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The globally recognized standard of excellence in sonography

2015 ARDMS Physicians' Vascular Interpretation Job Task Analysis Summary Report

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ABOUT THE REPORT

The American Registry for Diagnostic Medical Sonography (ARDMS) is the globally recognized standard of excellence in sonography. It is responsible for the preparation of valid and reliable certification examinations in sonography. The performance of job task analysis (JTA) at the national level assists ARDMS in evaluating the current practice expectations and performance requirements of the specialty. The 2015 Physicians' Vascular Interpretation (PVI) JTA was designed to collect information on the sonography-related work activities physician registrants actually perform in practice. The results were used in the development of the test content outline that guides content distribution of the PVI Examination. This report details the methodology, data collection & analysis and survey results. It also includes the test content outline that resulted from the JTA.

METHODOLOGY

Job Task Analysis (JTA) Working Group

A JTA Working Group consisting of four subject matter experts (SMEs) led this project. All four JTA Working Group members were Exam Development Task Force (EDTF) members.

Survey Questionnaire Development

ARDMS facilitated a process whereby the JTA Working Group developed the task list and demographic items for the survey. Tasks and demographic items from previous job task surveys were used as a starting point in this development. The JTA Working Group reached a consensus on a list of 128 tasks to be used in the survey. These tasks were divided into six domains: (1) Cerebrovascular; (2) Abdominal; (3) Peripheral Arterial – Duplex Imaging; (4) Peripheral Arterial – Physiologic; (5) Peripheral Venous; and (6) Laboratory Technology and Operations. All task statements and response options were relevant to RPVI credentialed physicians.

The survey questionnaire was pilot-tested with a group of seven individuals from the PVI EDTF and volunteers.

Survey Administration

The survey was made available to participants as a web-based survey through the survey platform Qualtrics®. An invitation to participate in the study was sent via email to the members.

ARDMS sent the job task analysis survey to 2,473 registrants credentialed since 2010. These registrants were selected randomly using a stratified sampling method so that the sample is representative of all ARDMS RPVI registrants in terms of specialty, gender, and geographic region. The survey was made available to the participants for two week between May 22nd and June 5th, 2015. The participants responded anonymously and all responses were kept confidential.

A total of 944 (38.2% of those sampled) physicians responded to the survey. Of these, 876 (92.8%) reported that they are actively board certified practitioners. The data analysis were based on the responses from the 876 physicians.

Data Analysis

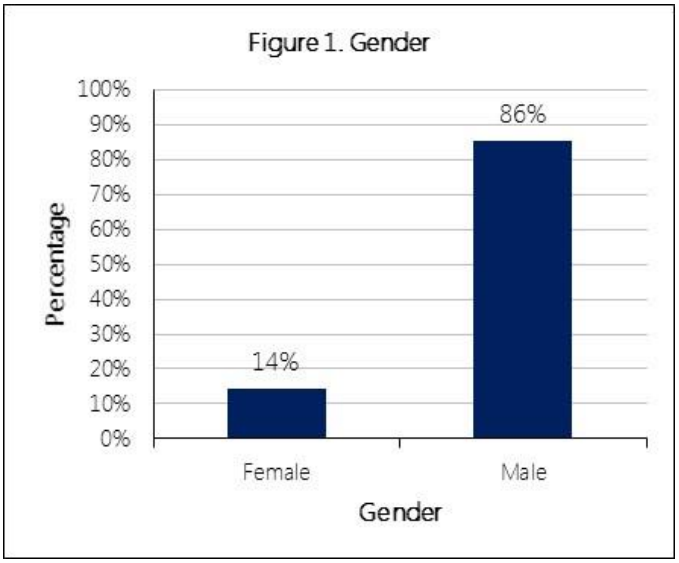
Respondents were asked the following questions for each task: How frequently do you perform the task in your practice, and how important is the task in affecting clinical decisions and patient outcomes? The frequency and importance rating scales were scored 1-5. The response options for the frequency scale were Never, Rarely, Occasionally, Often, and Frequently. The response options for the importance scale were Not Important, Somewhat Important, Moderately Important, Very Important, and Critically Important.

SURVEY RESULTS

Demographics and Backgrounds of Participants

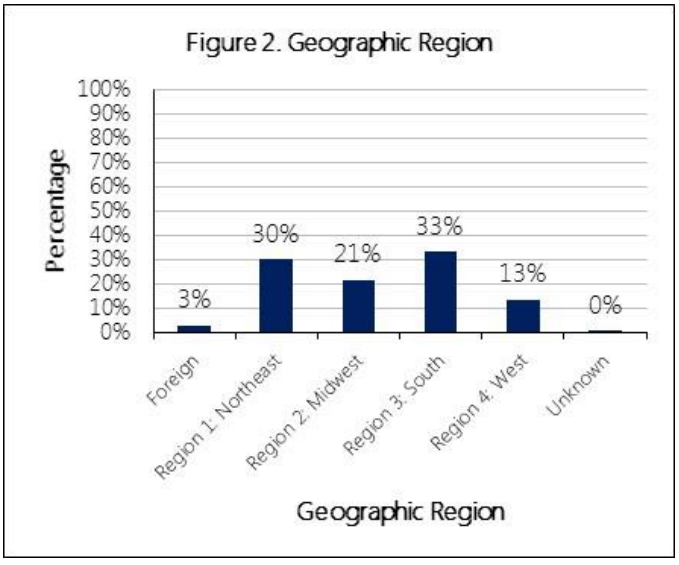
Gender

Approximately 86% of the respondents were male and 14% were male (Figure 1).



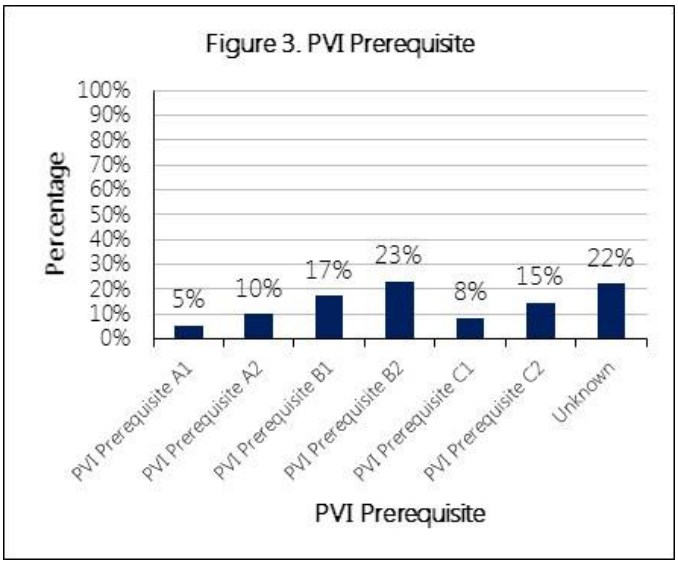
Location of Practice

Most of the respondents reside in the United States. About a third of the respondents practice in the southern region of the United States and another third in the northeast region of the United States (Figure 2).



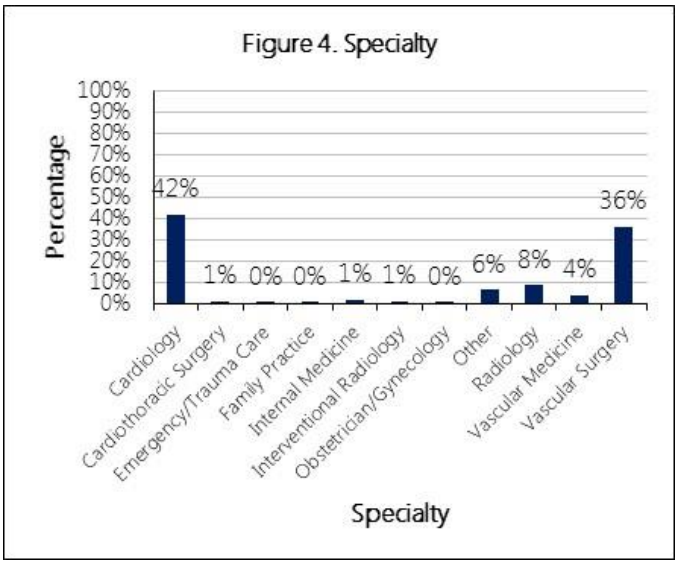
Prerequisite

Approximately 23% of respondents have an MD or DO degree from outside the United States and Canada (prerequisites C1 and C2; see Figure 3).



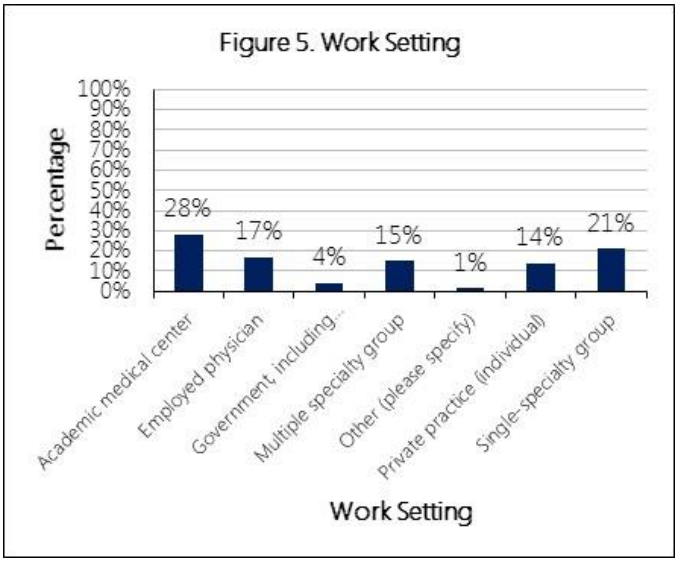
Specialty

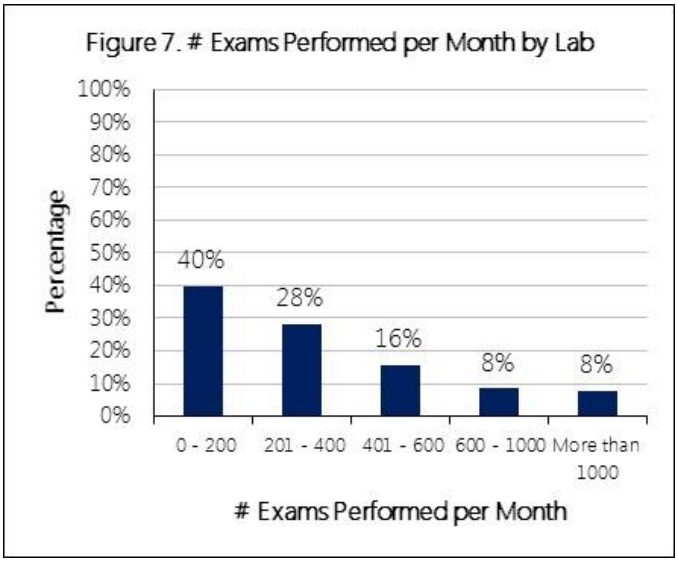
Approximately 42% of respondents specialized in Cardiology and 36% in Vascular Surgery (Figure 4).

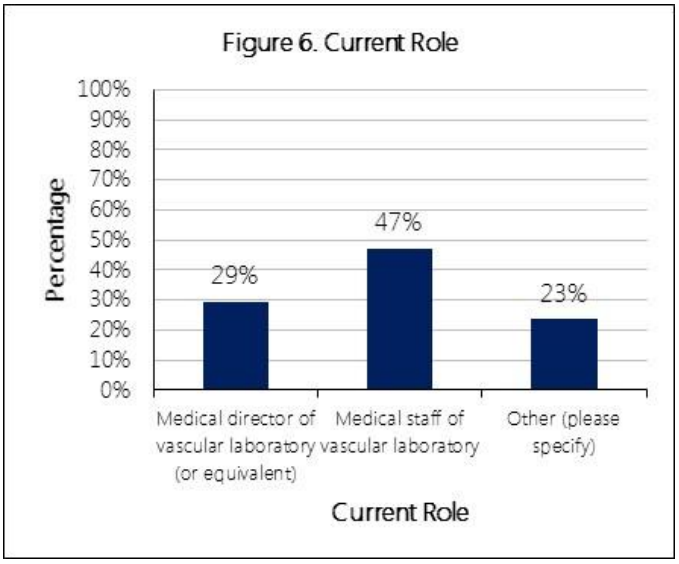


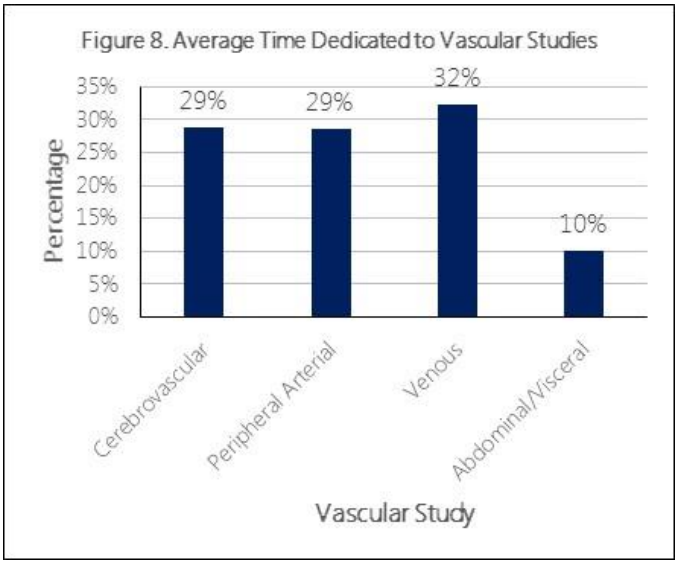
Work Setting

Approximately 28% of respondents work in an academic medical center (Figure 5). The majority (47%) of respondents are medical staff (Figure 6).



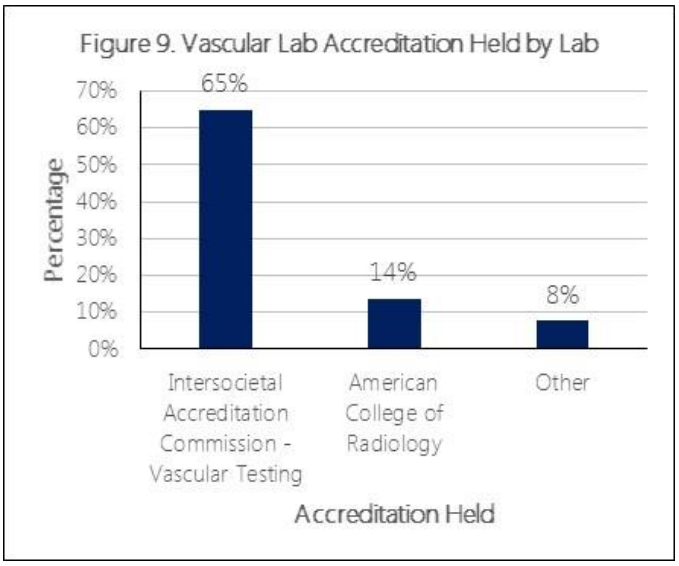


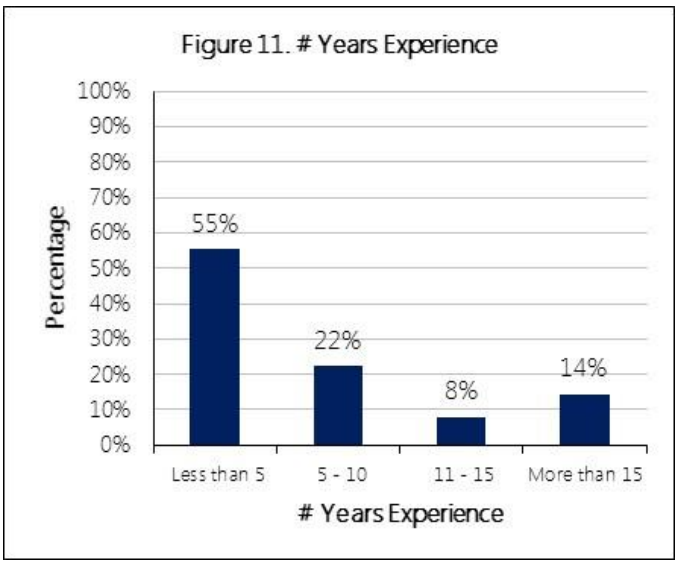


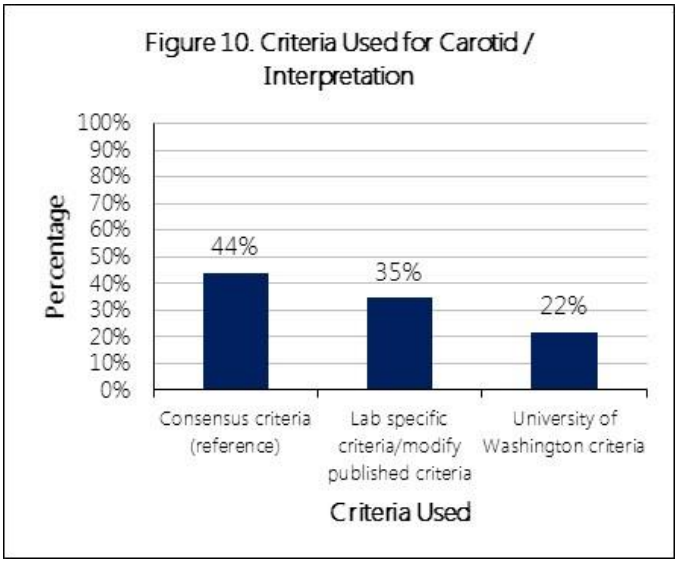


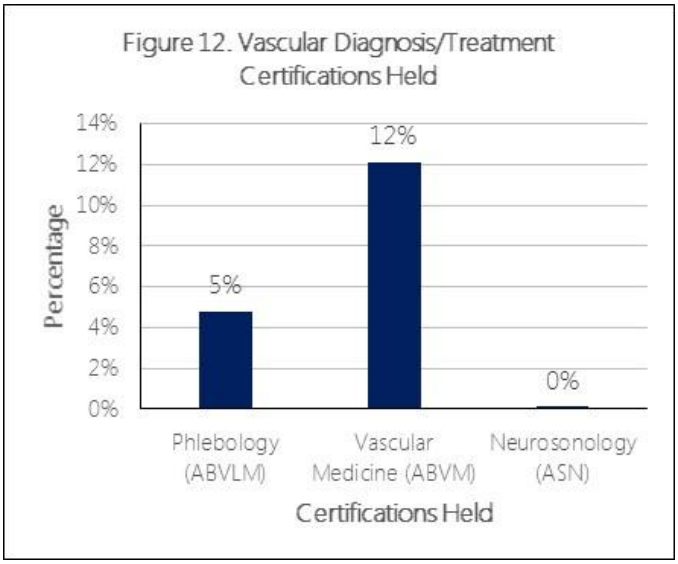
Approximately 60% of respondents' labs perform more than 200 exams per month (Figure 7). Most time is dedicated to vascular studies that are cerebrovascular, peripheral arterial, or venous in nature (Figure 8).

Most (65%) of labs hold accreditation with the Intersocietal Accreditation Commission (Figure 9). Approximately 44% use consensus criteria for carotid / interpretation (Figure 10).



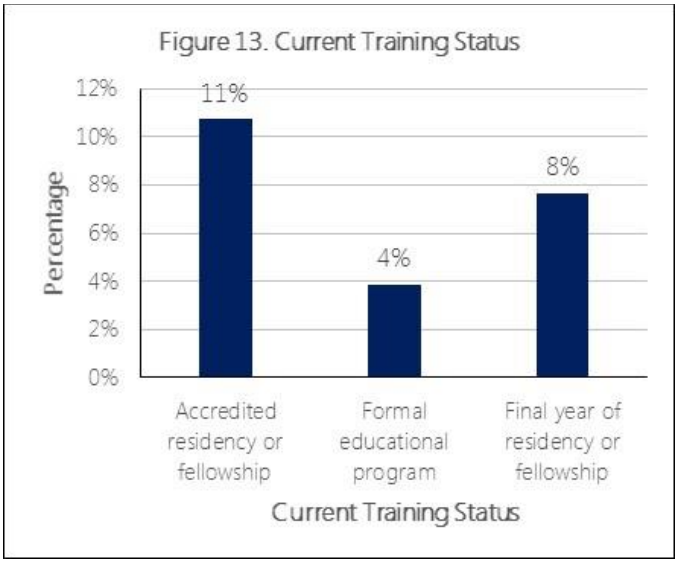






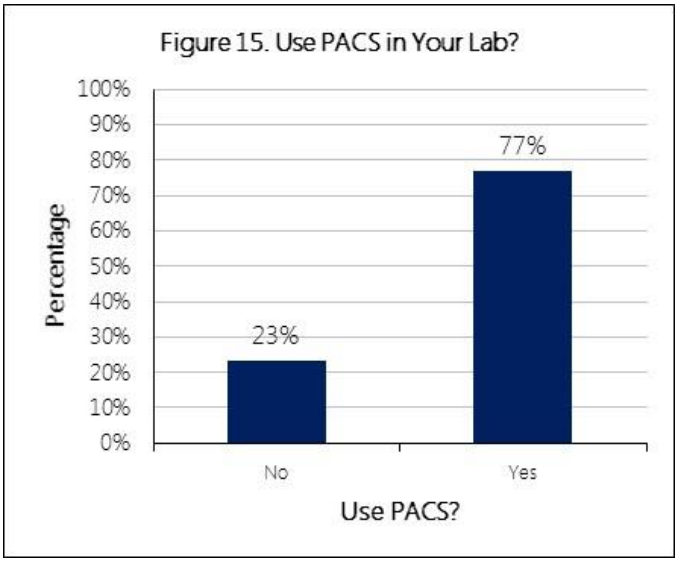
Experience and Training

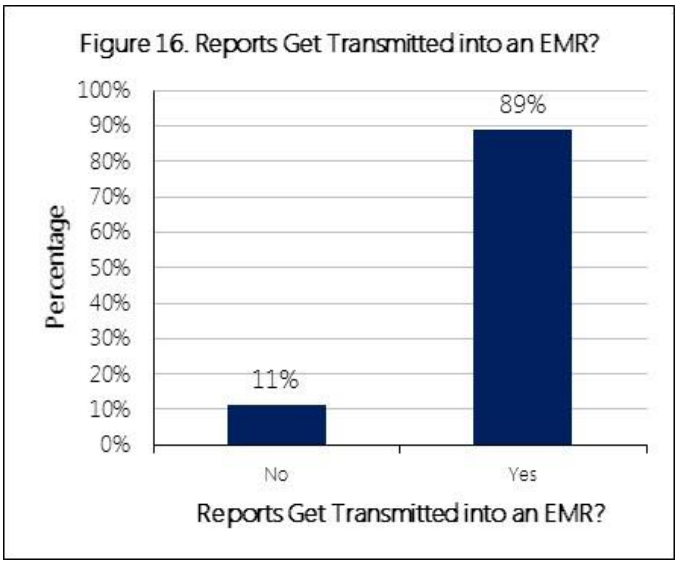
Approximately 55% of respondents reported having less than 5 years of experience (Figure 11). Approximately 12% have the ABVM certification and 5% have the ABVLM certification (Figure 12). About 11% of respondents are currently in an accredited residency or fellowship and 8% are in their final year of residency or fellowship (Figure 13).

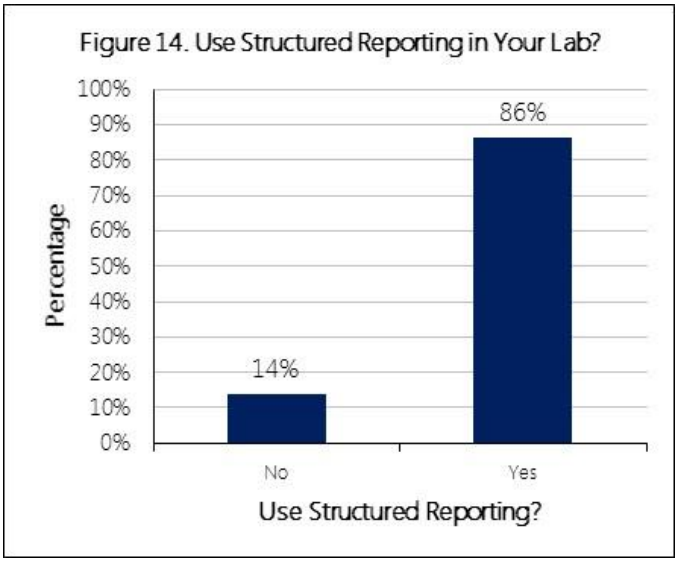


Lab Reporting

Approximately 86% of respondents reported that their labs use structured reporting (Figure 14). Roughly 77% use PACS (Figure 15) and 89% transmit their reports into an EMR (Figure 16).







Task Descriptions

Table 3 contains the Task Summary within Domain. Table 4 contains the preliminary and approved domain breakdowns. For the complete final content outline please visit
http://www.ardms.org/Content%20Outlines/PVI%20exam%20content%20outline%202015%20v2.pdf

Table 3. Task Summary within Domain

Domain, Subdomain, & Task
Cerebrovascular 15%
Extracranial Carotid
Interpret extracranial carotid exams
Assess carotid vessels after intervention, (i.e., carotid endarterectomy or stent)
Assess the effect of contralateral disease
Include plaque description when interpreting exams
Grade stenosis other than bulb/internal carotid artery,(i.e., common carotid artery, external carotid artery, vertebral artery and subclavian artery)
Comment on incidental findings
Incorporate cardiac disease impact on carotid waveforms
Assess nonatherosclerotic vascular disease
Intracranial Carotid
Interpret intracranial carotid exams
Abdominal 15%
Aortoiliac
Evaluate aneurysmal disease
Interpret aortoiliac ultrasound studies
Evaluate occlusive disease
Interpret post-endovascular aneurysm repair ultrasound studies
Use color Doppler for evaluation of endoleaks
Use power Doppler for evaluation of endoleaks
Liver
Interpret hepatoportal studies
Mesenteric
Interpret mesenteric ultrasound studies
Use modified criteria for post-stent evaluation
Interpret testing for celiac compression
Renal
Use renal-aortic ratio to grade stenosis
Use velocity criteria to grade stenosis
Report on resistive indices
Interpret renal ultrasound studies
Assess renal allografts
Peripheral Arterial - Duplex Imaging 15%
Bypass Graft
Apply a criteria for evaluating stenosis
Image native circulation above and below bypass graft

Interpret surveillance of bypass graft with vein conduit
Interpret surveillance of stents
Interpret surveillance of bypass graft with prosthetic conduit
Dialysis Access
Interpret venous mapping for pre-dialysis access
Evaluate for access problems
Interpret arterial exams for pre-dialysis access
Evaluate existing access before and after intervention
Evaluate central veins
Evaluate arteriovenous access for aneurysms
Interpret access surveillance
Use volume flow measurements
Perform Duplex Imaging
Interpret peripheral arterial ultrasound studies
Apply velocity criteria to grade stenosis
Assess for peripheral arterial aneurysms
Treat pseudoaneurysms in the vascular laboratory
Assess for arterial trauma
Use a protocol for provocative maneuvers to assess for popliteal artery entrapment
Post-op Endovascular Intervention
Image native circulation above and below intervention
Apply velocity criteria for stenosis/restenosis
Use protocols that are modified to assess the stented vessel
Use ultrasound guidance during procedures
Assess for stent fracture
Peripheral Arterial - Physiologic 20%
Ankle Brachial Index/Pulse Volume Recording
Report the level of disease
Interpret qualitative Doppler waveform analysis
Interpret segmental pressure studies
Interpret quantitative Doppler waveform analysis
Interpret pulse volume recordings
Interpret exercise studies
Digital Evaluation
Interpret toe pressures
Interpret finger pressures to evaluate for arterial steal
Evaluate for thoracic outlet syndrome
Interpret Raynaud disease testing
Interpret transcutaneous oxygen tension ($TcPo_2$) testing
Peripheral Venous 20%
Vein Mapping
Comment on compressibility of the veins
Report on vein diameter
Comment on anatomic variants

Interpret venous ultrasound studies
Venous Thrombosis/Obstruction
Assess for deep vein thrombosis
Assess for anatomic variants
Examine for nonthrombotic venous compression
Assess waveforms for cardiac comorbidities
Assess waveforms for central venous obstruction
Routinely examine the inferior vena cava and iliac veins
Venous Insufficiency Testing
Assess for superficial venous reflux
Assess for deep venous incompetence
Assess for perforating veins
Assess for superficial venous thrombus
Laboratory Technology and Operations 15%
Patient Care
Address patient safety issues
Collect and evaluate patient satisfaction scores
Physics and Instrumentation
Identify Doppler waveform characteristics
Recognize artifacts
Apply color Doppler principles
Apply pulsed wave Doppler principles
Apply continuous wave Doppler principles
Apply power Doppler principles
Implement a preventative maintenance program
Interpret and obtain video images
Use ultrasound contrast agents
Quality Assurance
Implement a quality assurance program
Participate in regular quality assurance
Determine percent accuracy

Table 4. Content Outline Breakdown by Domain

Domain	% of Total
Cerebrovascular	15%
Abdominal	15%
Peripheral Arterial – Duplex Imaging	15%
Peripheral Arterial – Physiologic	20%
Peripheral Venous	20%
Laboratory Technology and Operations	15%
Total	*100%*

Note. Forms built to this outline may not match approved percentages exactly.