Supplemental Table 1:
SRU Carotid Consensus Criteria (SRUCC) for Internal Carotid Artery (ICA) Stenosis

| Degree of Stenosis (%) | Primary Parameters | | Additional Parameters | |
|---|---|---|---|---|
| | ICA PSV (cm/sec) | Plaque Estimate (%)* | ICA/CCA PSV Ratio | ICA EDV (cm/sec) |
| Normal | <125 | None | <2.0 | <40 |
| <50 | <125 | <50 | <2.0 | <40 |
| 50-69 | 125-230 | ≥50 | 2.0-4.0 | 40-100 |
| ≥70 but less than near occlusion | >230 | ≥50 | >4.0 | >100 |
| Near occlusion | High, low or undetectable | Visible | Variable | Variable |
| Total occlusion | Undetectable | Visible, no detectable lumen | Not applicable | Not applicable |

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ICA, internal carotid artery; CCA, common carotid artery; PSV, peak-systolic velocity; EDV, end-diastolic velocity.

Supplemental Table 2
Summary statistics of duplex ultrasound velocity parameters*

| Parameter | *N* | Mean | Std Dev | Median | Minimum | Maximum |
|---|---|---|---|---|---|---|
| **Common carotid artery (CCA)** | | | | | | |
| Prox CCA PSV (cm/sec) | 287 | 99.5 | 27.2 | 95.6 | 36.7 | 225.4 |
| Mid CCA PSV (cm/sec) | 252 | 89.6 | 25.3 | 85.7 | 45.8 | 213.0 |
| Dist CCA PSV (cm/sec) | 283 | 83.0 | 25.1 | 81.1 | 32.5 | 217.0 |
| **Internal carotid artery (ICA)** | | | | | | |
| Prox ICA PSV (cm/sec) | 289 | 180.9 | 135.7 | 131.0 | 32.8 | 697.0 |
| Prox ICA EDV (cm/sec) | 289 | 54.7 | 50.7 | 34.6 | 6.6 | 304.0 |
| Mid ICA PSV (cm/sec) | 258 | 128.3 | 76.4 | 104.0 | 32.8 | 484.0 |
| Mid ICA EDV (cm/sec) | 257 | 37.1 | 26.6 | 30.1 | 10.1 | 290.0 |
| Distal ICA PSV (cm/sec) | 283 | 96.0 | 43.9 | 85.0 | 8.4 | 310.0 |
| Distal ICA EDV (cm/sec) | 283 | 29.0 | 13.2 | 25.9 | 5.3 | 87.7 |
| **Max† (Prox/Mid) ICA PSV** | 290 | 193.6 | 137.0 | 141.0 | 32.8 | 697.0 |
| **Max† (Prox/Mid) ICA EDV** | 289 | 59.3 | 51.6 | 39.3 | 8.4 | 304.0 |
| **ICA/CCA PSV ratio** | 283 | 2.6 | 2.2 | 1.6 | 0.51 | 13.5 |

CCA, common carotid artery; ICA, internal carotid artery; PSV, peak systolic velocity; EDV, end diastolic velocity; cm/sec, centimeters/second.

**N*=9 sides with near-total/total ICA occlusion excluded.
†Defined as highest recorded velocity in the proximal or mid ICA segment.

ICA, internal carotid artery; CCA, common carotid artery; PSV, peak-systolic velocity; EDV, end-diastolic velocity; prox, proximal; max, maximum.

Supplemental Table 3:
Distribution of category of ICA stenosis as determined by physician ultrasound interpretation using SRUCC and catheter angiography (NASCET). *N*=299 ICA sides.

| **Stenosis Category** | **Angiogram (NASCET)** | **Ultrasound Review (SRUCC)** |
|---|---|---|
| <50% | 201 (67.2%) | 130 (43.5%)* |
| 50-69% | 56 (18.7%) | 87 (29.1%) |
| ≥70% but less than near-total/total occlusion | 33 (11.0%)† | 73 (24.4%) |
| Near- total occlusion | 3 (1.0%) | 4 (1.3%) |
| Total occlusion | 6 (2.0%) | 5 (1.7%) |

*Normal and plaque with < 50% stenosis by ultrasound defined as < 50% stenosis
†13/33 ICA lesions with ≥ 80% ICA stenosis in the ≥ 70% category

NASCET, North American Symptomatic Carotid Endarterectomy Trial; SRUCC, Society of Radiologists in Ultrasound Consensus; ICA, internal carotid artery.

Supplemental Table 4: Area under curve for ROC analysis of duplex ultrasound velocity parameters for prediction of ≥ 50% and ≥ 70% ICA stenosis by catheter angiography (NASCET): stratified analyses by contralateral occlusion, patient sex, right/left sides, hemispheric symptoms*

ICA side contralateral to near-total/total occlusions removed

| | All Angio ≥50% vs <50% | Removed Angio ≥50% vs <50% | | All Angio ≥70% vs <70% | Removed Angio ≥70% vs <70% |
|---|---|---|---|---|---|
| Max ICA PSV | 0.94 | 0.94 | | 0.91 | 0.91 |
| Max ICA EDV | 0.93 | 0.93 | | 0.91 | 0.91 |
| ICA/CCA PSV ratio† | 0.96 | 0.96 | | 0.90 | 0.90 |
| PSV + ratio | 0.96 | 0.95 | | 0.91 | 0.91 |
| PSV + EDV | 0.94 | 0.94 | | 0.91 | 0.91 |
| PSV + EDV + ratio | 0.96 | 0.96 | | 0.91 | 0.92 |

Patient sex

| | All Angio ≥50% vs <50% | Male Angio ≥50% vs <50% | Female Angio ≥50% vs <50% | | All Angio ≥70% vs <70% | Male Angio ≥70% vs <70% | Female Angio ≥70% vs <70% |
|---|---|---|---|---|---|---|---|
| Max ICA PSV | 0.94 | 0.94 | 0.93 | | 0.91 | 0.88 | 0.98 |
| Max ICA EDV | 0.93 | 0.94 | 0.91 | | 0.91 | 0.90 | 0.94 |
| ICA/CCA PSV ratio | 0.96 | 0.96 | 0.96 | | 0.90 | 0.88 | 0.97 |
| PSV + ratio | 0.96 | 0.95 | 0.96 | | 0.91 | 0.89 | 0.99 |
| PSV + EDV | 0.94 | 0.95 | 0.93 | | 0.91 | 0.89 | 0.97 |
| PSV + EDV + ratio | 0.96 | 0.96 | 0.96 | | 0.91 | 0.90 | 0.99 |

By ICA side

| | All Angio ≥50% vs <50% | Right Angio ≥50% vs <50% | Left Angio ≥50% vs <50% | | All Angio ≥70% vs <70% | Right Angio ≥70% vs <70% | Left Angio ≥70% vs <70% |
|---|---|---|---|---|---|---|---|
| Max ICA PSV | 0.94 | 0.97 | 0.90 | | 0.91 | 0.94 | 0.87 |
| Max ICA EDV | 0.93 | 0.96 | 0.89 | | 0.91 | 0.94 | 0.88 |
| ICA/CCA PSV ratio | 0.96 | 0.98 | 0.94 | | 0.90 | 0.94 | 0.87 |
| PSV + ratio | 0.96 | 0.97 | 0.90 | | 0.91 | 0.94 | 0.88 |
| PSV + EDV | 0.94 | 0.98 | 0.90 | | 0.91 | 0.93 | 0.89 |
| PSV + EDV + ratio | 0.96 | 0.98 | 0.94 | | 0.91 | 0.94 | 0.89 |

By study indication hemispheric neurological symptoms (Yes/No)

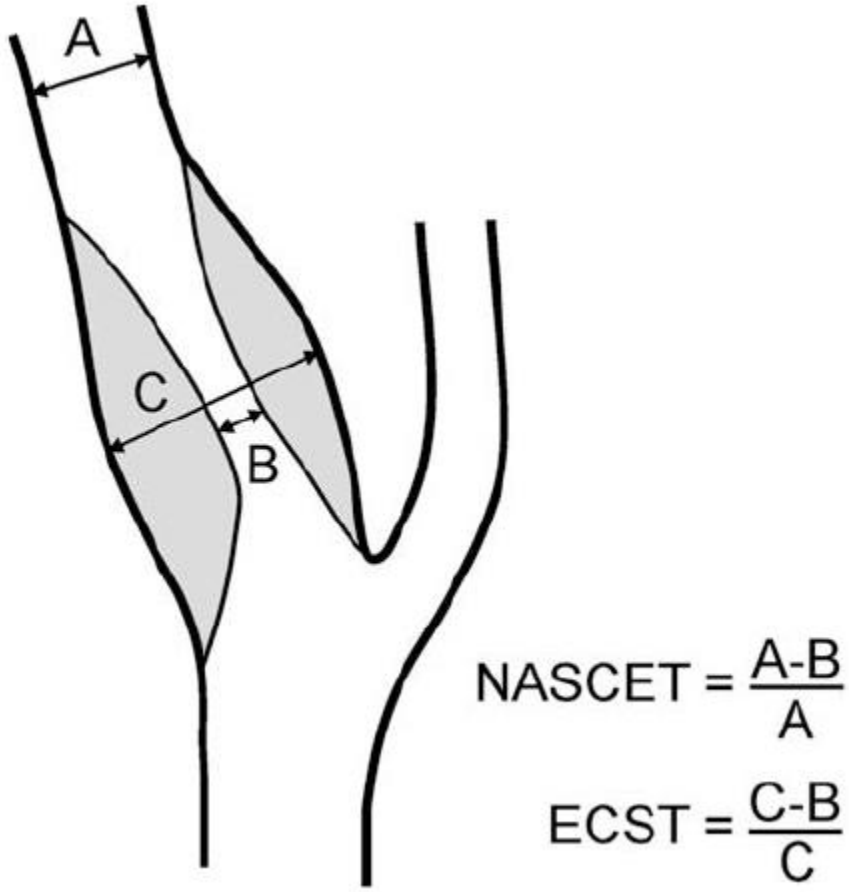
| | All Angio ≥50% vs <50% | Yes Angio ≥50% vs <50% | No Angio ≥50% vs <50% | | All Angio ≥70% vs <70% | Yes Angio ≥70% vs <70% | No Angio ≥70% vs <70% |
|---|---|---|---|---|---|---|---|
| Max ICA PSV | 0.94 | 0.95 | 0.92 | | 0.91 | 0.96 | 0.87 |
| Max ICA EDV | 0.93 | 0.95 | 0.91 | | 0.91 | 0.98 | 0.86 |
| ICA/CCA PSV ratio | 0.96 | 0.96 | 0.95 | | 0.90 | 0.94 | 0.86 |
| PSV + ratio | 0.96 | 0.95 | 0.95 | | 0.91 | 0.96 | 0.88 |
| PSV + EDV | 0.94 | 0.95 | 0.92 | | 0.91 | 0.98 | 0.88 |
| PSV + EDV + ratio | 0.96 | 0.96 | 0.96 | | 0.91 | 0.97 | 0.88 |

*$N$=9 sides with near-total/total ICA occlusion excluded; †Ratio = ICA/CCA PSV ratio

NASCET, North American Symptomatic Carotid Endarterectomy Trial; of Radiologists in Ultrasound Consensus; ICA, internal carotid artery; CCA, common carotid artery; PSV, peak-systolic velocity; EDV, end-diastolic velocity.

Supplemental Figure 1:

Methods for measurement of carotid angiograms. This study was conducted using the NASCET method for measurement of ICA stenosis with a normal segment of the ICA distal to the lesion used as the reference lumen diameter[18]. For the ECST method, the lumen diameter is estimated at the site of the ICA stenosis in the proximal segment[23, 24]. It has been shown that percentage ICA stenosis is higher when measured by ECST compared with NASCET methodology[24]. Figure reproduced with permission from Oates CP, Naylor AR, Hartshorne T, Charles SM, Fail T, Humphries K, Aslam M and Khodabakhsh P. Joint recommendations for reporting carotid ultrasound investigations in the United Kingdom. Eur J Vasc Endovasc Surg. 2009;37:251-61.




NASCET, North American Symptomatic Carotid Endarterectomy Trial; ECST, European Carotid Surgery Trial.