

# Stroke and TIA mimics

Putting the latest evidence based  
medicine into practice.

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# Why worry? 10% early stroke risk after TIA.

- 70,000 TIAs annually in UK.
- Up to 20% will have a stroke within 90 days.
- Of those, 50% will have a stroke within 2 days.
- Guidelines on whom to admit are vague.
- Practice is variable.

Lancet 2005; 366: 29-36

**TIA - use the Rothwell ABCD score to stratify risk of progression to ischaemic stroke.**

Simple clinical observations.

Composite score is highly predictive of 7 day risk of stroke.

If high risk (5 or more): admit.

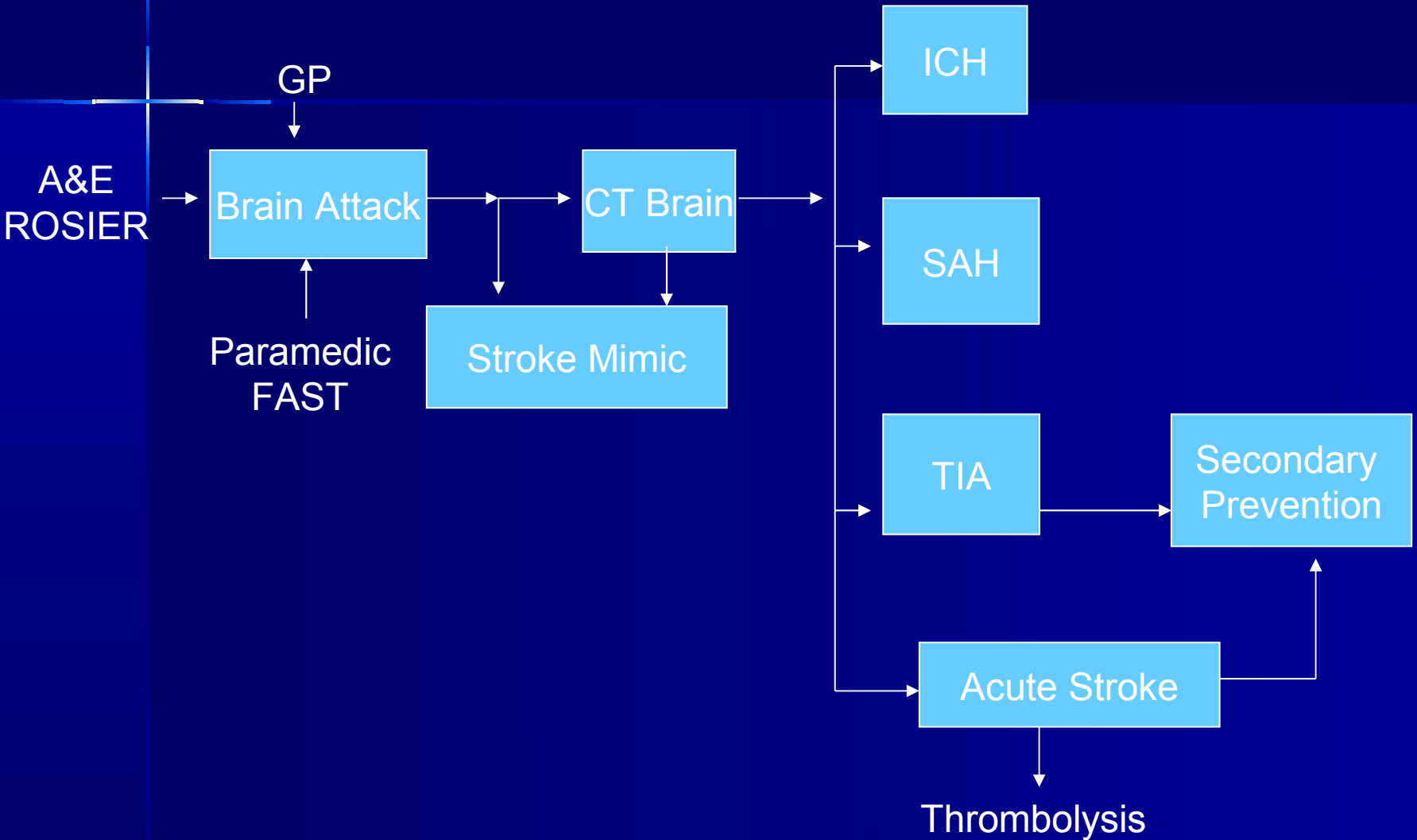
Rothwell et al. Lancet 2005; 366: 29-36

# Rothwell score: ABCD2

A - Age 60 or older:	1 point
B - BP > 140/90:	1 point
C - Clinical features	
unilateral weakness:	2 points
speech impairment:	1 point
D - Duration	
$\geq 60$ minutes:	2 points
10-59 minutes:	1 point
< 10 minutes:	0 points

Johnstone et al. Lancet 2007, 369: 283-9

# The hyperacute context



# Is ROSIER a better stroke assessment in the ER?

	<u>Sensitivity</u>	<u>Specificity</u>
ROSIER	93%	83%
FAST	82%	83%

Total score: -2 to +5

Admit to Acute Stroke Unit/ refer to Stroke team if total score >0.

# How often is “suspected stroke” not stroke?

- Meta-analysis of 24 heterogeneous studies, mean size 388 patients.
- 22% (95% CI) are mimics.
- According to context:
  - Ambulance 34%
  - A&E 30%
  - Stroke Unit 11%

# TIA / Stroke mimics

## **Metabolic/toxic/infections**

Sepsis / intercurrent illness

Hypo-/hyper- gly/ Na/ Ca

## **Ophthalmic**

Glaucoma

Retinal vein occlusion

## **Respiratory**

Hypoventilation

## **Other**

Syncope

Postural hypotension

Vestibular attack

# Neurological

- Seizure
- \* Tumour
- Spreading migraine aura
- Somatisation / functional / panic
- Neuropathies (cervical spond, compression)
- Radiculopathies
- \* Haematoma
- TGA
- Bell's palsy
- \* Multiple sclerosis
- Myasthenia gravis

\*Imaging helpful for diagnosis.

# Neurovascular clinic perspective

## IRH:

Stroke and TIA      ?%

Eye TIAs              ?%

Possible CVD        ?%

Mimics                ?%

Patients seen in our NV clinic

# Front door perspective:

Stroke and TIA 67%

Possible CVD 14%

Mimics 19%

Stroke 2006; 37(3):769-75

# Top 5 TIA / Stroke mimics :

- Seizure
- Sepsis / intercurrent illness
- Syncope
- Spreading migraine aura
- Somatisation / functional / panic

# TIA

A clinical syndrome characterised by

- a sudden onset of focal cerebral or monocular function
  - with symptoms lasting < 24hr
  - thought to be due to inadequate cerebral or ocular blood supply
  - as a result of low blood flow, thrombosis or embolism
- associated with disease of the arteries, heart or blood.

# Stroke

A clinical syndrome characterised by:

- a sudden loss of focal cerebral function
- with symptoms that are fatal or last >24h
- thought to be due to either spontaneous brain haemorrhage or inadequate cerebral blood supply to a part of the brain (ischaemic stroke)
- As a result of low blood flow, thrombosis or embolism associated with disease of the arteries, heart or blood.

# “Sudden” onset of vascular events

## Sudden

- without warning
- maximal at onset
- body parts affected simultaneously

“What were you doing at the time?”

“What was it like at its worst?”

“Was it like that at the beginning or did it take some time?”

# Focal symptoms to beware of:

- “Positive” rather than “negative” symptoms

Isolated focal symptoms:

- Motor symptoms
- Simultaneous bilateral weakness
- Imbalance
- Slurred speech
- Double vision
- Vertigo
- Forgetfulness

# Front door perspective: brain attack

Sudden onset

Weakness face/arm/leg

Slurred speech

Able to walk

Dizziness

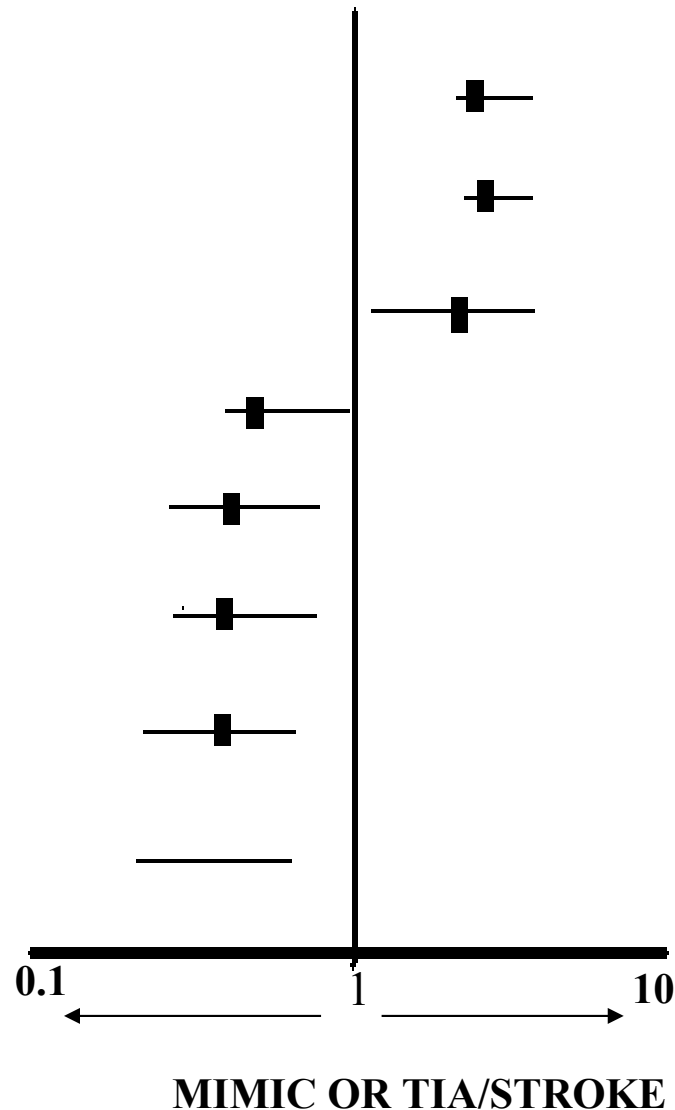
Seizure

LOC

Confusion

Stroke 2006; 37: 769-75

Lancet 2005; 4:727-34



# Transient focal neurological attacks

- Ischaemia
- Seizure (focal)
- Spreading aura of migraine
- Somatisation
- Intracranial tumour, subdural, abscess
- Multiple sclerosis
- Mononeuropathy / radiculopathy

# Transient non-focal neurological attacks

- Generalised seizure
- Syncope
- Somatisation
- Vestibular failure (Ménière's disease)
- TGA
- Metabolic disturbance

# Migraine aura $\pm$ headache

- Positive symptoms
- Spread and intensify 5-20 min
- Gradually fade  $<$  60 min
- Headache 4-72 hours
- PMH of migraine

# Focal seizures

- Positive symptoms
- Spread over seconds lasting a few min
- $\pm$  residual negative symptoms / signs, amnesia
- $\pm$  preceding aura
  
- Speech : arrest / dysphasia / dysarthria
- 2% of strokes + seizure

# Shouldn't we do an MRI on everyone?

## Brain imaging

	<u>CT</u>	<u>CT</u> Ang/perf	<u>MR</u> dwi/pwi/MRA
<u>Availability</u>			
■ Urgent	Easy(ish)	Variable	Challenging
■ Routine	Easy	Poor	Variable
■ Cost	Low	Moderate	Moderate
<u>Sensitivity</u>			
■ Haemorrhage	High	N/A	Excellent
■ Acute infarction	Poor	Very good	Excellent
■ Salvageable time	Poor	Excellent	Excellent
<u>Tolerability</u>	High	High	Problematic in some
<u>Technical support</u>	Low	High	Moderate

# How we handle TIAs / Stroke

Triage and treat

Telephone discussion:

1. Immediate admission for ?thrombolysis
2. Immediate admission
3. Assess in A&E same day
4. See in next TIA clinic
5. Divert to more appropriate service

# Messages

- History: onset and progression
- Positive / negative symptoms
- Isolated symptoms
- Dizziness, LOC, confusion
- False positive imaging findings
- It's difficult to be accurate very early / late.