

Research Echo/Vascular Lab CIMT Protocol

EQUIPMENT

Research Vivid 7 or E9

12MHz or 11MHz Linear Vascular probe

ECG cable

Automated blood pressures monitor & range appropriate-sized BP cuffs

Analysis software

Vascular Tools Carotid Analyser for CIMT and Carotid Distensibility

ACQUISITION

- Lie subject supine for approximately 5 minutes with no pillow
- Explain the procedure to the subject, giving time to allow for questions
- Label study with full name & study ID number
- Attach Echo machine ECG electrodes and obtain optimal upright R wave
- Adjust bed height, allowing for optimal patient comfort
- Apply right forearm pressure inflation BP cuff to mid-forearm
- Record height, weight, resting SBP, DBP, MBP and HR
- Position patients head to left to 45°
- Use AdDIT Carotid preset
- Apply liberal ultrasound gel to patients right neck
- Identify main common carotid artery in transverse view and slide superiorly until carotid bifurcation is identified with 2D and acquire a 3 beat loop
- Rotate probe to obtain best sagittal view to clearly identify the common, external and internal carotid arteries and optimize imaging
- Acquire 2x6 beat real time 2D loop optimized to assess bilaterally the IMT of the far and near wall of a segment 1cm below the common carotid artery bifurcation / bulb.

ANALYSIS

Using Vascular Tools Carotid analyser version 5.0 software*

- Load images from CD/USB
- Set region of interest width at 10mm ensuring near and far walls are within ROI
- Ensure success rate >95%, SD < 10% of mean IMT
- Record 3 mean IMT and standard deviation measurements for the sets of images of the far walls of the common carotid artery and bifurcation

*The Vascular Research Tools IMT quantification software uses an edge-detection method to identify the lumen/intima and the media/adventitia interfaces. The algorithm then processes each vertical column of pixel data separately across the width of the region of interest. Individual measurements for each column are valid only if the algorithm determines an intima and media point for that column and are indicated as % success rate. Automated analysis is utilized to reduce inter- and intra-observer and inter-session variability.¹ The algorithm has been optimized to assess the far wall IMT, as this has been shown in vitro to have better correlation with intravascular and histological measurements than near wall assessment.²