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Diagnosis and initial management of transient ischaemic attack

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ABSTRACT – Transient ischaemic attack (TIA) is the sudden onset of focal neurological dysfunction of presumed vascular origin that, by definition, resolves within 24 hours (usually much sooner). Its importance as a predictor of completed stroke has only recently been recognised. Updated guidance on the recognition and management of TIA has recently been published as part of the National Clinical Guideline for Stroke.[1] This is a concise version of the TIA component of the full guideline that recommends an urgent response to TIA to prevent subsequent stroke.

KEY WORDS: stroke prevention, transient ischaemic attack

Introduction and aims

It is only relatively recently that the importance of transient ischaemic attack (TIA) as a predictor of stroke has been defined. Agreed standards for the management of TIA were first published in the UK in the 2001 National Service Framework, identifying the importance of 'rapid access TIA clinics' for diagnosis and management. It was not until the publication of data from the OXVASC studies that the very high early risk (within hours or days) of stroke after TIA was appreciated, and with it the realisation that 14- or even seven-day assessment targets would mean that those patients at highest risk might have a stroke before they had the opportunity to attend a TIA clinic.[2] This new evidence suggested that a guideline for the management of TIA would be of value to clinicians, service providers, commissioners and patients. Information in this concise guidance has been extracted from the full guideline. Please refer to the full guidance for details of the methodology and members of the guideline development group.

Aims of the guideline

The aim of this guidance is to provide updated recommendations in the following areas:

- pre-hospital recognition of the symptoms of TIA
- assessment of those at highest risk of stroke
- appropriate referral for specialist assessment.

Box 1. The Face Arm and Speech Test (FAST) can be used by healthcare professionals and members of the public. Adapted from reference 3. Reproduced with permission from Wolters Kluwer. TIA = transient ischaemic attack.

FAST is used to screen for the diagnosis of a stroke or TIA	
Facial weakness:	Can the person smile? Has their mouth or eye drooped?
Arm weakness:	Can the person raise both arms?
Speech problems:	Can the person speak clearly and understand what you say?
Time to call 999	

Pre-hospital recognition of the symptoms of TIA

A simple recognition tool can be used to determine the symptoms of stroke; part of the education programme involves the understanding that these symptoms require urgent action, even if they only last a few minutes. The Face Arm and Speech Test (FAST) can be used by healthcare professionals and members of the public as a quick assessment (Box 1). First responders need to be aware that hypoglycaemia is an important stroke mimic and blood sugar should be checked at the earliest opportunity.

The Recognition of Stroke in the Emergency Room (ROSIER) score is a more detailed version of the FAST test that is used to identify patients with likely stroke or TIA in the emergency department (Fig 1).

Assessment of those at highest risk of stroke

Epidemiological studies of patients with TIA identified very early after symptom onset have demonstrated the clinical features associated with highest risk. These include older people (over 60 years), those with high blood pressure, diabetes, longer duration of symptoms and those with speech problems or motor weakness.

The ABCD^2 score is a simple scoring system that can be used to stratify those patients who need urgent specialist assessment (within 24 hours) and those who need assessment within one week (Box 2). It can be used in primary care or by trained paramedics to determine which patients may need immediate transfer to hospital:

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- a score of ⩾4 is considered high risk (>4% risk of stroke over the next seven days)
- those patients with low ABCD^2 (<4) should receive aspirin 300 mg immediately, specialist assessment (including referral for imaging where appropriate) as soon as possible but certainly within a week, and secondary prevention as soon as the diagnosis is confirmed and risk factors discussed.

Clinicians should also be aware that scoring systems such as ABCD^2 exclude certain populations who may be at particularly high risk (eg recurrent events and those on anticoagulation) who may need urgent evaluation. They may not be relevant to those who present late.

Acute management

Staff who see and assess patients acutely (paramedics and doctors and nurses in the accident and emergency department and in general practice) need to know how to make a provisional diagnosis of TIA, assess risk, and make the appropriate referral for specialist assessment (either within 24 hours or within a week). If there are no contraindications aspirin should be provided. Key steps in management are:

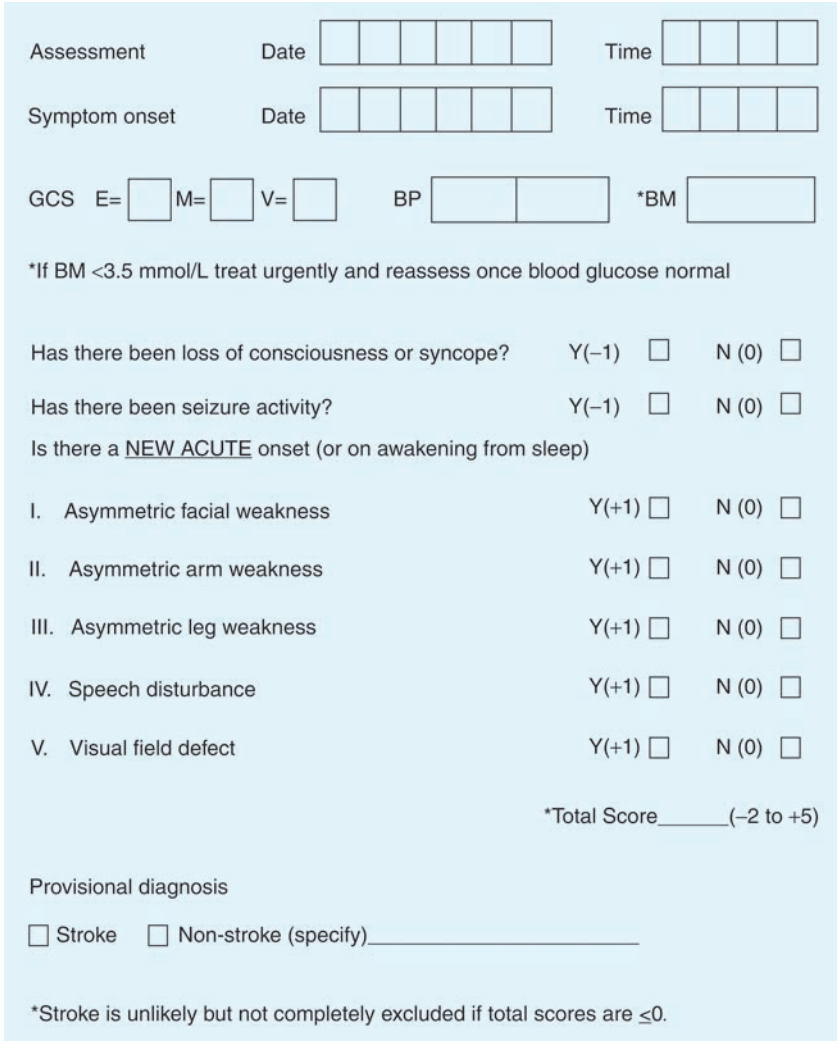
1 confirm that there is no residual neurological deficit (exclude stroke)
2 check:
   - bloods: glucose, fasting lipids, renal function, platelets
   - electrocardiogram: exclude atrial fibrillation
3 start aspirin (unless contra-indicated)
4 decide whether the TIA is 'high' or 'low risk':
   - do they need the specialist assessment this week or within 24 hours?
   - get the patient to the specialist at the appropriate time.

Referral for specialist assessment

The specialist assessment will include:

- confirmation of diagnosis
- assessment of risk factors, lifestyle and secondary prevention advice
- early pharmacological management
- referral for timely brain (where appropriate) and carotid imaging, and for carotid intervention within two weeks.

Fig 1. Proforma for application of the Recognition of Stroke in the Emergency Room (ROSIER) tool. Adapted from reference 4. Reproduced with permission from Elsevier. BM = blood sugar level; BP = blood pressure; GCS = Glasgow Coma Score.



Box 2. The ABCD^2 score. Adapted from reference 5. Reproduced with permission from Elsevier. TIA = transient ischaemic attack.

Prognostic score used to identify people at high risk of stroke following TIA

It is calculated based on:

A: Age (⩾60 years = 1 point)
B: Blood pressure at presentation (⩾140/90 mmHg = 1 point)
C: Clinical features: Unilateral weakness = 2 points
Speech disturbance without weakness = 1 point
D: Duration of symptoms: ⩾60 minutes = 2 points
10–59 minutes = 1 point
D: Diabetes = 1 point

Total scores range from 0 (low risk) to 7 (high risk)

The guidelines

A Prompt recognition of symptoms and correct diagnosis of transient ischaemic attack (TIA)

Patients with transient neurological dysfunction often fail to recognise the significance of their symptoms and delay seeking medical attention. The transient nature of TIA symptoms does not reduce the importance of an immediate response.

1 In people with sudden onset of neurological symptoms:
- a validated tool such as the FAST (Box 1) should be used outside hospital to screen for a diagnosis of a stroke or TIA
- hypoglycaemia should be excluded as the cause of these symptoms.

2 In people who are admitted to accident and emergency (A&E) with a suspected stroke or TIA:
- the diagnosis should be established rapidly using a validated tool such as the Recognition of Stroke in the Emergency Room (ROSIER) (Figure 1).

B Assessment and early management of TIA

TIA is an important predictor of subsequent stroke. All patients who have had a suspected TIA should be assessed as soon as possible for their risk of subsequent stroke.

1 A validated scoring system, such as ABCD^2 (Box 2), should be used to assess the risk of stroke following a suspected TIA:

An ABCD^2 score of:
- **4 or above** represents a **high risk** of subsequent stroke
- **3 or below** represents a **lower risk** of subsequent stroke.

People with crescendo TIA ($\geq$2 TIAs in a week) should be treated as being at high risk of stroke, even if their ABCD^2 score is $\leq$3.

People who have had a TIA, but who present late (more than one week after their last symptom has resolved), should be treated as though they are at lower risk of stroke.

2 All patients with suspected TIA should have:
- aspirin 300 mg daily started immediately
- specialist assessment and investigation:
  - within 24 hours for patients at high risk of subsequent stroke
  - as soon as possible, but definitely within one week, for patients at lower risk of subsequent stroke
  - measures for secondary prevention introduced as soon as the diagnosis is confirmed, including discussion of individual risk factors.

The guidelines – *continued*

C Brain imaging following TIA

Not all patients with TIA need immediate brain imaging.

Patients require specialist assessment before a decision on imaging is made.

Brain imaging following suspected TIA is recommended when:

- the vascular territory affected is uncertain (anterior or posterior circulation) and the patient is being considered for carotid endarterectomy
- the pathology underlying the patient's neurological symptoms is uncertain, eg alternative diagnoses may include migraine, epilepsy, tumour
- intracerebral haemorrhage needs to be excluded, eg patients on anticoagulants, long duration of symptoms.

1 People who have had a suspected TIA should be assessed by a specialist before a decision on brain imaging is made.

2 Diffusion-weighted magnetic resonance imaging (MRI) is the imaging modality of choice for patients with suspected TIA who require brain imaging and should be performed:

- within 24 hours of onset of symptoms, if the risk of subsequent stroke is high ($ABCD^2$ score $\geqslant 4$ or with crescendo TIA)
- within one week of onset of symptoms, if the risk of subsequent stroke is lower ($ABCD^2$ score $\leqslant 3$).

Diagnostic yield is high within first 24 hours following TIA, but falls rapidly with time.

3 If MRI is contraindicated, computed tomography (CT) scanning should be used:

- patients with pacemakers, aneurysm clips, metallic valves etc.

Diagnostic yield from brain CT is low in TIA, compared with diffusion-weighted MRI.

Brain imaging (ideally with diffusion weighted imaging) is valuable in those cases of diagnostic doubt (eg where there may be a differential diagnosis, for example migraine) or where the specialist is uncertain whether the ischaemic event was in the anterior or posterior circulation. Those people with anterior circulation events who are considered appropriate for carotid intervention should be referred within one week for carotid imaging. When stenosis is reported it is important that the criteria for measurement (European Carotid Surgery Trial or North American Symptomatic Carotid Endarterectomy Trial) is stated to avoid confusion. Patients with significant carotid stenosis should undergo surgery within two weeks of symptom onset. All patients with TIA need immediate management of risk factors. The results of the EXPRESS and TIA-SOS studies underline the importance of immediate treatment and lifestyle advice to reduce the risk of stroke following TIA.[6,7]

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