Vascular Sonography

Candidates for certification and registration are required to meet the Professional Requirements specified in the *ARRT Rules and Regulations*. ARRT's *Vascular Sonography 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 document that candidates have performed a subset of the clinical procedures within a discipline. Successful performance of these fundamental procedures, in combination with mastery of the cognitive knowledge and skills as documented by the examination requirement, provides the basis for the acquisition of the full range of clinical skills required in a variety of settings.

The requirements are periodically updated based upon a practice analysis which is a systematic process to delineate the job responsibilities typically required of vascular sonographers. The result of this process is 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 vascular sonography certification and registration must document performance of at least 295 vascular sonography procedures according to the criteria noted below. Procedures are documented, verified, and submitted when complete via an online worksheet accessible through your account on arrt.org. A maximum of 8 procedures/entries per day may be reported in the ARRT online worksheet. A limit of two procedures (either mandatory or elective) may be documented on one patient or volunteer per day. ARRT encourages individuals to obtain education and experience beyond these minimum requirements.

Completion of each procedure must be verified by a certified and registered technologist, certified sonographer, supervisor, or licensed physician. The verification process is described within the online tool.

General Guidelines

One patient or volunteer may be used for documentation for a maximum of two different procedures. To qualify as a complete procedure, the candidate must appropriately demonstrate the following for each procedure:

- evaluation of requisition and/or medical record
- preparation of examination room
- CDC Standard Precautions
- identification of patient
- patient assessment and education concerning the procedure
- patient positioning
- Doppler mode selection
- image optimization (e.g., transducer selection, focal zone, field of view, Doppler angle, pulse repetition frequency)
- image archiving
- documentation of procedure and patient data in appropriate record evaluation of image quality (e.g., artifacts) and optimal demonstration of anatomic region and pathology
- assurance of exam completeness

Simulation

ARRT defines simulation of a clinical procedure routinely performed on a patient as the candidate completing hands-on tasks of the procedure on a live human being, using the same level of cognitive, psychomotor, and affective skills required for performing the procedure on a patient in a clinical setting standardized to mirror the physical facilities where practice occurs.

Specific Procedural Requirements

A. Mandatory Procedures

Candidates must demonstrate experience in all eight mandatory vascular sonography procedures by completing the specified number of procedures listed for a total of 195 repetitions. Some, but not all, of the procedures are listed in the Appendix. If a procedure is listed in the Appendix, all the required vessels must be seen. If the procedure is not listed in the Appendix, then only that procedure needs to be documented.

At least 75% of the repetitions on **each** of the mandatory procedure must be demonstrated on patients, while the remainder can be performed using volunteers for simulation, as long as your institution has a policy that assures the protection of both the volunteer's and institution's interest. Procedures eligible for simulation are indicated with a checkmark (✓) on the table.

EXAMPLE:

Aorta Procedure – 25 mandatory aorta procedures must be demonstrated; up to six of the 25 may be simulated. (25 procedures - 75% performed on patients = 6.25. Six aorta procedures eligible for simulation; always round down).

B. Elective Procedures

Candidates must demonstrate experience in the elective procedures by completing up to the maximum number of repetitions in any combination of procedures for a total of 100 repetitions. If a procedure is listed in the Appendix, all the required vessels must be seen. If the procedure is NOT listed in the Appendix, then only that procedure needs to be documented.

At least 75% of the repetitions on **each** of the elective procedures must be demonstrated on patients, while the remainder can be performed using volunteers for simulation as long as your institution has a policy that assures the protection of both the volunteer's and institution's interest.

EXAMPLE:

Lower Extremity Reflux Assessment – Maximum of 15 elective procedures may be demonstrated; up to three may be simulated if a total of 15 are submitted.

If eight are submitted (for example), two of the eight may be simulated.

The procedures marked with an * must include the required vessels listed in the Appendix

ABDOMINAL/PELVIC VASCULATURE		
Mandatory Procedures	**Number required**	**Eligible for Simulation**
Aorta*	**25**	✓
Renal artery with duplex*	**25**	✓
Liver Doppler/vasculature*	**25**	✓
Elective Procedures	**Maximum number that can be counted. No minimum number.**	**Eligible for Simulation**
Mesenteric*	**10**	✓
TIPS*	**15**	
Liver transplant*	**15**	
Kidney transplant*	**15**	
UPPER EXTREMITY VASCULATURE		
Mandatory Procedures	**Number required**	**Eligible for Simulation**
Upper extremity arterial Doppler*	**20**	✓
Upper extremity venous Doppler*	**20**	✓
Elective Procedures	**Maximum number that can be counted. No minimum number.**	**Eligible for Simulation**
Radial artery mapping	**10**	✓
Vein mapping	**10**	✓
LOWER EXTREMITY VASCULATURE		
Mandatory Procedures	**Number required**	**Eligible for Simulation**
Lower extremity arterial Doppler*	**20**	✓
Lower extremity venous Doppler*	**30**	✓
Elective Procedures	**Maximum number that can be counted. No minimum number.**	**Eligible for Simulation**
Vein mapping	**10**	✓
Lower extremity reflux assessment	**15**	✓
NECK VASCULATURE		
Mandatory Procedures	**Number required**	**Eligible for Simulation**
Carotid*	**30**	✓

PRESSURE TESTING		
Elective Procedures	**Maximum number that can be counted. No minimum number.**	**Eligible for Simulation**
Segmental pressure (upper extremities)	**10**	✓
Segmental pressure (lower extremities)	**20**	✓
Ankle-Brachial Index (ABI)	**15**	✓
Pulse Volume Recording (PVR)	**15**	✓
Photoplethysmography (PPG)	**10**	✓

POST-INTERVENTION PROCEDURES		
Elective Procedures	**Maximum number that can be counted. No minimum number.**	**Eligible for Simulation**
Bypass grafts	**15**	
Post-catheterization complications	**10**	
Endografts	**10**	
Dialysis access grafts/fistulae	**20**	
Stents	**10**	
INTERVENTIONAL PROCEDURES		
Elective Procedures	**Maximum number that can be counted. No minimum number.**	**Eligible for Simulation**
Pseudoaneurysm treatment (compression or guided thrombin injection)	**15**	
TOTAL REPETITIONS (Mandatory and Elective)	**295**	

Appendix

The following is a list of procedures along with the vessels to be included in each procedure. **REQUIRED** vessels listed must be included in the procedure to demonstrate clinical experience. Although **OPTIONAL** vessels are not required to be demonstrated, it is recommended that they be included in the procedure, when possible.

It is not a requirement to document the vessels in the online worksheet; however, your verifier must be able to attest to full completion of each procedure listed in the worksheet, including required vessels listed, if requested.

PROCEDURE	REQUIRED VESSELS	OPTIONAL VESSELS
Aorta		
	aorta	inferior vena cava
	common Iliac artery	common iliac vein
Renal Artery with Duplex		
	aorta	common iliac artery
	renal artery	common iliac vein
	intrarenal artery	
	inferior vena cava	
	renal vein	
Liver Doppler/Vasculature		
	aorta	superior mesenteric vein
	hepatic artery	splenic artery
	inferior vena cava	
	portal vein	
	hepatic veins	
	splenic vein	
Mesenteric		
	aorta	inferior mesenteric artery
	celiac artery	splenic artery
	superior mesenteric artery	splenic vein
	inferior vena cava	
	superior mesenteric vein	
TIPS		
	hepatic artery	aorta
	hepatic veins	right portal vein
	portal vein	splenic vein
	left portal vein	
	TIPS shunt	
	inferior vena cava	
Liver Transplant		
	aorta	celiac artery
	hepatic artery	superior mesenteric vein
	inferior vena cava	
	portal vein	
	hepatic veins	
	splenic vein	

Kidney Transplant		
	external iliac artery	
	renal transplant artery	
	intrarenal artery	
	external iliac vein	
	renal transplant vein	
Upper Extremity Arterial Doppler		
	subclavian artery	brachiocephalic artery
	axillary artery	
	brachial artery	
	radial artery	
	ulnar artery	
Upper Extremity Venous Doppler		
	internal jugular vein	brachiocephalic vein
	subclavian vein	radial veins
	axillary vein	ulnar veins
	brachial veins	
	cephalic vein	
	basilic vein	
Lower Extremity Arterial Doppler		
	common femoral artery	tibioperoneal trunk
	profunda femoris artery	anterior tibial artery
	superficial femoral artery	peroneal artery
	popliteal artery	
	posterior tibial artery	
	dorsalis pedis artery	
Lower Extremity Venous Doppler		
	common femoral vein	external iliac vein
	profunda femoris vein	small saphenous vein
	femoral vein	peroneal veins
	great saphenous vein	posterior tibial veins
	popliteal vein	anterior tibial vein
Carotid		
	common carotid artery	subclavian artery
	external carotid artery	
	internal carotid artery	
	vertebral artery	