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Examination Overview

RVS

Registered Vascular Specialist



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Registered Vascular Specialist (RVS)

This Examination Overview is meant to assist you as a prospective candidate of the Registered Vascular Specialist (RVS) credentialing program. It provides an overview of the Qualification Requirements and Examination Content. For more details on CCI policies, the testing process, and procedures to submit an application, please visit www.cci-online.org to view or download the Applicant Handbook. **Examination fee is \$365 USD and all exam fees include a \$100 USD non-refundable filing fee.**

Qualification Requirements

All applicants must meet the following criteria: 1) Have a high school diploma or general education diploma at the time of application. 2) Fulfill one (1) of the qualifications of the exam for which you are applying. See qualifications listed in the tables below. 3) Provide typed documentation to support the qualification prerequisite under which you are applying. Required documentation for each qualification prerequisite is listed below. CCI reserves the right to request additional information.

Qualification Prerequisite (All applicants must fulfill one of the following)	Supporting Documentation
<p>RVS1</p> <p>Two years of full-time or full-time equivalent work experience in vascular ultrasound. The applicant must have performed a minimum of 600 vascular ultrasound studies at the time of application.</p> <p>It is recommended, but not required, that the applicant have experience in the following areas:</p> <ul style="list-style-type: none"> • Carotid duplex ultrasound • Transcranial Doppler • Peripheral arterial physiologic • Peripheral arterial duplex • Venous duplex ultrasound • Visceral vascular duplex ultrasound <p>In the verification letter the medical director(s) must confirm the number of studies performed during the applicant's employment.</p> <p>Effective June 30, 2023, the RVS1 qualification prerequisite will be sunset. First-time RVS applicants applying on or after July 1, 2023 must select from the qualification prerequisites listed below.</p>	<p>RVS1</p> <p>Employment Verification Letter (must confirm the number of studies performed during the applicant's employment).</p>
<p>RVS235</p> <p>A graduate of a diploma, associate, or baccalaureate academic program in health science (including, but not limited to, cardiovascular technology, ultrasound, radiologic technology, respiratory therapy, or nursing)</p> <p>AND</p> <p>One year full-time or full-time equivalent work experience in vascular ultrasound</p> <p>AND</p> <p>Performance of a minimum of 600 vascular ultrasound studies* in their career, which is defined as work experience and/or clinical experience gained during a formal educational program.</p> <p>It is recommended, but not required, that the applicant have experience in the following areas:</p> <ul style="list-style-type: none"> • Carotid duplex ultrasound • Transcranial Doppler • Peripheral arterial physiologic • Peripheral arterial duplex • Venous duplex ultrasound • Visceral vascular duplex ultrasound <p>In the verification letter(s) the medical director(s) and/or program director(s) must confirm the number of studies performed during the applicant's employment and/or during the academic program.</p>	<p>RVS235</p> <p>Completion certificate and/or educational transcript</p> <p>AND</p> <p>Employment Verification Letter</p> <p>AND/OR</p> <p>Clinical Experience Letter (only required for applicants submitting verification of the number of studies completed during a formal educational program)</p>
<p>RVS4</p> <p>Applicant must be a graduate of a programmatically accredited program** in vascular ultrasound.</p>	<p>RVS4</p> <p>Completion certificate and/or educational transcript</p> <p>AND</p> <p>Student Verification Letter</p> <p><i>Students applying to take examination prior to graduation will be required to submit this documentation</i></p>
<p>RVS5</p> <p>A graduate of a NON-programmatically accredited program in vascular ultrasound which has a minimum of one year of specialty training and includes a minimum of 800 clinical hours** in the specialty in which the examination is being requested.</p> <p>IMPORTANT: If an individual's clinical hours were completed after graduation or if the hours are not a requirement for their educational program, then those hours WOULD NOT count toward the 800-hour minimum under qualification RVS5. All clinical hours must be earned in a setting in which patients are being tested or medically treated.</p>	<p>RVS5</p> <p>Completion certificate and/or educational transcript</p> <p>AND</p> <p>Student Verification Letter</p> <p>AND</p> <p>Clinical Experience Letter</p> <p><i>Students applying to take examination prior to graduation will be required to submit this documentation</i></p>
<p>RVS6</p> <p>Active ultrasound credential holders with six (6) months of full-time or full-time equivalent work experience in vascular ultrasound. The applicant must have participated in a minimum of 100 vascular ultrasound studies* at the time of application.</p> <p>In the verification letter, the medical director(s) must confirm the number of studies performed during the applicant's employment.</p>	<p>RVS6</p> <p>Copy of wallet card showing date earned and active through date of ultrasound registry credential</p> <p>AND</p> <p>Employment Verification Letter (must confirm the number of studies performed during the applicant's employment).</p> <p>AND/OR</p> <p>Clinical Experience Letter (only required for applicants submitting verification of the number of studies completed during a formal educational program)</p>

* If an individual's studies were conducted during a formal educational program, then those studies completed WOULD count toward the minimum vascular ultrasound studies under qualifications RVS235 and RVS6.

** An accredited program is accredited by an agency recognized by the Council for Higher Education Accreditation (CHEA), United States Department of Education (USDOE), or Canadian Medical Association (CMA) that specifically conducts programmatic accreditation for cardiovascular technology, diagnostic cardiac sonography, or vascular technology.

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Examination Matrix

This examination matrix is provided to illustrate the general distribution of questions and the relative weight or emphasis given to a skill or content area on the examination.

Content Category	Approximate % of Exam
A. Maintaining Patient Care and Safety	9%
B. Applying Principles of Physics and Hemodynamics	15%
C. Performing Abdominal/Visceral Examinations	11%
D. Performing Extracranial/Intracranial Examinations	20%
E. Performing Arterial Examinations of the Upper and Lower Extremities	21%
F. Performing Venous Examinations of the Upper and Lower Extremities	20%
G. Performing Hemodialysis Examinations	3%
TOTAL	100%

Knowledge List

The list below describes general areas of knowledge that are needed in order to perform the tasks identified. This knowledge will apply across multiple tasks.

Regulatory and compliance standards
 Medical ethics
 Medical terminology
 General anatomy
 Cardiovascular anatomy and physiology
 Vascular hemodynamics
 Disease process and progression
 Basic math skills (formulas, exponents, decimals, scientific notation)
 Basic statistics

Basic pharmacology
 History and physical

- Vascular signs and symptoms
- Risk factors (family history, genetics)

 Patient care and assessment
 Basic Life Support (BLS)
 Safety practices for patients and staff
 Universal precautions/infection control
 Specific policies and procedures (e.g., department, hospital)

Ultrasound physics

- Ultrasound instrumentation
- Ultrasound modalities (e.g., Doppler, color Doppler, B-mode, contrast)

 Vascular anomalies and normal variances
 Vascular nonsurgical interventions (e.g., medications, risk factor modification)
 Vascular surgical interventions (current and past)
 Imaging modalities (e.g., CT, MR)
 Exam correlation with other imaging modalities

Task List

The task list below describes the activities which a Registered Vascular Specialist is expected to perform on the job. All examination questions are linked to these tasks.

Duties and Tasks	Approx. % of Exam
A Maintaining Patient Care and Safety	9%
1 Identify patient and explain procedure	
2 Verify appropriateness of examination and recognize contraindications	
3 Elicit patient history and risk factors	
4 Prepare room and patient for examination	
5 Identify and document critical findings	
6 Use standard, universal precautions and sterile techniques	
7 Maintain ergonomic safety	
8 Evaluate quality assurance and improvement	
9 Practice bioeffect safety and maintain equipment	
B Applying Principles of Physics and Hemodynamics	15%
1 Set-up examination equipment (e.g., transducer selection, examination pre-sets)	
2 Obtain optimal gray scale image	
3 Apply hemodynamic principles	
4 Optimize pulse wave (PW) Doppler data	
5 Optimize continuous wave (CW) Doppler data	
6 Optimize color Doppler data	
7 Detect artifacts	
C Performing Abdominal/Visceral Examinations	11%
1 Perform renal duplex	
2 Perform mesenteric duplex	
3 Perform abdominal aortoiliac duplex (including endovascular repair)	
4 Perform ilioacaval duplex (including venous stents)	

Duties and Tasks	Approx. % of Exam
D Performing Extracranial/Intracranial Examinations	20%
1 Perform extracranial duplex	
2 Perform transcranial Doppler (imaging and nonimaging)	
3 Perform extracranial post intervention duplex	
E Performing Arterial Examinations of the Upper and Lower Extremities	21%
1 Perform extremity arterial duplex	
2 Perform post-intervention assessment (e.g., bypass grafts, stents)	
3 Perform segmental pressures and/or ankle-brachial indices (ABI)	
4 Perform pulse volume recording (PVR)	
5 Perform exercise testing	
6 Perform specialty physiologic testing (e.g., Allen's test, cold sensitivity, thoracic outlet)	
7 Assess for post-procedure arterial complications (i.e., pseudoaneurysm, arteriovenous fistula (AVF), hematoma)	
F Performing Venous Examinations of the Upper and Lower Extremities	20%
1 Perform extremity venous duplex	
2 Perform lower extremity venous insufficiency testing	
3 Perform vein mapping	
4 Perform peri-procedural (e.g., ablation, PICC) venous assessment	
G Performing Hemodialysis Examinations	3%
Perform hemodialysis access examination	
Total	100%

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Sample Questions

1. **What mechanism is primarily responsible for returning blood to the heart while walking?**
 - a. Gravity
 - b. Venous valves
 - c. Skeletal muscle
 - d. Arterial pressure
2. **A TIA of the left anterior hemisphere of the brain will MOST likely affect**
 - a. Entire body
 - b. Left side of the body
 - c. Right side of the face
 - d. Right side of the body
3. **Intracranial circulation is a**
 - a. Low-flow, low resistance system
 - b. Low-flow, high resistance system
 - c. High-flow, low resistance system
 - d. High-flow, high resistance system
4. **Failure to produce augmentation of a Doppler signal in the common femoral vein following thigh compression suggests obstruction of what vein?**
 - a. Popliteal
 - b. External iliac
 - c. Greater Saphenous
 - d. Femoral
5. **Which of the following factors has the greatest effect on resistance to laminar flow through a blood vessel?**
 - a. Vessel radius
 - b. Vessel length
 - c. Blood velocity
 - d. Blood viscosity

Answers

1. c 2. d 3. c 4. d 5. a

RVS References

The textbooks listed below are intended as recommended resources when preparing for examination. You may have previous or later editions of these or other references available that also present acceptable coverage of the subject matter. Any general text in vascular or venous techniques, evaluation, and patient care and management may be used. It is not necessary to use all of the texts identified. They are provided as suggestions only. CCI does not endorse or recommend any third-party review course or material.

1. Daigle, Robert J. *Techniques in Noninvasive Vascular Diagnosis: an Encyclopedia of Vascular Testing*. 4th ed. Littleton, CO: Summer Pub., 2014.
2. Edelman, Sidney K.. *Understanding Ultrasound Physics*. 4th ed. 2012.
3. Kremkau, Frederick W., and Flemming Forsberg. *Sonography Principles and Instruments*. 9th ed. St. Louis, Mo.: Elsevier/Saunders, 2016.
4. Rumwell, Claudia, and Michalene McPharlin. *Vascular technology: an Illustrated Review*. 5th ed. Pasadena, Calif.: Davies Pub., 2017.
5. Thrush, Abigail, and Timothy Hartshorne. *Vascular ultrasound: how, why, and when*. 3rd ed. Edinburgh: Churchill Livingstone, 2010.
6. Size, Gail P, Lozanski, Laurie, Russo, Troy. *Inside Ultrasound Vascular Reference Guide*, Inside Ultrasound, Inc.

Online Self-Assessment Practice Examinations are available for purchase for self-evaluation purposes. It is important to note that the results of the self-assessment exam do not guarantee or indicate individual success on the CCI exam, nor should the self-assessment serve as the only means for preparing for the CCI examination. **To order the self-assessment examinations online visit www.cci-online.org.**

CCI Applicant Handbook is required reading prior to applying for a CCI exam. Included is important information regarding the application policies, CCI procedures, and the testing process. **Download at www.cci-online.org/applicanthandbook.**