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Recent Advances in the Treatment of Stroke - Main Session

Friday, 21 June 2013

Start 9:00am

Duration: 25mins

Baytrust



 **Rotorua GP CME 2013** 

General Practice Conference & Medical Exhibition

20-23 June 2013 | Energy Events Centre | Rotorua

Recent advances in the treatment of stroke

Alan Barber

Neurological Foundation of NZ
Professor of Clinical Neurology

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Stroke in NZ

- ▶ 9000 new strokes in NZ every year
- ▶ 3rd most common cause of death
 - 1 in 5 die within first month
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- ▶ Major cause of long term adult disability
- ▶ Number of strokes increasing

Stroke in NZ

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Stroke in NZ

- ▶ Not restricted to the elderly
 - 1 in 4 people with stroke are working age
- ▶ Major problem in Maori/Pacific
 - Age of onset

Maori	56 y
Pacific	60 y
Europeans	73 y

RCT evidence of benefit with:

- ▶ Stroke unit care

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 - aspirin
 - stroke thrombolysis
 - hemicraniectomy for malignant infarction

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- ▶ Ischemic stroke
 - aspirin
 - stroke thrombolysis
 - hemicraniectomy for malignant infarction
- ▶ Intracerebral hemorrhage
 - acute systolic BP lowering to 140 mmHg

Stroke unit care

- ▶ Stroke unit
 - geographically discrete area
 - comprehensive assessments
 - coordinated multidisciplinary care

Stroke unit care

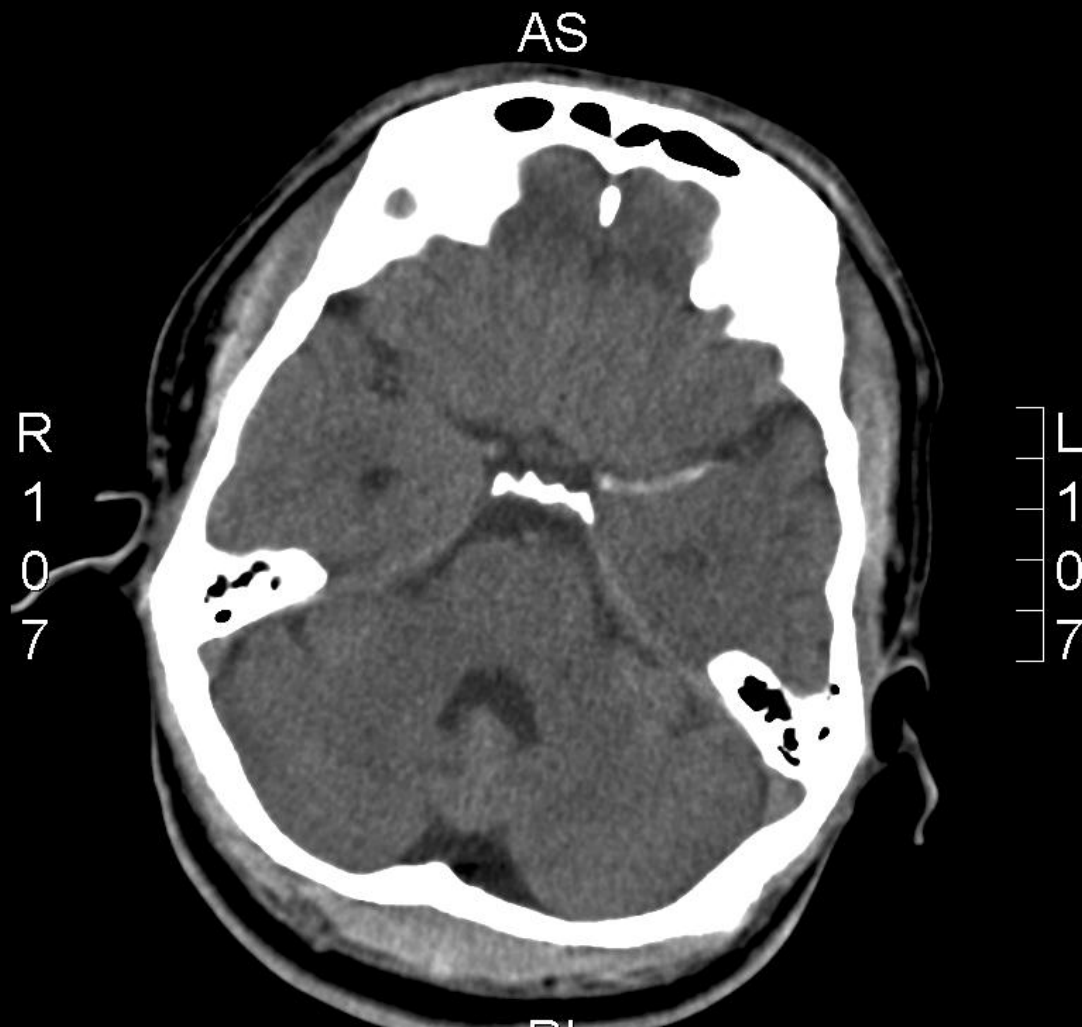
- ▶ Stroke unit
 - geographically discrete area
 - comprehensive assessments
 - coordinated multidisciplinary care
- ▶ Stroke units reduce death or disability
 - overwhelming evidence (31 RCTs)
 - OR 0.82 (95% CI 0.73–0.92)
 - NNT = 16

Aspirin acutely

In ischemic stroke

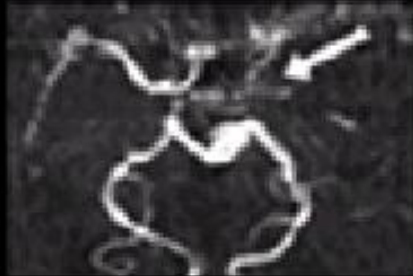
- ▶ Aspirin 150–300 mg within 48 hours
 - modest reduction in death or disability
 - number needed to treat = 79 (12 RCTs)

Stroke thrombolysis

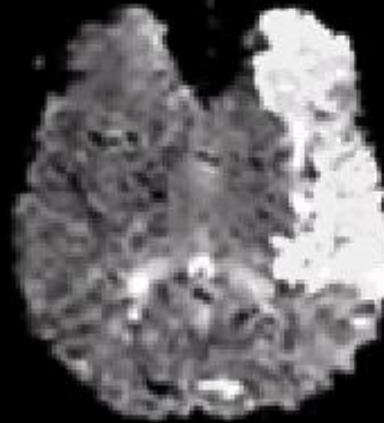


Before tPA

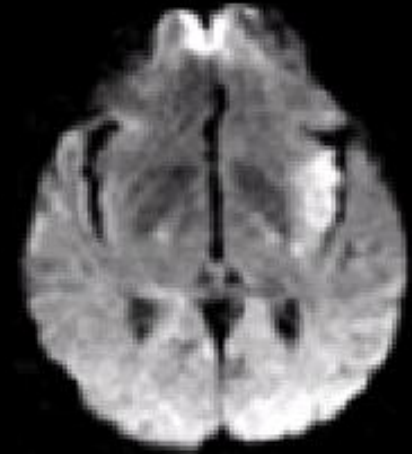
2 h



MRA



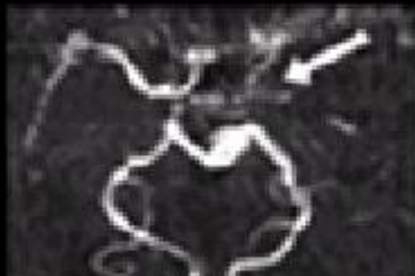
PWI



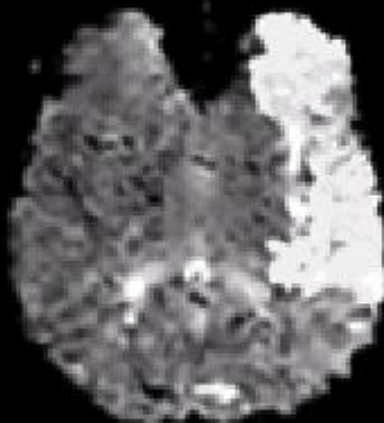
DWI

Before tPA

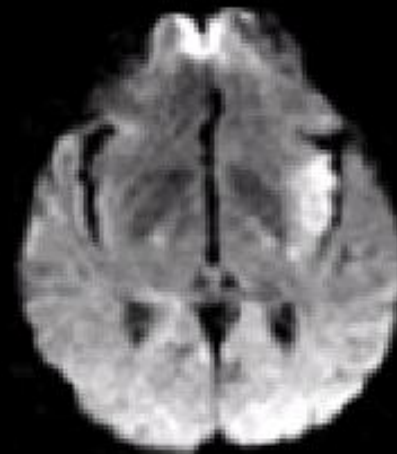
2 h



MRA



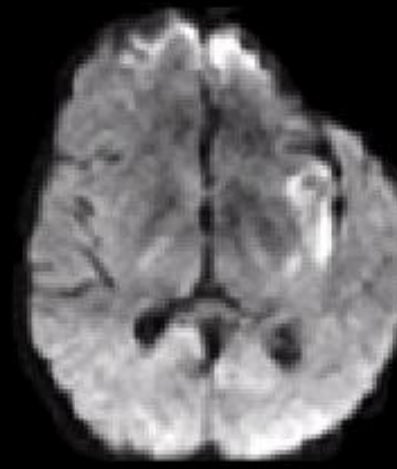
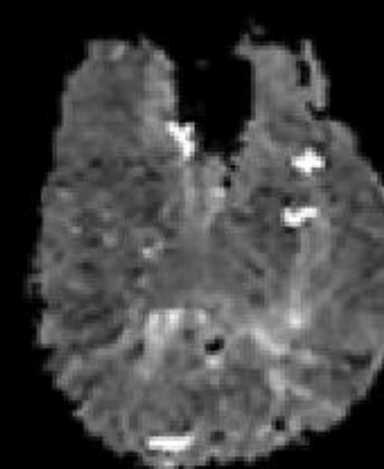
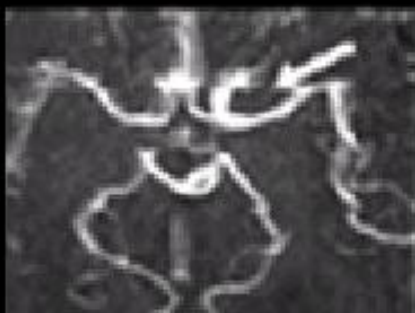
PWI



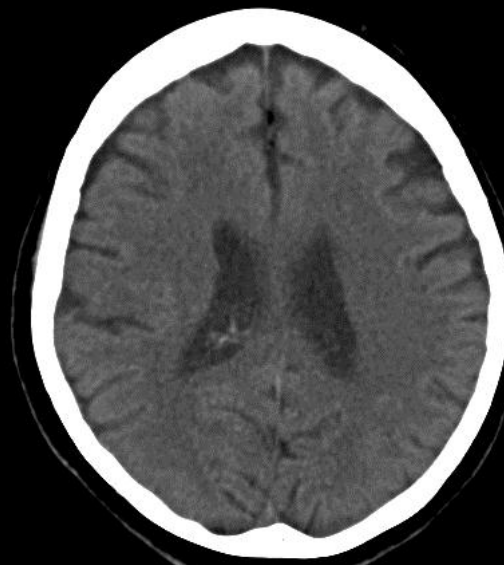
DWI

After tPA

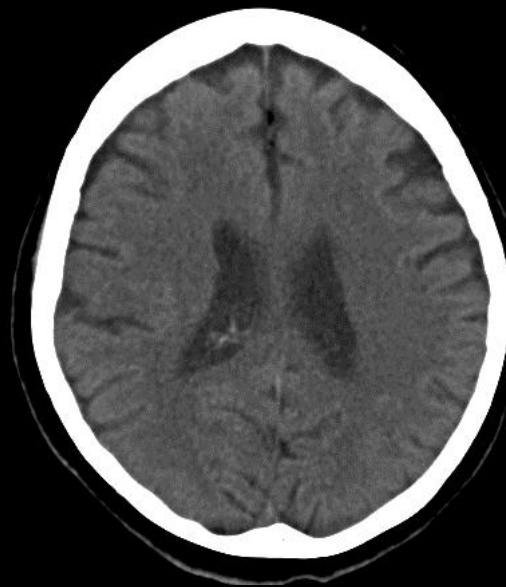
5 d



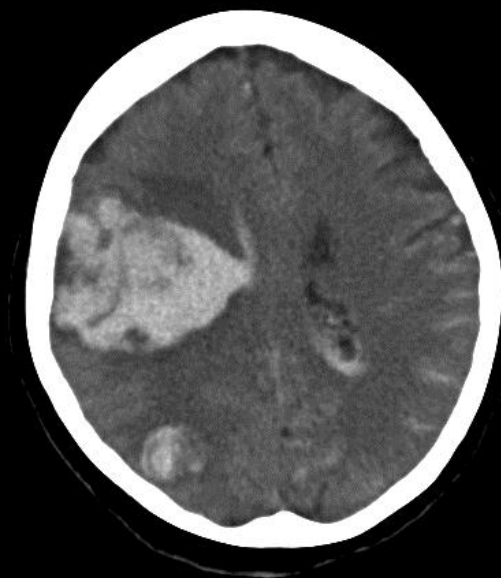
Pre t-PA



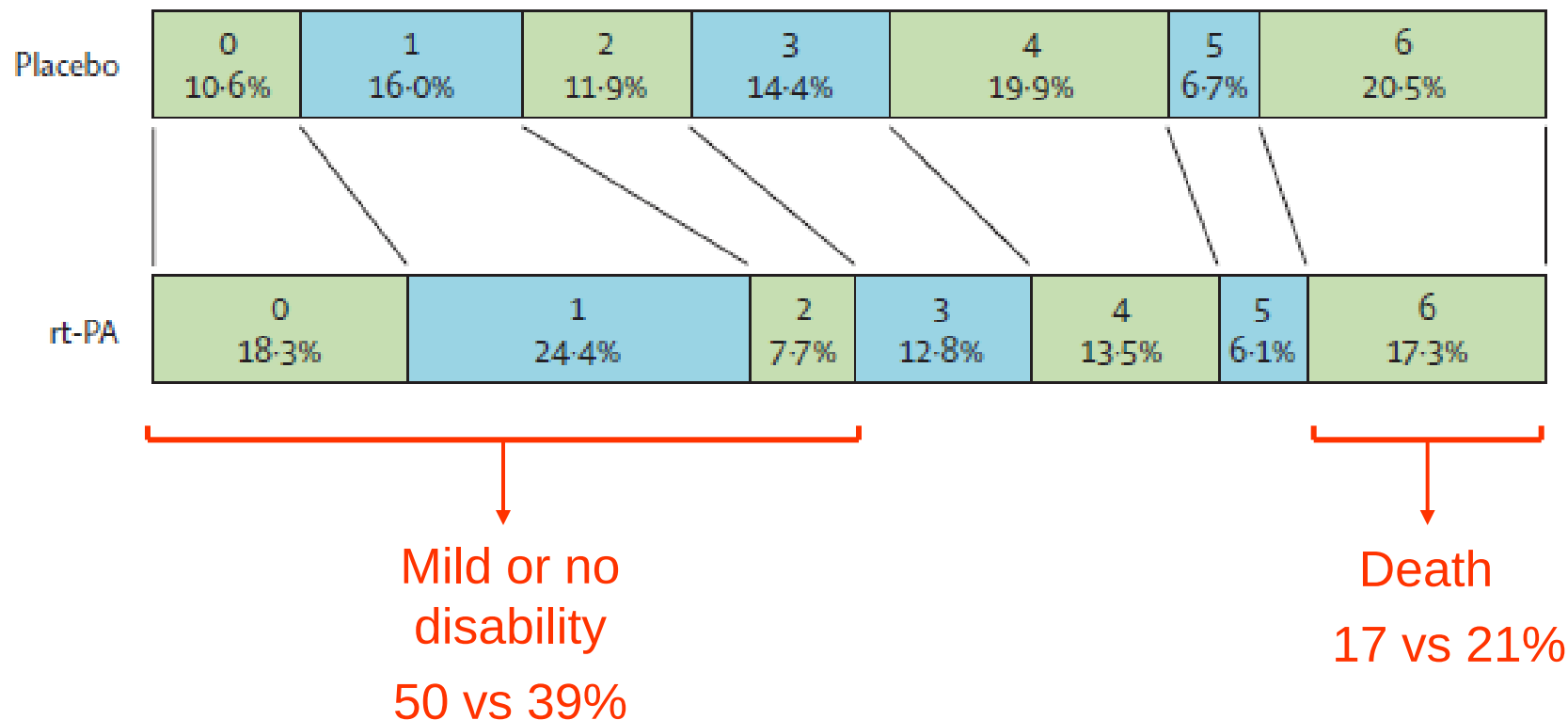
Pre t-PA



Post t-PA



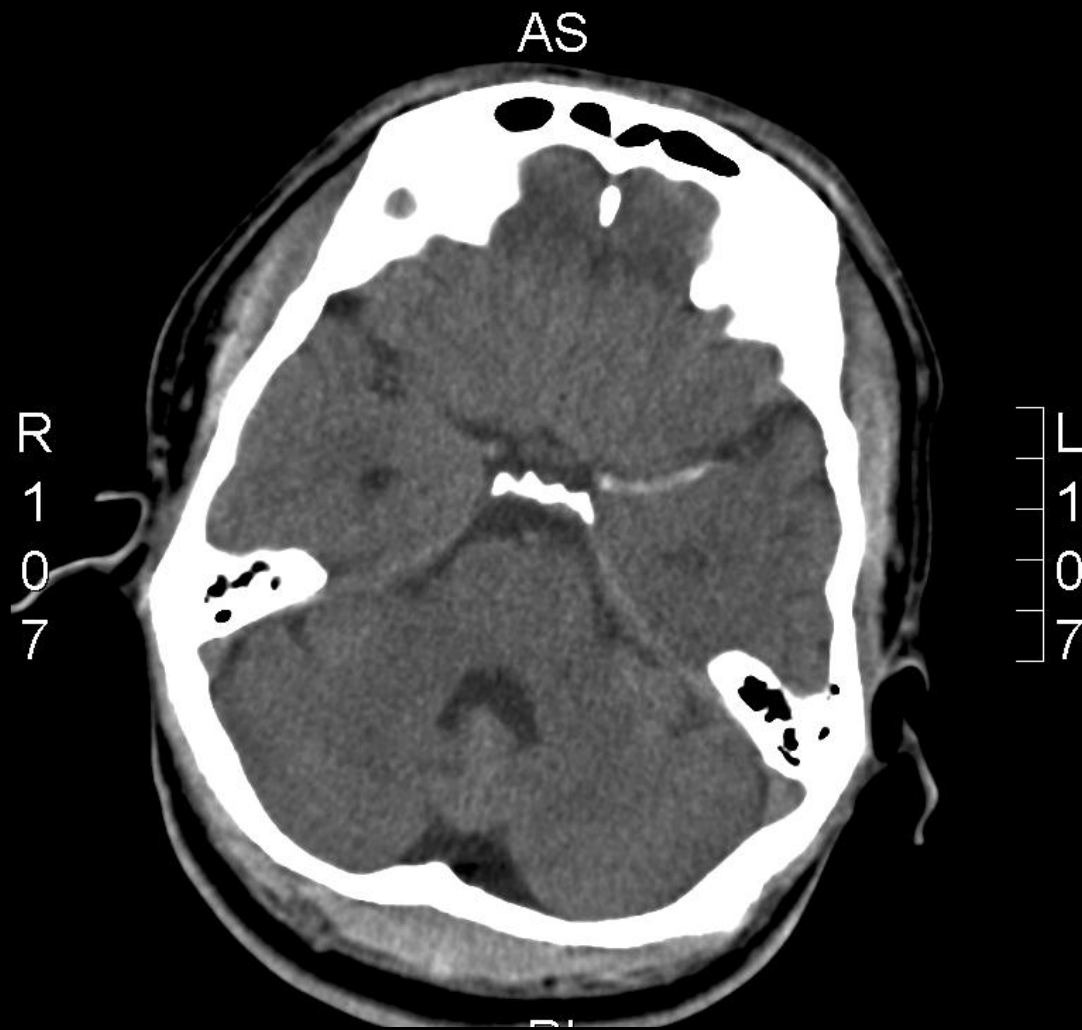
Modified Rankin score



Time is brain!

► NNT to see benefit

- < 1 hr 3
- < 3 hrs 7
- < 3–4.5 hrs 14

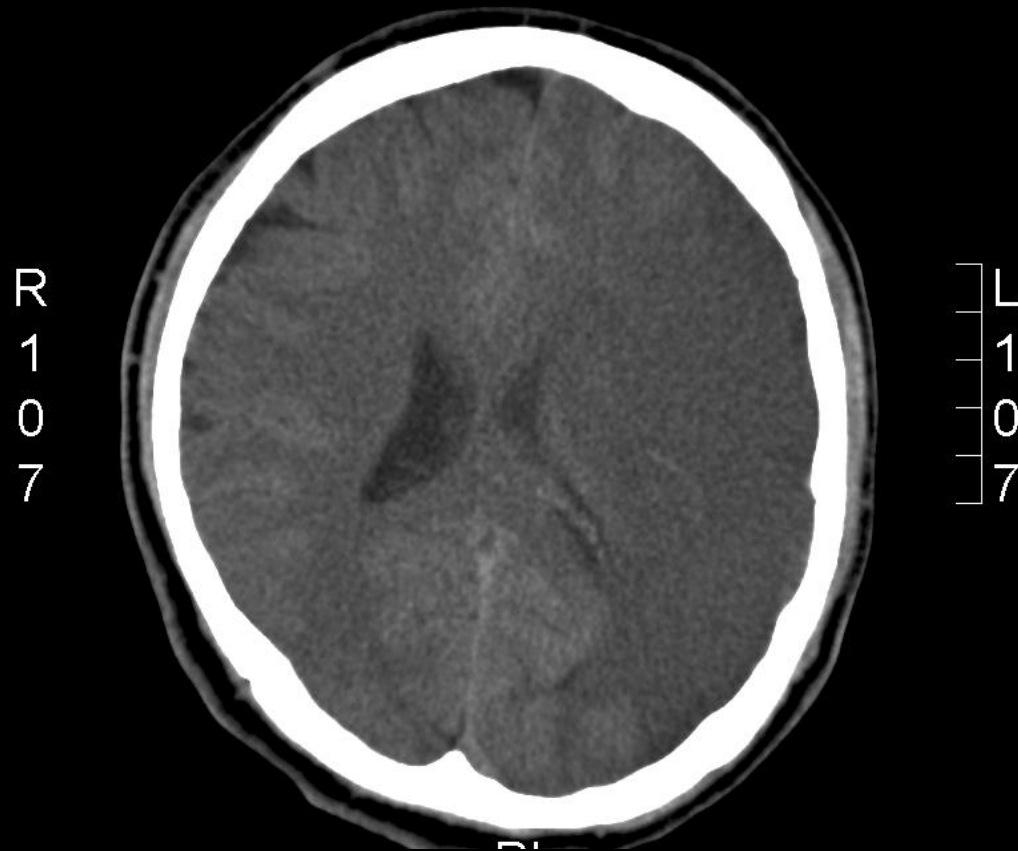


Recanalisation with iv tPA

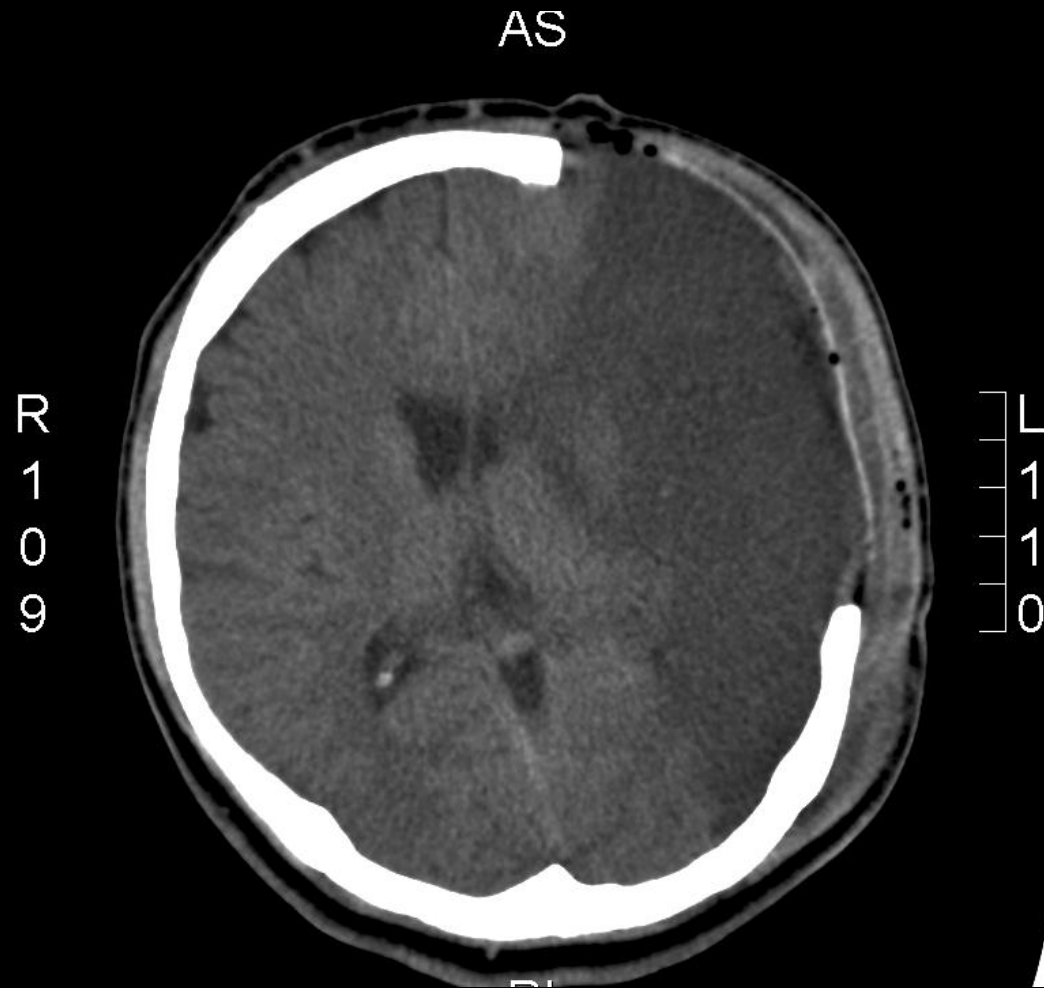
Occlusion	Recanalisation
ICA	5%
MCA	30%
Basilar	11%
Overall	30%

15 hours after onset

AS



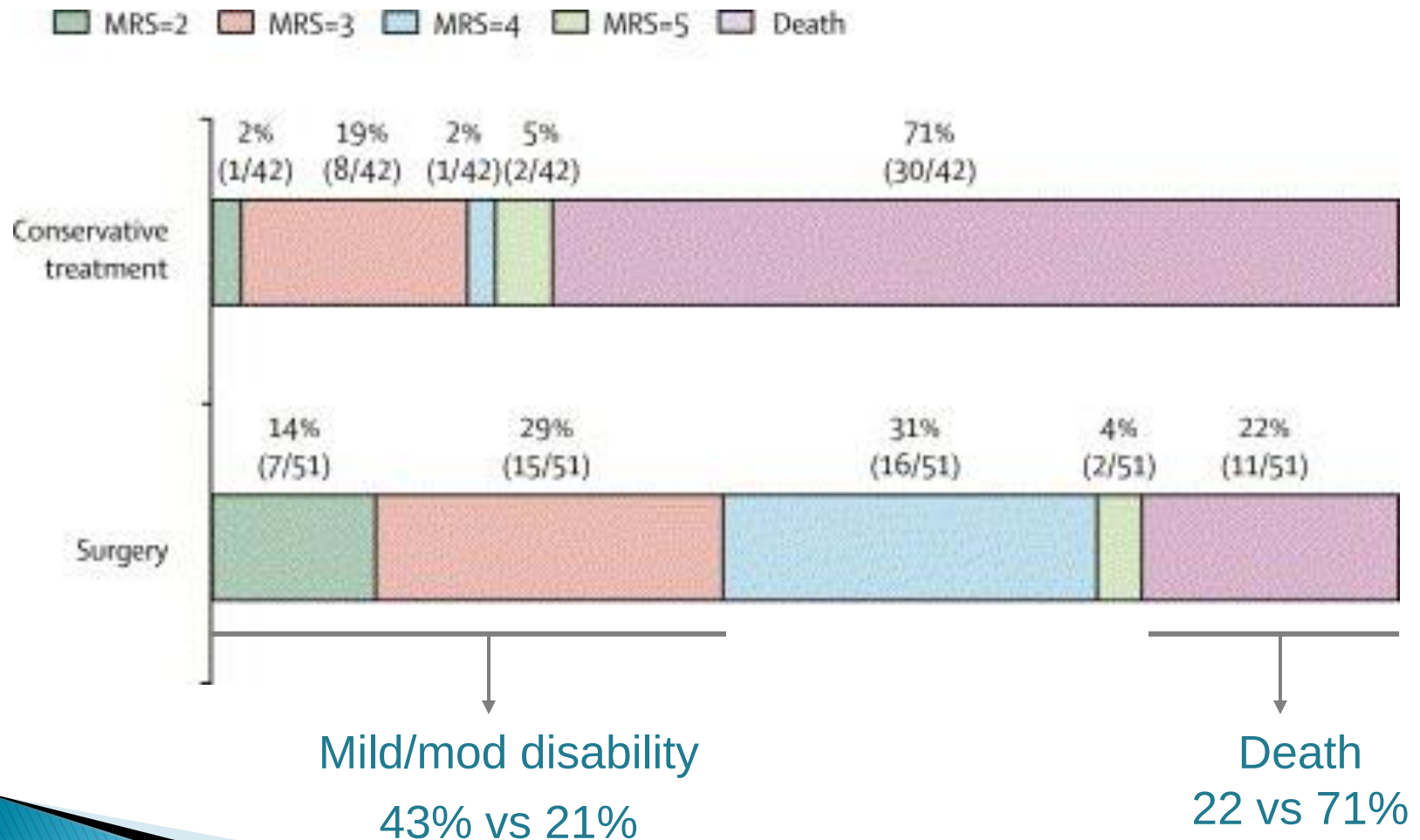
Post op



6 weeks after craniectomy



Modified Rankin score



After hemicraniectomy

- ▶ NNT = 2 to survive
- ▶ NNT = 4 to survive with mRS of ≤ 3

Lancet Neurol. 2007;6:200

Intracerebral hemorrhage

Mr S 53 years

- ▶ Presented with sudden onset
 - Dysphasia & right sided weakness
 - Headache
- ▶ Background
 - Hypertension & smoker
- ▶ Examination
 - Dysphasic
 - R hemiplegia
- ▶ Screened for iv Alteplase

1 hour



1 hour



6 hours

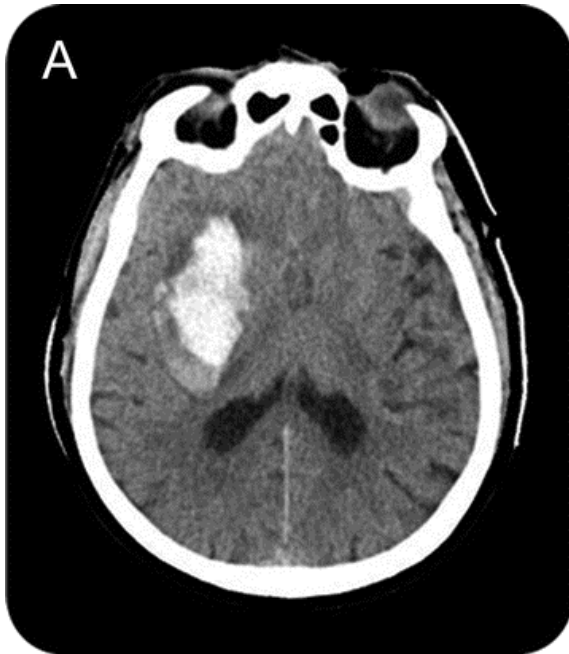


Spot sign & ICH growth

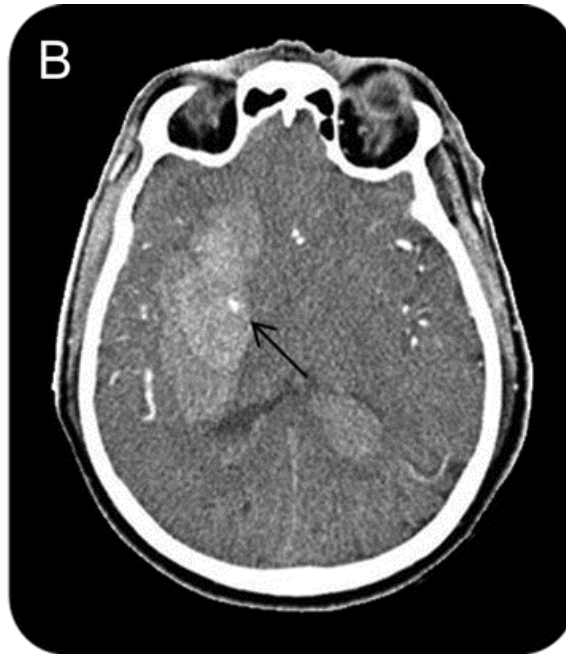
CT

CTA

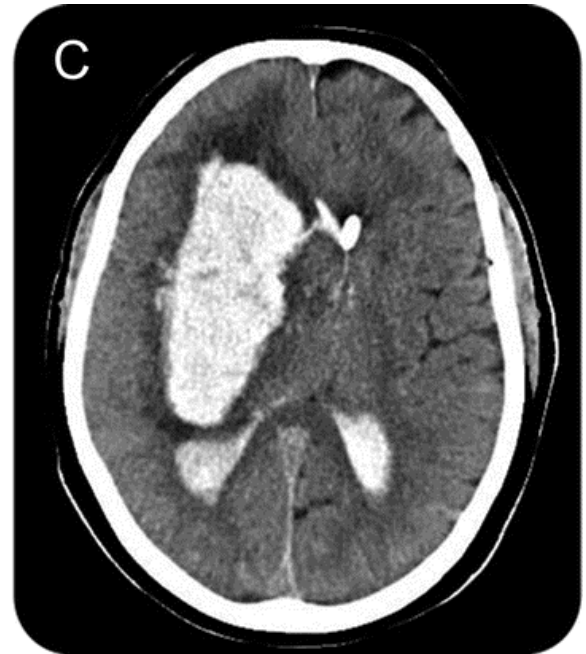
CT



1 hour



1 hour 10 mins



follow up

Aggressive acute BP lowering

INTERACT II study

- ▶ 2839 patients <6 hrs
 - <140 mmHg
 - <180 mmHg
- ▶ Aggressive BP lowering improved outcome
 - OR 0.87 (95% CI 0.75–1.01)
 - NNT to prevent 1 death or disability = 27

Future stroke therapies?

Mrs X 54 years

- ▶ 01:00 husband woken
 - laboured breathing
 - unresponsive
- ▶ Examination
 - unconscious
 - GCS = 3

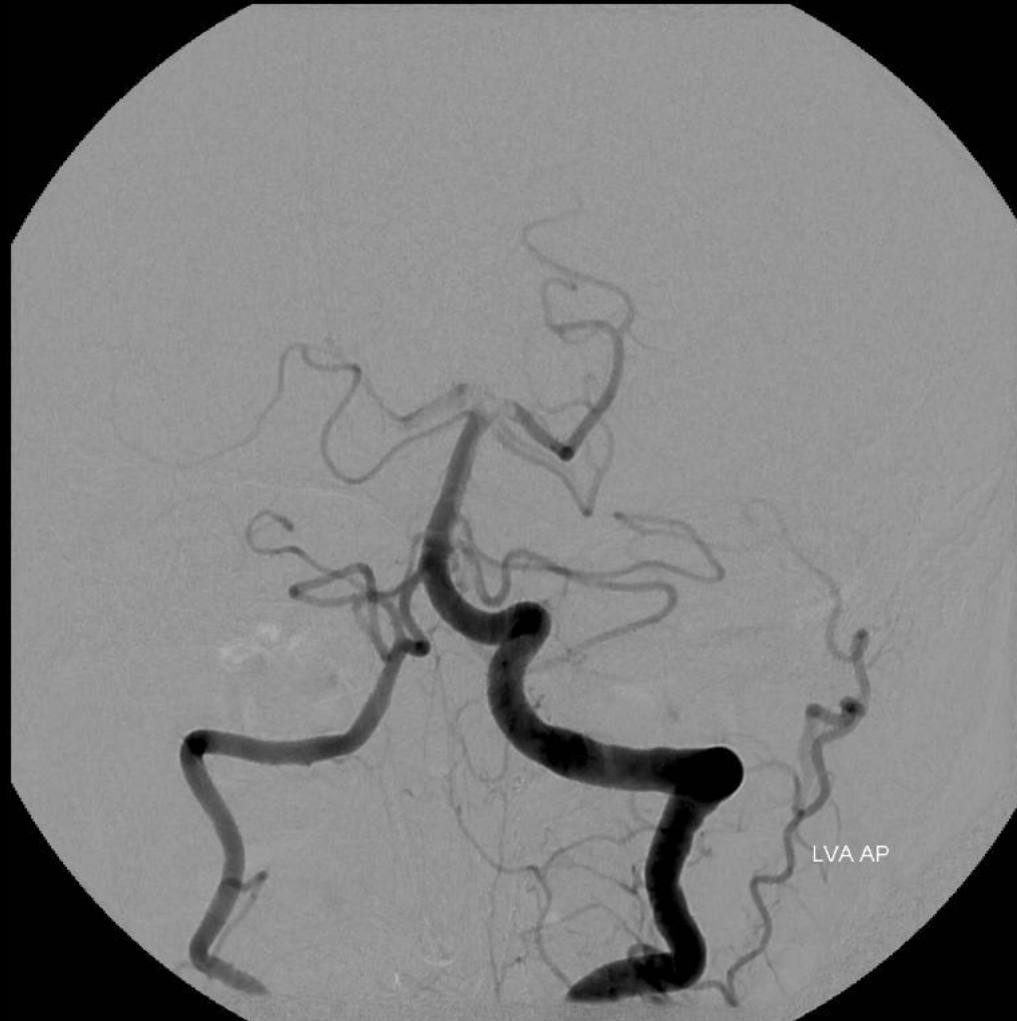
54 year old woman with initial GCS 3



Recanalisation with iv tPA

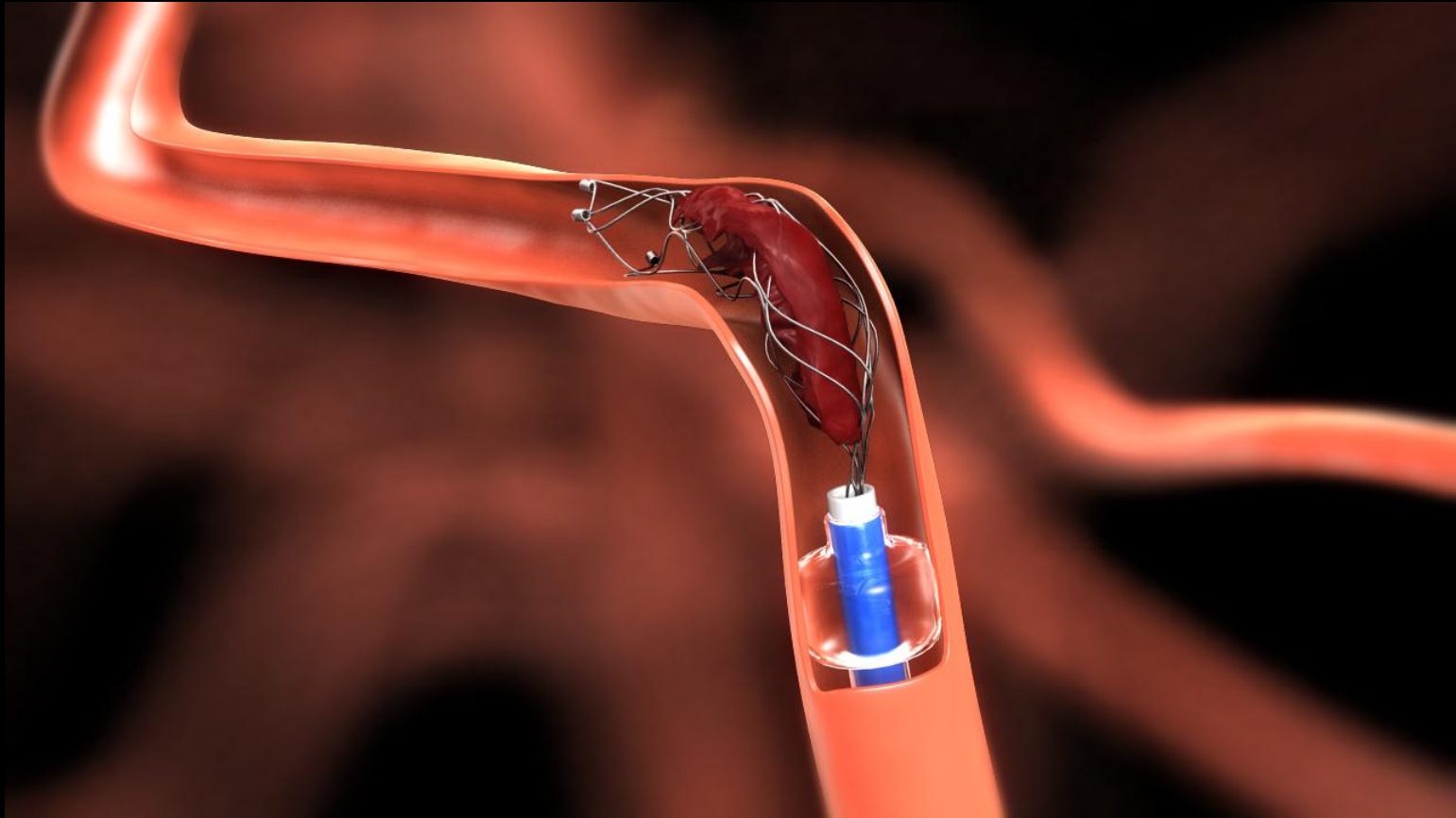
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54 year old woman
Presented with GCS 3



LVA AP

Solitaire device



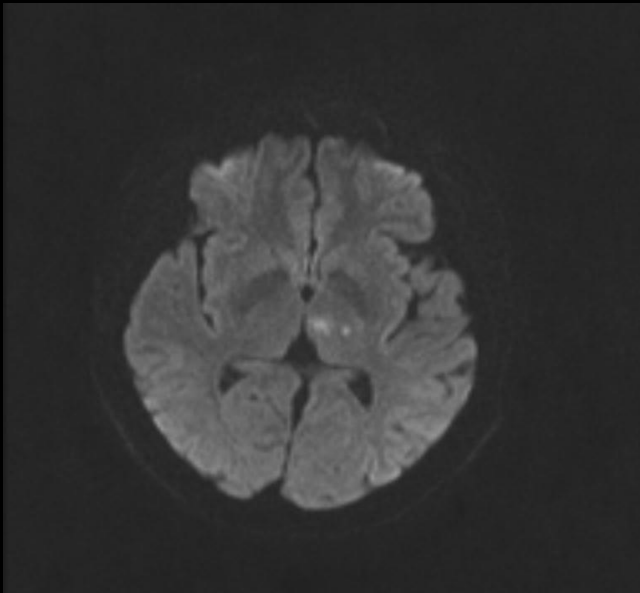
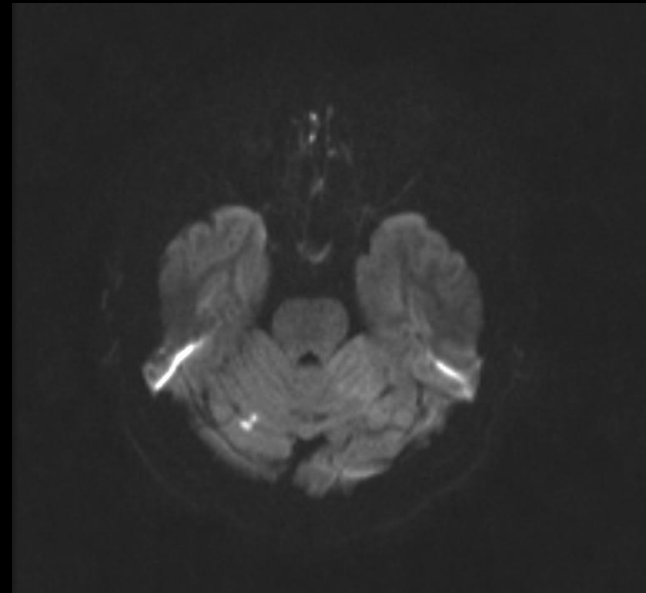
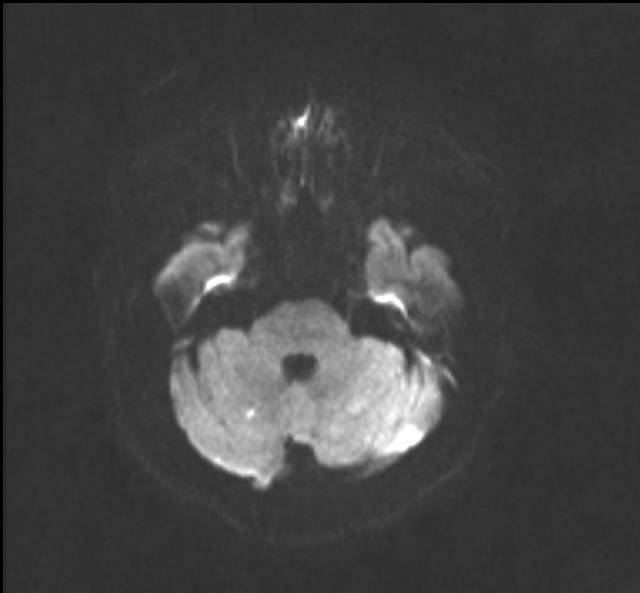
54 year old woman



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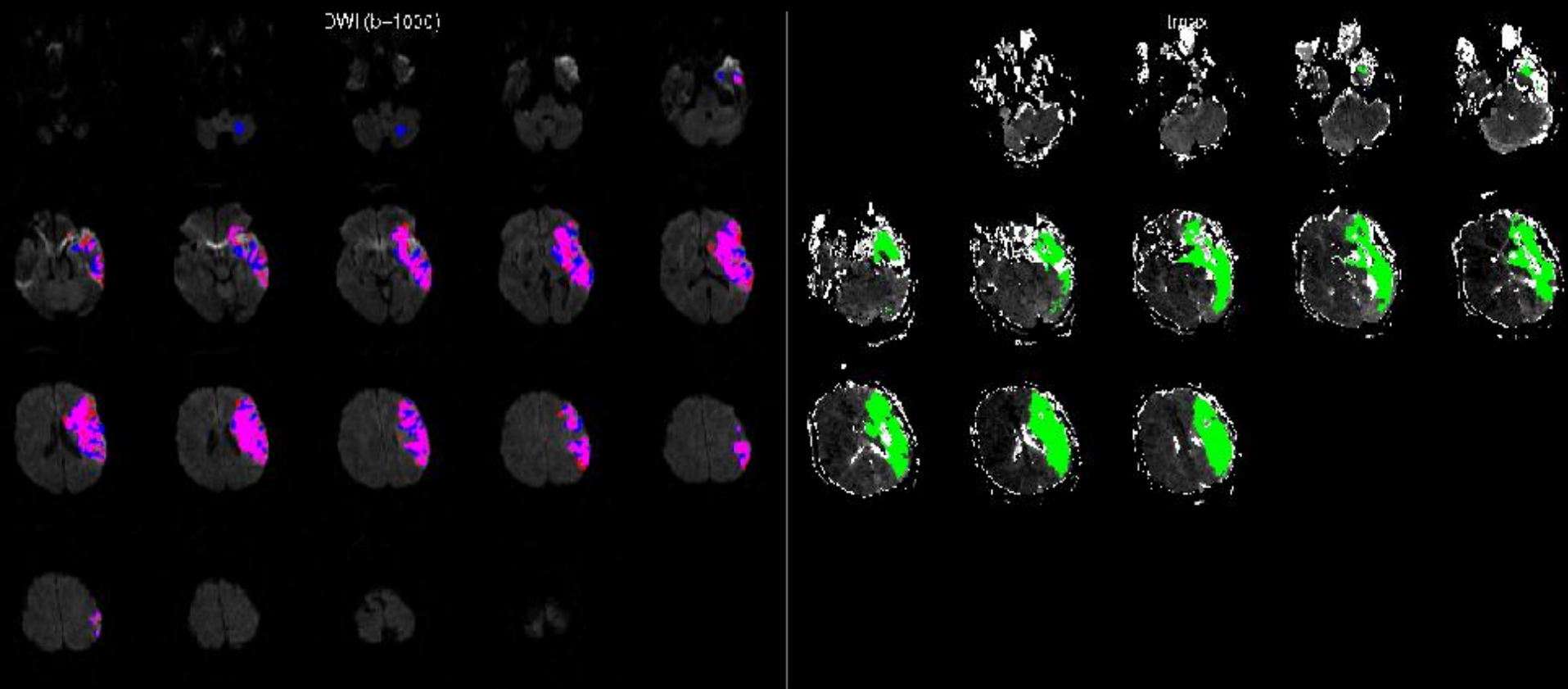


home with mild diplopia mRS = 2

Extending thrombolysis window

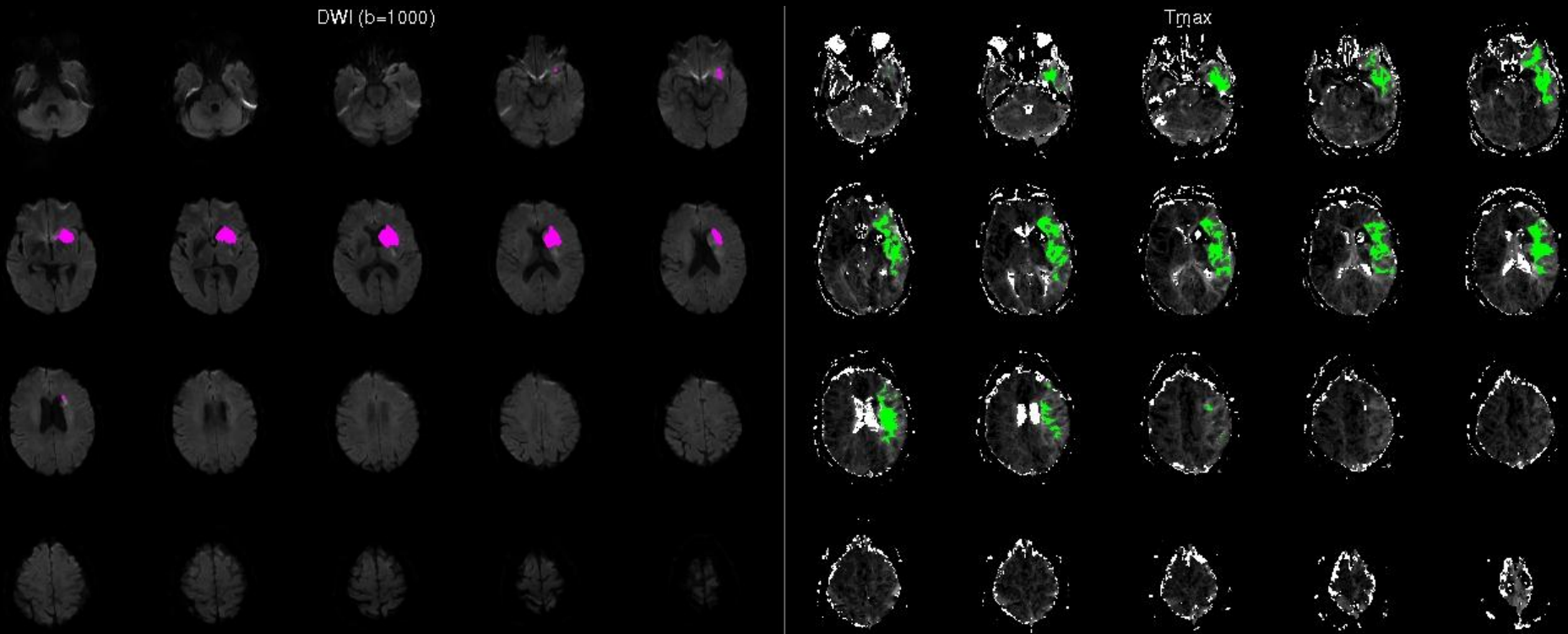
- ▶ **EXTEND IA study**
 - ischemic stroke patients 4.5–9 hrs
 - ‘penumbra’ on CT perfusion or MRI
 - randomised to alteplase or placebo

Don't randomize patient



PWI lesion for $t_{max} > 6.0s$: 137.2 ccm
DWI lesion (total): 129.7 ccm, mismatch ratio: 1.1

Randomize patient



DWI lesion: 11 ml PWI (Tmax>6s) lesion: 43 ml
Mismatch ratio: 4.0 Absolute Mismatch Difference: 32 ml
Mismatch > 1.2: YES
Absolute mismatch > 10 ml: YES
DWI < 70 ml: YES
Randomize patient: YES

Alternative stroke thrombolytics

Tenecteplase vs alteplase

- ▶ Phase II study
 - better imaging outcomes
 - trend to reduced death/disability (mRS 5/6)
 - suggestion of improved functional outcome
 - trend to reduced ICH
- ▶ TASTE Phase III study
 - 'penumbra' on CT perfusion or MRI
 - randomised to tenecteplase or alteplase

Acute therapy summary

- ▶ Stroke units
- ▶ Ischemic stroke patients
 - aspirin acutely
 - stroke thrombolysis
 - hemicraniectomy
- ▶ Intracerebral hemorrhage
 - aggressive acute BP management