This folder contains basic information on TIAs to supplement the new TIA service, referral form and pathway at St. Richard’s Hospital. It is written for medical staff (either in general practice or the hospital setting) that are likely to be the first point of contact for patients who have had a TIA.

It includes:

- Brief summary of recent new evidence concerning TIA/ minor stroke.
- Guide to diagnosis, management, investigations and treatment of TIA.

Contents:

- Introduction
- Definition of TIA
- Aid to clinical diagnosis
- Common mimics
- ADCD2 score
- Appropriate investigations
- Current Management
- Imaging
- Referral to vascular surgery
- References
- Appendix 1 Referral Form
- Appendix 2 Pathway

Dr. Simone Ivatts 2009
SPECIALTY: GENERAL MEDICINE
CLINICAL PROBLEM: Transient Ischemic Attack – TIA

Introduction

Recent epidemiological data has shown that 15-20% of patients with a stroke have a preceding TIA.

It is also now known that there is clear evidence that the risk of stroke following a TIA is highest within the first few hours and days and starts to reduce significantly thereafter.

In patients who have a preceding TIA prior to their stroke:

- 17% have a TIA on the same day as the stroke
- 9% have a TIA the day before the stroke
- 43% have a TIA within the previous 7 days

Risk of stroke following a TIA:

- 7 day risk 8%
- 1 month 11.5%
- 3 month 17.3%

There is also now evidence that early assessment and treatment of patients with TIA can reduce the risk of early recurrent stroke (within the first 90 days) by as much as 80%.

There is now an internationally validated score for predicting the 7 day risk of stroke following a TIA which should now be used for all TIA patients presenting within 7 days of their event to guide the speed of assessment and treatment.

All these recent epidemiological studies and the EXPRESS trial have changed the thinking about how quickly TIA patients should be assessed and treated. This has lead to the publication of 3 major guidelines in the last 18 months.

Definition of a TIA

Transient Ischemic Attack - TIA
A clinical syndrome characterised by:
- A sudden loss of focal cerebral or monocular function with symptoms lasting < 24 hours. 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 > 24 hours. 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.
**Incidence of TIA**

- 1000 per 100,000 per year
- 80-90% present initially to general practice
- more common in men and the elderly

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**Aid to clinical diagnosis**

The diagnosis of a TIA is a clinical one.

Careful history is essential and key as there may be no clues on physical examination. Physical examination may reveal vascular risk factors not ascertained from the history. An eye witness account can sometimes be useful to distinguish TIAs from other events.

- The majority of TIAs last less than one hour
- Rare for a TIA to last seconds only
- The onset of symptoms is usually sudden and maximal at onset and improves gradually.
- No “march”
- No warning or antecedent symptoms
- Body parts are affected simultaneously
- Involvement of individual digits or portion of a hand is unlikely to be a TIA
- Symptoms are usually negative: loss of power in limb(s), face, speech, vision.
- Numbness i.e. loss of feeling is far more typical than “tingling” (positive symptom).

**Commonest symptoms in TIA:**

- Unilateral weakness 50%
- Unilateral sensory symptoms 35%
- Dysarthria 23%
- Transient monocular blindness 18%
- Dysphasia 18%
- Ataxia 12%
- Vertigo 5%
- Hemianopia 5%
- Diplopia 5%

**A simple guide to anterior and posterior symptoms:**

- Sometimes it is difficult to localise which vascular territory is involved with a TIA.
- Sometimes the clinical features can help differentiate anterior circulation (carotid territory events) from posterior circulation symptoms (vertebrobasilar/posterior cerebral events). Approximately 80% of TIAs occur in the anterior circulation, 20% in the posterior circulation.
- Patients who have a TIA, which is likely to have been in carotid artery territory, should be investigated with carotid dopplers urgently if they are surgical candidates i.e. do not have pre-existing very significant co-morbidities.

**Symptoms suggesting a carotid territory TIA are:**

- Speech/language deficit (dysphasia)
- Monocular blindness
Symptoms which can occur in either territory
- Unilateral motor and or sensory symptoms affecting face and limbs (usually regarded as carotid distribution)
- Dysarthria
- Homonymous hemianopia
- Unsteadiness/ataxia
- Dysphagia

Symptoms suggesting a TIA in vertebrobasilar territory
- Diplopia
- Vertigo (TIA unlikely if vertigo is isolated symptom)
- Bilateral simultaneous visual loss
- Bilateral simultaneous weakness (limbs and or face)
- Bilateral simultaneous sensory disturbance
- Crossed sensory/motor loss

Note
Very prominent dysarthria/ dysphagia and diplopia can occur in TIAs but most often they occur in association with other symptoms.
Vertigo does occur with other posterior circulation symptoms with a TIA but if an isolated symptom, is unlikely to be due to a TIA.

In cases of isolated: dysphagia, dysarthria, diplopia or vertigo, consider alternative diagnoses.

Common Mimics
There are many common mimics of TIAs and sometimes an accurate alternative diagnosis only becomes apparent with time.

Figures vary considerably but between 50-70% of patients attending a TIA clinic will have actually had a TIA.
The rest will have had non-vascular events:

Neurological
- Migraine aura (+/- headache)
- Epileptic seizure
- Neuropathies (compression)
- Bell’s palsy
- Radiculopathies
- Tumour
- Subdural haematoma
- Transient global amnesia
- Myasthenia gravis
- Motor neurone disease
- Somatisation
- Cataplexy

Inflammatory
- Temporal arteritis

Opthalmic
- Glaucoma
- Retinal vein occlusion
Metabolic/toxic/infectious
- Inter-current illness often with underlying cerebral vascular disease
- Hypo-/hyper glycaemia, calcaemia, natraemia
- Respiratory
- Hyperventilation

Other
- Syncope
- Postural hypotension
- Vestibular

**ABCD2 score**

A simple six-point score was devised in 2005 using age of patient, blood pressure, clinical features and duration of symptoms and was found to be highly predictive of 7 day risk of stroke in patients with a TIA. It was further validated and incorporated a further point for diabetes in 2007.

**ABCD2 risk stratification**

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<tr>
<td></td>
<td>Age &lt; 60</td>
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<tr>
<td>BP at assessment</td>
<td>SBP&gt;140 or DBP ≥ 90</td>
<td>1</td>
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<tr>
<td></td>
<td>Other</td>
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<td>Clinical features</td>
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<tr>
<td></td>
<td>Speech disturbance(no weakness)</td>
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<tr>
<td></td>
<td>Other</td>
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<td>Diabetes</td>
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<td>1</td>
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<tr>
<td></td>
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The score predicts the risk of stroke within 7 days of the TIA occurring. It does not predict the stroke risk in people presenting with a TIA after 7 days. It will not pick up all patients at significant risk of a stroke within 7 days of their TIA but it is strongly predictive of the majority who are at risk. The score does not predict underlying pathology such as atrial fibrillation or significant carotid disease but the score does predict patients with pathology who are at risk of early stroke.

**7 day risk of stroke using the score**

<table>
<thead>
<tr>
<th>7 day risk of stroke</th>
<th>ABCD2 score</th>
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<tbody>
<tr>
<td>0.4%</td>
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<td>12.0%</td>
<td>5</td>
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<tr>
<td>31.4%</td>
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Appropriate investigations

Initial investigations when the patient is first assessed (depending on accessibility) should include:

- Bloods: full blood count, ESR, urea and electrolytes, glucose, cholesterol, INR if patient on oral anticoagulation, liver function tests (as baseline/monitoring of statin therapy)
- ECG
- CXR

Current management

The following guidelines are based on the 3 major National Guidelines published since 2007.

- Start daily aspirin (300mg) immediately.
  If aspirin intolerant start clopidogrel (75mg) immediately
- Complete TIA clinic referral form and fax to St. Richard’s Hospital 01243 831427 or Worthing Hospital 01903 285101 - appendix 1 or download from gp.westernsussexhospitals.nhs.uk
- Advise patient not to drive for 4 weeks from date of TIA
- Patients with an ABCD2 score of 4 or more should be assessed, ideally within 24 hours or next available clinic (patients presenting at weekend)
- Patients with crescendo TIA (2 or more TIAs in a week) should be treated as being at high risk of stroke, even though they may have an ABCD2 score of 3 or below and should also be assessed within 24 hours or next available clinic.
- Patients at lower risk of stroke:
  ABCD2 score of 3 or below or presenting more than 1 week after symptoms have resolved should be seen in TIA clinic within 1 week of symptom onset
- Patients presenting with an ABCD2 score of 6-7 out of hours (Mon – Fri, 5pm – 9am, weekends and bank holidays) should be admitted under the on-call medical team.

Aim of specialist assessment in TIA clinic:

Exclusion of stroke mimics

If diagnosis of TIA is confirmed, introduce measures for secondary prevention including discussion of individual risk factors.

Identification of likely causes

Access to urgent imaging when appropriate:

- carotid dopplers
- In patients found to have ipsilateral carotid stenosis ≥ 50% same day referral to vascular team should be made
- MRI/CT head
- Echocardiography/24 hour tape when clinically indicated
- Consideration of further antiplatelet treatment (dipyridamole MR 200mg bd) if tolerated by patient.
- Anticoagulation with warfarin for atrial fibrillation in absence of contraindications

Simvastatin 20-40mg od if total cholesterol >3.5 mmol/l or LDL cholesterol >2.5mmol/l.

Antihypertensive e.g. ACE/indapamide for optimal target BP 130/80mmHg for patients with established cardiovascular disease. For patients known to have bilateral severe (>70%) internal carotid artery stenosis a slightly higher target (e.g. systolic BP of 150 mmHg) may be appropriate.

Follow-up when clinically indicated.

**Imaging**

Appropriate imaging investigations for TIA patients will be determined by the clinical presentation. Speed of imaging should be influenced by a patient's ABCD2 score. The following are guidelines based on current recommendations.

There is no consensus that every suspected TIA patient should have brain imaging. Cases where brain imaging is helpful in the management of TIA are:
- People being considered for carotid endarterectomy (CEA) where it is uncertain whether the stroke is in the anterior or posterior circulation.
- People with TIA where haemorrhage needs to be excluded, for example long duration symptoms or people on anticoagulants.
- Where an alternative diagnosis (for example migraine, epilepsy or tumour) is being considered.
- Patients with recurrent symptoms should usually always be scanned.
- Patients with speech disturbance often benefit from scanning as clinically it can be difficult to differentiate dysphasia from speech arrest.

The current recommendations prefer diffusion weighted MRI for TIA patients where brain imaging is indicated. Locally this is not currently feasible. CT still has a useful role. MRI should be used when there is uncertainty following a CT scan or for patients presenting > 10 days after an event where there is a clinical suspicion of cerebral haemorrhage (gradient echo MR).

Carotid imaging is required to determine the presence and severity of carotid stenosis in those individuals who may be appropriate for carotid endarterectomy, i.e. those with a TIA or minor or recovered stroke involving the anterior circulation who are fit and willing for surgery.

First investigation of choice is a carotid doppler scan. MRA should be reserved for cases where there is difficulty interpreting the doppler scan or where either a carotid or vertebral artery dissection is suspected.

**Referral to vascular surgery**

For people presenting with a likely recent TIA.
Those with an ipsilateral stenosis of ≥ 50% should be referred to the vascular surgical team.
**References**


Lovett J, Dennis M, Sandercock PAG, Bamford J, Warlow CP, Rothwell PM. The very early risk of stroke following a TIA. Stroke 2003;34:e138-40.


National clinical guideline for diagnosis and initial management of acute stroke and transient ischaemic attack (TIA). The National Collaborating Centre for Chronic Conditions. Published by Royal College of Physicians 2008.


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