



ACGME International

**Advanced Specialty Program Requirements for
Graduate Medical Education in
Cardiovascular Disease
(Internal Medicine)**

Reformatted: 1 April 2022
Revised: 12 February 2015, Effective: 1 July 2016
Initial Approval: 2 October 2012

ACGME International Specialty Program Requirements for Graduate Medical Education in Cardiovascular Disease (Internal Medicine)

Int. Introduction

Background and Intent: Programs must achieve and maintain Foundational Accreditation according to the ACGME-I Foundational Requirements prior to receiving Advanced Specialty Accreditation. The Advanced Specialty Requirements noted below complement the ACGME-I Foundational Requirements. For each section, the Advanced Specialty Requirements should be considered together with the Foundational Requirements.

Int. I. Definition and Scope of the Specialty

~~The adult medicine-based specialty of cardiovascular disease concerns disorders of the heart, including prevention, diagnosis, and treatment of coronary artery disease, myocardial disease, heart failure, valvular heart disease, vascular disease, and arrhythmias.~~ Cardiovascular disease is the internal medicine subspecialty that focuses on prevention, diagnosis, and management of disorders of the cardiovascular system.

Int. II. Duration of Education

Int. II.A. The educational program in cardiovascular disease must be 36 or 48 months in length.

I. Institution

I.A. Sponsoring Institution

I.A.1. A fellowship in cardiovascular disease must function as an integral part of an ACGME-I-accredited residency in internal medicine.

I.B. Participating Sites

See International Foundational Requirements, Section I.B.

II. Program Personnel and Resources

II.A. Program Director

See International Foundational Requirements, Section II.A.

II.B. Faculty

II.B.1. In addition to the program director, there must be at least three core faculty members.

II.C. Other Program Personnel

II.C.1. Fellows must have regular interaction with electrophysiologists and cardiac surgeons, such as at catheterization conferences and in patient care planning.

II.C.2. The following personnel must be available to provide multidisciplinary patient care and fellow education:

II.C.2.a) dietitians;

II.C.2.b) language interpreters;

II.C.2.c) nurses;

II.C.2.d) occupational therapists;

II.C.2.e) physical therapists; and,

II.C.2.f) social workers.

II.D. Resources

II.D.1. ~~A cardiac intensive care unit.~~ The following must be present at the primary clinical site:

II.D.1.a) a cardiac intensive care unit; and,

II.D.1.b) an active cardiac surgery program.

II.D.2. The following laboratory services ~~should~~ must be present at the primary clinical site:

II.D.2.a) cardiac catheterization laboratories, including cardiac hemodynamics and a full range of interventional cardiology;

II.D.2.b) cardiac radiology laboratory, including magnetic resonance imaging (MRI) and computed tomography (CT);

II.D.2.c) cardiac radionuclide laboratories;

II.D.2.d) echocardiography laboratories, including Doppler and transesophageal echocardiography;

II.D.2.e) electrocardiogram (ECG), ambulatory ECG, and exercise testing laboratories;

II.D.2.f) electrophysiology laboratories; and,

II.D.2.g) a non-invasive vascular laboratory.

III. Fellow Appointment

III.A. Eligibility Criteria

III.A.1. Prior to appointment in the program, fellows should have completed an ACGME-I-accredited residency program in internal medicine, or an internal medicine residency program acceptable to the Sponsoring

106		Institution's Graduate Medical Education Committee.
107		
108	III.B.	Number of Fellows
109		
110		See International Foundational Requirements, Section III.B.
111		
112	IV.	Specialty-Specific Educational Program
113	IV.A.	ACGME-I Competencies
114	IV.A.1.	The program must integrate the following ACGME-I Competencies into
115		the curriculum.
116		
117	IV.A.1.a)	Professionalism
118		
119	IV.A.1.a).(1)	Fellows must demonstrate a commitment to
120		professionalism and an adherence to ethical principles
121		
122	IV.A.1.b)	Patient Care and Procedural Skills
123		
124	IV.A.1.b).(1)	Fellows must provide patient care that is compassionate,
125		appropriate, and effective for the treatment of health
126		problems and the promotion of health. Fellows must
127		demonstrate competence in managing <u>the</u> care of
128		patients:
129		
130	IV.A.1.b).(1).(a)	<u>in a variety of health care settings, including</u>
131		<u>inpatient and ambulatory settings; the practice of</u>
132		<u>health promotion, disease prevention, diagnosis,</u>
133		<u>care, and treatment of patients of each gender,</u>
134		<u>from adolescence to old age, during health and all</u>
135		<u>stages of illness;</u>
136	IV.A.1.b).(1).(b)	<u>using critical thinking and evidence-based tools;</u>
137	IV.A.1.b).(1).(c)	<u>using population-based data; and,</u>
138	IV.A.1.b).(1).(d)	<u>with whom they have limited or no physical contact,</u>
139		<u>through the use of telemedicine.</u>
140		
141	IV.A.1.b).(2).	Fellows must demonstrate competence in prevention,
142		evaluation, and management of:
143	IV.A.1.b).(2).(a)	arrhythmias;
144	IV.A.1.b).(2).(b)	acute myocardial infarction and other acute
145		ischemic syndromes;
146		
147	IV.A.1.b).(2).(c)	cardiomyopathy;
148		
149	IV.A.1.b).(2).(d)	cardiovascular evaluation system of patients
150		undergoing non-cardiac surgery;
151		

152	IV.A.1.b).(2).(e)	congestive heart failure;
153		
154	IV.A.1.b).(2).(f)	coronary heart disease, including:
155	IV.A.1.b).(2).(f).(i)	acute coronary syndromes; and,
156	IV.A.1.b).(2).(f).(ii)	chronic coronary heart disease.
157		
158	IV.A.1.b).(2).(g)	diseases of the aorta;
159		
160	IV.A.1.b).(2).(h)	need for end-of-life (palliative) care;
161		
162	IV.A.1.b).(2).(i)	heart disease in pregnancy;
163		
164	IV.A.1.b).(2).(j)	hypertension;
165		
166	IV.A.1.b).(2).(k)	infectious and inflammatory heart disease;
167		
168	IV.A.1.b).(2).(l)	lipid disorders and metabolic syndrome;
169	IV.A.1.b).(2).(m)	pericardial disease;
170		
171	IV.A.1.b).(2).(n)	peripheral vascular disease;
172		
173	IV.A.1.b).(2).(o)	pulmonary hypertension;
174		
175	IV.A.1.b).(2).(p)	thromboembolic disorders; and,
176		
177	IV.A.1.b).(2).(q)	valvular heart disease.
178	IV.A.1.b).(3).	<u>Fellows must be able to perform all medical, diagnostic,</u>
179		<u>and surgical procedures considered essential to the</u>
180		<u>subspecialty, including:</u>
181	IV.A.1. b).(3).(a)	<u>performing diagnostic and therapeutic procedures</u>
182		<u>relevant to their individual specific planned career</u>
183		<u>path, to include:</u>
184	IV.A.1. b).(3).(a).(i)	conscious sedation;
185	IV.A.1.b).(3).(a).(ii)	direct cardioversion or defibrillation;
186	IV.A.1.b).(3).(a).(iii)	echocardiography;
187	IV.A.1.b).(3).(a).(iv)	exercise stress testing (ECG tests);
188		
189	IV.A.1.b).(3).(a).(v)	placement and management of temporary
190		pacemakers, <u>including both</u> transvenous
191		and transcutaneous;
192		
193	IV.A.1.b).(3).(a).(vi)	programming and follow-up surveillance of
194		permanent pacemakers and implantable
195		cardioverter defibrillators (ICD); and,

196		
197	IV.A.1.b).(3).(a).(vii)	right and left heart catheterization, including
198		coronary arteriography.
199	IV.A.1. b).(3).(b)	<u>treating their patient's conditions with practices that</u>
200		<u>are patient-centered, safe, scientifically based,</u>
201		<u>effective, timely, and cost-effective; and,</u>
202	IV.A.1. b).(3).(c)	<u>using diagnostic and/or imaging studies relevant to</u>
203		<u>the care of the patient, to include interpretation of:</u>
204	IV.A.1.b).(3).(c).(i)	ambulatory ECG recordings;
205	IV.A.1.b).(3).(c).(ii)	chest x-rays;
206		
207	IV.A.1.b).(3).(c).(iii)	electrocardiograms; and,
208	IV.A.1.b).(3).(c).(iv)	nuclear cardiology, including single-photon
209		emission computerized tomography
210		(SPECT) myocardial perfusion imaging and
211		ventriculograms.
212		
213	IV.A.1.c)	Medical Knowledge
214		
215	IV.A.1.c).(1)	Fellows must demonstrate knowledge of established and
216		evolving biomedical clinical, epidemiological, and social-
217		behavioral sciences, as well as the application of this
218		knowledge to patient care. Fellows must demonstrate
219		knowledge of:
220		
221	IV.A.1.c).(1).(a)	the scientific method of problem solving and
222		evidence-based decision making;
223		
224	IV.A.1.c).(1).(b)	indications, contraindications, and techniques for,
225		and limitations, complications, and interpretation of
226		results of those diagnostic and therapeutic
227		procedures integral to the discipline, including the
228		appropriate indications for and use of screening
229		tests and procedures;
230		
231	IV.A.1.c).(1).(c)	the following content areas of basic science:
232	IV.A.1.c).(1).(c).(i)	cardiovascular anatomy;
233	IV.A.1.c).(1).(c).(ii)	cardiovascular metabolism;
234		
235	IV.A.1.c).(1).(c).(iii)	cardiovascular pathology;
236		
237	IV.A.1.c).(1).(c).(iv)	cardiovascular pharmacology, to include
238		drug metabolism, adverse effects,
239		indications, the effects on aging, relative
240		costs of therapy, and the effects of non-
241		cardiovascular drugs on cardiovascular

242		function;
243		
244	IV.A.1.c).(1).(c).(v)	cardiovascular physiology;
245		
246	IV.A.1.c).(1).(c).(vi)	genetic causes of cardiovascular disease;
247		and,
248		
249	IV.A.1.c).(1).(c).(vii)	molecular biology of the cardiovascular
250		system.
251		
252	IV.A.1.c).(1).(d)	primary and secondary prevention of
253		cardiovascular disease, including:
254		
255	IV.A.1.c).(1).(d).(i)	biostatistics;
256		
257	IV.A.1.c).(1).(d).(ii)	cardiac rehabilitation;
258		
259	IV.A.1.c).(1).(d).(iii)	cerebrovascular disease;
260		
261	IV.A.1.c).(1).(d).(iv)	clinical epidemiology; and,
262		
263	IV.A.1.c).(1).(d).(v)	current and emerging risk factors.
264	IV.A.1.c).(1).(e)	evaluation and management of patients with:
265	IV.A.1.c).(1).(e).(i)	adult congenital heart disease;
266	IV.A.1.c).(1).(e).(ii)	cardiac trauma;
267		
268	IV.A.1.c).(1).(e).(iii)	cardiac tumors;
269	IV.A.1.c).(1).(e).(iv)	cerebrovascular disease; and,
270		
271	IV.A.1.c).(1).(e).(v)	geriatric cardiology.
272	IV.A.1.c).(2)	<u>Fellows must demonstrate sufficient knowledge specific</u>
273		<u>to the subspecialty of cardiovascular disease, including</u>
274		<u>application of technology appropriate for the clinical</u>
275		<u>context, to include evolving technologies.</u>
276		
277	IV.A.1.d)	Practice-Based Learning and Improvement
278		
279	IV.A.1.d).(1)	Fellows must demonstrate the ability to investigate and
280		evaluate their care of patients, to appraise and assimilate
281		scientific evidence, and to continuously improve patient
282		care based on constant self-evaluation and lifelong
283		learning.
284	IV.A.1.e)	Interpersonal and Communication Skills
285	IV.A.1.e).(1)	Fellows must demonstrate interpersonal and
286		communication skills that result in the effective exchange
287		of information and collaboration with patients, patients'

288 families, and health professionals.
 289
 290 IV.A.1.f) Systems-Based Practice
 291
 292 IV.A.1.f).(1) Fellows must demonstrate an awareness of and
 293 responsiveness to the larger context and system of
 294 health care, including the social determinates of health,
 295 as well as the ability to call effectively on other resources
 296 in the system to produce optimal care.

297 **IV.B. Regularly Scheduled Educational Activities**

298 IV.B.1. The educational program must include didactic instruction based upon
 299 the core knowledge content in cardiovascular disease.

300 IV.B.1.a) Fellows must have a sufficient number of didactic sessions to
 301 ensure fellow-fellow and fellow-and-faculty member interaction.

302 IV.B.2. The program must ensure that fellows have an opportunity to review all
 303 knowledge content from conferences that they could not attend.

304 IV.B.3. Fellows must receive instruction in practice management relevant to
 305 cardiovascular disease.

306 **IV.C. Clinical Experiences**

307 IV.C.1. Assignment of rotations must be structured to minimize the frequency of
 308 rotational transitions, and rotations must be of sufficient length to provide
 309 a quality educational experience, defined by continuity of patient care,
 310 ongoing supervision, longitudinal relationships with faculty members, and
 311 meaningful assessment and feedback.

312 IV.C.2. Rotations must be structured to allow fellows to function as a part of an
 313 effective interprofessional team that works together toward the shared
 314 goals of patient safety and quality improvement.

315 IV.C.3. Rotations must be structured to minimize conflicting inpatient and
 316 outpatient responsibilities.

317
 318 IV.C.4. Fellows must have at least 24 months of clinical experience, including
 319 inpatient and special experiences, to include:
 320

321 IV.C.4.a) at least four months in the cardiac catheterization laboratory;
 322

323 IV.C.4.b) at least six months in non-invasive cardiac evaluations, consisting
 324 of:
 325

326 IV.C.4.b).(1) at least three months of echocardiography and Doppler;
 327

328 IV.C.4.b).(2) at least two months of nuclear cardiology, including each
 329 fellow's active participation in a minimum of 80 hours of
 330 daily nuclear cardiology study interpretation during the
 331 rotation;

332	IV.C.4.b).(3)	at least one month of experiences in other non-invasive
333		cardiac evaluations, including exercise stress testing,
334		ECG interpretation, and ambulatory ECG monitoring
335		(continuous and event recording); and,
336	IV.C.4.b).(3).(a).	These rotations may be done concurrently with
337		other rotations.;
338		
339	IV.C.4.b).(4)	experience in cardiac tomography, positron emission
340		tomography(PET), cardiac <u>MRI</u> magnetic resonance
341		imaging (CMRI) , and peripheral vascular imaging.
342		
343	IV.C.4.b).(4).(a)	These rotations may be done concurrently with
344		other rotations.
345		
346	IV.C.4.c)	at least two months devoted to electrophysiology; and,
347		
348	IV.C.4.d)	at least nine months of non-laboratory clinical practice activities,
349		including consultations, cardiac care units, post-operative care,
350		and experience in congenital heart disease, preventive
351		cardiology, and vascular medicine.
352		
353	IV.C.5.	Fellows must have formal instruction in and clinical experience with
354		performance of the following procedural and technical skills:
355		
356	IV.C.5.a)	conscious sedation;
357		
358	IV.C.5.b)	intra-aortic balloon counterpulsation;
359		
360	IV.C.5.c)	intra-cardiac electrophysiologic studies;
361		
362	IV.C.5.d)	MRI;
363		
364	IV.C.5.e)	percutaneous transluminal coronary angioplasty and other
365		interventional procedures;
366		
367	IV.C.5.f)	pericardiocentesis;
368		
369	IV.C.5.g)	placement and management of temporary pacemakers, including
370		transvenous and transcutaneous; and,
371		
372	IV.C.5.h)	programming and follow-up surveillance of permanent
373		pacemakers and implantable cardioverter-defibrillators (ICDs).
374	IV.C.6.	<u>The program must provide educational experiences in team-based care</u>
375		<u>that allow fellows to interact with and learn from other health care</u>
376		<u>professionals.</u>
377	IV.C.7.	<u>The educational program must provide fellows with elective experiences</u>
378		<u>relevant to their future practice or to further skill/competence</u>
379		<u>development.</u>
380		
381	IV.C.8.	<u>Fellows must participate in training using simulation.</u>

- IV.C.9. Fellows should have a structured continuity ambulatory clinic experience for the duration of the program that exposes them to the breadth and depth of ~~cardiology~~ cardiovascular disease.
- ~~IV.C.9.a) This experience should include an appropriate distribution of patients of each gender and a diversity of ages.~~
- IV.C.9.a) This experience should average one half-day each week throughout the educational program.
- ~~IV.C.9.b).(1) Each fellow should, on average, be responsible for four to eight patients during each half-day session.~~
- ~~IV.C.9.b).(1).(a) Each fellow should, on average, be responsible for no more than eight to 12 patients during each half-day ambulatory session.~~
- IV.C.9.b) The continuing patient care experience should not be interrupted by more than one month, excluding a fellow's vacation.
- IV.D. Scholarly Activity**
- IV.D.1. Fellows' Scholarly Activity
- IV.D.1.a) While in the program, each fellow must complete at least one of the following scholarly activities: participation in grand rounds; poster presentations; workshops; quality improvement presentations; podium presentations; grant leadership; non-peer-reviewed print/electronic resources; articles or publications; book chapters; textbooks; webinars; service on professional committees; or service as a journal reviewer, journal editorial board member, or editor.
- IV.D.2. Faculty Scholarly Activity
- See International Foundational Requirements, Section IV.D.2.
- V. Evaluation**
- See International Foundational Requirements, Section V.
- VI. The Learning and Working Environment**
- VI.A. Principles**
- See International Foundational Requirements, Section VI.A.
- VI.B. Patient Safety**
- See International Foundational Requirements, Section VI.B.
- VI.C. Quality Improvement**

430		
431		See International Foundational Requirements, Section VI.C.
432		
433	VI.D.	Supervision and Accountability
434		
435	VI.D.1.	Direct supervision of procedures performed by each fellow must occur until
436		competence has been acquired and documented by the program director.
437		
438	VI.E.	Professionalism
439		
440		See International Foundational Requirements, Section VI.E.
441		
442	VI.F.	Well-Being
443		
444		See International Foundational Requirements, Section VI.F.
445		
446	VI.G.	Fatigue
447		
448		See International Foundational Requirements, Section VI.G.
449		
450	VI.H.	Transitions of Care
451		
452		See International Foundational Requirements, Section VI.H.
453		
454	VI.I.	Clinical Experience and Education
455		
456		See International Foundational Requirements, Section VI.I.
457		
458	VI.J.	On-Call Activities
459		
460		See International Foundational Requirements, Section VI.J.