Current status of the European Carotid Surgery Trial 2 (ECST-2)

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ECST-2 tests the assumption that the selection of patients for carotid revascularisation on the basis of old trials (ECST, NASCET & ACST) is valid

- Medical treatment has improved
  - Better duel antiplatelet therapy
  - Lower targets for blood pressure control
  - Smoking has declined
  - Widespread use of statins with cholesterol targets

- Rates of stroke are generally at least 50% lower now than they were 20 to 30 years ago

- But surgery is also safer

- Therefore new trials needed to test better selection methods, especially in lower risk patients
2\textsuperscript{nd} European Carotid Surgery Trial (ECST-2): Design

• Multicentre RCT with blinded outcome assessment
• Symptomatic or asymptomatic atherosclerotic carotid artery stenosis
• Low to intermediate 5 year risk of stroke on optimised medical therapy (OMT) alone calculated using the Carotid Artery Risk Score as <20%
• Randomisation in equal proportions after selection of preferred revascularisation method
  • Immediate CEA with OMT versus OMT alone; \textbf{or}
  • Immediate CAS with OMT versus OMT alone

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What will the ECST-2 trial tell us about CEA, CAS and medical treatment?

1. Should patients with symptomatic or asymptomatic carotid stenosis who have a lower risk of future stroke (5-year risk of ipsilateral stroke <20%) have carotid revascularisation?

2. Can we select individual lower risk patients who will or will not benefit from revascularisation using the CAR score, baseline MRI and/or plaque imaging?

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Selection of patients for ECST-2 using the Carotid Artery Risk (CAR) score

- Data from ECST and NASCET suggested patients with 5-year risk of ipsilateral stroke <20% on best medical therapy will not benefit from surgery.
- Rothwell prediction model based on original ECST recalibrated to take account of benefits of modern Optimised Medical Therapy (OMT).
- We have called this new prediction score the Carotid Artery Risk (CAR) Score.
- Predicts 5 year-risk of ipsilateral stroke in patients with carotid stenosis > 50% treated with OMT alone using baseline clinical characteristics.

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CAR score app available for iPhone, iPad and for Android devices

Calculates 5-year risk of stroke in symptomatic carotid stenosis treated with optimum medical therapy using baseline characteristics

See www.ecst2.com for links to download app
Key question for current research: can we identify vulnerable plaque by in-vivo imaging (MR, Ultrasound, PET)?

Correlation of histology with ex vivo 9.4T MRI at UCL

Green = calcium
Red = lipid core
Intraplaque haemorrhage on MR plaque imaging of recently symptomatic carotid stenosis

Hosseini et al Ann Neurol 2013;73:774-784
Symptomatic or asymptomatic carotid stenosis ≥50%

Clinical screening
CAR Score

≥20% risk: Revascularisation recommended

<20% risk: Eligible for ECST-2

MRI brain ± plaque

CEA preferred
CAS preferred

Randomisation

OMT plus CEA
OMT
OMT plus CAS

Follow up for 5 years
MRI Brain at 2 & 5 years

ECST-2 Flow Diagram
ECST-2 Progress

• Funding available to support completion of the pilot study n=320
• 22 centres enrolled
• 207 patients randomised up to 30 Nov 2016
• New centres welcome
• Please contact us on office@ecst2.com or via the website www.ecst2.com
ECST-2 recruitment graph