccupation with coronary luminology. The dissociation between clinical and angiographic findings in ischemic heart disease. *Circulation* 1995;92:2333–2342.
 31. Little WC, Constantinescu M, Applegate RJ, Kutcher MA, Burrows MT, Kahl FR, Santamore WP. Can coronary angiography predict the site of a subsequent myocardial infarction in patients with mild-to-moderate coronary artery disease? *Circulation* 1988;78:1157–1166.
 32. Lin GA, Dudley RA, Redberg RF. Cardiologists' use of percutaneous coronary interventions for stable coronary artery disease. *Arch Intern Med* 2007;167:1604–1609.
 33. Willerson JT. James Thornton Willerson, MD: a conversation with the editor. *Am J Cardiol* 1997;79:457–467.
 34. Allison JJ, Kiefe CI, Weissman NW, Person SD, Rousculp M, Canto JG, Bae S, Williams OD, Farmer R, Centor RM. Relationship of hospital teaching status with quality of care and mortality for Medicare patients with acute MI. *JAMA* 2000;284:1256–1262.
 35. Thieman DR, Coresh J, Oetgen WJ, Powe NR. Association between hospital volume and survival after acute myocardial infarction in elderly patients. *N Engl J Med* 1999;340:1640–1648.