



# 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 ~~verify~~ ~~document~~ that candidates have ~~completed~~ ~~performed~~ a subset of the clinical procedures within a ~~discipline~~ ~~modality~~. Successful performance of these fundamental procedures, in combination with mastery of the cognitive knowledge and skills covered by the examination ~~requirements~~ 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. ~~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 vascular sonography certification and registration must document performance of at ~~minimum least of 1,120~~ ~~295~~<sup>1</sup> ~~repetitions of~~ vascular sonography procedures (~~studies~~) according to the criteria noted below. ~~A limit of two studies (either mandatory or elective) may be documented on one patient, per day.~~ ~~Procedures~~ ~~Studies~~ are documented, verified, and submitted when complete via an online tool accessible through your online account at arrt.org. ARRT encourages individuals to obtain education and experience beyond these minimum requirements.

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

## Specific Procedural Requirements

### A. Mandatory ~~Procedures~~ ~~Studies~~

Candidates must demonstrate experience in all ~~30~~ ~~eight~~ mandatory ~~procedure~~ ~~vascular sonography~~ ~~studies~~ by completing the specified number of ~~repetitions~~ ~~studies~~ listed for a total of 195 repetitions. ARRT ~~does not require you to document evaluation of specific vessels within the study however a subset of mandatory and optional vessels is listed in Appendix 1.~~

At least ~~50%~~ ~~75%~~ of the repetitions on ~~each~~ of the mandatory ~~procedure~~ ~~studies~~ 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. ~~Simulation is further described on page two.~~

#### EXAMPLE:

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

<sup>1</sup>NOTE: A maximum of 8 studies/entries per day may be reported in the ARRT online tool.



## B. Elective ~~Procedures~~Studies

Candidates must demonstrate experience in ~~at least the 50~~ elective ~~procedures~~ studies by completing ~~the~~ up to ~~a~~ the maximum number of ~~repetitions~~ studies listed in any combination ~~of procedures~~, for a total of 100 repetitions.

At least 75% of the repetitions on each of the elective ~~procedures~~ studies 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. ~~Elective studies marked with an asterisk (\*) are not eligible for simulation and must be performed on a patient.~~

### EXAMPLE:

**Liver Transplant Study** – Maximum of ten elective studies may be demonstrated; up to two may be simulated if a total of ten are submitted.

If four are submitted (for example), one of the four may be simulated.

## General Guidelines

An examination on one patient may be used for documentation of ~~several procedures~~ up to two studies. To qualify as a complete ~~procedure~~ study, the candidate must appropriately demonstrate the following for each study:

- 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.



Although individual documentation of vessels is NOT required, a list of vessels to include in each study can be seen on Appendix 1.

<b>ABDOMINAL/PELVIC VASCULATURE</b>	
<b>Mandatory Studies</b>	<b>Number required</b>
Aorta	<b>25</b>
Renal Artery Stenosis	<b>25</b>
Liver Doppler/Vasculature	<b>25</b>
<b>Elective Studies</b>	<b>Maximum number that can be counted No minimum number</b>
Mesenteric Study	<b>5</b>
TIPS*	<b>10</b>
Liver Transplant	<b>10</b>
Kidney Transplant	<b>10</b>
<b>UPPER EXTREMITY VASCULATURE</b>	
<b>Mandatory Studies</b>	<b>Number required</b>
Upper Extremity Arterial Doppler	<b>20</b>
Upper Extremity Venous Doppler	<b>20</b>
<b>Elective Studies</b>	<b>Maximum number that can be counted No minimum number</b>
Radial Artery Mapping	<b>5</b>
Vein Mapping	<b>5</b>
<b>LOWER EXTREMITY VASCULATURE</b>	
<b>Mandatory Studies</b>	<b>Number required</b>
Lower Extremity Arterial Doppler	<b>20</b>
Lower Extremity Venous Doppler	<b>30</b>
<b>Elective Studies</b>	<b>Maximum number that can be counted No minimum number</b>
Vein Mapping	<b>5</b>
Lower Extremity Reflux Assessment	<b>10</b>
<b>NECK VASCULATURE</b>	
<b>Mandatory Studies</b>	<b>Number required</b>
Carotid Artery Ultrasound	<b>30</b>
<b>STRESS/PRESSURE TESTING</b>	
<b>Elective Studies</b>	<b>Maximum number that can be counted No minimum number</b>
Segmental pressure (upper extremities)	<b>5</b>
Segmental pressure (lower extremities)	<b>15</b>
Ankle-Brachial Index (ABI)	<b>10</b>
Pulse Volume Recording (PVR)	<b>10</b>



<b>POST INTERVENTION PROCEDURES</b>	
<b>Elective Studies</b>	<b>Maximum number that can be counted No minimum number</b>
Bypass grafts	<b>10</b>
Post catheterization complications*	<b>5</b>
Endografts*	<b>5</b>
Dialysis access grafts/fistulae*	<b>15</b>
Stents*	<b>5</b>
<b>INTERVENTIONAL PROCEDURES</b>	
<b>Elective Studies</b>	<b>Maximum number that can be counted No minimum number</b>
Pseudoaneurysm treatment (compression or guided thrombin injection) *	<b>10</b>
<b>TOTAL REPETITIONS (Mandatory and Elective)</b>	<b>295</b>

\*Simulations may not be used for ~~procedures~~ studies marked with an asterisk

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**Appendix 1**

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

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

STUDY	REQUIRED VESSELS	OPTIONAL VESSELS
<b>Aorta Ultrasound</b>		
	aorta	inferior vena cava
	common Iliac artery	common iliac vein
<b>Renal Artery Stenosis</b>		
	aorta	intrarenal artery
	renal artery	
	renal vein	
	inferior vena cava	
<b>Liver Doppler/Vasculature</b>		
	aorta	superior mesenteric vein
	inferior vena cava	
	portal vein	
	splenic vein	
	hepatic vein	
	hepatic artery	
<b>Mesenteric Ultrasound</b>		
	aorta	inferior mesenteric artery
	celiac artery	splenic vein
	inferior vena cava	splenic artery
	superior mesenteric vein	
	superior mesenteric artery	
<b>TIPS</b>		
	hepatic artery	aorta
	hepatic vein	left portal vein
	portal vein	right portal vein
		TIPS shunt



<b>Liver Transplant</b>		
	aorta	
	inferior vena cava	
	portal vein	
	splenic vein	
	hepatic vein	
	hepatic artery	
	celiac artery	
<b>Kidney Transplant</b>		
	renal transplant artery	intrarenal artery
	renal transplant vein	renal transplant venous anastomosis
	external iliac vein	renal transplant artery anastomosis
<b>Upper Extremity Arterial Doppler</b>		
	subclavian artery	brachiocephalic artery
	axillary artery	
	brachial artery	
	radial artery	
	ulnar artery	
<b>Upper Extremity Venous Doppler</b>		
	internal jugular vein	brachiocephalic vein
	subclavian vein	
	axillary vein	
	brachial vein	
	cephalic vein	
	basilic vein	
	radial vein	
<b>Lower Extremity Arterial Doppler</b>		
	common femoral artery	
	superficial femoral artery	
	deep femoral artery	
	popliteal artery	
	tibioperoneal trunk	
	posterior tibial artery	
	anterior tibial artery	
	peroneal artery	
	dorsalis pedis artery	



<b>Lower Extremity Venous Doppler</b>		
	common femoral vein	external iliac vein
	femoral vein	small saphenous vein
	deep femoral vein	
	popliteal vein	
	greater saphenous vein	
	calf veins	
	common femoral vein	
<b>Carotid Ultrasound</b>		
	common carotid artery	subclavian artery
	internal carotid artery	
	external carotid artery	
	vertebral artery	

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