

# Making Quality Improvement Relevant

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No Financial Disclosures



# Relevance of Quality Improvement

- The Institute of Medicine defines health care quality as "the degree to which health care services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge."
- Intersocietal Accreditation Commission
  - Was developed to provide a framework to ensure standards of quality are being met and continues to revise standards as needed.
  - Recognized the need for a quality improvement plan for laboratories to identify areas of concern, collect data and establish corrective measures.
- Continuous quality improvement may be required for some Medicare payment adjustments
  - *see [qpp.cms.gov/mips/improvement-activities](http://qpp.cms.gov/mips/improvement-activities)*



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# Quality Improvement

- Intersocietal Accreditation Commission guidelines for QI
  - Updates standards to maintain relevance
  - Created tools to support quality improvement activities
- Examples of corrective measures to improve quality in the vascular laboratory



# IAC Mission

*“Improving Health Care through Accreditation”*

## Value of IAC-VT Accreditation

- *Framework for high quality and safety of testing*  
(standards - improve reliability, consistency, effectiveness)
- *Improves quality of care*
- An effective way to *demonstrate competence* of facility
- Provides *benchmarks* for maintaining competence
- Periodical audits stimulate *continuous Quality Improvement*
- Inspires *confidence* in patients, health care providers, public
- Provides *recognition and marketing advantage*



# IAC Standards and Guidelines

- Personnel and Supervision – Qualified staff, ongoing training
- Facility – Safety, privacy, adequate image storage
- Standardization – Reporting is uniform, thorough and timely
- Policies –
  - Staff safety (Msk disorders, control of infectious disease)
  - Maintaining sanitized equipment
  - Staff certification
  - Patient confidentiality and complaints
  - Trained personnel and equipment for acute medical emergencies
  - Oversight of multiple sites



# IAC Standards and Guidelines - Examinations

- Appropriate indication – Refer to Appropriate Use Criteria
- Appropriate equipment with records of routine maintenance
- Written exam protocols – Uniformity and standardization
- Techniques to assess severity, location, extent of disease and if possible etiology
- Clear documentation of images and waveforms
- Volumes must be adequate to maintain level of experience





# IAC Standards and Guidelines – Quality Improvement

- IAC recommends comprehensive program to include
  - Quality control (QC)-Organizational and facility
  - Quality Assurance (QA)- Peer review and correlation with protocols
  - Continuous quality improvement (CQI)- Collect, measure and improve over time



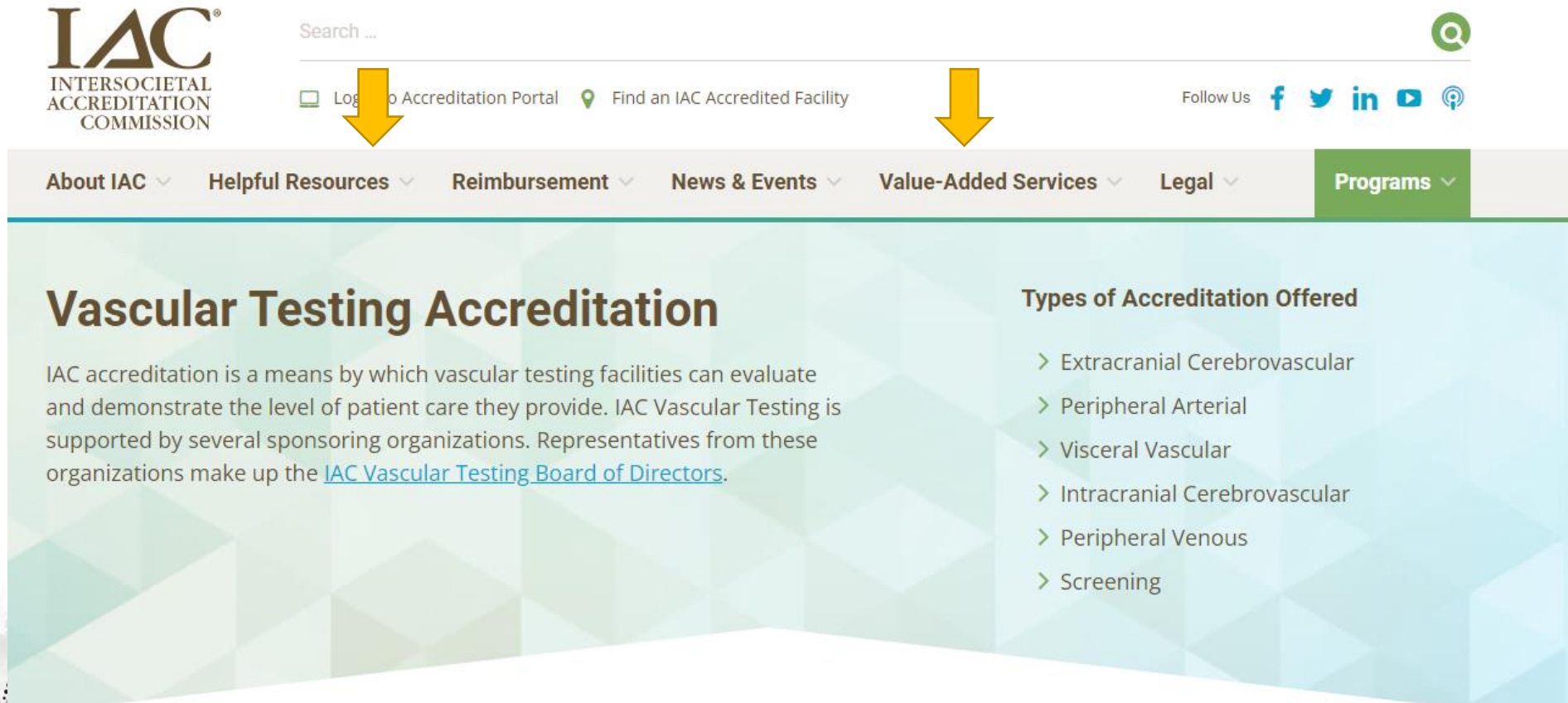
# IAC Standards and Guidelines - Quality Improvement

- Have a written Quality Improvement Program to evaluate all of the procedures performed on an ongoing basis for
  - Test appropriateness - Indication
  - Technical quality – B Mode and Doppler
  - Interpretive quality – Describe location extent and severity of disease
  - Report completeness and timeliness – Turnaround time
  - Correlation with other studies



# Use the IAC QI Tool

<https://intersocietal.org/programs/vascular-testing/standards/>



**IAC**  
INTERSOCIETAL  
ACCREDITATION  
COMMISSION

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## Vascular Testing Accreditation

IAC accreditation is a means by which vascular testing facilities can evaluate and demonstrate the level of patient care they provide. IAC Vascular Testing is supported by several sponsoring organizations. Representatives from these organizations make up the [IAC Vascular Testing Board of Directors](#).

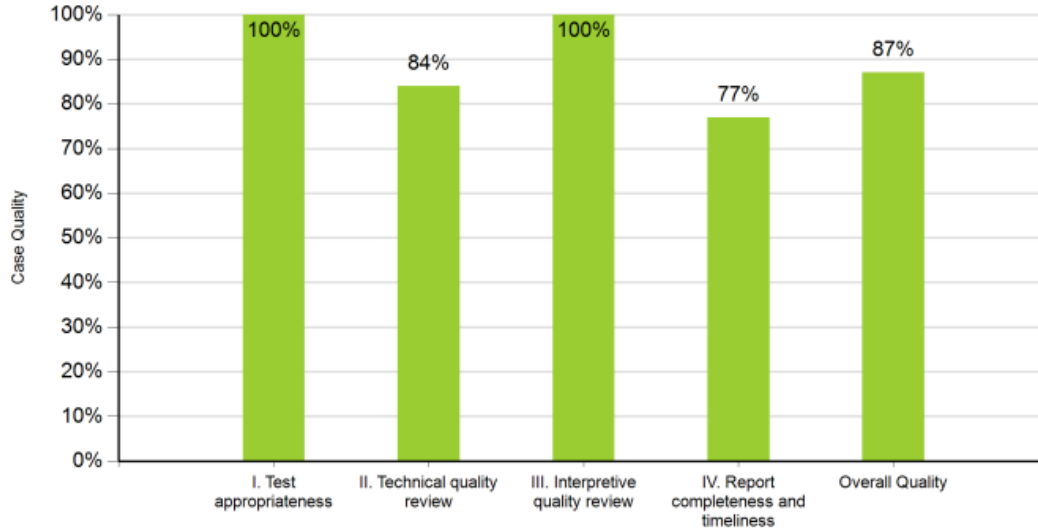
### Types of Accreditation Offered

- > Extracranial Cerebrovascular
- > Peripheral Arterial
- > Visceral Vascular
- > Intracranial Cerebrovascular
- > Peripheral Venous
- > Screening



## Case Quality Summary

QI Measure	Average Quality Score	Average Case Quality Score
I. Test appropriateness*	100%	<h1>87%</h1>
II. Technical quality review	84%	
III. Interpretive quality review	100%	
IV. Report completeness and timeliness	77%	



The overall case quality score is 87%

The overall quality score for this assessment was calculated by averaging the scores of each QI measure. An asterisk (\*) denotes that the measure is not reflected in the average quality score.

4.1 Is the inflow artery proximal to the graft/fistula documented?		✓
✓ Yes	1	
✗ No	0	
4.2 Is the proximal and distal anastomosis site documented?		✓
✓ Yes	1	
✗ No	0	
4.3 Is the outflow vein beyond the anastomosis documented?		✓
✓ Yes	1	
✗ No	0	
4.4 Is blood flow volume calculated from at least one site in the graft?		✓
✓ Yes	1	
✗ No	0	
5. Are all the cursor angles less than or equal to 60 degrees? <a href="#">Part B, 3.4.2.8B</a>		✓
✓ Yes	1	
✗ No	0	
6. Are the spectral Doppler waveforms of diagnostic quality?		✓
✓ Yes	1	
✗ No	0	
7. Was the examination of diagnostic quality?		✓
✓ Yes	1	
✗ No	0	
Could the technical quality of this case have been improved?		—
— Yes	0	
— No	1	
<b>III. Interpretive quality review</b>	<b>Responses</b>	<b>Quality</b>
1. Was the facility's published, validated diagnostic criteria used to interpret the case? <a href="#">Part A, 3.4A</a>		✓
✓ Yes	1	
✗ No	0	
2. Does the final report adhere to the facility's diagnostic criteria?		✓
✓ Yes	1	
✗ No	0	
3. Was the data interpreted according to location and severity of disease?		✓
✓ Yes	1	



# QI Meetings Required

## Continuous Quality Improvement

- Obtain measures with QI Tool
- Plan process improvement
- Use QI Tool Analytics to track improvement

**FACILITY NAME**  
Quality Improvement (QI) Meeting Minutes

<b>Date of QI Conference:</b>			
<b>Attendance:</b>			
Comments: From January 1, 2019 to June 1, 2019 we randomly selected 10 carotid cases, 5 venous DVT case, 5 venous reflux cases, 5 lower extremity arterial duplex cases and 5 LE physiologic cases.			
<b>Review of the results for QI measures:</b>			
Test Appropriateness	<p>Carotid: Over all the indications were clinically appropriate. A few should have been further investigated, such as dizziness and syncope.</p> <p>Venous: Indications for venous cases were appropriate on all reviewed cases.</p> <p>Arterial: Physiologic is out primary testing and duplex is used for specific indications such as follow-up interventions etc. Some of the indications such as decreased pedal pulses are really too vague.</p>		
Technical Quality Review	<p>Carotid:</p> <ol style="list-style-type: none"> <li>1. Some cases did not measure the PSV, EDV as close to the spectral envelop as it could have been.</li> <li>2. Annotations are sometime not changed from right to left; generally this issue is caught once the CCA is documented.</li> <li>3. Occasionally a &gt;60 degree angle was documented. This was in vessels that were repeated with correct angles, but techs need to pay attention to this issue.</li> </ol> <p>Venous:</p> <ol style="list-style-type: none"> <li>1. We have a protocol and all techs should follow it. It is very difficult for the reading physician to read the case when we all do images in various order.</li> <li>2. Reflux measurement must be done with calipers.</li> <li>3. DVT cases are generally compliant; but need to be sure we capture complete compression. Don't move too fast.</li> </ol>		



# IAC- Staying Relevant – Standard Revisions

- IAC periodically updates standards
  - Ensure IAC reflects the current clinical practice.
  - Implemented after a request to the vascular community for public comment.
- Carotid criteria updated 2021
  - 1980's University of Washington carotid criteria used, NASCET and ACAS had recommendations in 2002, by 2010 IAC concerned multiple versions
  - 2012 IAC survey found respondents felt there should only be one set of criteria
  - 2014 Multiple vascular labs contributed cases and angiograms to IAC for statistical analysis
  - 2021 IAC reports test performance was improved by raising the PSV from 125cm/s to 180 cm/s OR by adding ICA/CCA ratio of  $> 2.0$



# IAC- Staying Relevant – Standard Revisions

- Support for appropriate PPE and limited vascular exams during the pandemic 2020
- EVAR duplex assessment adopted 2021
- Updated visceral exam volumes to be the same as extracranial, intracranial, venous and arterial
- Require one hour of the required 15 cme's be related to work related musculoskeletal disorders for RVT's, medical director and technical director
- Sonographers cross training to vascular technology must have credential within 2 years.



# Quality Improvement Plan / Steps

- Describe the problem
- Analyze for root cause
- Create a QI team – responsible personnel
- Collect data for measures
- Develop a plan to correct the problem
- Measure to track improvement – set thresholds
  - Weiland and Hutchisson 2013





# QI Example

- Noncompliance-40% of venous exams being performed for inappropriate indications
- Root cause – all exams are being performed for providers regardless of the indication
- Corrective measure- If the indication is inappropriate, the vascular laboratory medical staff will call providers to establish the appropriate procedure or course of action and a letter will go to the referring physician describing appropriate indications for examinations
- All medical staff are involved in this activity
- Document the incidences of inappropriate indications-collect data
- Track improvement



# UW QI Example– Cardiac Assist Devices

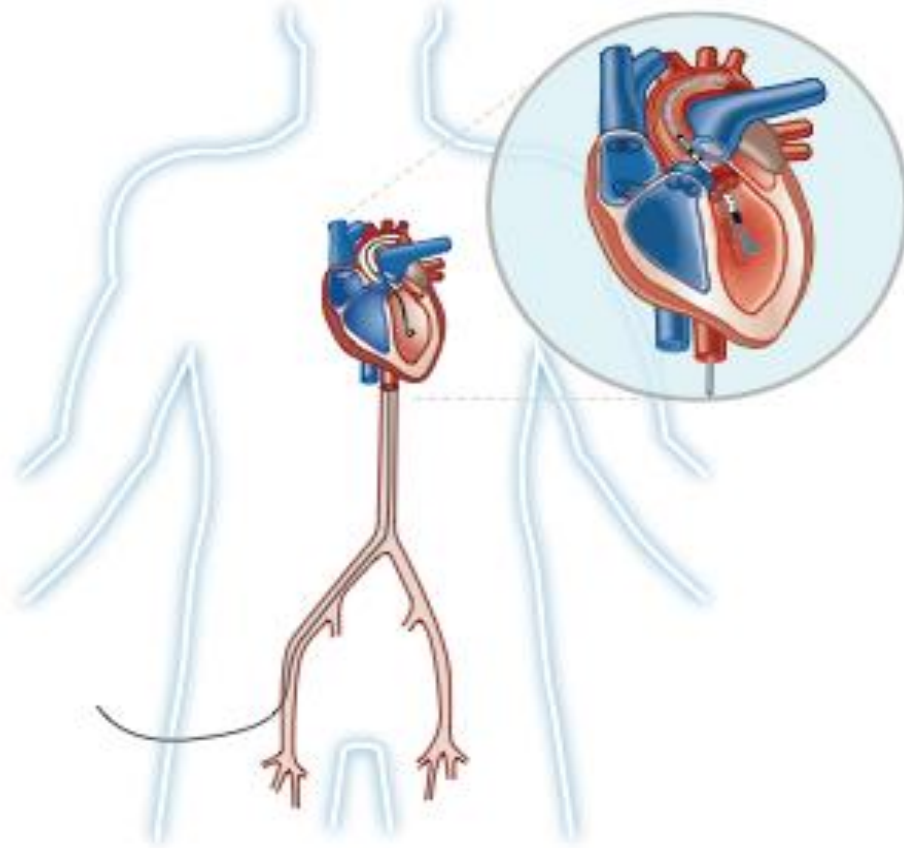
- RVT's requested information regarding cardiac assist devices and the changes that occur in the arterial flow pattern.

Invited cardiologists to attend a staff meeting to describe the different devices that support patients waiting for heart transplants and describe how the devices change arterial flow patterns.

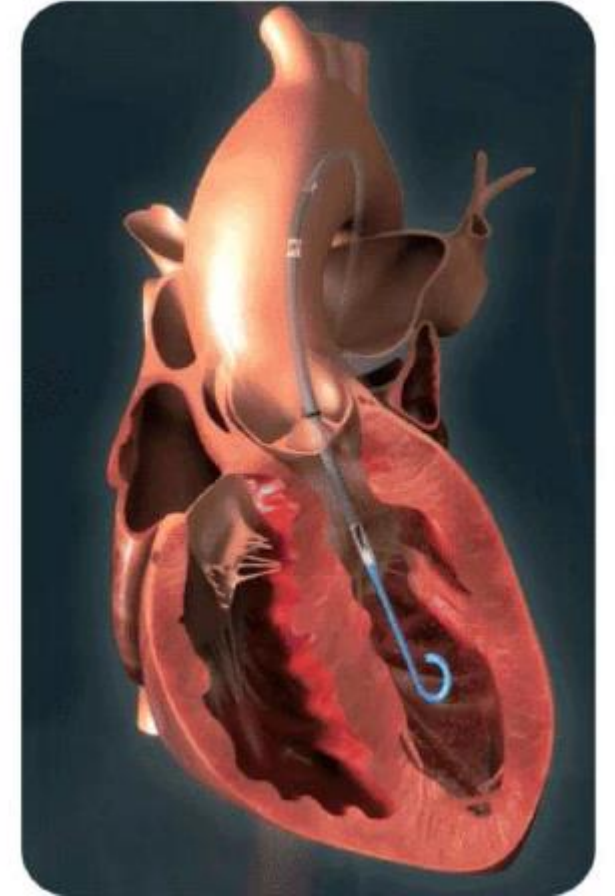
- Nurse practitioners in cardiac ICU requested our help in developing a solution to limb ischemia in patients on cardiac assist devices.



# Impella – Continuous flow pump

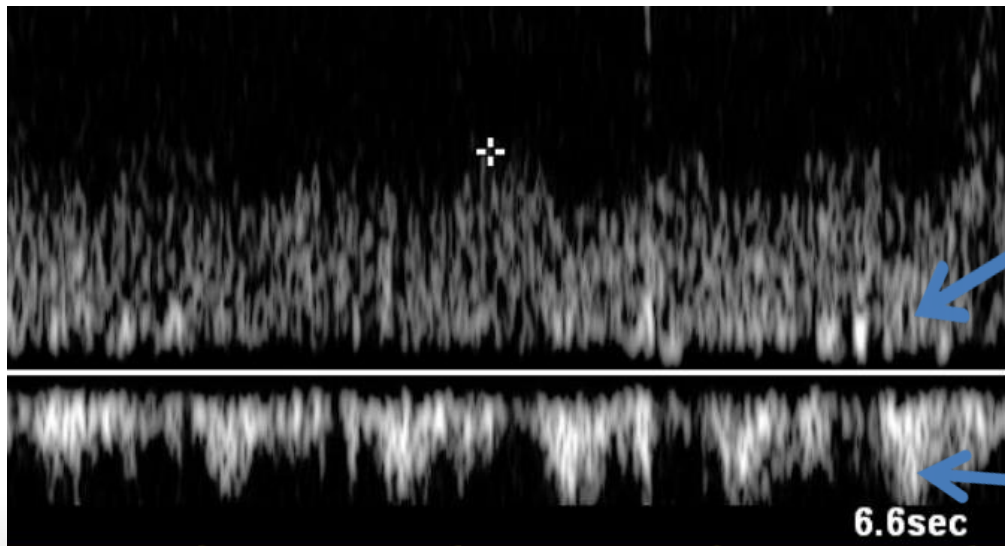


*Impella® 2.5 Catheter in the Heart*



# LVAD-Continuous Flow pump

- Difficult to differentiate arterial versus venous flow



Arterial flow  
continuous due to  
device not  
obstruction

Venous flow is  
pulsatile due to  
cardiac congestion

# QI – Cardiac Assist Devices

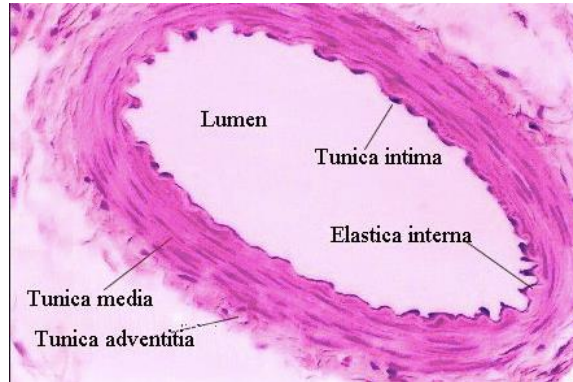
- Provide training to nursing staff to compress the foot while listening to Doppler to differentiate venous flow from arterial flow.
- Protocol implemented to monitor arterial perfusion to the foot every 2 hours and to escalate if change is noted.
- Developing a training module to listen to recorded arterial Doppler sounds with various cardiac devices.
- Created a protocol for arterial duplex after cannulation and following de-cannulation of cardiac assist devices for early detection of arterial compromise.

• *Watson will describe in more detail*

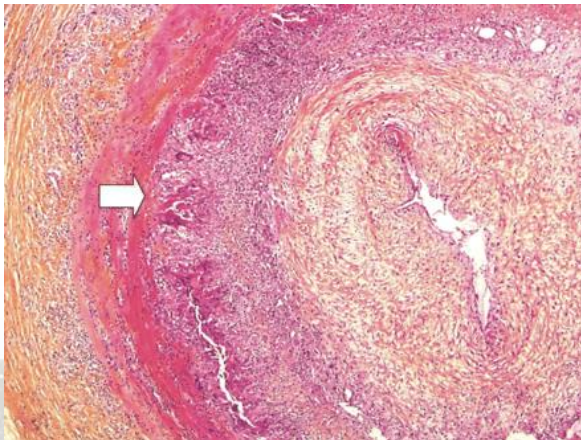


# UW QI Example– GCA Testing

Normal artery



Giant Cell Arteritis



- Previous methods of scanning temporal arteries for “halo” was inadequate
- Rheumatology group proposed a protocol to model the Fast Track Clinic in Norway using duplex to measure Intima Media Thickness for temporal and axillary artery IMT for diagnosis and follow up of Giant Cell Arteritis



# IMT Criteria

Schäfer VS, et al. *Ann Rheum Dis* 2016 (Abstract FRI0393)

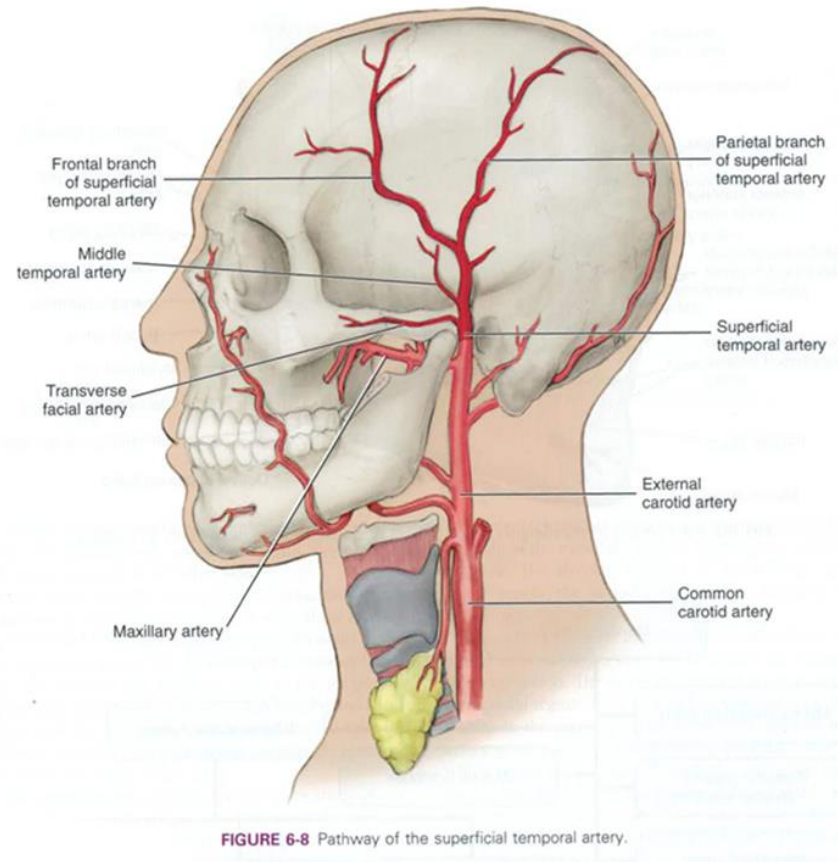
Transducer selection is important!

Artery	N	IMT in mm	Cut-off in mm	Sensitivity	Specificity	Correctly classified
Common superficial temporal artery	40	C: r. 0.23 (SD 0.03) l. 0.23 (SD 0.04)	r. 0.42	100 %	100 %	100 %
	28	P: r. 0.66 (SD 0.18) l. 0.65 (SD 0.19)	l. 0.45	100 %	100 %	100 %
Frontal branch	40	C: r. 0.19 (SD 0.03) l. 0.19 (SD 0.04)	r. 0.35	100 %	100 %	100 %
	26	P: r. 0.53 (SD 0.19) l. 0.55 (SD 0.18)	l. 0.34	100 %	100 %	100 %
Parietal branch	40	C: r. 0.19 (SD 0.03) l. 0.20 (SD 0.03)	r. 0.32	100 %	100 %	100 %
	23	P: r. 0.51 (SD 0.18) l. 0.48 (SD 0.16)	l. 0.29	94.4 %	100 %	98.3 %
Facial artery	40	C: r. 0.24 (SD 0.05) l. 0.23 (SD 0.05)	r. 0.37	92.3 %	100 %	98.1 %
	15	P: r. 0.55 (SD 0.19) l. 0.51 (SD 0.19)	l. 0.40	81.8 %	97.5 %	94.1 %
Axillary artery	40	C: r. 0.59 (SD 0.10) l. 0.59 (SD 0.10)	r. 1.1	100 %	100 %	100 %
	26	P: r. 1.80 (SD 0.41) l. 1.62 (SD 0.39)	l. 1.0	100 %	100 %	100 %



# UW QI Example– GCA Testing

RIGHT SIDE



- Case review sessions with rheumatologists held to discuss findings of new protocol to continue to improve.

*Watson will describe in more detail.*



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*D.E. Strandness, Jr. Vascular Laboratory  
at UWMC*

*Our Mission Statement*

*Provide state-of-the-art noninvasive vascular  
diagnostic services for patients and healthcare  
providers.*

*Serve as a center for educating health care  
professionals.*

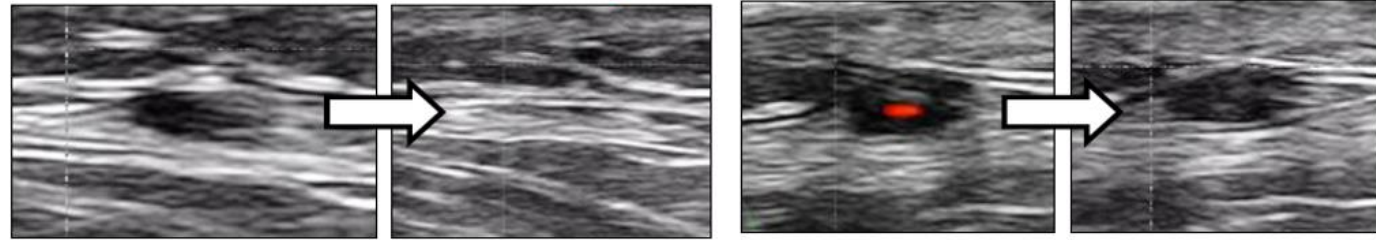
*Support research in vascular disease.*

*Promote an environment of communication,  
respect and safety.*



# GCA Technique

## Compression-Sign:



**The thickened arterial wall remains visible upon compression, i.e. the echogenicity contrasts hypoechoic due to vasculitic vessel wall thickening in comparison to the mid- to hyperechoic surrounding tissue.**

