

Building a Vascular Laboratory

CLINICAL APPROACH TO VASCULAR ULTRASOUND & RPVI PREP COURSE

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Building a Vascular Laboratory

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▶ No Disclosures



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Building a Vascular Lab

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- ▶ Physical Space
- ▶ Equipment
- ▶ Protocols
- ▶ Structured Reporting
- ▶ Image Storage
- ▶ Personnel
- ▶ Record Keeping
- ▶ Quality Control
- ▶ Accreditation
- ▶ Maintenance

Physical Space

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- ▶ Hallway and door spacing
- ▶ Size of exam rooms
- ▶ Design of the space
- ▶ Lighting
- ▶ Amenities

Hallway and door spacing

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Size of Exam Room

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Size of Exam Room

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Space Design



No Windows
In exam and reading rooms

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Space Design

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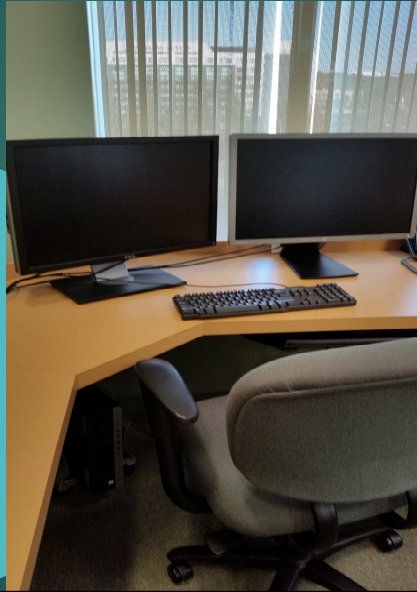


Space Design

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Space Design



Equipment



Source: ADA.gov

Equipment

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Equipment

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Equipment

- ▶ Calibrated
- ▶ Accommodate 300lbs
- ▶ Variable handle placements



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Protocols

- ▶ The Hallmarks
 - ▶ Extracranial Cerebrovascular Duplex
 - ▶ Lower Extremity Venous Duplex
 - ▶ Lower Extremity Arterial Physiologic Exam
 - ▶ Lower Extremity Arterial Duplex

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Protocols

▶ Frequently Used

- ▶ Renal Artery Duplex
- ▶ Lower Extremity Venous Reflux Duplex
- ▶ Abdominal Aorta / IVC Duplex
- ▶ Upper Extremity Arterial Physiologic Exam
- ▶ Upper Extremity Venous Duplex
- ▶ Transcranial Doppler (Imaging or non-imaging)
- ▶ Bypass Graft / Stent Duplex

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Protocols

▶ Occasionally Used

- ▶ Mesenteric Artery/Vein Duplex
- ▶ Arterial Duplex for Aneurysm/Pseudoaneurysm
- ▶ Hemodialysis Fistula Duplex
- ▶ Palmar Arch Testing
- ▶ Raynaud's and Thoracic Outlet Testing
- ▶ Vasomotor Reactivity Testing

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Protocols

Resources



Source: www.Intersocietal.org

Protocols

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IAC Standards & Guidelines
For Vascular Testing
www.Intersocietal.org

Structured Reporting

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Vertebral number
 Subclavian number
 ICA number
 ICA Stenosis plaque
 Pick List Choices
 Acoustic shadowing
 ICA Normal
 ICA Minimal 1-19%
 ICA Mild 20-49%
 ICA Moderate 50-69%
 ICA Severe 70-89%
 ICA Very Severe 90-99%
 ICA Occluded
 ICA more proximal stenosis
 CCA Occlusion
 CCA Stenosis < 50%
 CCA Stenosis > 50%
 CCA Stenosis > 75%
 CCA to subclavian graft veloci
 Contralateral ICA Stenosis
 ICA String sign
 ICA Distal Stenosis/Occlusion
 IMT
 Plaque: Calcific
 Plaque: Heterogeneous
 Plaque: Homogenous
 Enter Findings Mode
 Properties
 Fields (55)
 Notes
 Attachments

ICA (cm/s):
 Proximal Systolic 0 Proximal Diastolic 0
 Mid Systolic 0 Mid Diastolic 0
 Distal Systolic 0 Distal Diastolic 0
 ECA (cm/s):
 Systolic 231 Diastolic 37
 ICA/CCA Ratio:
 Systolic 0
 ICA STENOSIS: Occluded
 PLAQUE: Heterogeneous
 R VERTEBRAL: Antegrade
 Sys: 62 cm/s
 Dia: 23 cm/s
 R SUBCLAVIAN: Normal
 Velocity: 152 cm/s
 LEFT
 CCA (cm/s):
 Proximal Systolic 70 Proximal Diastolic 15
 Mid Systolic 46 Mid Diastolic 13
 Distal Systolic 43 Distal Diastolic 12
 ICA (cm/s):
 Proximal Systolic 0 Proximal Diastolic 0
 Mid Systolic 0 Mid Diastolic 0
 Distal Systolic 0 Distal Diastolic 0
 ECA (cm/s):
 Systolic 507 Diastolic 114
 ICA/CCA Ratio:
 Systolic 0
 ICA STENOSIS: Occluded
 PLAQUE: Heterogeneous
 L VERTEBRAL: Antegrade
 Sys: 88 cm/s
 Dia: 23 cm/s
 L SUBCLAVIAN: Normal
 Velocity: 156 cm/s
 FINDINGS:

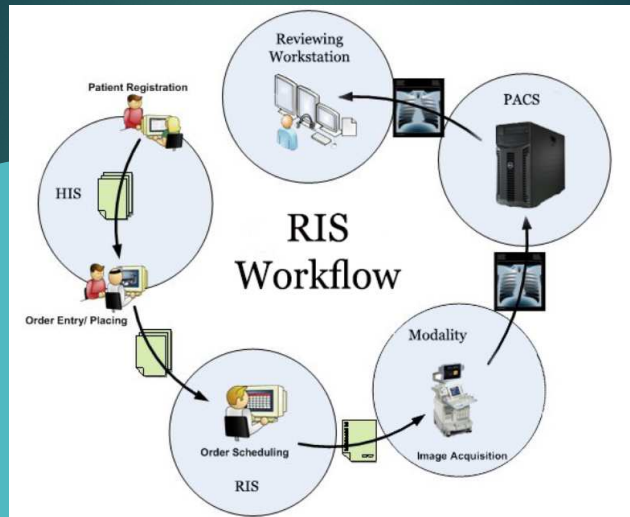
Structured Reporting

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R VERTEBRAL: Antegrade
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 Proximal Systolic 70 Proximal Diastolic 15
 Mid Systolic 46 Mid Diastolic 13
 Distal Systolic 43 Distal Diastolic 12
 ICA (cm/s):
 Proximal Systolic 0 Proximal Diastolic 0
 Mid Systolic 0 Mid Diastolic 0
 Distal Systolic 0 Distal Diastolic 0
 ECA (cm/s):
 Systolic 507 Diastolic 114
 ICA/CCA Ratio:
 Systolic 0
 ICA STENOSIS: Occluded
 PLAQUE: Heterogeneous
 L VERTEBRAL: Antegrade
 Sys: 88 cm/s
 Dia: 23 cm/s
 L SUBCLAVIAN: Normal
 Velocity: 156 cm/s
 FINDINGS:
 Right: The common carotid artery is patent with diminished diastolic flow. The external carotid artery is patent with branch arteries clearly identified. The internal carotid artery has echogenic material filling the lumen. No color flow is noted through the vessel which is suggestive of a total occlusion. There are elevated Doppler flow velocities within the external carotid artery, with associated post-stenotic turbulence.
 IMPRESSIONS:
 STENOSIS: Internal carotid artery stenosis by duplex ultrasonography has been validated by comparing findings with angiographic stenosis. NASCET methods were used, where the most severe stenosis represents the numerator, and the normal internal carotid artery diameter distal to the stenosis where the walls are parallel represents the denominator.

Enter Findings Mode
 Properties
 Fields (55)
 Notes
 Attachments

Image Storage



Source: www.pacs101.com

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Personnel

- ▶ Medical Director
 - ▶ Licensed MD or DO
 - ▶ Must meet one or more levels of training/experience
 - ▶ Physician Credential for Vascular Interpretation (RPVI or ASN)
 - ▶ Formal Training
 - ▶ Informal Training
 - ▶ Established Practice

Personnel

- ▶ Technical Director
 - ▶ Credentialed in appropriate area of vascular testing
 - ▶ Appropriate level of training meeting minimum testing volume standards in each area

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Personnel

- ▶ Technical Staff
 - ▶ Credentialed in appropriate level of training – meeting minimum testing volume standards
 - ▶ Provisional – new graduate from an established program who must obtain credential within one year from date of graduation

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Record Keeping

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GOAL



ACCREDITATION

Record Keeping

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- ▶ Volume Requirements (in each testing area)
 - ▶ Extracranial Cerebrovascular Testing – 100
 - ▶ Intracranial Cerebrovascular Testing – 100
 - ▶ Peripheral Arterial Testing – 100
 - ▶ Peripheral Venous Testing – 100
 - ▶ Visceral Vascular Testing – 100

Practice can choose which areas of testing in which to obtain accreditation

Record Keeping

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	A	B	C	D	E	F	G	H
1	Patient Name	MRN	Ultrasound Results	CTA Results	MRA/MRI Results	Angiogram	Op Report	Correlation
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
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22								
23								
24								
25								

Record Keeping

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- ▶ **Quality Assurance Meetings**
 - ▶ All staff may participate in validation of interpretation criteria
 - ▶ Two staff QA meetings per year (minimum)
 - ▶ Engage staff in "interesting cases" huddles
 - ▶ IAC website - many resources for staff meetings and sample templates for recording meeting minutes
 - ▶ CME's – all staff must meet minimum requirements

IAC Accreditation

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...One Year Later
You're ready to begin the ...

IAC Accreditation Application!

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IAC Application



Link: www.Intersocietal.org



Vascular Testing



Web-based



Step-by-step application process



Two-month completion time
(estimated)



Three-month waiting period for decision
on the granting of accreditation

IAC Accreditation

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CONGRATULATIONS!



ACCREDITATION
GRANTED



...FOR 3 YEARS

Maintenance

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Protocols



Continue to review



IAC changes/modifies
the requirements for
the standards yearly

Maintenance

Quality Assurance

Continue to review ultrasound exams as compared to the "gold standards"

Interpretation criteria may need tweaking

(make sure any changes are scientifically based)

Maintenance



Quality Assurance



Semi-annual meetings with staff to maintain quality within the vascular lab

Maintenance

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Continuing Medical
Education Credits



Each staff member (medical
and technological) must
maintain a required number
of CME's



Conferences, local meetings,
webinars, journal articles,
etc.

Thank You !

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Best of Luck



Building Your
Vascular Lab