Cardiac-Interventional Radiography

Candidates for certification and registration are required to meet the Professional Requirements specified in the *ARRT Rules and Regulations*. ARRT's Cardiac-Interventional Radiography Clinical Experience *Requirements* describe the specific eligibility requirements that must be documented as part of the application for certification and registration process.

The purpose of the clinical experience requirements is to verify that candidates have completed a subset of the clinical procedures within a discipline. Successful performance of these fundamental procedures, with mastery of the cognitive knowledge and skills covered by the examination provides the basis for the acquisition of the full range of clinical skills required in a variety of settings.

The job responsibilities typically required of cardiac-interventional radiographers are delineated through a periodic practice analysis. This results in a "task inventory." An advisory committee then determines the number of clinical procedures required to demonstrate adequate candidate experience in performing the tasks on the inventory.

Candidates for Cardiac-Interventional Radiography certification and registration must document performance of a minimum of 150 repetitions of cardiac-interventional radiography procedures according to the criteria noted below. Procedures are documented, verified and submitted when complete via an online tool accessible through the candidate's online account on arrt.org. ARRT encourages individuals to obtain education and experience beyond these minimum requirements.

In addition, to ensure the highest level of patient care, candidates must document current advanced cardiac life support (ACLS) certification with application submission.

To qualify as a complete imaging procedure, the candidate must demonstrate active participation in a primary role throughout the entire procedure. Examples of primary roles include:

- scrubbing
- circulating
- monitoring

Completion of each procedure must be verified by a certified and registered technologist (post-primary certification not required), supervisor or licensed physician. The verification process is described within the online tool.

Specific Procedural Requirements

A. Mandatory Procedures

Right Heart Catheterization

Candidates must complete a minimum of 10 right heart catheterizations, and each heart catheterization must include at least two studies from the following list. Up to 80 additional right heart catheterizations may be performed and counted as elective procedures.

- cardiac output calculations (*e.g., Fick, thermodilution)
- hemoximetry
- shunt detection
- pulmonary angiography
- hemodynamics
- valve measurement
- right ventriculography

Left Heart Catheterization

Candidates must complete a minimum of 60 left heart catheterizations, and each heart catheterization must include at least two studies from the following list. Up to 80 additional left heart catheterizations may be performed and counted as elective procedures.

- coronary angiography
- coronary artery bypass graft angiography
- aortography
- hemodynamics (e.g., aortic pressure, end-diastolic pressure (EDP))
- left ventriculography
- ventricular volume measurement/ejection fraction (EF)

*e.g., This is used here and in the remainder of this document to indicate examples of the topics covered, but not a complete list.

B. Elective Procedures

A minimum of 80 repetitions of the elective procedures must be documented. Electives can be satisfied by: (a) completing any of the electives that appear on the list; or (b) completing additional repetitions of the mandatory right and/or left heart procedures. Multiple different procedures can be documented for each patient. However, each individual procedure (e.g., thrombectomy) can be documented only once for each patient.

No limit to repetitions

- angioplasty/stent placement
- atherectomy (directional or rotational)
- thrombectomy (mechanical or pharmacological)
- intravascular ultrasound (IVUS)
- optical coherence tomography (OCT)
- intracardiac echocardiography (ICE)
- transcatheter aortic valve implantation (TAVI/TAVR)
- fractional flow reserve
- distal protection device placement/retrieval
- ventricular assist device implantation
- intra-aortic balloon counterpulsation
- valvuloplasty
- patent foramen ovale/atrial septal defect closure
- pacemaker, permanent implantation
- defibrillator implantation
- arrhythmia ablation
- electrophysiology study

Up to five repetitions for each procedure

- femoral angiography (e.g., runoff)
- carotid angiography
- aortography
- renal angiography
- vascular closure devices (e.g., collagen plug, suture-based)
- pericardiocentesis
- endomyocardial biopsy
- removal of foreign body
- inferior vena cava (IVC) filter placement/retrieval
- pacemaker, temporary insertion
- cardioversion

Examples

A patient has a left heart catheterization with intervention to follow. Two vessels need stenting with atherectomy and mechanical thrombectomy of both vessels. The procedures should be documented as:

Counts as one interventional procedure each

- 1 angioplasty/stent placement
- 1 atherectomy
- 1 thrombectomy

Counts as one left heart catheterization total

- 1 coronary angiogram
- 1 left ventriculogram
- 1 hemodynamic measurement

The preceding example counts as four total procedures.

The hypothetical scenarios that follow illustrate three ways of satisfying the 150 clinical experience requirements. Numerous other combinations are possible.

Candidate A: This person participated in 10 right heart catheterizations, 60 left heart catheterizations, 30 angioplasties, 20 intravascular ultrasounds, 10 thrombectomies, five cardioversions, five pericardiocenteses, five biopsies and five foreign body removals.

Candidate B: This person participated in 35 right heart catheterizations, 100 left heart catheterizations, 10 thrombectomies and five angioplasties.

Candidate C: This person participated in 20 right heart catheterizations and 130 left heart catheterizations.

Candidate	Right Heart Catheterizations	Left Heart Catheterizations	Elective Procedures
A.	10	60	80
B.	35	100	15 (55 electives covered by overflow from mandatory procedures)
C.	20	130	0 (80 electives covered by overflow from mandatory procedures)