

ACUTE STROKE SECONDARY PREVENTION GUIDELINES 2009

Stroke is a major health problem in the UK. It accounted for over 56,000 deaths in England and Wales in 1999, which represent 11% of all deaths.¹ Most people survive a first stroke, but often have significant morbidity. Each year in England, approximately 110,000 people have a first or recurrent stroke and a further 20,000 people have a TIA. More than 900,000 people in England are living with the effects of stroke, with half of these being dependent on other people for help with everyday activities

Every patient who has had a stroke (including TIA and SAH) and in whom preventative interventions would be appropriate should be investigated for risk factors as soon as possible certainly within one week of onset. At a minimum this includes checking for:

- raised blood pressure (sustained over 130/90 mmHg)
- hyperlipidaemia
- diabetes mellitus.

For patients who have had an ischaemic stroke or TIA the following risk factors should also be checked for:

- atrial fibrillation and other arrhythmias
- structural cardiac disease
- carotid artery stenosis (only for individuals with a non-disabling carotid territory event likely to benefit from surgery for stenosis).

HYPERTENSION

All patients should have their blood pressure checked and should be treated in keeping with national guidelines (5):

- an optimal target BP for patients with established cardiovascular disease is 130/80 mmHg
- for patients known to have bilateral severe (>70%) internal carotid artery stenosis a slightly higher target (eg systolic BP of 150 mmHg) may be appropriate.

Blood pressure reduction should be undertaken using one or more of the following agents (6):

- In hypertensive patients aged 55 or older or black patients of any age, the first choice for initial therapy should be either a calcium-channel blocker or a thiazide-type diuretic. (For this recommendation, black patients are considered to be those of African or Caribbean descent, not mixed-race, Asian or Chinese.)
- In hypertensive patients younger than 55, the first choice for initial therapy should be an angiotensin-converting enzyme (ACE) inhibitor (or an angiotensin-II receptor antagonist if an ACE inhibitor is not tolerated).
- An ACE inhibitor, calcium-channel blocker or a thiazide-type diuretic should be added if target BP is not achieved with the initial choice.

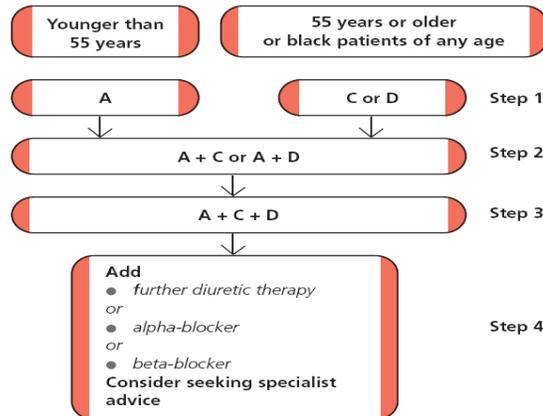
Beta-blockers should not usually be initiated as first- or second-line for the prevention of recurrent stroke (unless there are other specific clinical indications). The British Hypertension Society recommendations for the pharmacological management of hypertension in all individuals is as follows:

Choosing drugs for patients newly diagnosed with hypertension

Abbreviations:

A = ACE inhibitor
(consider angiotensin-II receptor antagonist if ACE intolerant)
C = calcium-channel blocker
D = thiazide-type diuretic

Black patients are those of African or Caribbean descent, and not mixed-race, Asian or Chinese patients



Beta-blockers



NHS
National Institute for
Health and Clinical Excellence

patients with intolerance or contraindications to ACE inhibitors and angiotensin II receptor antagonists.

- If a patient taking a beta-blocker needs a second drug, add a calcium-channel blocker rather than a thiazide-type diuretic, to reduce the patient's risk of developing diabetes.
- If a patient's blood pressure is not controlled by a regimen that includes a beta-blocker (that is, it is still above 140/90 mmHg), change their treatment by following the flow chart above.
- If a patient's blood pressure is well controlled (that is, 140/90 mmHg or less) by a regimen that



Patients resistant to a three drug regimen, experiencing drug intolerances and/or drug contraindications, or of a young age (<40) should be referred to a specialist hypertension clinic.

DIABETES MELLITUS

All patients should have their blood glucose levels checked. If blood glucose levels are elevated >7mmols at the time of or soon after a stroke, then fasting blood glucose levels and/or glucose tolerance tests should be undertaken to facilitate the diagnosis and optimal management of patients with impaired glucose tolerance and diabetes mellitus.

Methods and criteria for diagnosing diabetes mellitus

With symptoms (polyuria, thirst, unexplained weight loss)

- a random venous plasma glucose concentration ≥ 11.1 mmol/l or
- a fasting venous plasma glucose concentration ≥ 7.0 mmol/l or
- 2 hour venous plasma glucose concentration ≥ 11.1 mmol/l 2 hours after 75g anhydrous glucose in an oral glucose tolerance test (OGTT)

With no symptoms

- Diagnosis must not be based on a single glucose determination. It requires a confirmatory venous plasma test. At least one additional glucose result on another day with a value in the diabetic range is essential. This can be either fasting, from a random sample or from the 2 hour OGTT. If the fasting or random values are not diagnostic, the 2 hour value should be used

LIPID MANAGEMENT

Raised lipid levels, especially hypercholesterolaemia are a well-known risk factor for atherosclerotic or atherothrombotic diseases, especially myocardial infarction. Lowering lipid levels is an effective primary and secondary prevention treatment for vascular events, including stroke.

All patients who have had an ischaemic stroke or transient ischaemic attack should be treated with a statin drug unless contraindicated, according to the following criteria (7):

- a total cholesterol of >3.5 mmol/L, *or*
- LDL cholesterol >2.5 mmol/L.

The treatment goals should be:

- total cholesterol <4.0 mmol/L *and* LDL cholesterol <2.0 mmol/L, *or*
- a 25% reduction in total cholesterol *and* a 30% reduction in LDL cholesterol, whichever achieves the lowest absolute value.

Treatment with statin therapy should be avoided or used with caution (if required for other indications) in individuals with a history of haemorrhagic stroke, particularly those with inadequately controlled hypertension.

ANTI-PLATELET AND ANTICOAGULATION AGENTS

Aspirin and dipyridamole should be the standard secondary prevention treatment following ischaemic stroke (8-9):

- The daily dose of aspirin should be between 50 mg and 300 mg aspirin and dipyridamole MR 200 mg bd.
- For patients who are unable to tolerate dipyridamole, aspirin alone is appropriate.
- For patients who are intolerant of aspirin, clopidogrel 75 mg once daily is a suitable alternative.

Addition of a proton pump inhibitor should only be considered when there is dyspepsia or other significant risk of gastrointestinal bleeding associated with aspirin, to allow aspirin medication to continue.

Anticoagulation (10):

- should be recommended in every patient with persistent or paroxysmal atrial fibrillation (valvular and non-valvular) unless contraindicated
- should not be started (after cerebral events) until brain imaging has excluded haemorrhage, and not usually until 14 days have passed from the onset of disabling ischaemic stroke
- should not be used for patients in sinus rhythm unless a major cardiac source of embolism has been identified.

CAROTID ARTERY DISEASE

Narrowing of the carotid arteries is commonly associated with stroke and transient ischaemic attack, and surgical intervention (including radiologically guided surgery and stenting) has been used in attempts to reduce both initial stroke and further stroke.

Any patient with a carotid artery territory TIA or stroke but without severe disability should be considered for carotid endarterectomy, and if the patient agrees (11):

- S/he should have a carotid duplex ultrasound performed urgently to estimate the degree of stenosis.
- S/he should have a second urgent non-invasive imaging investigation (such as magnetic resonance angiography (MRA) or a second ultrasound) to confirm the degree of stenosis. The confirmatory test should also be carried out urgently so as to avoid introducing delay.

Carotid endarterectomy should be considered when carotid stenosis is measured at greater than (12):

- 70% as measured using the ECST methods, or
- 50% as measured using the NASCET methods.

Final decisions should be made on the basis of individualised risk estimates, particularly if patients are being considered for endarterectomy some weeks after their presenting symptoms. (13)

LIFESTYLE MEASURES

Changes in lifestyle are as important in secondary prevention as they are in primary prevention. This requires changes in behaviour by the patient in areas such as smoking, exercise, eating and alcohol intake. Although it is the responsibility of the person to change his or her own behaviour, the health system has the responsibility of giving accurate advice and information and providing support for patients to make and maintain lifestyle changes. Wider society also has some responsibility in enabling behaviour change.

All patients who smoke should be advised to stop smoking (14):

- Smoking cessation should be promoted at every opportunity using individualised strategies which may include pharmacological agents and/or psychological support.

All patients should be advised to take regular exercise as far as they are able (15):

- The aim should be to achieve moderate physical activity (sufficient to become slightly breathless) for 20–30 minutes each day.
- Exercise programmes should be considered, and tailored to the individual following appropriate assessment, starting with low-intensity physical activity and gradually increasing to moderate levels.

All patients should be advised to eat the optimum diet (16):

- eating five or more portions of fruit and vegetables per day
- eating two portions of fish per week, one of which should be oily (salmon, trout, herring, pilchards, sardines, fresh tuna).

All patients should be advised to reduce and replace saturated fats in their diet with polyunsaturated or monounsaturated fats by (16):

- using low-fat dairy products
- replacing butter and lard with products based on vegetable and plant oils
- reducing meat intake.

Patients who are overweight or obese (as determined by body mass index (BMI) or waist: hip measurement ratio) should be offered (17):

- advice and support to aid weight loss, which may include diet, behavioural therapy and physical activity
- medication to aid weight loss only after dietary advice and exercise has been started and evaluated.

All patients, but especially patients with hypertension, should be advised to reduce their salt intake by (18):

- not adding salt to food
- using as little as possible in cooking
- choosing lower sodium/salt foods.

Patients who drink alcohol should be advised to keep within recognised safe drinking limits of no more than three units per day for men and two units per day for women

Updated in August 2008 by Maria Fitzpatrick Consultant Nurse Stroke Management

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