Mechanical Thrombectomy: A Neuroanaesthetist's Perspective

Dr Adam Low
Consultant Anaesthetist
Queen Elizabeth Hospital Birmingham

CORE TOPICS

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Declarations

- No Conflicts of Interest Declared

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Objectives

- Understanding of anaesthetic care given to stroke patients undergoing thrombectomy
- Relevance to referring centres
- Understanding of challenges of setting up a new service in a remote site

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2010 – 2015 an evolving modality

- Supported by NICE IPG guidance 2013
- Evidence not robust enough
- CI or unsuitable for thrombolysis

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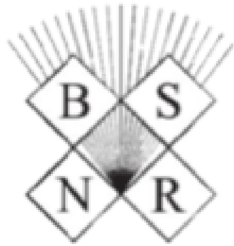

BRITISH SOCIETY OF NEURORADIOLOGISTS

Standards for providing safe acute ischaemic stroke thrombectomy services

- MDT approach: Consultant Stroke Physician, Neurointerventionist and anaesthetist
- Appropriate team availability and staff skill mix
- Remote site
- Airway management and Haemodynamics

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What's anaesthesia got to do with it?

70 GA vs 278 LA/Sedation
Better functional outcome in Non GA group
OR 2.1 (95% CI 1.02 - 4.31)

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Berkhemer et al. *N Engl J Med* 2015; 372: 11-20
Van der Berg et al. *Stroke* 2015 46: 1257 - 62

NICE Guidance: IPG 548 Feb 2016

- Appropriate facilities and Neurosciences support
- As soon as possible after onset of stroke symptoms
- Most literature within 8 hours of symptom onset

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Anaesthetic Care at QEHB

- Stroke Team: ED. Register plus baseline bloods
- Transfer to Angio suite
- Re-assessment by Stroke team
- GA or Local +/- Sedation
- Post procedure CT
- Post-op recovery then HASU

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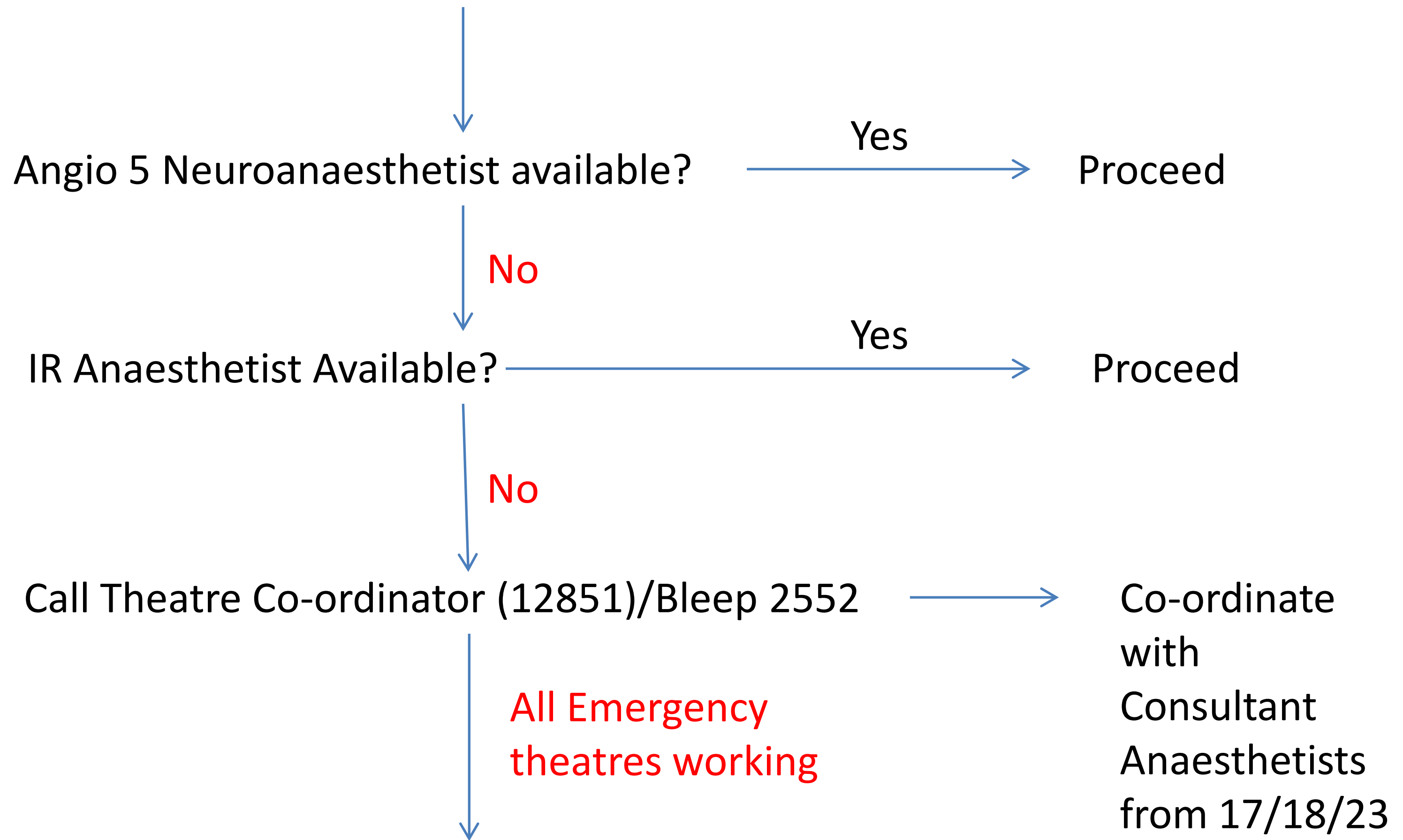
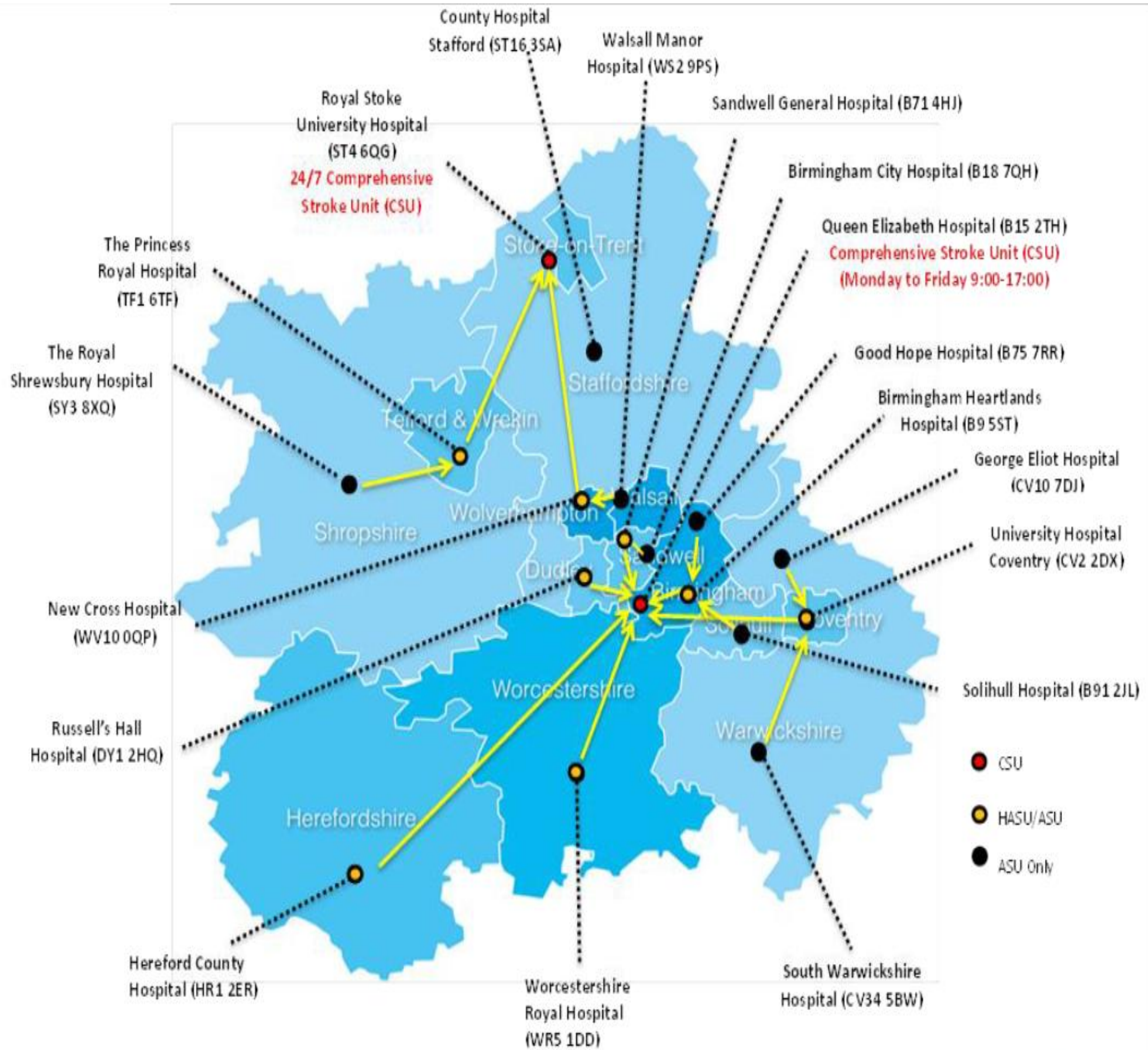
Anaesthesia for Thrombectomy



Regional referrals



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So what's your role?

- Symptom onset?
- Imaging
- Safe transfer
- Pre-assessment

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Case Study 1

- 78 year old female
- Arrived 5 hrs post symptom onset + thrombolysis
- Gradually inc HR noted in transfer
- GA
- Struggle with haemodynamics
- Hb 54 on ABG
- Fractured NOF diagnosed coming off table…

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Safe Transfer

- What if they need a GA?
- 3 RCTs that show no difference between LA/Sedation and GA
  - SIESTA: single centre 150 patients: NIHSS at 24 hours and MRS at 3/12 and mortality
  - AnStroke: single centre 90 patients: Neurological outcome at 3/12 + infarct size
  - GOLIATH: single centre 128 patients: infarct size and clinical outcome

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Schonenberger S et al. *JAMA* 2016 Nov 15; 316 (19): 1986-1996
Henden P et al. *Stroke* 2017Jun; 48 (6): 1601 – 1607
Simonsen CZ et al. *JAMA Neurol* 2018; 75 (4):470-477

JAMA. 2019 Oct 1;322(13):1283-1293. doi: 10.1001/jama.2019.11455.

Association of General Anesthesia vs Procedural Sedation With Functional Outcome Among Patients With Acute Ischemic Stroke Undergoing Thrombectomy: A Systematic Review and Meta-analysis.

Schönenberger S[1], Hendén PL[2], Simonsen CZ[3], Uhlmann L[4], Klose C[4], Pfaff JAR[5], Yoo AJ[6], Sørensen LH[7], Ringleb PA[1], Wick W[1,8], Kieser M[4], Möhlenbruch MA[5], Rasmussen M[9], Rentzos A[10], Bösel J[11].

- Use of protocol based general anaesthesia significantly associated with less disability at 3 months
- But single centre trials
- Disability primary outcome in only 1 trial
- Multi-centre trials needed….

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Multi-centre RCTs to come…

- AMETIS trial: 270 patients: MRS 0-2 by 90 days, perioperative complications by day 7
- GASS Trial: 350 patients: MRS at 3 months.

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Chabanne R et al. *BMJ Open* 2019 Sep 13; 9(9): e027561
Maurice A et al. *BMJ Open* 2019 Jun 1; 9(5): e024249

Haemodynamics

- Original guideline joint college guideline
- SBP within 10% baseline: IV fluids/vasopressors
- SBP 140 – 180 if thrombolysed.
- Retrospective analyses:
  - 390 patients. Difference in Admission MAP and lowest procedural MAP
  - Infarct growth (p = 0.036)
  - Infarct volume p = 0.035)
  - 371 patients: linear relationship between duration of hypotension & functional outcome

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Petersen NH et al. *Stroke* 2019 Jul; 50 (7): 1797 – 1804
Valent A et al. *J Neurointerv Surg.* 2019 Sep 26. pii:neurintsurg-2019

Transfer: Transport

999 Call by Doctor/Nurse "ringing on behalf of the patient"?

↓

Is the Patient Conscious and Breathing?

↓ YES

Are you a registered Doctor or Nurse?

↓ YES

Is this an immediate interhospital transfer request?

↓ YES

Is the transfer because of an immediate clinical need or a management issue?

↓ YES, IMMEDIATE CLINICAL NEED

Is there an immediate threat to life?

↓ YES

Emergency Stroke Intervention

↓

Symptoms start within the last 5 hours?

↓ YES

CATEGORY 2 AMBULANCE RESPONSE (18 Minute Target)

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Pre-Assessment

NORSE
Stroke Referrals

University Hospitals Birmingham NHS
NHS Foundation Trust

Your Current Role : Referrer to UHB - Stroke
Logout
Logged in as: Don Sims University Hospital Birmingham NHS Foundation Trust (RRK\DON.SIMS@U

Patient Details

Patient Reg No
Patient Forename
Patient SURNAME
Gender: Please Select
Date Of Birth
NHS Number: __-__-__
Ward/Location
Ward Phone No
Address 1
Postcode

MiniSpine Lookup
*** NHS Number and DOB Required ***

Referrer Details

Referring Trust Region: Please select
Referring Trust: Please select
Referring Hospital: Please select
Referring Consultant/GP
Consultant E-mail
Referring Clinician
Tel. No.
Mobile No.
Contact Email
Position
Department
Admit. Consultant

Clinical Details

History (max 1000 characters)

Examination (max 1000 characters)

Stroke | Share

Indications & Personal | Management | GCS | Observations

Indications for Mechanical Thrombectomy

Proximal intracranial large vessel occlusion (LVO) on CT-A	☐ Yes	☐ No
Disabling acute stroke (NIHSS > 5)	☐ Yes	☐ No
Pre-morbid modified Rankin score of 0 - 1	☐ Yes	☐ No
Procedure can restore perfusion within 6 hours; or ...	☐ Yes	☐ No
Unless provern salvageable brain tissue proven on imaging (up to 12 hours); or...	☐ Yes	☐ No
Unless LVO is in the posterior circulation (up to 24 hours)	☐ Yes	☐ No

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Cerebrovascular Diseases

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Review

Endovascular Stroke Management: Key Elements of Success

Manning N.W.[a, b] · Chapot R.[c] · Meyers P.M.[a]

Key elements:

- Patient Selection
- Time
- Reperfusion

Manning NW et al. *Cerebrovasc Dis.* 2016; 42: 170-177

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New Service in a Remote Site

- Did not rush into it
- Started with an ad hoc service 9 – 5
  - Impact on Neurosurgery out of hours
  - Approx 50 cases per year
- Comprehensive business case
  - 400 cases over 5 year period
- Established Angio suite with Anaesthetic presence

Guidelines for the Provision of Anaesthesia Services in the Non-theatre Environment 2019

RCoA
Royal College of Anaesthetists
Guidelines for the Provision of Anaesthetic Services (GPAS)

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Thrombectomy Steering Group

- Senior Management
- MDT Clinicians
    - Stroke Medicine
    - Neuroradiology
    - Anaesthesia
    - Allied Health
- Risk Register
- Recruitment plans
- Working towards implementation date

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Challenges

- Recruitment
- Rota patterns
- Non-clinical factors
- External expectations

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Case Study 2

- 62 year old collapse in hospital
- RSI in ED. CT head – basilar artery thrombus
- 2 cases for Thrombectomy in our ED
- Arrives in angio 4 at 3 hours.
- Clot out within 15 minutes
- 2nd case started Local/sedation in Angio 1
- Post CT + transfer to ITU
- 2nd case completed and transferred to HASU
- Patient extubated and GCS 14 that evening

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Questions…?

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