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 al 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 setting and for outpatient management of coronary artery disease, heart failure, and atrial fibrillation. Compliance with these performance measures has been monitored in the inpatient setting (i.e., with the National Cardiovascular Data Registries and Get With the Guidelines) and outpatient arenas (Practice Innovation and Clinical Excellence). 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. 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 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.

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.” 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 described 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-

0002-9149/11/$ – see front matter © 2011 Elsevier Inc. All rights reserved. doi:10.1016/j.amjcard.2011.03.095

www.ajconline.org
erate interest in educational interventions that pertain to cardiovascular risk reduction. Hayes et al\textsuperscript{14} 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.\textsuperscript{13} 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”\textsuperscript{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,\textsuperscript{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.\textsuperscript{17} In a recent poll conducted by Consumer Reports, \textgreater 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.\textsuperscript{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.\textsuperscript{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 Ventura 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 al\textsuperscript{1} 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,\textsuperscript{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.\textsuperscript{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.\textsuperscript{23} This may be because cardiologists may have neither training nor comfort with end-of-life care.\textsuperscript{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.\textsuperscript{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.”\textsuperscript{25} Dr. Leier sent a note to a group of master clinicians in heart failure man-
In patients with chronic heart failure due to left ventricular dysfunc-
tion, inotropic agents increase, rather than decrease, mortality. A pub-
cation of a large, randomized, controlled trial showed that inotropic agents
in patients with heart failure increased mortality. This finding has sub-
sequently been confirmed by many other studies. In fact, it is now clear
that inotropic agents are contraindicated in patients with heart failure.

Iatrogenesis is a term used to describe the adverse effects of phar-
caceutical interventions. It is estimated that 20% of all deaths in the US
are due to iatrogenesis. This is a significant number and has important
implications for the care of patients with heart disease.

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.

Ioannidis 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 cardio-
vascular 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) antiarrhyth-
ic drugs improve the survival of heart attack survivors
with frequent ventricular ectopy, and (3) cardioversion im-
proves 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 clin-
ical trials showed that despite improvement in hemody-
namics, inotropic agents increase, rather than decrease, mortality
in patients with chronic heart failure due to left ventricular
systolic dysfunction. The Cardiac Arrhythmia Suppres-
sion Trial (CAST) showed that antiarrhythmic drugs in-
creased, rather than decreased, mortality in patients whose
ventricular ectopy could be suppressed with antiarrhythmic
therapy after a myocardial infarction. 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.

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, which
leads providers to recommend percutaneous coronary inter-
vention 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.
It is clear that even when possessing the requisite knowledge,
cardiologists often recommend such intervention when it is
not indicated. The scholarly approach to clinical practice
in cardiology therefore involves not only knowing the pub-
lished 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 impor-
tant quality for clinical excellence in the work by Christmas
e et al. 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 medi-
cine were inspirational. An interview in The American Jour-
nal of Cardiology with James Thornton Willerson, 1 of
the great leaders in our specialty, captures passion for clin-
ic 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.” 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 cardi-
ology 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, 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 deploy-
ment of technology, it must be. The 7 domains of clinical excel-
ence defined by Christmas et al were identified by inter-
viewing 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 do-
 mains 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 al reported
that the processes of care and outcomes for elderly (Medi-
care) patients with acute myocardial infarction admitted to
teaching hospitals were better than in other venues of care. However, a report by Thiemann et al based on an analysis of the same Cooperative Cardiovascular Project found no relation between teaching and nonteaching status and outcomes. Instead, Thiemann et al 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 medicine 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.


