Stroke Prevention in Primary Care

Diagnosis and Management of TIA

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Referral Behaviour Varies!

- ‘ No point in rapid referral as there is no rapid response’
- ‘ I refer when I have time to write a letter’
- ‘ I would not refer the first TIA’
- ‘ It varies depending on the severity of symptoms’
- ‘ Information on investigations carried out as outpatients are not effectively communicated to GPs’

NAO National Audit Office

Case history

- 78 year old women contacts her GP immediately after recovering from a 90 min episode of difficulty speaking and weakness of her right arm. Her medical history is unremarkable other than history of hypertension.

- What priority for action would you give such a lady?

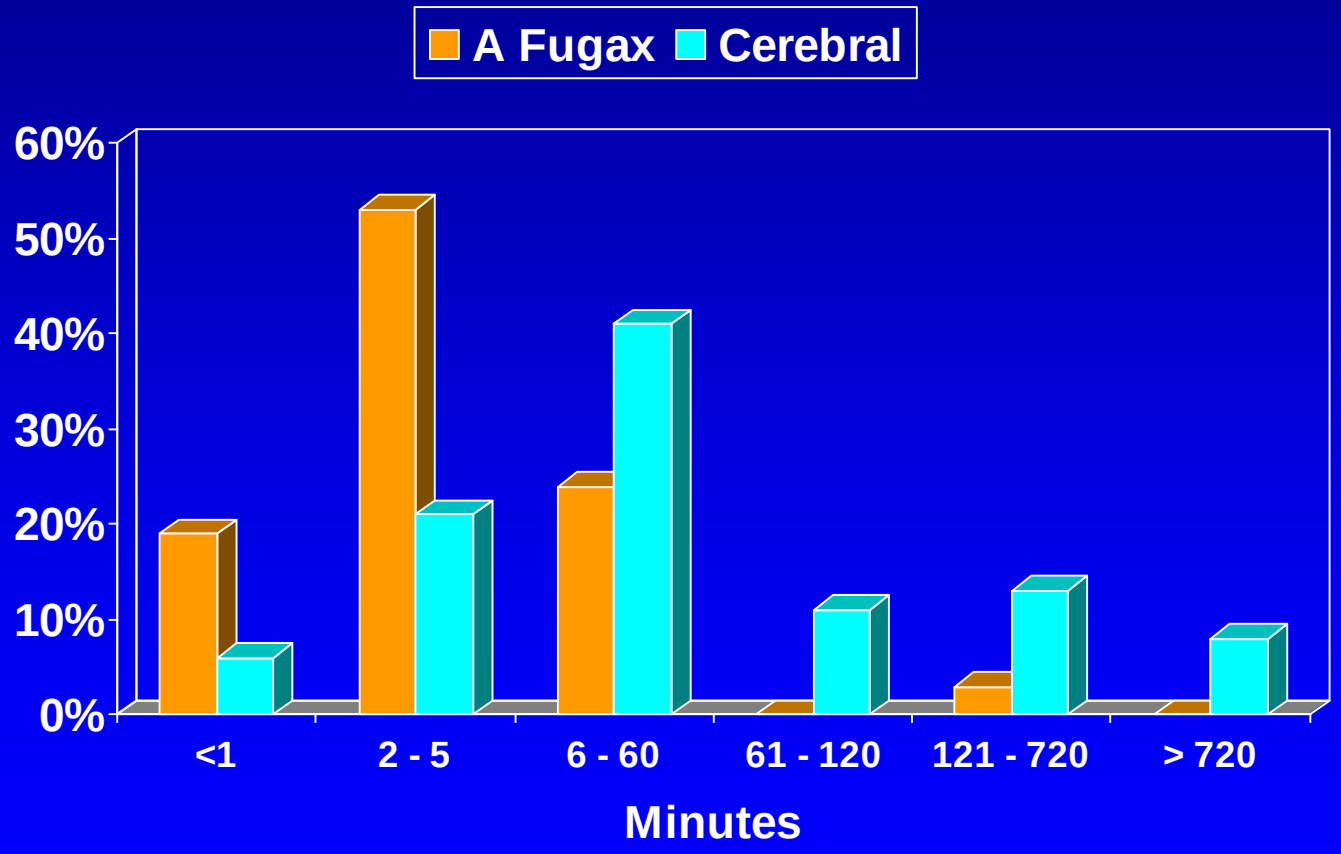
‘Just a TIA, no lasting damage’

Not True!

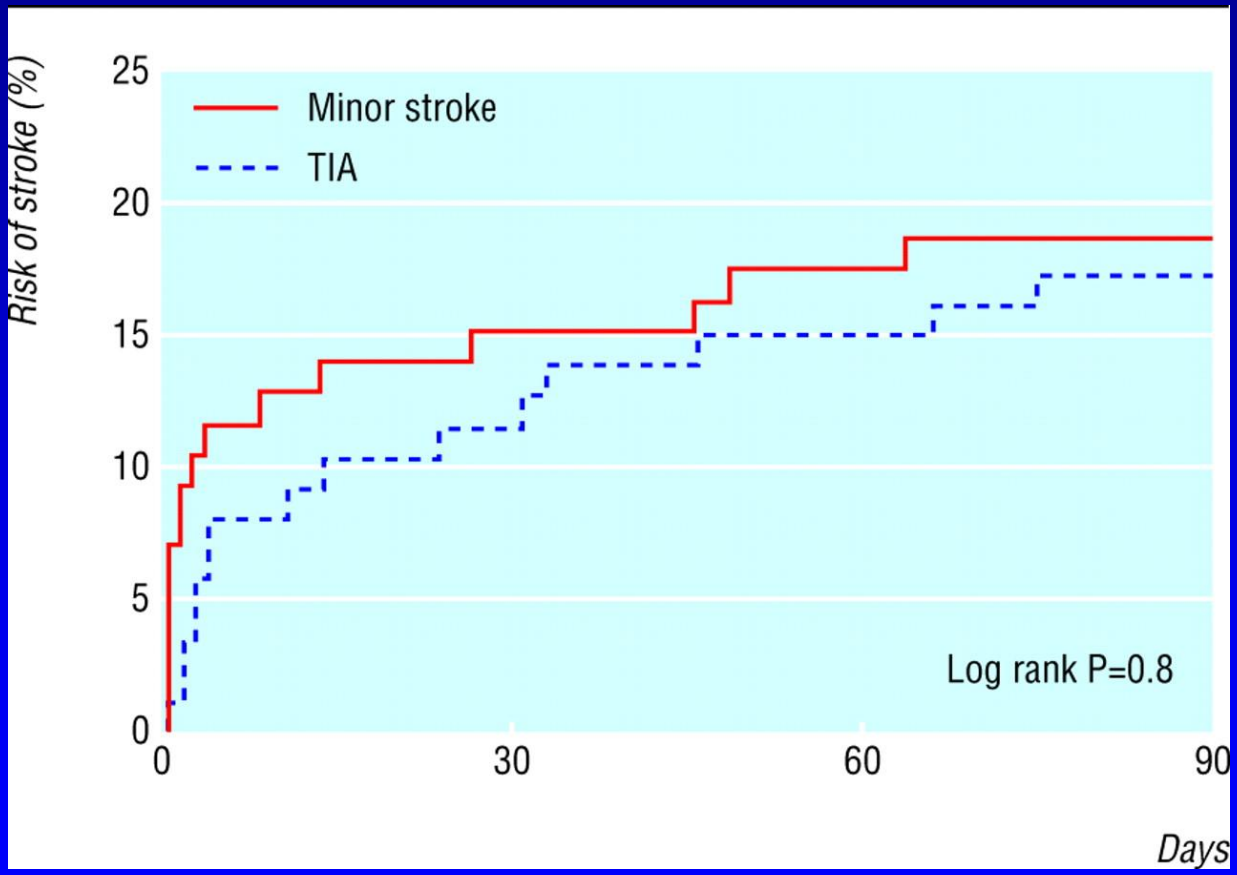
- 25% patients of patients suffering a stroke will have had a ‘warning’ TIA previously

- 17% occur on the day of the stroke

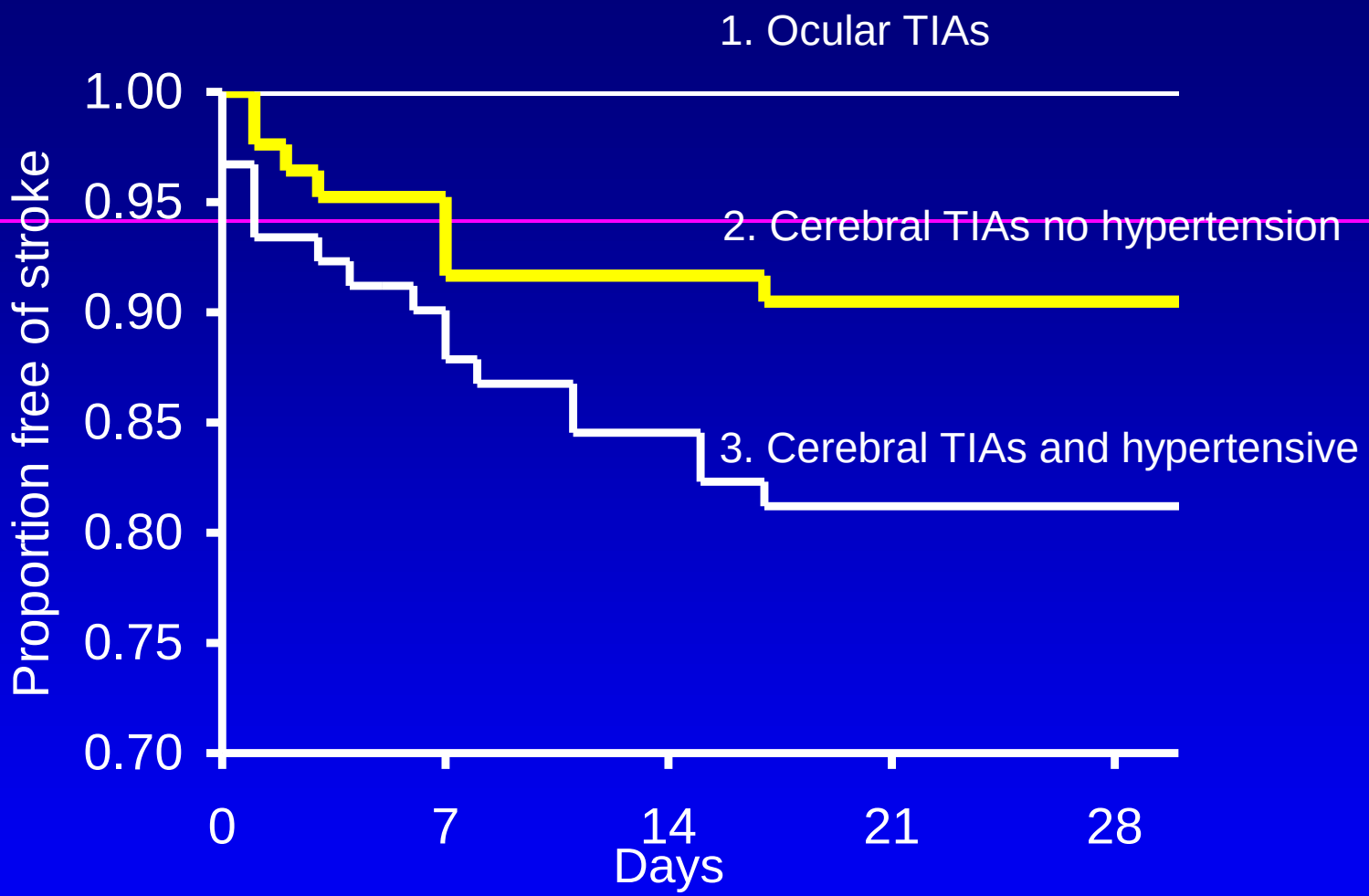
Duration of longest TIA (OCSP)



Early risk of stroke after TIA



Rothwell et al 2003

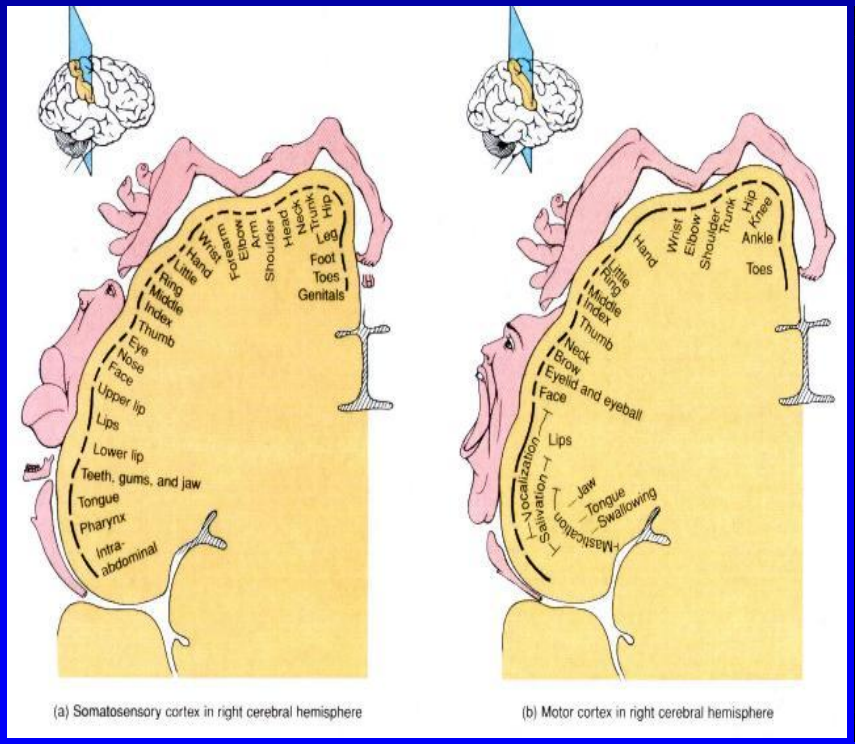


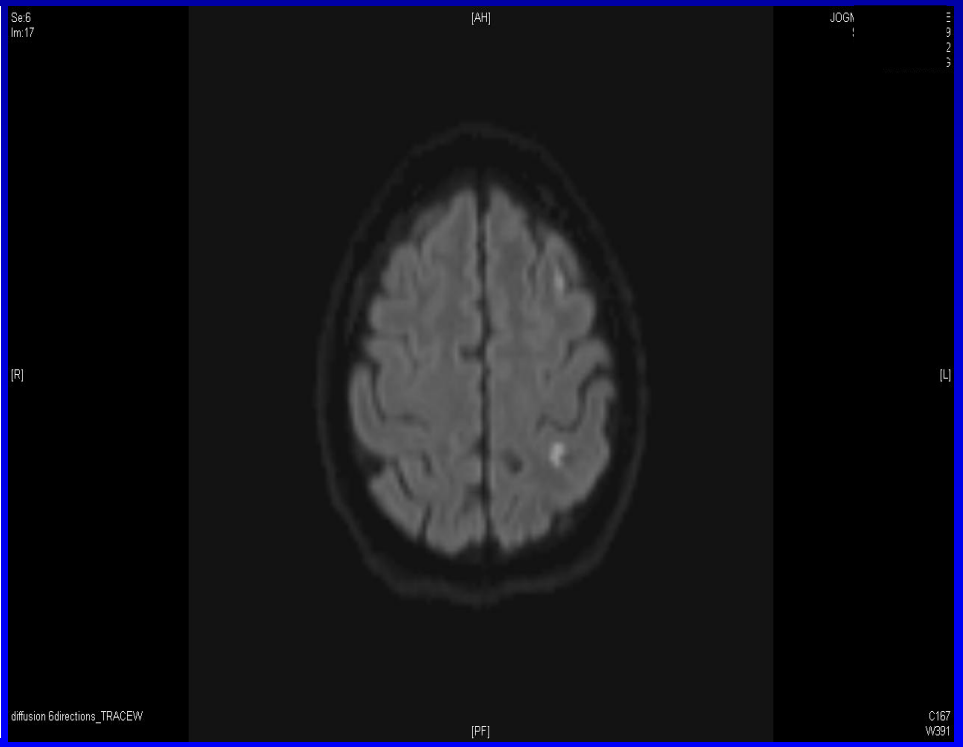
% stroke risk (95% CI):	at 7 days	at 30 days
All cerebral TIAs (n=176)	10.3 (5.8 – 14.7)	14.3 (9.1 – 19.4)
Cerebral + hypertension (n=91)	12.1 (5.4 – 18.8)	18.8 (10.7 – 26.9)

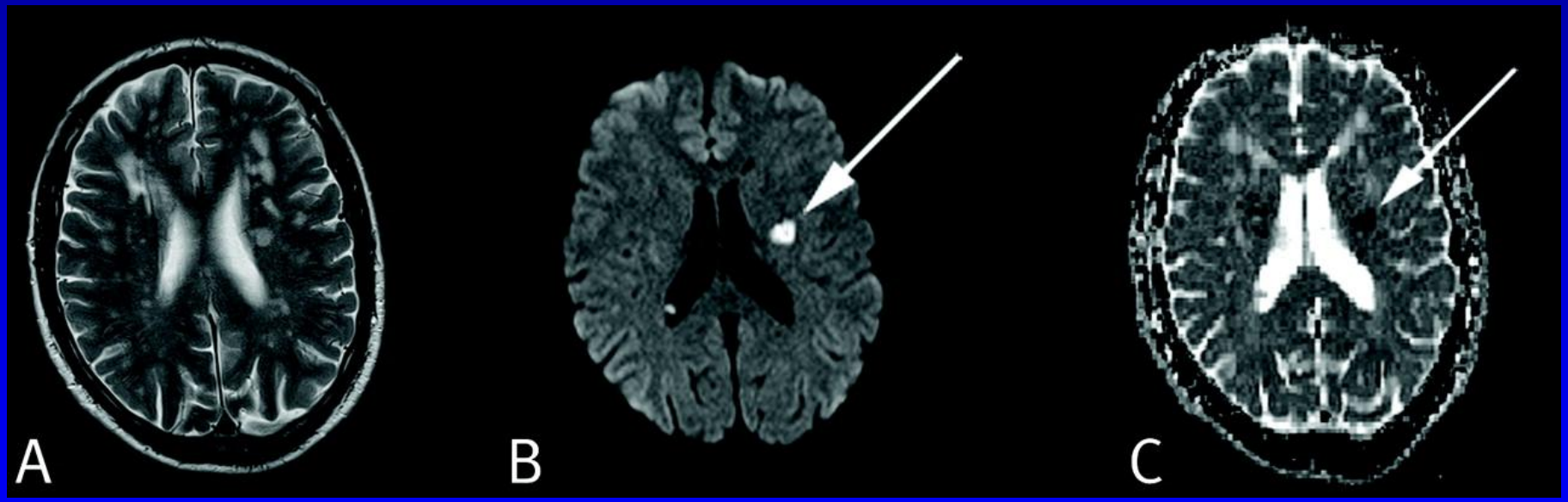
How do we predict high risk patients?

- Type of symptoms ($ABCD^2$)
- Vascular Territory
- Underlying aetiology
- Appearances on brain imaging

Neurovascular Imaging: MRI



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How do TIAs present?

- Presentation depends on which part of the brain
- Diagnosis not easy!
- Stroke mimic exists

Non-focal neurological symptoms

- faintness
- non-specific dizziness
- light-headedness
- confusion
- mental disorientation
- incontinence
- drop attacks
- syncope

do not suggest TIA unless accompanied by focal neurological symptoms

OCSP: 184 TIA Patients

None had isolated dysarthria, ataxia, vertigo, diplopia, dysphagia

Neurological symptoms during TIA	**% of 184**
Unilateral weakness, heaviness, clumsiness	50
Unilateral sensory symptoms	35
Slurred speech (dysarthria)	23
Transient Monocular Blindness	18
Difficulty speaking (dysphasia)	18
Unsteadiness (ataxia)	12
Vertigo	5
Homonymous hemianopia	5
Diplopia	5
Bilateral limb weakness	4
Crossed motor and sensory loss	1
Dysphagia	1

Causes of transient focal neurological attacks

- Focal cerebral ischaemia ie TIA
- Migraine aura (with/without headache)
- Partial (focal) epilepsy
- Labyrinthine disturbances
  - Meniere's disease
  - BPPV
  - Benign recurrent vertigo
  - Labyrinthitis/vestibular neuronitis
- Transient global amnesia (TGA)
- Multiple sclerosis

STROKE MIMICS

- S: SYNCOPE
- S: SEIZURES
- S: SEPSIS
- S: SPACE OCCUPYING LESION
- S: SOMATISATION

Migraine with Aura

Younger. Family history

Positive phenomena 5-20 minutes, usually < 60 minutes

Visual symptoms may be homonymous, unilateral or central

Flashes of light, zig-zag lines, scintillations, fortification spectra which usually build up or expand

Parasthaesiae or heaviness in one or other limbs

Evolves/spreads in minutes in marching pattern hand to elbow then face into tongue several minutes

Progression from one accompaniment to another without delay such as visual symptoms to parasthaesiae to dysphasia

Epilepsy

- Focal sudden positive sensory or motor phenomena
- Spread quickly to adjacent body parts over 1 minute
- Versus TIA where tingling will arise in affect parts of the body at the same time
- Migraine is over minutes
- May be focal jerking
- Altered awareness

Transient Global Amnesia (TGA)

Characteristic clinical syndrome

Middle-aged or elderly

Sudden disorder of memory

For a period (some hours) pt cannot memorise any current information (anterograde amnesia) and often cannot recall events of the past few days/weeks (retrograde amnesia)

Model of the diagnostic process

Are the neurological symptoms focal rather than non-focal?

Are the focal neurological symptoms negative rather than positive?

Was the onset of the focal neurological symptoms sudden?

Were the focal neurological symptoms maximal at onset rather than progressing over a period?

If YES to all questions, the symptoms are almost certainly caused by vascular pathology (cerebral ischaemia or haemorrhage

ABCD2 Score

	Yes	No
Age ≥ 60 yrs –	1	0
Bp ≥ 140/90	1	0
Clinical Features		
• Unilateral weakness	2	0
• Speech without weakness	1	0
Duration		
> 10 min < 59 min	1	0
≥ 60 min	2	0
Diabetes	1	0

Score ≥ 4 = High Risk

Rothwell et al 2005

Case history

- 78 year old women contacts her GP immediately after recovering from a 90 min episode of difficulty speaking and weakness of her right arm. Her medical history is unremarkable other than history of hypertension.

Who is risk?

- Age 78 (1)
- BP 160/80 mmHg (1)
- Weakness (2)
- Speech (1)
- 90 minutes (2)
- Diabetes (0)

- $ABCD^2$ score=7

Predicted effect of treatment

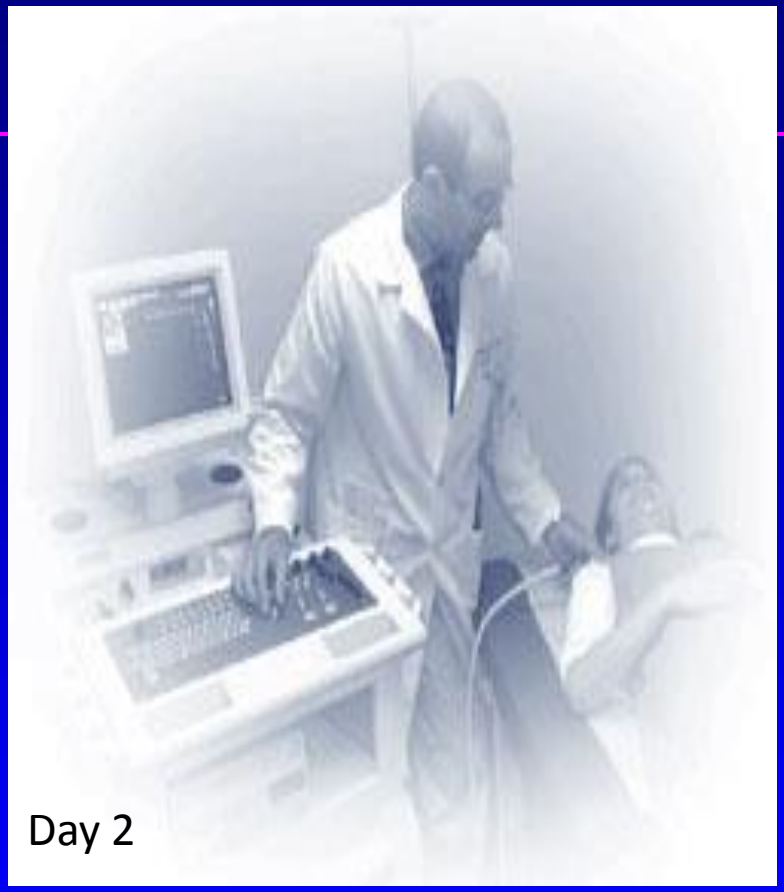
Based on RCTs of long-term treatment

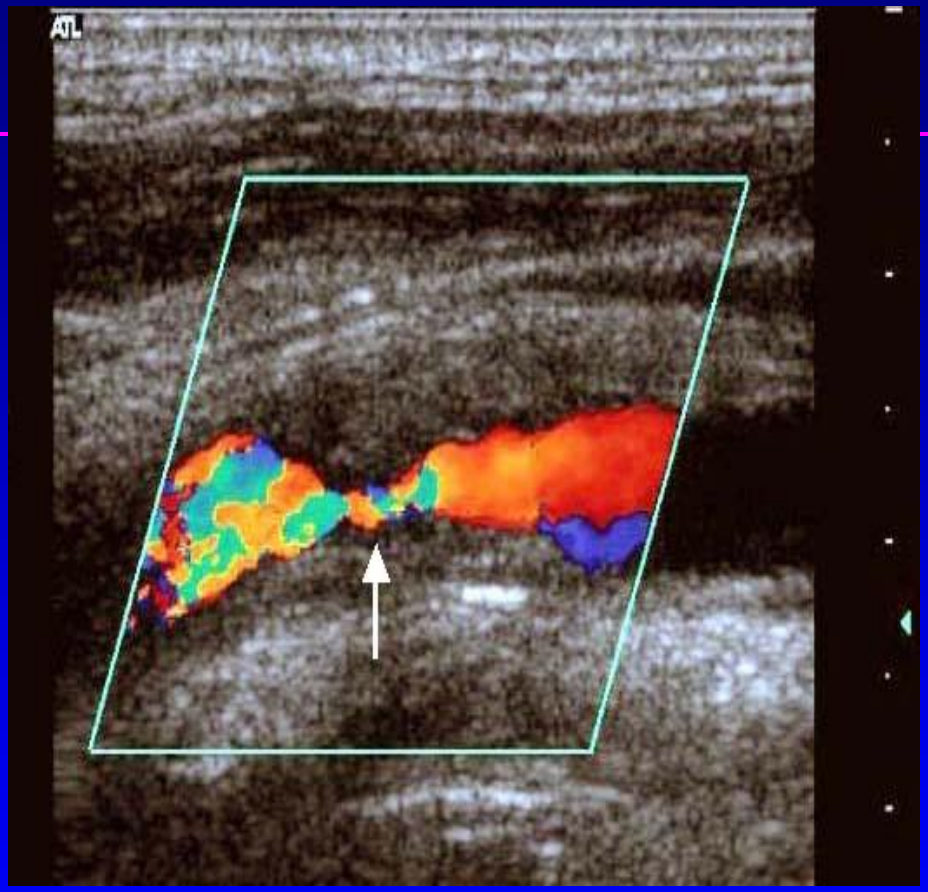
Most patients	Relative Risk Reduction
Aspirin	20%
Statin	20%
Blood pressure lowering	30%
Some patients	
Warfarin	50%
CEA within 2 weeks	75%
(Aspirin + Clopidogrel	?)
Total	**>80%**

Hackam DG, Spence JD. Stroke 2007.

Yusuf S. Lancet 2002; 360:2-3.

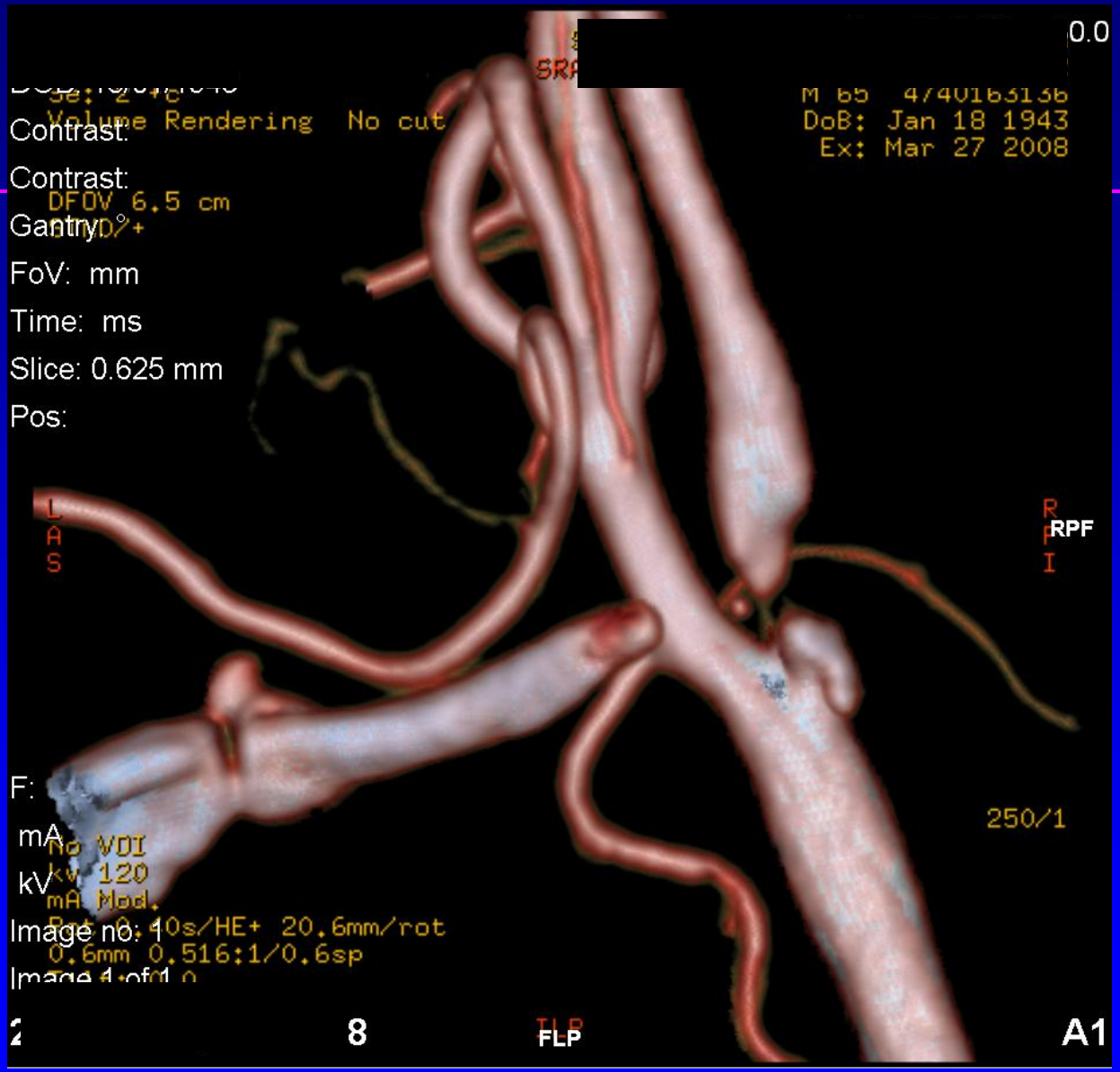
Carotid Artery Duplex Ultrasound





90% symptomatic

left internal carotid artery stenosis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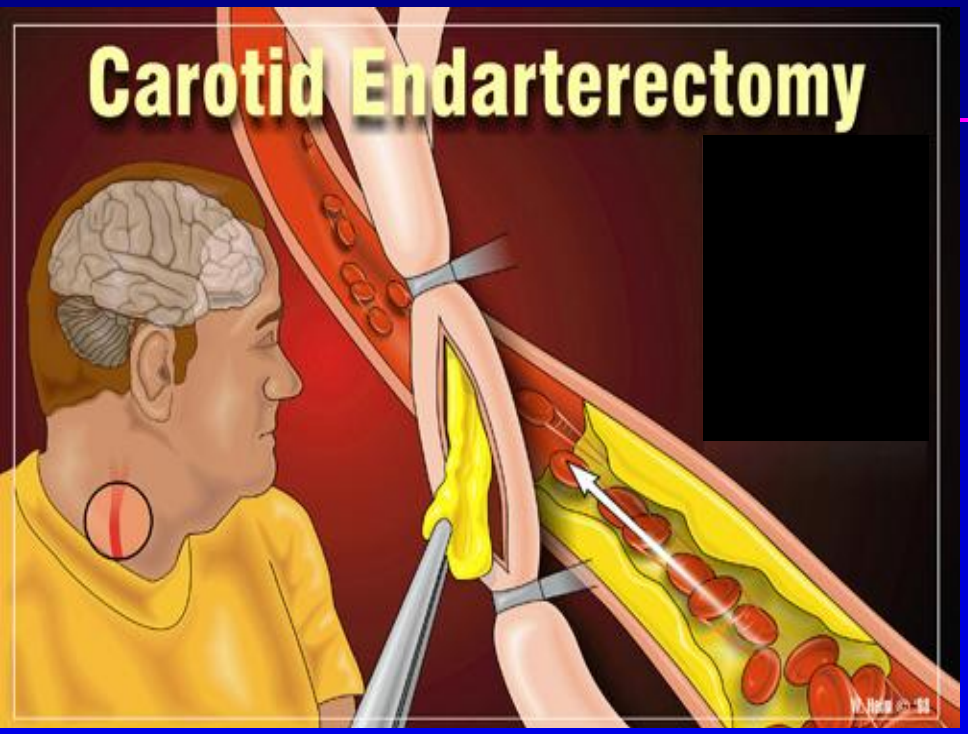
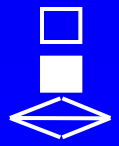
3 days after TIA presentation



Patient discharged from hospital
5 days after her initial presentation

Ipsilateral ischaemic stroke or operative stroke / death
50-99% stenosis

	Events / Patients		ARR (%)	95% CI
	Surgical	Medical		
TIME SINCE LAST EVENT				
< 2 weeks	13 / 112	26 / 75	24.7	12.3-37.1
	27 / 213	62 / 224	15.9	8.3-23.5
	40 / 325	88 / 299	18.5	12.1-24.9
2-4 weeks	17 / 136	13 / 81	4.4	-5.5-14.2
	14 / 132	31 / 134	13.1	4.0-22.2
	31 / 268	44 / 215	9.8	3.0-16.5
4-12 weeks	29 / 271	31 / 216	4.1	-2.0-10.2
	34 / 289	50 / 282	6.4	0.4-12.5
	63 / 560	81 / 498	5.5	1.2-9.8
> 12 weeks	20 / 196	12 / 113	0.7	-6.5-8.0
	21 / 125	19 / 119	-3.1	-13.3-7.2
	41 / 321	31 / 232	0.8	-5.2-6.8
TOTAL	175 / 1474	244 / 1244	8.5	5.6-11.3



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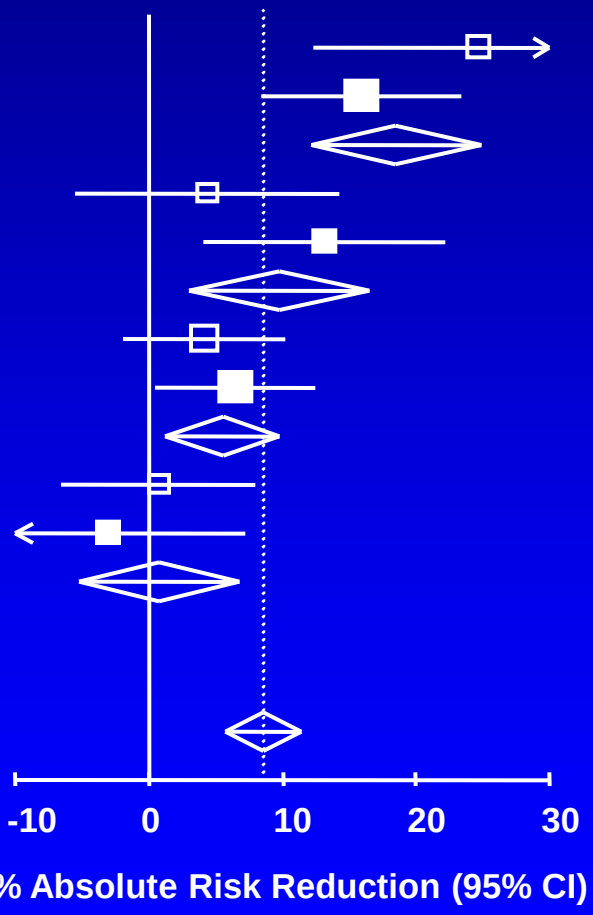
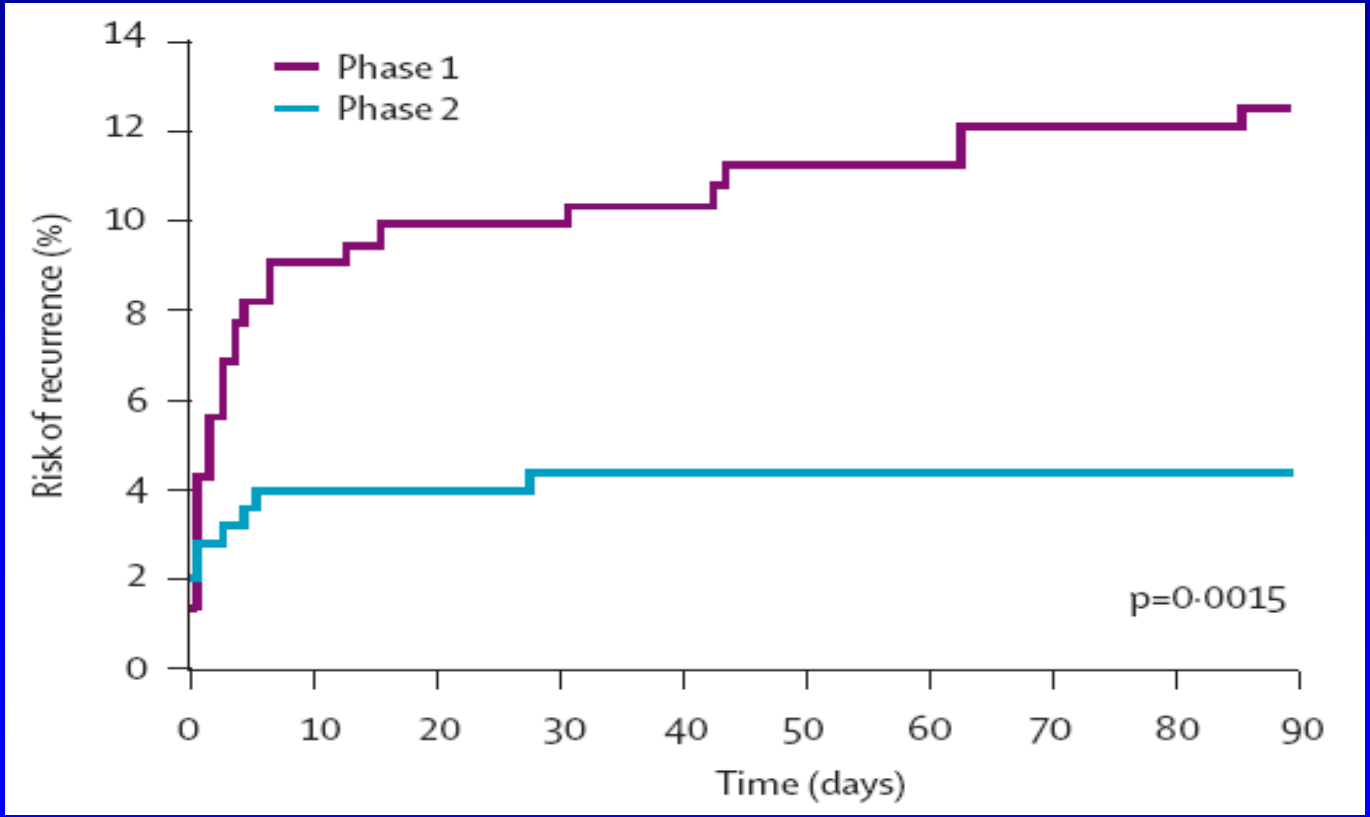
NASCET
TOTAL



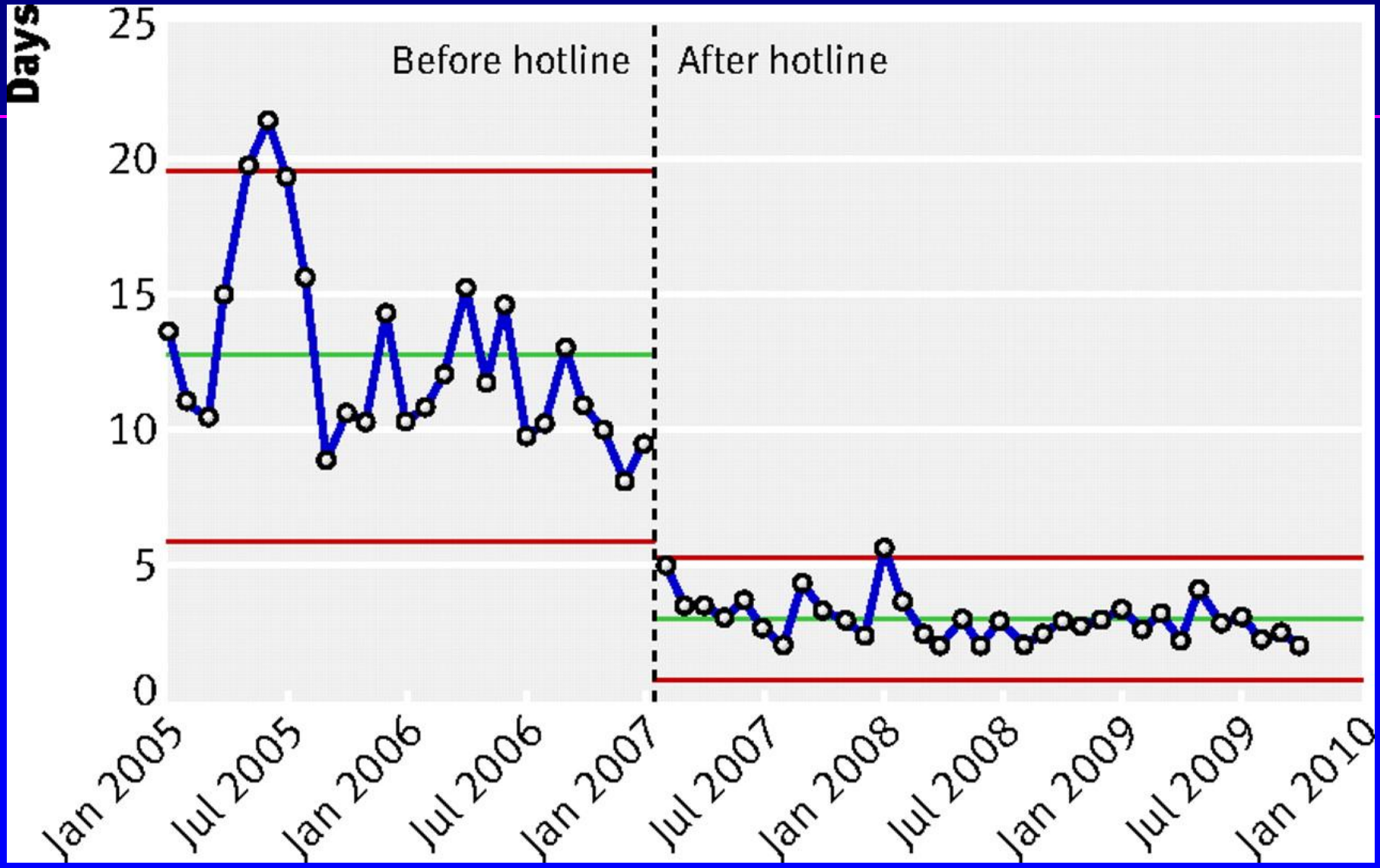
Rothwell et al 2003

ACT FAST!

EXPRESS Study (Rothwell et al, Lancet 2007)



Delay from receipt of referral to assessment in the transient ischaemic attack and stroke clinic before and after the introduction of the telephone hotline.



Kerr E et al. BMJ 2010;341:bmj.c3265

Standards you should expect from your TIA Service

- High risk patients seen same day ($ABCD^2$ score 4 or more)
- Other patients seen and management plan instituted within 1 week presentation
- Carotid endarterectomy within 2 weeks of presentation

St Thomas' TIA Pathway

- All suspected TIAs contact stroke team
  - Normal working hours via stroke bleep
  - Out of hours via stroke consultant bleep
- Do ABCD2 score
  - 4 or above (high risk) admit to acute stroke unit
  - Less than 4 book into next neurovascular clinic (Monday and Thursday)
- Start aspirin 300mg
- Advise no driving for 1 month
- Call 999 immediately if any recurrence of symptoms

St Thomas' TIA Pathway

- Brain imaging not required routinely but may be needed if
  - Prolonged symptoms
  - Anything atypical
- MRI imaging of choice

Thank you