

## Hospital Certification for Optimizing Cardiovascular Disease and Stroke Quality of Care and Outcomes

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**Abstract**—Cardiovascular disease and stroke remain leading causes of mortality, disability, and rising healthcare expenditures in the United States. Although a number of organizations provide hospital accreditation, recognition, and certification programs, existing programs do not address cardiovascular disease and stroke care in a comprehensive way. Current evidence suggests mixed findings for correlation between accreditation, recognition, and certification programs and hospitals' actual quality of care and outcomes. This advisory discusses potential opportunities to develop and enhance hospital certification programs for cardiovascular disease and stroke. The American Heart Association/American Stroke Association is uniquely positioned as a patient-centered, respected, transparent healthcare organization to help drive improvements in care and outcomes for patients hospitalized with cardiovascular disease and stroke. As a part of its commitment to promoting high-quality, evidence-based care for cardiovascular and stroke patients, it is recommended that the American Heart Association/American Stroke Association explore hospital certification programs to develop truly meaningful programs to facilitate improvements in and recognition for cardiovascular disease and stroke quality of care and outcomes. Future strategies should standardize objective, unbiased assessments of hospital structural, process, and outcome performance while allowing flexibility as technology and methodology advances occur. (*Circulation*. 2010;122:2459-2469.)

**Key Words:** AHA Scientific Statements ■ cardiovascular diseases ■ quality of care ■ stroke

Cardiovascular disease (CVD) and stroke remain leading causes of mortality, disability, and rising healthcare expenditures in the United States. There are an estimated 6.2 million cardiovascular hospitalizations, 730 000 stroke hospitalizations, and 7.2 million cardiac and vascular procedures performed each year in this country.<sup>1</sup> The quality of cardiovascular and stroke care in hospitals can be variable, and there are frequently missed opportunities to implement evidence-based care. Numerous studies have documented gaps, variations, and disparities in the quality of care for myocardial infarction, heart failure (HF), and stroke that are not explained by differences in clinical factors.<sup>1</sup> These missed opportunities can adversely affect short-, intermediate-, and long-term patient outcomes. The American Heart Association/American Stroke Association (AHA/ASA) is uniquely

positioned as a patient-centered, respected, transparent healthcare organization to help drive improvements in care and outcomes for patients hospitalized with CVD and stroke.<sup>2</sup> The stated mission of the AHA/ASA is "building healthier lives, free of cardiovascular diseases and stroke." As part of this mission, the goal of the AHA/ASA is to improve the cardiovascular health of all Americans by 20% while reducing deaths due to CVD and stroke by 20% by the year 2020.<sup>3</sup> The AHA/ASA has facilitated the application of science into practice, furthered the development and use of evidence-based medicine, and facilitated improvements in cardiovascular and stroke healthcare quality. The AHA/ASA has developed performance improvement systems and tools to aid

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providers and institutions in improving the quality of care that they deliver to patients.<sup>2</sup> However, because care and outcomes still vary significantly between hospitals, there may be an important, but currently unmet, need for a trusted, objective, patient-centered national organization to recognize those hospitals that meet evidence-based standards, provide high-quality care, and produce superior outcomes for CVD and stroke. The provision of standardized, objective, unbiased assessment may help to ensure quality patient care, patient safety, and favorable outcomes. Hospital certification programs also have the potential to provide highly visible distinctions for hospitals that achieve high standards of performance in CVD and stroke care.

### WHAT IS KNOWN

- Hospital Accreditation, Recognition, and Certification Programs currently exist, but do not comprehensively address cardiovascular disease and stroke care.
- Organizations that provide these programs include The Joint Commission, Centers for Medicare and Medicaid Services, *US News & World Report*, HealthGrades, Leapfrog, and the American Heart Association/American Stroke Association.
- Current evidence suggests mixed results for correlation of these programs to hospital performance, including quality of care and outcomes.

### WHAT THIS PAPER ADDS

- The American Heart Association/American Stroke Association as a trusted, objective, patient-centered national organization should explore certification programs to develop a truly meaningful program to facilitate improvements in and recognition for cardiovascular disease and stroke quality of care and outcomes in US hospitals.
- This proposal considers perceptions of key leaders at randomly selected US hospitals for further development of accreditation, recognition, and certification programs.
- Future strategies should standardize objective, unbiased assessments of hospital structural, process, and outcome performance, while allowing flexibility as technology and methodology advances.

This report will present an overview on hospital accreditation, recognition, and certification programs and the potential for such programs to facilitate improved quality of care and outcomes for patients with CVD and stroke. More specifically, this report (1) describes the current state of hospital care for cardiac and stroke patients; (2) provides a summary of existing hospital accreditation, recognition, and certification programs and studies of their effectiveness; (3) gives a description of current AHA/ASA recognition programs and collaborations with other organizations; (4) provides a summary of a national hospital certification needs-assessment survey; and (5) suggests future strategies for optimizing CVD and stroke quality of care and outcomes via hospital certification.

## Current State of Hospital Care for Cardiac and Stroke Patients

Acute myocardial infarction (AMI), HF, other CVD, and stroke result in a substantial number of hospitalizations each year, and patients with these acute illnesses face significant mortality, morbidity, disability, and risks for recurrent cardiovascular and stroke events. CVD and stroke remain leading causes of admissions to or discharges from hospitals. CVD as a first-listed diagnosis is the highest-ranked disease category for hospital discharges, and there have been sizable increases in hospitalizations for CVD, particularly for HF, during the past 25 years.<sup>1</sup> An estimated 1.2 million individuals will be hospitalized with a new or recurrent acute coronary event each year, and 1.1 million will be hospitalized with HF as a primary diagnosis in the United States; approximately twice as many hospitalizations, occur annually for which HF is a secondary diagnosis.<sup>1</sup> CVD results in 831 000 deaths each year, which represents 34.3% of all deaths. There are an estimated 795 000 stroke cases and 137 000 stroke deaths annually in the United States.<sup>1</sup> Stroke is the third-leading cause of death and a leading cause of disability in the United States. Stroke, as the second-leading cause of hospital admission among older adults, places a significant economic burden (estimated at \$20.2 billion in direct hospital costs) on the American healthcare system.<sup>1</sup> The total direct and indirect annual costs are estimated to be \$177 billion for coronary heart disease and \$74 billion for stroke.<sup>1</sup> Overall costs for CVD are estimated to be \$503 billion annually. Fortunately, scientific discovery and clinical research have resulted in effective therapies that can significantly improve short-, intermediate-, and long-term clinical outcomes for these patients. Yet the full benefits of these clinical advances are often unrealized by CVD and stroke patients because of gaps, variability, and disparities between evidence and its application to clinical cardiovascular and stroke care. Despite the publication of evidence-based guidelines and requirements to report process measures, many studies have demonstrated that quality gaps exist in the management of patients with CVD and stroke.<sup>4–9</sup> Treatment frequently does not follow published guidelines or conform to core performance measures, which potentially contributes to the high morbidity, mortality, and economic cost of these disorders. Although there has been overall improvement by hospitals in recent years, and certain quality-of-care measures show high conformity rates, there are a number of care processes that need increased focus and for which large opportunities for improvement still exist. There is also significant variation in care across hospitals, and the quality of care provided may differ substantially among hospitals within the same community. Studies suggest that the wide variations in conformity may reflect differences in training, guideline familiarity, active engagement of hospital administration in quality improvement efforts, and implementation of tools and systems to ensure that recommended care is provided.<sup>10</sup> The development of effective strategies to optimize quality of care is critically important. However, there are some hospitals able to consistently perform at very high levels and provide patient-centered, efficient, timely, effective, safe, and equitable care consistently.

Hospitals may differ in the structural aspects of CVD and stroke care, including the systems responsible for the provision of care, the material resources on which those systems depend,

and the organizational structures that guide the interaction. These differences can impact CVD and stroke care quality, as well as the clinical outcomes and other patient-centered outcomes that individuals may experience.<sup>11</sup> Patient care systems necessary to ensure high-quality care across the continuum include prehospital, emergency medical services (EMS), emergency department, inpatient (including intensive care, general care, diagnostic testing, and procedural care), discharge planning, rehabilitation, transitional, and outpatient care. Sufficient availability of material resources, including personnel (number, training, and competence) and equipment for patient treatment, is necessary to provide high-quality care. In addition, well-functioning organizational systems, including institutional policies and procedures, clinical decision support, disease-management programs, strong administrative support, and quality measurement/improvement infrastructure, are essential.<sup>10</sup> Certain hospitals may not have the systems, organization, staff, and equipment to most effectively diagnose, manage, and treat acute CVD and stroke patients. Other hospitals have the systems, clinical expertise, staff, culture, allocation of resources, and quality oversight to elevate the quality of care and outcomes.

Clinical outcomes for patients hospitalized with CVD and stroke show substantial hospital variability, and there appear to be important opportunities to reduce preventable deaths and rehospitalizations. In a recent report of Medicare claims data, significant variability in risk-standardized mortality and readmission rates in contemporary practice was documented, with an absolute 5.2% difference between hospitals in the 5th versus 95th percentile for AMI and a 5.0% difference for HF.<sup>12</sup> Medicare data on patients hospitalized with acute ischemic stroke also demonstrate that even after risk adjustment, there is significant variation among hospitals for mortality and rehospitalization at 30 days and 1 year.<sup>13</sup> Furthermore, there have been little to no improvements observed in risk-adjusted 30-day or 1-year outcomes among Medicare beneficiaries hospitalized with acute ischemic stroke in recent time periods. These studies identify existing opportunities for application of targeted quality improvement for short-term care, improved care transitions, and secondary preventive strategies for patients hospitalized with CVD and stroke.

### Assessment of Contemporary Hospital Accreditation, Recognition, and Certification Initiatives

Hospital accreditation, recognition, and certification programs play an increasingly important role in healthcare. Hospital accreditation can be defined as an external peer-assessment process used by accrediting bodies to evaluate whether a hospital satisfies established standards.<sup>14,15</sup> Accreditation programs generally involve standard-setting, analytic, and self-improvement dimensions. However, most accreditation programs do not have a requirement for a certain level of performance in processes or outcomes for a center to be accredited. In contrast, hospital recognition programs are frequently based on the attainment of certain performance levels on standardized quality measures.<sup>16</sup> These programs recognize hospitals that demonstrate excellence or improvement in performance areas, including process measures,

outcome measures, safety measures, and efficacy measures. Hospital certification programs are voluntary programs in which hospitals that meet structure requirements, process standards, and performance targets for treating specific diseases are certified. Hospital certification programs integrate elements that exist in both accreditation and recognition programs and require both structural elements for care and achievement of performance targets for quality.

There are a number of existing accreditation, recognition, and certification programs for hospitals. Various national healthcare agencies, such as the Centers for Medicare and Medicaid Services (CMS) and The Joint Commission, formerly known as the Joint Commission on Accreditation of Healthcare Organizations, require hospitals to report various process and outcome performance metrics to obtain accreditation. Although such programs require reporting, there are no set performance standards that need to be met for a center to be accredited. Additionally, national quality-based organizations such as Leapfrog and other entities use these data to provide ratings of hospital quality. Lastly, many national associations and organizations offer recognition programs based on specific diseases or specialties, including the AHA's Get With The Guidelines (GWTG) program.

### Hospital Accreditation Programs

One of most well-established accreditation programs for hospitals is that of The Joint Commission. Approximately 80% of the ≈5000 hospitals in the United States seek accreditation by The Joint Commission. Accreditation is awarded on the basis of a hospital's compliance with a set of standards that surveyors use in assessing performance during hospital site visits. The Medicare Act of 1965 deemed that hospitals accredited by The Joint Commission had satisfied all federal health and safety requirements necessary to participate in Medicare. Accreditation is awarded on the basis of a hospital's compliance with set standards of performance as outlined by The Joint Commission. Because Medicare is the largest insurer of those 65 years of age or older and The Joint Commission accreditation program has been linked by Medicare to eligibility for payment, this voluntary accreditation program has essentially been made mandatory for a majority of hospitals in the United States.

Evidence to support the idea that accreditation by The Joint Commission improves a hospital's quality of care or outcomes is relatively limited. Studies have found little correlation between accreditation and hospital mortality and no differences in rates of medication error between accredited and nonaccredited hospitals.<sup>17</sup> A study of the benefits of accreditation was conducted with AMI used as a disease-specific quality measure and data from the Cooperative Cardiovascular Project used to assess whether hospitals surveyed and accredited by The Joint Commission provided higher quality of care and had better risk-adjusted clinical outcomes.<sup>17</sup> In that study, nonsurveyed hospitals had lower use of AMI therapies and worse 30-day outcomes than did hospitals surveyed by The Joint Commission; however, among surveyed hospitals, there were only modest differences in the use of AMI therapies. Patients admitted to hospitals accredited with commendation had lower 30-day mortality rates than



did patients admitted to hospitals that received lower accreditation levels; however, the study observed significant variation in quality measures and outcomes within each accreditation category of The Joint Commission across hospitals.

Since 2003, the Society of Chest Pain Centers (SCPC) has provided an accreditation program for hospitals in acute coronary syndrome care. The SCPC accreditation process evaluates the early care process for treatment of acute coronary syndromes. The intent of this accreditation is to ensure that facilities meet or exceed quality-of-care measures based on improving the process for the care of the acute coronary syndrome patient. A study has compared quality of care and outcomes for patients with non-ST-segment elevation myocardial infarction at SCPC-accredited hospitals versus nonaccredited hospitals.<sup>18</sup> Patients at SCPC-accredited centers were more likely to receive evidence-based guideline adherence for 2 of 5 measures, but there was no difference in the other 3 measures. Also, there was no significant difference in risk-adjusted mortality for patients treated at SCPC hospitals versus nonaccredited hospitals (3.4% versus 3.5%; adjusted odds ratio 1.17, 95% confidence interval 0.88 to 1.55). Further studies are needed to determine whether there is a meaningful association between SCPC accreditation and improved care for patients with acute coronary syndromes.

### Hospital Recognition Programs

Hospital recognition programs are based on the attainment of certain performance levels on standardized quality measures and other domains. These programs recognize hospitals that demonstrate excellence or improvement in performance areas, including process, outcome, safety, and efficacy measures.

The Medicare Modernization Act of 2003 requires short-term-care hospitals to report data on adherence to quality-based measures to the CMS. As part of the Health Quality Alliance Program, data are collected by CMS on quality-of-care indicators for conditions including AMI and HF. CMS has more than 375 quality measures, including measures for efficiency, structure, process, outcomes, and patient centeredness. There are currently a number of hospital recognition and ranking programs that use publicly available, voluntarily reported, and other data sources to evaluate hospitals.

*US News & World Report* has had a long-standing hospital-ranking program. This program bases its rankings on a combination of 3 weighted measures: Hospital infrastructure, hospital reputation among subspecialists, and 30-day mortality rates. A total of 4852 hospitals were evaluated for the 2010 report, of which only 152 hospitals performed well enough to rank in any specialty. Each of the hospitals receives a score from 0 to 100 based on 4 basic elements: Reputation, death rate, patient safety, and care-related factors such as nursing and patient services. In this annual report, specialty services, including cardiovascular care, are ranked. Heart and heart surgery care is ranked on the basis of 3 equally weighted measures: in-hospital mortality rates for a range of cardiovascular conditions, reputation among surveyed cardiologists, and hospital infrastructure. A 2006 study<sup>19</sup> focused on how well hospitals that were identified in press reports such as *US News & World Report* as “America’s Best Hospitals” per-

formed on specific evidence-based care processes. Top-ranked heart and heart surgery hospitals were selected to review their performance on AMI and HF process measures derived from the American College of Cardiology and the AHA clinical treatment guidelines. Seven hundred seventy-four hospitals, including 41 of the *US News & World Report* top 50 heart and heart surgery hospitals, were assessed for 10 performance measures (6 that addressed AMI and 4 that addressed HF care) that were aggregated into a cardiovascular composite measure. Although overall the *US News & World Report* hospitals performed statistically better than their peers (mean 86% versus 83%;  $P < 0.05$ ), only 23 of the *US News & World Report* hospitals achieved statistically better-than-average performance individually, whereas 9 performed significantly worse. Also, only 167 hospitals in this study routinely implemented evidence-based heart care  $\geq 90\%$  of the time. The study concluded that “A number of the *US News & World Report* top hospitals fell short in regularly applying evidence-based care for their heart patients. At the same time, many lesser known hospitals routinely provided cardiovascular care that was consistent with nationally established guidelines.”<sup>19</sup>

A 2007 study<sup>20</sup> reviewed the risk-standardized 30-day mortality rates for patients with AMI for hospitals that were ranked and not ranked in the 2003 *US News & World Report* for “Heart and Heart Surgery.” The purpose of the study was to determine whether ranked hospitals had better patient outcomes than nonranked hospitals. The study revealed that risk-standardized 30-day mortality rates were lower in hospitals that were ranked than in hospitals that were not ranked or listed as one of “America’s Best Hospitals” by *US News & World Report*. The results conclude that on average, admission to a ranked hospital for an AMI was associated with a lower risk of 30-day mortality, yet one third of the ranked hospitals fell outside the best-performing quartile based on risk-standardized 30-day mortality rates.<sup>20</sup>

HealthGrades is an independent, for-profit ratings organization that provides healthcare quality ratings by profiling cost information on the nation’s 5000 hospitals, 750 000 physicians, 16 000 nursing homes, and numerous prescription drugs. HealthGrades’ proprietary methodology includes analysis of  $\approx 40$  million Medicare inpatient records, state records, medical board records, and publicly available directories, which it uses to view procedures and diagnoses to develop its rankings. Hospitals are rated according to several specialty diagnoses, such as cardiac surgery, cardiology, orthopedic surgery, neurosciences, pulmonary/respiratory, vascular surgery, obstetrics, and women’s health. HealthGrades “best hospitals” list is created by calculating predicted 30-day mortality rates based on Medicare Part A billing data. Predicted mortality rates are compared with the observed mortality rates at each hospital for 27 procedures and diagnoses. The hospitals with the best observed-versus-expected mortality ratio make the top 50 list. The top 10% of hospitals within each specialty area are selected to receive the HealthGrades Specialty Excellence Award. HealthGrades recognizes 19 specialties with distinguished awards of excellence. According to HealthGrades, the cardiac care specialty award is determined by even weighting of the “cardiac surgical star

rating” (coronary bypass surgery and valve replacement surgery), the “medical star rating” (heart attack and HF), and the rating for coronary interventional procedures. A study of this rating system found that it identified groups of hospitals that in the aggregate differed in certain measures of quality of care but not others.<sup>21</sup> There were also differences in 30-day mortality rates. However, the ratings poorly discriminated between any 2 individual hospitals’ processes of care or mortality rates during the study period. The study authors raised concerns that limitations in discrimination by this rating system may potentially undermine its usefulness for patients or payers and may lead to misperceptions of hospitals’ performance.<sup>21</sup>

Leapfrog evaluates hospital quality and safety practices via the Leapfrog Hospital Quality and Safety Survey. Hospitals voluntarily self-report to the Leapfrog Hospital Quality and Safety Survey. Leapfrog is endorsed by the National Quality Forum and evaluates hospitals on the basis of 4 key practices: Computerized physician order entry, evidence-based hospital referral, intensive care unit staffing by physicians experienced in critical care medicine, and the Leapfrog Safe Practices Score. The Leapfrog Safe Practices Score ranks hospital performance on the basis of 17 key procedures that reduce preventable medical mistakes. The Leapfrog Hospital Survey incorporates an indicator that is meant to recognize a hospital’s efforts in making its quality and safety records public.<sup>22</sup> Evaluations of the effectiveness of incorporating key practices defined by Leapfrog have produced mixed results. A study to determine the relationship between hospitals’ performance on Leapfrog criteria and risk-adjusted inpatient mortality rates was performed and found that survey scores were not significantly associated with risk-adjusted inpatient mortality.<sup>22</sup> Another study that identified hospitals that implemented the 3 sets of patient safety practices found better quality of care for all 3 conditions.<sup>23</sup> Of the 1860 hospitals that participated in reporting via Leapfrog, those with computerized physician order entry had better AMI quality scores than those that either did not have computerized physician order entry or chose not to report. It remains unclear whether hospitals that put into practice the patient safety practices endorsed by Leapfrog will have improved processes, quality outcomes, and mortality rates.

The GWTG programs were developed by the AHA/ASA as national AMI, HF, and stroke registries and performance improvement programs, with the primary goal of improving the quality of care and outcomes for CVD and stroke. There is now evidence that processes of care can be improved for patients hospitalized with CVD and stroke through performance improvement efforts such as GWTG and refinements to care systems, material resources, and organizational structures. Minimization of variations in the processes of health-care delivery, where clear evidence defines a link between established performance measures and meaningful patient outcomes, should improve the quality of CVD and stroke care substantially. GWTG has used a performance achievement recognition program for hospitals. A recent study compared hospitals enrolled in GWTG that received achievement awards for high levels of recommended processes of care

with other hospitals using data on risk-adjusted 30-day survival for HF and AMI reported by the CMS.<sup>16</sup> Risk-adjusted mortality for both HF and AMI for hospitals that received awards was significantly lower than for those that did not receive awards. After additional adjustment for hospital characteristics and noncardiac performance measures, the reduction in mortality remained significantly lower for GWTG-award hospitals. These data suggest that this hospital recognition program may be associated with better clinical outcomes, because recognized hospitals have lower risk-standardized mortality rates than other hospitals, and that this is explained, at least in part, by better processes of care provided by these recognized hospitals. However, participation in GWTG is voluntary, and participating hospitals may differ from non-participating hospitals in a number of ways that could also influence patient outcomes. Further studies are needed to more fully quantify the effects of GWTG program participation and hospital recognition on care and outcomes for patients with CVD and stroke.

There are significant limitations to current hospital recognition programs. The data currently available to demonstrate healthcare quality are often used selectively, misinterpreted, and not completely understood by healthcare agencies, managed care organizations, and consumers. Quality results that are presented to the public are further diluted through hospitals that market their cardiovascular service lines and through press reports in magazines such as *US News & World Report* and *Forbes*.

### Hospital Certification Programs

Hospital certification programs are targeted for hospitals that have required structural elements, meet standards, and achieve levels of performance for treating specific diseases. Hospital certification programs involve external review and assessment. These certification programs integrate elements of both accreditation and recognition programs.

To improve the care of stroke patients, The Joint Commission in conjunction with the AHA/ASA established a Primary Stroke Center of Care certification. A Primary Stroke Center is a facility that is recognized by The Joint Commission as providing evidence-based care for patients with an acute cerebrovascular event. In 2003, The Joint Commission began certifying primary stroke centers based on recommendations from the Brain Attack Coalition and the ASA/ASA. Certification is granted if a facility demonstrates compliance with national standards, primary stroke center recommendations, clinical practice guidelines, and performance measurement and improvement activities. Information or data to reflect the impact that primary stroke center certification has had is limited because of lack of availability of quality data before the hospital became a primary stroke center, and data may be biased if hospitals already had better outcomes before they became a primary stroke center. A study to evaluate the effectiveness of the model compared unadjusted and risk-adjusted 30-day mortality and readmission rates of elderly patients with ischemic stroke treated at hospitals that would become certified within the first few years of the program with those treated at hospitals that did not subsequently become certified within the same period.<sup>24</sup>

The results revealed that The Joint Commission Primary Stroke Center–certified hospitals had better outcomes than noncertified hospitals even before the program began.<sup>24</sup> A recent study of whether stroke centers that fulfill the criteria for primary stroke centers are associated with better outcomes has been reported.<sup>25</sup> Hospitals that met the classification for Comprehensive Stroke Centers, Primary Stroke Centers, or general hospitals were compared. Care in stroke centers was associated with lower 1-year case fatality and reduced institutional care compared with general hospitals. This study showed an association between the level of acute stroke care and patient outcome and supports the use of published criteria for primary and comprehensive stroke centers.

The existing accreditation, recognition, and certification programs focus on either structural process or outcome measures in various combinations, primarily for very select disease states. To comprehensively improve outcomes for CVD and stroke, a more optimal approach may be a system that evaluates all aspects simultaneously. Furthermore, because many CVDs coexist in individual patients, focusing on a single disease state may not maximize the potential benefits of a more global assessment. The systems, processes, and outcome improvement infrastructure overlap, and hence, there may be economies of scale to assess quality more comprehensively.

Currently, there is not a national standard to evaluate hospitals for the quality of cardiovascular and stroke care and to identify cardiovascular and stroke centers of excellence. Healthcare providers, payers, and the public do not have a consistent or recognizable method to determine which healthcare system in a given community provides quality standards for cardiac and stroke care. The Institute of Medicine defines quality of care as “the degree to which health services for individuals and populations increase the likelihood of desired outcomes and are consistent with current professional knowledge.” The continued persistence of suboptimal compliance with evidence-based care and the significant variability between hospitals in both quality and outcome parameters provides a compelling rationale for a hospital certification program for CVD and stroke.

Hospitals that excel in providing quality CVD and stroke care frequently have certain identifiable elements in common. These include a high degree of shared goals, a substantial level of administrative support, strong physician leadership, and high-quality data feedback.<sup>10</sup> Implementation of a CVD and stroke hospital certification program would provide a framework to evaluate and recognize those hospitals with effective systems in place that meet high standards for adherence to established guidelines and core performance measures and produce favorable clinical outcomes. This certification process may help to reduce the treatment variability from one hospital to the next. As a result of this program and other ongoing performance improvement efforts, the overall quality of care may improve significantly, thereby reducing the morbidity, mortality, and economic cost associated with hospitalizations for CVD and stroke.

### Summary of Current AHA/ASA Hospital Recognition Programs and Collaborations With The Joint Commission on Hospital Certification

The AHA/ASA has been involved extensively in developing performance improvement systems and tools to aid providers and institutions in improving the quality of care that they deliver to patients. In addition, the AHA is participating in partnership with other organizations in hospital certification programs. The AHA/ASA’s GWTG program,<sup>26</sup> as noted in the prior section, is a quality measurement and improvement program developed with the intention of increasing the overall quality of care in the healthcare setting. Currently, there are 5 GWTG modules: GWTG-Heart Failure, GWTG-Stroke, GWTG-Resuscitation (formerly NRCPR [the National Registry of Cardiopulmonary Resuscitation]), GWTG-Outpatient, and ACTION Registry–GWTG, which was created by the merger of the National Cardiovascular Data Registry’s ACTION (Acute Coronary Treatment and Intervention Outcomes Network) Registry from the American College of Cardiology Foundation and the GWTG-Coronary Artery Disease program from the AHA. The ACTION Registry–GWTG combined the assets of a research-based registry with the quality improvement activities of GWTG into a single, national system for inpatient care of patients with acute coronary syndrome. Each module has a data collection tool that provides patient-specific guideline recommendations, allows for real-time data validation, and enables each institution to track its adherence to the guidelines individually and against national benchmarks. Hospitals using GWTG that meet high performance criteria are recognized<sup>27</sup> at AHA meetings and in an annual advertisement in *US News & World Report*. Since its inception in 2001, GWTG has been implemented in more than 1500 hospitals and has collected more than 2.8 million patient records (Table). Data from GWTG have also helped inform the quality cycle.<sup>16,28–32</sup>

Despite the overall success with GWTG, the AHA/ASA realizes that this program must continually evolve if we are to narrow existing healthcare treatment gaps. Patients transitioning from the inpatient to the outpatient setting are often at risk for lapses in appropriate medical care, in part because healthcare information does not move seamlessly between settings. To address this issue, the AHA recently developed a continuity-of-care record, which facilitates the transfer of information from an in-hospital stay to an electronic or paper-based outpatient health record. Enhanced information transfer can enable all providers to easily access the patient’s clinical history, diagnostic tests, treatments, and management plans to support smooth and safe continuity of care.

Another example of an in-hospital quality improvement program is the AHA’s NRCPR, now known as GWTG-Resuscitation,<sup>33</sup> a prospective, multisite, observational study of in-hospital CPR, including medical emergency team responses and post resuscitation care. The program’s mission is to reduce disability and death due to cardiac and respiratory emergencies by providing an evidence-based quality improvement program of patient safety, medical emergency team response, effective resuscitation, and post emergency



**Table. Current AHA/ASA Hospital Recognition and Certification Programs**

Program	Year Initiated	Classification	No. of Hospitals Participating	Total Patient Records Entered*
GWTG-CAD†	2000	Performance improvement, recognition	NA	615 184
GWTG-Stroke	2003	Performance improvement, recognition	1463	1 420 899
GWTG-HF	2005	Performance improvement, recognition	517	465 185
ACTION Registry-GWTG	2008	Performance improvement, recognition	617	205 719
GWTG-Resuscitation	2000	Performance improvement	121	176 000
The Joint Commission (AHA/ASA)–Primary Stroke Center	2003	Certification	778	NA
The Joint Commission AHA Advanced Certification in Heart Failure	2009	Certification	14	NA
Mission: Lifeline	2007	Recognition/certification	341	NA

CAD indicates coronary artery disease; ACTION, Acute Coronary Treatment and Intervention Outcomes Network; NA, not applicable.

\*As of September 30, 2010.

†Merged into ACTION Registry-GWTG and closed effective December 31, 2009, with final data entry completed on March 31, 2010.

care. NRCPR provides participating hospitals with quarterly reports on key process variables and patient outcomes that allow each hospital to then track performance improvement over time, compare its performance with that of a cohort of similar hospitals, and monitor adherence to facility protocols and AHA guidelines.<sup>34</sup> Since 2000, NRCPR has been implemented in more than 600 hospitals and has collected more than 150 000 cardiopulmonary arrest records (Table). Moreover, several research studies have been published using data from NRCPR that demonstrate the impact of CPR quality improvement on patient outcomes.<sup>35–41</sup> Important new research based on data from NRCPR has shown that delayed defibrillation (>2 minutes) occurs in 30% of in-hospital arrests and is associated with substantial decreases in survival to hospital discharge.<sup>35</sup> In another study using NRCPR data, survival rates were much worse for in-hospital cardiac arrests that occurred at night or on weekends compared with weekday daytime hours.<sup>42</sup>

In addition to the efforts with GWTG, the AHA/ASA, as a part of the Brain Attack Coalition, established recommendations for primary stroke centers.<sup>43</sup> After publication of these recommendations, the AHA/ASA, in collaboration with a large, multispecialty advisory group and The Joint Commission, developed certification criteria standards for a Primary Stroke Center certification program. Launched in 2003, the Primary Stroke Center certification program was based on guidelines and statement recommendations for treatment of stroke patients developed by the AHA/ASA,<sup>44–46</sup> as well as the recommendations developed by the Brain Attack Coalition. The AHA/ASA field staff have helped prepare hospitals for their Primary Stroke Center certification and have contributed significantly to the success of the Primary Stroke Center program. The Primary Stroke Center program is still overseen by a multispecialty advisory group comanaged by the AHA/ASA and The Joint Commission. Although The Joint Commission's Primary Stroke Center certification has been largely successful, with 778 primary stroke center hospitals participating,<sup>47</sup> it soon became apparent that numerous data elements and quality measures were also being used by those hospitals participating in the Centers for Disease Control and Prevention's Paul Coverdell National Acute

Stroke Registry and GWTG-Stroke. With this in mind, the 3 organizations set out in 2006 to try to integrate the data elements of all 3 sets of measures.<sup>48</sup> By identifying commonalities across the 3 data sources, aligning data element definitions, and standardizing guidelines for abstraction, the organizations developed an integrated set of 10 performance measures for stroke patient care that was implemented in January 2008. This successful collaborative effort substantially reduced the administrative burden of submitting stroke data to these 3 entities. Eight of those 10 consensus measures were subsequently endorsed by the National Quality Forum and are now optional measures for The Joint Commission Core Measure reporting and required for The Joint Commission Primary Stroke Center certification.

The AHA/ASA has developed a series of tools and resources to help hospitals prepare for Joint Commission certification. For example, the Acute Stroke Treatment Program is a toolkit that helps hospitals build the critical infrastructure for becoming a primary stroke center.<sup>49</sup> Going forward, the AHA/ASA will continue to work with like-minded organizations to promote greater utilization of stroke-related measures by hospitals. As a part of this effort, the AHA/ASA will continue to advocate for the adoption of stroke measures by CMS. The AHA/ASA also worked with The Joint Commission to codevelop a Heart Failure Disease-Specific Advanced Certification Program that addresses the treatment of HF in the inpatient setting. Launched in 2009, the Heart Failure Advanced Certification Program now has 14 hospitals certified.<sup>50</sup> AHA/ASA has worked with other state-based designation programs to ensure that other primary stroke center programs are held to the same standards as those of The Joint Commission Primary Stroke Center.

Finally, the AHA/ASA has worked to develop programs that recognize physicians who provide high-quality patient care through the AHA/ASA/National Committee for Quality Assurance Heart and Stroke Recognition Program.<sup>51</sup> This voluntary program, which was jointly developed and cobranded with the National Committee for Quality Assurance, facilitates the use of evidence-based measures and recognizes participating physicians for taking the steps needed to ensure high-quality care for patients with CVD.<sup>52</sup> With the National Committee for Quality

Assurance, the AHA/ASA will also explore strategies to incorporate functionality into existing electronic medical records for the collection and transmission of Heart and Stroke Recognition Program data. Physicians who meet Heart and Stroke Recognition Program performance criteria are recognized on the National Committee for Quality Assurance Web site,<sup>51</sup> as well as in directories for health plans, including Aetna, CIGNA, and United Healthcare. To date, there are 3145 physicians enrolled in the Heart and Stroke Recognition Program, with a goal to increase enrollment to 3500 in 2010.

The AHA launched Mission: Lifeline, a directed campaign designed to serve as a vehicle to encourage communities across the country to develop systems of care for patients with ST-segment elevation myocardial infarction (STEMI) to improve the quality of care and outcomes for patients with STEMI, as well as to improve the healthcare system's readiness and response to STEMI. The focus of Mission: Lifeline is to increase timely access to primary percutaneous coronary intervention, which is the preferred reperfusion strategy, for patients with STEMI.<sup>53</sup> It is the expectation that Mission: Lifeline will save lives and reduce disability of patients with STEMI by changing the delivery of short-term care. Importantly, Mission: Lifeline addresses the continuum of care for patients with STEMI, from the patient's entry into the system through EMS activation, evaluation, treatment, and transport (including interhospital transfer); care in the STEMI referral and receiving hospitals; and back into the community to the local healthcare professional for long-term care and secondary prevention measures. Mission: Lifeline emphasizes multidisciplinary care and aims to optimize patient care transitions along with referral to qualified cardiac rehabilitation programs for all eligible patients. Given the immense nature of this task, the AHA has developed an action plan to advance the adoption of STEMI systems that includes convening thought leaders to review existing local or regional pilot programs that could serve as examples for other communities, EMS assessment throughout the 50 states to determine local practice patterns and resources, and initiation of local (state and regional) Mission: Lifeline task forces designed to facilitate implementation of national recommendations on a community level. The AHA is also assessing whether it should work with partner organizations to develop a STEMI certification program that incentivizes each part of the system (eg, EMS, referring and receiving hospitals) that participates in the delivery of care. Ultimately, the regional and local systems of care will focus on increasing patient and family awareness of the importance of calling 911 at the onset of symptoms and ensuring that local EMS are equipped and trained in the use of 12-lead ECGs for rapid diagnosis and triage. The AHA plans to help provide those resources that may be needed by states and regions that want to implement a STEMI system of care.

Over the past decade, the AHA/ASA has gained considerable experience in hospital quality improvement, recognition, and certification, as described in this section. As a result of that experience and the strategic planning cycle for the AHA/ASA 2020 Health Impact Goal, the AHA/ASA commissioned a qualitative research study to further explore the value of certification programs for national

hospital partners. The results of that study are shared in the next section.

### Market Research/Needs-Assessment Interviews on Certification

In June 2010, the AHA/ASA commissioned a study to help explore hospital leaders' experience, value perceptions, and expectations for national hospital certification programs. The study conducted qualitative telephone interviews with 22 individuals at 12 US hospitals. The key organizational hospital leaders who participated in the interviews represented multiple functions within the hospital setting, including chief executive officers, directors of cardiovascular and neurology programs, and marketing and strategic planning executives. This cross representation within individual hospitals was done intentionally to gain different perspectives within the same hospital.

The interview questions were structured around topic areas that included current certification programs, the value of certification, and feedback on potential new certification offerings. The summary of the research findings follows.

- **Operational Excellence:** Certification programs must focus on driving operational excellence, not marketing outcomes. Respondents were clear that they would not be interested in "pay-to-play" programs.
- **Evidence-Based High Standards:** Certification programs are of the most value to partners when standards are high and focus service-line teams on improving patient outcomes. Many hospital partners expressed interest in certification if the standards were considered significantly rigorous, thereby creating true differentiation in the market.
- **Factors Influencing Certification Program Selection:** Credibility of the certifying body was the leading factor, followed by rigorous standards, ties to reimbursement, status as an outcomes-based program, professional respect, and cost.
- **Consumer Value:** Consumers generally do not understand the meaning behind certifications. Hospitals view certifications as nice to have when marketing to consumers but not a major driver of consumer choice.
- **Marketing Certifications:** Use of certifications in marketing is mixed and is generally not viewed as a primary marketing tool to consumers but has greater value in marketing to the professional community for recruitment and retention.
- **Center-of-Excellence Certification Offerings:** Interest in the Cardiac or Stroke Centers of Excellence certification program from the AHA/ASA was high—4.9 on a 1- to 5-point scale, with 1 being the lowest and 5 being the highest level of interest.

This qualitative interview sample was limited by a small sample size that may not be representative of all hospital types. However, this research was conducted to provide high-level market feedback to the AHA/ASA to help guide the considerations for future certification endeavors.



## Future Strategies for Optimizing Quality via Hospital Certification

The AHA/ASA is committed to supporting and facilitating the translation of research into practice and reducing morbidity and mortality from CVD and stroke. As a recognized thought leader in quality and evidence-based recommendations, the AHA/ASA is committed to the achievement of optimal outcomes for all patients with CVD and stroke via the Institute of Medicine's 6 aims for quality improvement: Safe, effective, equitable, patient-centered, timely, and efficient care. As such, the AHA/ASA has engaged in a number of initiatives to further evidence-based medicine, improve quality of care, control costs, and optimize outcomes, including development of clinical practice guidelines and performance measures. The AHA/ASA has a long history of developing evidence-based guidelines, performance measures, and scientific position statements for CVD and stroke. These are updated on a regular basis as new scientific evidence emerges. These documents are developed on the basis of scientifically and methodologically rigorous criteria that are transparent and standardized. Financial relationships are explicitly disclosed and are scrutinized and managed scrupulously. AHA/ASA volunteers, councils, and working groups consist of multidisciplinary members who have extensive expertise in fundamental, translational, clinical, and population science; quality assessment, quality of care, and outcomes research; and statistical and methodological expertise. These documents often become the basis of accreditation, recognition, and certification programs. The AHA/ASA also has been a leader in the development of systems of care and the integration of inpatient and outpatient care for cardiovascular and stroke patients.

A national hospital certification program would have the potential to set evidence-based standards and provide certification of those hospitals that are delivering appropriate, highest-quality care to their patients with CVD and stroke. By exploring hospital certification and other programs, the AHA/ASA will continue to advocate for quality, provide leadership, and help set standards in translating research into practice to support hospitals, healthcare providers, and patients in its quest "to build healthier lives, free of cardiovascular diseases and stroke."

## Recommendations

As a part of the AHA/ASA's mission and organizational strategy, the association should further explore working both independently and in partnership with other organizations to establish frameworks for hospital certification and develop programs that certify hospitals that meet rigorous standards and provide high-quality CVD and stroke patient care.

To promote improvements in care for patients with CVD and stroke, the AHA/ASA also presents the following recommendations for accreditation, recognition, and certification programs to facilitate improvements in quality of care and outcomes:

- Standardize objective, unbiased, and meaningful assessments of hospital structural, process, and outcome performance that allow for the integration of technology and methodology advances

- Establish legitimate, validated, and transparent evidence-based indicators and criteria
- Offer objective, unbiased, consistent assessment and interval reassessment, along with monitoring for potential unintended consequences
- Form benchmarked thresholds for hospital performance
- Give highly visible, prominent distinction to hospitals that achieve high standards and assist other hospitals in performance and outcomes improvement
- Provide for quality improvement programs to assist hospitals in optimizing their quality of care and outcomes
- Conduct further research to determine effectiveness and the best implementation strategies

Hospital certification programs hold promise with regard to promoting the best interests of patients and addressing many of the challenges that face hospitals in providing a high quality of care and achieving optimal outcomes for patients hospitalized with CVD or stroke. As a part of its commitment to promoting high-quality, evidence-based care for cardiovascular and stroke patients, it is recommended that the AHA/ASA explore the development of evidence-based criteria for hospital certification and the development of a certification program for hospitals that provide high-quality CVD and stroke patient care, either independently or in partnership with other organizations. The provision of standardized, objective, unbiased assessments has the potential to ensure quality patient care, patient safety, and favorable outcomes. Hospital certification programs also have the potential to provide highly visible distinctions for hospitals that achieve high standards of performance in CVD and stroke care. The AHA/ASA provides the recommendations described above with the goal of helping to address these issues as a means toward improving quality of care and patient outcomes.

## Disclosures

All writing group members contributed to the entire manuscript. The Chair outlined and authored the first draft. Writing group members were assigned to further co-author various sections (indicated below) and all members provided input on final manuscript version. At the time of the publication, authors held the following positions within the American Heart Association: Gregg C. Fonarow, Past Chair of the Get With The Guidelines (GWTG) Steering Committee, Entire Manuscript; Craig Beam, Past Chairman of the AHA Board of Directors (BOD), Market Research Section; Alice K. Jacobs, Past AHA President, Future Strategies Section; Neil M. Meltzer, Past Chairman of the AHA BOD, Market Research Section; Ralph L. Sacco, AHA President, Future Strategies & Recommendations Sections; Lee H. Schwamm, Chair of GWTG Steering Committee, Summary of AHA Current Programs Section; John A. Spertus, Chair of the Interdisciplinary Council on Quality of Care and Outcomes Research, Assessment Section; Gordon F. Tomaselli, AHA President Elect, Recommendations Section; Clyde W. Yancy, Immediate Past AHA President, Recommendations Section; Javed Butler, AHA Deputy Chief Science Advisor, Summary of AHA Current Programs Section; Meagan Driskill, AHA Consultant, Assessment Section; Tammy Gregory, AHA Vice President for Quality and Health IT, Assessment Section; Mark D. Stewart, AHA Science and Medicine Advisor, Assessment Section; and Eric D. Peterson, Immediate Past Chair of the Interdisciplinary Council on Quality of Care and Outcomes Research, Assessment Section. All individuals were recused from participation in areas of potential conflicts of interest.

## Writing Group Disclosures

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		Grant	Support	Bureau/Honoraria	Witness	Interest	Board	Other
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This table represents the relationships of writing group members that may be perceived as actual or reasonably perceived conflicts of interest as reported on the Disclosure Questionnaire, which all members of the writing group are required to complete and submit. A relationship is considered to be "significant" if (1) the person receives \$10 000 or more during any 12-month period or 5% or more of the person's gross income, or (2) the person owns 5% or more of the voting stock or share of the entity or owns \$10 000 or more of the fair market value of the entity. A relationship is considered to be "modest" if it is less than "significant" under the preceding definition.

\*American Heart Association staff serve in implementing the strategic and operational aspects of AHA's quality improvement programs.

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