Cardiovascular disease (cardiology)

Background

Cardiovascular disease, or cardiology, is the subspecialty of internal medicine that focuses on finding, treating, and preventing diseases of the heart and blood vessels—also known as the cardiovascular system. Cardiologists manage complex cardiac conditions such as heart attacks, heart failure, and abnormal heartbeats. They often advise surgeons performing heart surgery and perform complicated diagnostic procedures such as cardiac catheterization.

To become a cardiologist, physicians must complete three years of training in internal medicine and become board-certified. They must then complete three additional years of approved subspecialty training in cardiology before becoming board-certified in cardiovascular disease by the American Board of Internal Medicine (ABIM) or in cardiology by the American Osteopathic Board of Internal Medicine (AOBIM).

Physicians certified in cardiology can go on to become certified in other areas such as interventional cardiology, electrophysiology, nuclear cardiology, and echocardiography. Specialization in these areas requires an additional one to two years of training.

For more information, please see Clinical Privilege White Paper, Practice area 135—Internal medicine.

Involved specialties

Cardiologists

Positions of specialty boards

**ABIM**

To become certified in the subspecialty of cardiovascular disease through the ABIM, physicians must:

- Be previously certified in internal medicine by ABIM
- Satisfactorily complete the requisite graduate medical education fellowship training
- Demonstrate clinical competence, procedural skills, and moral and ethical behavior in the clinical setting
- Hold a valid, unrestricted, and unchallenged license to practice medicine
- Pass the cardiovascular disease certification examination
With regard to training, the ABIM requires 36 months of cardiovascular disease training, of which a minimum of 24 months must be spent in the diagnosis and management of a broad spectrum of cardiovascular diseases. Training must include the following diagnostic and therapeutic procedures:

➤ Advanced cardiac life support, including cardioversion
➤ Electrocardiography, including ambulatory monitoring and exercise testing
➤ Echocardiography
➤ Arterial catheter insertion
➤ Right heart catheterization, including insertion and management of temporary pacemakers
➤ Left heart catheterization and diagnostic coronary angiography

The ABIM also requires documentation that candidates for certification are competent in:

➤ Patient care and procedural skills
➤ Medical knowledge
➤ Practice-based learning and improvement
➤ Interpersonal and communication skills
➤ Professionalism
➤ Systems-based practice

**AOBIM**

The AOBIM offers a certificate of special qualifications in cardiology to certified internal medicine specialists who have:

➤ Successfully complete three years of an American Osteopathic Association (AOA)–approved fellowship in cardiology. Two years of cardiology subspecialty training is acceptable if completed prior to September 1, 1993.
➤ Successfully passed a comprehensive, one-day written and clinical examination.

**Positions of societies, academies, colleges, and associations**

**ACC**

In its *Training in Clinical Cardiology*, the American College of Cardiology (ACC) states that training in cardiology should almost always occur after a physician completes three years of postdoctoral education and training in internal medicine, and that the training must be completed at facilities that are fully accredited by the Accreditation Council for Graduate Medical Education (ACGME) or the AOA.

In the same document, the ACC states that a three-year training program in cardiology should include a clinical core of 24 months, consisting of the following minimums:

➤ Nine months in non-laboratory clinical practice activities, such as cardiac consultation, inpatient cardiac care, intermediate acute care unit, chest pain unit,
coronary care unit, cardiothoracic/cardiovascular surgery, congenital heart disease, heart failure/cardiatic transplantation, preventive cardiovascular medicine, cardiac rehabilitation, and vascular medicine

➤ Four months in a cardiac catheterization laboratory
➤ Seven months in noninvasive imaging, which includes echocardiography and Doppler (a minimum of three months), noninvasive and peripheral vascular studies, nuclear cardiology techniques (a minimum of two months), cardiovascular magnetic resonance, and other techniques, such as electron beam or fast helical CT
➤ Two months (in blocks or equivalent experience) in echocardiography, stress testing, and ambulatory electrocardiogram (ECG) monitoring
➤ Two months in arrhythmias, permanent pacemaker and implantable cardioverter-defibrillator (ICD) management, and electrophysiology

A continuing ambulatory care experience for at least a half day per week should occur throughout the three-year training program. The remaining year in the training program should include six to 12 months of dedicated research, or research combined with the individual trainee’s interests and future career goals. This may include additional, more intensive training in specific areas of cardiovascular medicine.

Trainees often require additional clinical training during the final 12-month period to be qualified to function properly as consultants in cardiovascular disease and as specialists in cardiology.

A cardiovascular disease training program must include training in patient care and management. By the conclusion of the program, trainees must meet the following qualifications:
➤ Skills in obtaining a history and performing a complete cardiovascular physical examination
➤ Familiarity with the role of aging and psychogenic factors in the production of symptoms and the emotional and physical response of patients to cardiovascular disease
➤ Familiarity with the importance of preventive and rehabilitative aspects of the management of patients with known or potential cardiovascular disease
➤ Possess considerable experience acting as a consultant to other physicians and should have direct patient care responsibility under supervision in proportion to their experience and qualifications
➤ Complete extensive outpatient training

According to the ACC, the trainee also must become well educated in pathogenesis, pathology, risk factors, natural history, diagnoses by history, physical examinations and laboratory methods, and medical and surgical management. Trainees also must become knowledgeable about complications and the prevention of cardiovascular conditions, including coronary artery disease,
hypertension, valvular heart disease, congenital heart disease, cardiac arrhythmias, heart failure, cardiomyopathy, involvement of the cardiovascular system by systemic disease, infective endocarditis, diseases of the great vessels and peripheral blood vessels, diseases of the pericardium, pulmonary heart disease, the interaction of pregnancy and cardiovascular disease, cardiovascular complications of chronic renal failure, traumatic heart disease, and cardiac tumors.

Programs in cardiology should also include training in:

- Intensive care
- Ambulatory, outpatient, and follow-up care
- Interpretation of ECGs
- Cardiac catheterization laboratory
- Echocardiography
- Nuclear cardiology
- Other advanced imaging techniques
- Cardiac arrhythmia device management
- Electrophysiology
- Cardiovascular research
- Heart failure and heart transplantation
- Congenital heart disease
- Preventive cardiovascular medicine
- Vascular disease
- MRI
- CT
- Related sciences
- Related fields of medicine:
  - Radiology
  - Surgery
  - Anesthesia
  - Pulmonary disease
  - Obstetrics
  - Physiology
  - Pharmacology
  - Pathology
  - Geriatrics

Additionally, trainees are expected to participate in conferences, seminars, reviews of published reports, and lectures, and should have teaching and educational experiences pertaining to cardiology.

**ACGME**

In its *Program Requirements for Graduate Medical Education in Cardiovascular Disease*, the ACGME states that cardiovascular disease fellowships provide advanced education to allow a fellow to acquire competency in the subspecialty with sufficient
expertise to act as an independent consultant. To accomplish this goal, the educational program in cardiovascular disease must be 36 months in length.

With regard to patient care, fellows must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. Fellows must demonstrate competence in the practice of health promotion, disease prevention, diagnosis, care, and treatment of patients of each gender, from adolescence to old age, during health and all stages of illness, as well as the prevention, evaluation, and management of the following:

- Arrhythmias; acute myocardial infarction and other acute ischemic syndromes
- Cardiomyopathy
- Cardiovascular evaluation of patients undergoing noncardiac surgery
- Congestive heart failure
- Coronary heart disease, including acute coronary syndromes and chronic coronary heart disease
- Diseases of the aorta
- Heart disease in pregnancy
- Hypertension
- Infectious and inflammatory heart disease
- Lipid disorders and metabolic syndrome
- Need for end-of-life (palliative) care
- Peripheral vascular disease
- Pericardial disease
- Pulmonary hypertension
- Thromboembolic disorders
- Valvular heart disease

The ACGME also states that cardiology fellows must demonstrate competence in the performance of the following procedures:

- Direct current cardioversion (each fellow must perform 10)
- Echocardiography (each fellow must perform a minimum of 75 and interpret a minimum of 150 studies, and observe the performance and interpretation of transesophageal cardiac studies)
- Exercise stress testing (each fellow must perform a minimum of 50 stress ECG tests)
- Right and left heart catheterization, including coronary arteriography (each fellow must participate in a minimum of 100 catheterizations)
- Conscious sedation
- Placement and management of temporary pacemakers, including transvenous and transcutaneous
- Programming and follow-up surveillance of permanent pacemakers and ICDs
Fellows must also demonstrate competence in the interpretation of:

- Ambulatory ECG recordings
- ECGs (each fellow must interpret a minimum of 3,500 ECGs)
- Nuclear cardiology (each fellow must interpret a minimum of 100 radionuclide studies to include SPECT myocardial perfusion imaging and ventriculograms)
- Chest x-rays

With regard to medical knowledge, fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Fellows must demonstrate knowledge of the scientific method of problem solving and evidence-based decision-making, in addition to a knowledge of indications, contraindications, limitations, complications, techniques, and interpretation of results of those diagnostic and therapeutic procedures integral to the discipline, including the appropriate indications for and use of screening tests/procedures.

Fellows must demonstrate knowledge of the following content areas:

- Basic science, including:
  - Cardiovascular anatomy
  - Cardiovascular metabolism
  - Cardiovascular pathology
  - Cardiovascular pharmacology, including drug metabolism, adverse effects, indications, the effects on aging, relative costs of therapy, and the effects of non-cardiovascular drugs on cardiovascular function
  - Cardiovascular physiology
  - Genetic causes of cardiovascular disease
  - Molecular biology of the cardiovascular system
- Primary and secondary prevention of cardiovascular disease, including:
  - Biostatistics
  - Clinical epidemiology
  - Cardiac rehabilitation
  - Current and emerging risk factors
  - Cerebrovascular disease
- Evaluation and management of patients with:
  - Adult congenital heart disease
  - Cardiac trauma
  - Cardiac tumors
  - Cerebrovascular disease
  - Geriatric cardiology

AOA

In its Specific Basic Standards for Cardiac Fellowship Training in Cardiology, the AOA states that the fellowship training program must be full time and a minimum of 36 months in duration, of which a minimum of 24 months must include supervised management of patients (clinical rotations). During this time, the ambula-
tory experience must take place a minimum of one-half day a week, 36 weeks per year.

With regard to medical knowledge, the AOA requires that there must be at least weekly clinical teaching conferences and cardiac catheterization conferences and at least monthly mortality and morbidity review. Each fellow must also participate in a cardiology board review, either in the form of an ongoing program or by the program sponsoring the fellow’s attendance at an internal medicine board review course.

The basic science core curriculum must contain, at minimum, the following basic medical sciences of cardiovascular medicine:

- Physiology
- Anatomy
- Histology
- Pharmacology
- Epidemiology

Additionally, each fellow must have learning activities in:

- Preventive cardiology
- Risk factor reduction
- Management of lipid disorders
- Cardiac rehabilitation
- The ACC’s Revised Recommendations for Adult Cardiovascular Medicine Core Cardiology Training II 2008 (COCATS 2) so the fellow understands the credentialing requirements for cardiovascular procedures

With regard to patient care, fellows must have training and experience in:

- Hemodynamic monitoring
- Postoperative patient care
- Acute care of myocardial infarction, congestive heart failure, postoperative coronary artery, and cardiac transplant patients
- Right and left heart catheterization
- Management of exercise protocols, treadmill operation, computer troubleshooting, and the management of pharmacologic agents used in exercise testing
- Valvular heart disease, endocarditis, prosthetic valve evaluation, myocardial ischemia, primary and secondary disease of the heart and pericardium, and diseases of the great vessels during their echocardiographic experience
- Computer interpretation software to analyze and interpret nuclear cardiology data

Fellows must also demonstrate correlation of nuclear cardiology interpretations with subsequent anatomical findings at time of cardiac catheterization, CT angiography, or other modality for demonstration of coronary anatomy.
Over the course of training, fellows’ experiences must include the following:
➤ Nine months of hospital-based cardiology, three months of which should be in the ICU/CCU
➤ Four months of cardiac catheterization experience
➤ Three months of echocardiographic experience
➤ Four months of nuclear medicine
➤ Two months of electrophysiology
➤ One month of vascular medicine

According to the AOA, fellows must meet the following procedural training requirements:
➤ Interpretation of the following:
  – 3500 electrocardiographic procedures
  – 150 ambulatory ECG monitor recordings
  – 200 exercise tests, including 100 pharmacologic (dipyridamole, adenosine, and dhubutamine) tests
  – 150 complete (M-mode, 2-D, and Doppler) echocardiographic examinations
  – 100 complete (myocardial perfusion, function, and viability) cardiac nuclear imaging studies
  – 25 cardiac magnetic resonance studies
  – 50 cardiac CT studies
➤ Participation in 100 diagnostic cardiac catheterizations
➤ Performance of 75 complete (M-mode, 2-D, and Doppler) echocardiographic examinations
➤ Performance of 25 transesophageal echocardiographic intubations
➤ Insertion of 10 temporary pacemakers
➤ Performance of 10 cardioversions
➤ Participation in 50 permanent pacemaker insertions
➤ Insertion of 10 intra-aortic balloon assist devices with subsequent clinical management and removal of the device

Additionally, the fellow must function as the primary programming operator who interrogates, interprets, prescribes, and reprograms devices in at least 100 patients during the fellowship.

Positions of accreditation bodies

CMS

CMS has no formal position concerning the delineation of privileges for cardiovascular disease. However, the CMS Conditions of Participation (CoP) define a requirement for a criteria-based privileging process in §482.22(c)(6) stating, “The bylaws must include criteria for determining the privileges to be granted to individual practitioners and a procedure for applying the criteria to individuals requesting privileges.”
Chapter 22: Management of the Medical Staff

§482.12(a)(6) states, “The governing body must assure that the medical staff bylaws describe the privileging process. The process articulated in the bylaws, rules or regulations must include criteria for determining the privileges that may be granted to individual practitioners and a procedure for applying the criteria to individual practitioners that considers:

➤ Individual character
➤ Individual competence
➤ Individual training
➤ Individual experience
➤ Individual judgment

The governing body must ensure that the hospital’s bylaws governing medical staff membership or the granting of privileges apply equally to all practitioners in each professional category of practitioners.

Specific privileges must reflect activities that the majority of practitioners in that category can perform competently and that the hospital can support. Privileges are not granted for tasks, procedures, or activities that are not conducted within the hospital, regardless of the practitioner’s ability to perform them.

Each practitioner must be individually evaluated for requested privileges. It can not be assumed that every practitioner can perform every task, activity, or privilege specific to a specialty, nor can it be assumed that the practitioner should be automatically granted the full range of privileges. The individual practitioner’s ability to perform each task, activity, or privilege must be individually assessed.

CMS also requires that the organization have a process to ensure that practitioners granted privileges are working within the scope of those privileges.

CMS’ CoPs include the need for a periodic appraisal of practitioners appointed to the medical staff/granted medical staff privileges (§482.22[a][1]). In the absence of a state law that establishes a time frame for the periodic appraisal, CMS recommends that an appraisal be conducted at least every 24 months. The purpose of the periodic appraisal is to determine whether clinical privileges or membership should be continued, discontinued, revised, or otherwise changed.

The Joint Commission

The Joint Commission has no formal position concerning the delineation of privileges for cardiovascular disease. However, in its Comprehensive Accreditation Manual for Hospitals, The Joint Commission states, “The hospital collects information regarding each practitioner’s current license status, training, experience, competence, and ability to perform the requested privilege” (MS.06.01.03).

In the introduction for MS.06.01.03, The Joint Commission states that there must be a reliable and consistent system in place to process applications and verify credentials. The organized medical staff must then review and evaluate
the data collected. The resultant privilege recommendations to the governing body are based on the assessment of the data.

The Joint Commission introduces MS.06.01.05 by stating, “The organized medical staff is responsible for planning and implementing a privileging process.” It goes on to state that this process typically includes:

- Developing and approving a procedures list
- Processing the application
- Evaluating applicant-specific information
- Submitting recommendations to the governing body for applicant-specific delineated privileges
- Notifying the applicant, relevant personnel, and, as required by law, external entities of the privileging decision
- Monitoring the use of privileges and quality-of-care issues

MS.06.01.05 further states, “The decision to grant or deny a privilege(s) and/or to renew an existing privilege(s) is an objective, evidence-based process.”

The EPs for standard MS.06.01.05 include several requirements as follows:

- The need for all licensed independent practitioners who provide care, treatment, and services to have a current license, certification, or registration, as required by law and regulation
- Established criteria as recommended by the organized medical staff and approved by the governing body with specific evaluation of current licensure and/or certification, specific relevant training, evidence of physical ability, professional practice review data from the applicant’s current organization, peer and/or faculty recommendation, and a review of the practitioner’s performance within the hospital (for renewal of privileges)
- Consistent application of criteria
- A clearly defined (documented) procedure for processing clinical privilege requests that is approved by the organized medical staff
- Documentation and confirmation of the applicant’s statement that no health problems exist that would affect his or her ability to perform privileges requested
- A query of the NPDB for initial privileges, renewal of privileges, and when a new privilege is requested
- Written peer recommendations that address the practitioner’s current medical/clinical knowledge, technical and clinical skills, clinical judgment, interpersonal skills, communication skills, and professionalism
- A list of specific challenges or concerns that the organized medical staff must evaluate prior to recommending privileges (MS.06.01.05, EP 9)
- A process to determine whether there is sufficient clinical performance information to make a decision related to privileges
- A decision (action) on the completed application for privileges that occurs within the time period specified in the organization’s medical staff bylaws
Information regarding any changes to practitioners’ clinical privileges, updated as they occur

The Joint Commission further states, “The organized medical staff reviews and analyzes information regarding each requesting practitioner’s current licensure status, training, experience, current competence, and ability to perform the requested privilege” (MS.06.01.07).

In the EPs for standard MS.06.01.07, The Joint Commission states that the information review and analysis process is clearly defined and that the decision process must be timely. The organization, based on recommendations by the organized medical staff and approval by the governing body, develops criteria that will be considered in the decision to grant, limit, or deny a request for privileges. The criteria must be consistently applied and directly relate to the quality of care, treatment, and services. Ultimately, the governing body or delegated governing body has the final authority for granting, renewing, or denying clinical privileges. Privileges may not be granted for a period beyond two years.

Criteria that determine a practitioner’s ability to provide patient care, treatment, and services within the scope of the privilege(s) requested are consistently evaluated.

The Joint Commission further states, “Ongoing professional practice evaluation information is factored into the decision to maintain existing privilege(s), to revise existing privileges, or to revoke an existing privilege prior to or at the time of renewal” (MS.08.01.03).

In the EPs for MS.08.01.03, The Joint Commission says there is a clearly defined process facilitating the evaluation of each practitioner’s professional practice, in which the type of information collected is determined by individual departments and approved by the organized medical staff. Information resulting from the ongoing professional practice evaluation is used to determine whether to continue, limit, or revoke any existing privilege.

**HFAP**

The Healthcare Facilities Accreditation Program (HFAP) has no formal position concerning the delineation of privileges for cardiovascular disease. The bylaws must include the criteria for determining the privileges to be granted to the individual practitioners and the procedure for applying the criteria to individuals requesting privileges (03.01.09). Privileges are granted based on the medical staff’s review of an individual practitioner’s qualifications and its recommendation regarding that individual practitioner to the governing body.
It is also required that the organization have a process to ensure that practitioners granted privileges are working within the scope of those privileges.

Privileges must be granted within the capabilities of the facility. For example, if an organization is not capable of performing open-heart surgery, no physician should be granted that privilege.

In the explanation for standard 03.01.13 related to membership selection criteria, HFAP states, “Basic criteria listed in the bylaws, or the credentials manual, include the items listed in this standard. (Emphasis is placed on training and competence in the requested privileges.)”

The bylaws also define the mechanisms by which the clinical departments, if applicable, or the medical staff as a whole establish criteria for specific privilege delineation.

Periodic appraisals of the suitability for membership and clinical privileges is required to determine whether the individual practitioner’s clinical privileges should be approved, continued, discontinued, revised, or otherwise changed (03.00.04). The appraisals are to be conducted at least every 24 months.

The medical staff is accountable to the governing body for the quality of medical care provided, and quality assessment and performance improvement (03.02.01) information must be used in the process of evaluating and acting on re-privileging and reappointment requests from members and other credentialed staff.

**DNV**

DNV has no formal position concerning the delineation of privileges for cardiovascular disease. MS.12 Standard Requirement (SR) #1 states, “The medical staff bylaws shall include criteria for determining the privileges to be granted to individual practitioners and a procedure for applying the criteria to those individuals that request privileges.”

The governing body shall ensure that under no circumstances is medical staff membership or professional privileges in the organization dependent solely upon certification, fellowship, or membership in a specialty body or society.

Regarding the Medical Staff Standards related to Clinical Privileges (MS.12), DNV requires specific provisions within the medical staff bylaws for:

- The consideration of automatic suspension of clinical privileges in the following circumstances: revocation/restriction of licensure; revocation, suspension, or probation of a DEA license; failure to maintain professional liability insurance as specified; and noncompliance with written medical record delinquency/deficiency requirements

- Immediate and automatic suspension of clinical privileges due to the termina-
tion or revocation of the practitioner’s Medicare/Medicaid status
➤ Fair hearing and appeal

The Interpretive Guidelines also state that core privileges for general surgery and surgical subspecialties are acceptable as long as the core is properly defined.

DNV also requires a mechanism (outlined in the bylaws) to ensure that all individuals provide services only within the scope of privileges granted (MS.12, SR.4).

Clinical privileges (and appointments or reappointments) are for a period as defined by state law or, if permitted by state law, not to exceed three years (MS.12, SR.2).

Individual practitioner performance data must be measured, utilized, and evaluated as a part of the decision-making for appointment and reappointment. Although not specifically stated, this would apply to the individual practitioner’s respective delineation of privilege requests.

CRC draft criteria

The following draft criteria are intended to serve solely as a starting point for the development of an institution’s policy regarding this practice area. The core privileges and accompanying procedure list are not meant to be all-encompassing. They define the types of activities, procedures, and privileges that the majority of practitioners in this specialty perform. Additionally, it cannot be expected or required that practitioners perform every procedure listed. Instruct practitioners that they may strikethrough or delete any procedures they do not wish to request.

Minimum threshold criteria for requesting privileges in cardiovascular disease

Basic education: MD or DO

Minimal formal training: Successful completion of an ACGME- or AOA-accredited fellowship in cardiovascular disease and/or current certification or active participation in the examination process (with achievement of certification within [n] years) leading to subspecialty certification in cardiovascular disease by the ABIM or the AOBIM with special qualifications in cardiology.

Required current experience: At least 50 cardiology patients, reflective of the scope of privileges requested, in the past 12 months or successful completion of an ACGME- or AOA-accredited residency or clinical fellowship within the past 12 months.

References

If the applicant is recently trained, a letter of reference should come from the director of the applicant’s training program. Alternatively, a letter of reference
may come from the applicable department chair and/or clinical service chief at the facility where the applicant most recently practiced.

**Core privileges in cardiovascular disease**

Core privileges for cardiovascular disease include the ability to admit, evaluate, diagnose, treat, and provide consultation to adolescent and adult patients presenting with diseases of the heart and blood vessels and management of complex cardiac conditions. Cardiologists may provide care to patients in the intensive care setting in conformance with unit policies, and may assess, stabilize, and determine the disposition of patients with emergent conditions consistent with medical staff policy regarding emergency and consultative call services. The core privileges in this specialty include the following procedure list and such other procedures that are extensions of the same techniques and skills:

- Performance of history and physical exam
- Adult transthoracic echocardiography
- Ambulatory electrocardiography monitor interpretation
- Cardioversion, electrical and elective
- EKG interpretation, including signal average EKG
- Infusion and management of Gp IIb/IIIa, thrombolytic, and antithrombolytic agents
- Insertion and management of central venous catheters, pulmonary artery catheters, and arterial lines
- Noninvasive hemodynamic monitoring
- Pericardiocentesis
- Stress echocardiography (exercise and pharmacologic stress)
- Tilt table testing
- Transcutaneous external pacemaker placement
- Transthoracic 2-D echocardiography, Doppler, and color flow

**Special noncore privileges in cardiovascular disease**

If desired, noncore privileges are requested individually in addition to requesting the core. Each individual requesting noncore privileges must meet the specific threshold criteria governing the exercise of the privilege requested, including training, required previous experience, and maintenance of clinical competence. Noncore privileges include:

- Cardiac nuclear scan interpretation
- Cardiac CT and CT angiogram
- Cardiovascular magnetic resonance
- Transesophageal echocardiography
- Valvuloplasty
- Implantation of cardiovascular implantable electronic devices, including pacemakers, ICDs, cardiac resynchronization devices, implantable loop recorders, and implantable cardiovascular monitors
- Peripheral vascular interventions, including diagnostic and therapeutic angi-
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- Angiography, angioplasty, and stenting of arterial and venous grafts and fistulas (excluding carotid stenting and intracranial interventions)
  ➤ Percutaneous thrombolysis/thrombectomy
  ➤ Carotid stenting
  ➤ Percutaneous atrial septal defect/patent foramen ovale closure
  ➤ Administration of sedation and analgesia

**Reappointment**

Reappointment should be based on unbiased, objective results of care according to a hospital’s quality assurance mechanism. To be eligible to renew privileges in cardiovascular disease (cardiology), the applicant must demonstrate current competence and an adequate volume of experience ([n]1 patients) with acceptable results, reflective of the scope of privileges requested, for the past 24 months based on results of ongoing professional practice evaluation and outcomes. Evidence of current physical and mental ability to perform privileges requested is required of all applicants for renewal of privileges.

In addition, continuing education related to cardiovascular disease should be required.

**For more information**

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Chicago, IL 60654
Telephone: 312-755-5000
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Website: [www.acgme.org](http://www.acgme.org)

**American Board of Internal Medicine**
510 Walnut Street, Suite 1700
Philadelphia, PA 19106
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Website: [www.abim.org](http://www.abim.org)

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1 Healthcare organizations should define the minimum case/patient volume (the “[n]”) required to maintain clinical competence as recommended by the applicable department chair and the medical executive committee and subject to approval by the governing board.
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American Osteopathic Board of Internal Medicine
1111 West 17th Street
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Centers for Medicare & Medicaid Services
7500 Security Boulevard
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Website: www.cms.hhs.gov

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Website: www.dnvaccreditation.com

Healthcare Facilities Accreditation Program
142 East Ontario Street
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