

STROKE GUIDELINES

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STROKE GUIDELINES

RECOGNITION AND ASSESSMENT

*For acute management, all patients with symptoms present at time of assessment are treated as a stroke. A diagnosis of TIA can be made **only** if symptoms have completely resolved*

Definition:

- **Stroke is** a neurological deficit of sudden onset:
 - with focal rather than global dysfunction
 - with symptoms lasting >24 hr, or resulting in death before 24 hr in which, after adequate investigation, symptoms are presumed to be of a non-traumatic vascular origin
- The term stroke covers both cerebral infarction and intraparenchymal haemorrhage, which cannot be differentiated clinically but only by neuroimaging (CT or MR)
- **Transient ischaemic attack (TIA)** is a stroke-like event that resolves within 24 hr; most resolve within 30 min – follow **Transient ischaemic attack (TIA)** guideline. If symptoms over 1 hour probably a small stroke
- **Crescendo TIAs** (≥ 2 TIAs in one week) – follow **Transient ischaemic attack (TIA)** guideline **treat as high risk even if ABCD2 score <4.**

Differential diagnosis

- Subarachnoid haemorrhage, extradural haemorrhage, subdural haemorrhage
- Space-occupying lesion
- Arterial dissection (look out for Horner's syndrome, neck and face pains, whiplash injury, neck trauma)
- Meningitis/encephalitis
- Seizures/Todd's palsy
- Hypertensive encephalopathy (diastolic BP >120 mmHg, depressed consciousness, papilloedema)
- Metabolic (e.g. hypoglycaemia, hyponatraemia)
- Toxic (e.g. overdose)
- Anoxic encephalopathy (e.g. shock, arrhythmia)
- Trauma
- Functional

EMERGENCY STROKE ASSESSMENT TOOLS

The **FAST** and **ROSIER** scales are validated tools evaluating whether the patient has had a stroke or not. **FAST** is primarily used by the public and paramedics. **ROSIER** is used by accident and emergency staff. This will aid rapid patient evaluation so patient can be considered for stroke thrombolysis.

FAST

F – FACE
A – ARM
S – SPEECH
T – TIME

If you score 1 in any of the above possible stroke

ROSIER SCALE

	YES	NO
1. Has there been loss of consciousness/syncope	-1	0
2. Has there been seizure activity	-1	0
3. New asymmetric facial weakness	+1	0
4. New asymmetric hand weakness	+1	0
5. New asymmetric arm weakness	+1	0
6. New asymmetric leg weakness	+1	0
7. Speech disturbance	+1	0
8. New visual field defect	+1	0

If score >1 follow stroke pathway. If < or = 0 and still suspicion of Stroke discuss with Stroke team

STROKE SYNDROMES

Infarct subtypes ¹ (infarcted territory)	Symptoms and signs
Total anterior circulation syndrome (TACS) [involving both deep and superficial middle cerebral artery (MCA) territory]	<ul style="list-style-type: none"> • New higher cerebral dysfunction (e.g. dysphasia, dyscalculia, visiospatial disorder)² and • Homonymous visual field defect² and • Hemiparesis/hemisensory loss affecting at least two body areas (2 out of face, arm and leg)
Partial anterior circulation syndrome (PACS) [more restricted cortical infarcts in the MCA territory, including isolated infarctions in the anterior cerebral artery (ACA) territory and striatocapsular infarctions]	<ul style="list-style-type: none"> • Patients presenting with only two of the three components of the TACS or • Motor/sensory deficit restricted to face or arm or leg
Lacunar syndrome (LACS) (small lacunar infarcts in the basal ganglia or pons)	<ul style="list-style-type: none"> • Pure motor, pure sensory or sensori-motor deficit or • Ataxic hemiparesis (with at least faciobrachial or brachiocrural involvement)³
Posterior circulation syndrome (POCS) (infarcts in brainstem, cerebellum and/or occipital lobes)	<ul style="list-style-type: none"> • Ipsilateral cranial nerve palsy with contralateral motor and/or sensory deficit • Bilateral motor and/or sensory deficit • Disorder of conjugate eye movement • Cerebellar dysfunction without ipsilateral hemiparesis • Isolated homonymous visual field defect

1 As defined by Oxfordshire Community Stroke Project

2 Assume a deficit present if consciousness is impaired and higher cerebral functions or visual fields cannot be tested formally

3 Acute focal movement disorders should probably also be included in this group

ACUTE STROKE CARE PATHWAY

***Acute stroke is a medical emergency. Screen all patients on arrival and initiate stroke pathway.
Do not waste time, every minute of delay results in a further loss of 2 million brain cells***

Stroke Thrombolysis

- Suitable for thrombolysis if previously independent, time of onset known and the below:
 - * age 18 – 80 and <3.5hrs from event (to allow treatment within 4.5hrs)
 - * age 81+ (previously independent) and <2.5hrs from event (to allow treatment within 3 hrs)
 - * if working day and <5hrs consider IST.3
- **If the above criteria is satisfied then immediately notify the Stroke unit (Ext Nos 6479/4087) and discuss with Stroke consultant (8am to 8pm) or A+E Consultant (8pm to 8am)**
- **Start thrombolysis care pathway (Forms in thrombolysis folders which are in A+E or the Stroke unit)**
- **It is important to notify the stroke unit immediately (Ext Nos 6479/4087) so that a Stroke thrombolysis nurse can bring the necessary thrombolysis equipment and assess the patient but also that the STAR (Stroke thrombolysis assessment room) room can be made available for immediate transfer of the patient after treatment.**
- **During working hours: Phone CT scan to organise urgent CT Brain scan for Stroke thrombolysis (Ext No.6339/5924). Out of hours: Bleep CT radiographer on-call for Stroke thrombolysis CT brain (urgent).**
- **Phone porters for urgent transfer of patient to CT on 07824606632**
- **No Aspirin to be given.**
- **Relatives to be with patient and brought to CT.**
- **All patients who have had stroke thrombolysis to go directly to the acute stroke unit.**
- **Aim for all patients who have had a stroke to go directly to the Acute stroke unit (see admission pathway in A+E and EAU)**

Post Stroke thrombolysis (first 24hrs post treatment)

- Keep BP under 185/110 with SBP ideally around 150-160. See Stroke thrombolysis folder guidelines with patient. Use labetalol as directed or GTN infusion.
- If BP spikes unexpectedly, pt's neurological status worsens, the patient requires an urgent repeat CT Brain to exclude intracranial haemorrhage.
- If patient has had an intracranial bleed follow folder guidelines for reversal.
- Patient not to have aspirin until routine repeat CT brain done 22-36hrs after treatment excludes any haemorrhage.

Patients requiring urgent investigation

- **Immediate CT head scan in patients who are:**
- **For Stroke Thrombolysis (see previous page).**
- **Anticoagulated** or have known bleeding disorder
- Depressed level of consciousness
- Unexplained progressive or fluctuating symptoms
- Papilloedema, neck stiffness, or fever
- Severe headache at onset of stroke

All patients who have had a Stroke should have a CT scan done within 24 hours of admission.

This is unless pt is too unwell to come to CT. Discuss these patients with a senior doctor. Ensure a CT request card is done at time of admission and is sent to CT scan immediately. This will include weekends. Consider MRI acutely in posterior circulation events and MRI-DWI in possible non stroke patients or young patients acutely.

Urgent Blood investigations

- BM to exclude hypo or hyperglycaemia
- If intracerebral haemorrhage is suspected in patient taking warfarin, request **immediate** INR and do finger prick INR (available in A+E and on Stroke unit)
- Glucose, U&E, FBC (review results within 4 hr)
- Random cholesterol, LFT, CRP, ESR within working hours (review results within 24 hr)

Also do **ECG** on admission to hospital

CT/MRI Results:

If patient has had **intracerebral infarction** continue to next page.

If patient has had **intracerebral Haemorrhage** go to page 9

IMMEDIATE TREATMENT – first 24 hours

General

- Trained healthcare professional to assess swallowing before giving fluid food/medication orally.
- Position pt to minimize risk of pressure sores and turn 2 hrly
 - in obese or frail hemiparetic patients, consider pressure-relieving mattress
- Do not catheterize unless patient in urinary retention
- Consider DVT prophylaxis with enoxaparin (after intracranial haemorrhage has been ruled out) as TED stockings do not reduce the risk of DVT but increase risk of local tissue damage
- For patients with Intracranial bleeds consider calf stimulators for DVT prevention (available to be used on ASU only)

Fluids

- If consciousness impaired or swallowing doubtful, order nil by mouth
- In patients who are nil by mouth, dehydrated or at risk of dehydration, give sodium chloride 0.9% (**no** glucose during first 24 hr) 1 L IV 8 hrly for 24hrs and then 12hrly IV/Sc

Medications

- After CT has excluded haemorrhage, give aspirin 300 mg orally, or 150mg rectally/via nasogastric tube immediately
-
- Write patient up for paracetamol and normal medications including normal antihypertensives (see blood pressure guide) and statins.
- Recommendation is not to start statins acutely if already statin naïve.

Pyrexia and infection

- Antibiotics for suspected infection (temperature $\geq 37.5^{\circ}\text{C}$). Review antibiotic guidelines for appropriate choice. Investigate as appropriate (includes blood cultures pre-treatment).
- Treat pyrexia (temperature $>37.2^{\circ}\text{C}$) with paracetamol 1 g orally or rectally 6 hrly

Hyperglycaemia

- Maintain blood glucose between 4-11 mmol/L
- Follow Diabetes guide for acute MI management on intranet (**click here**)
- Then ask for Diabetic outreach team review the next day for subsequent diabetic management.

Hypoxia

- Check airway and clear if necessary
- If conscious, sit up and out of bed; if reduced consciousness, recovery position
- Do not give oxygen routinely
- If oxygen saturation falls to <94%, give supplemental oxygen unless pt has COPD then aim would be to maintain SaO₂ between 88-92%

Blood pressure – in first 24 hours

- Correct hypotension and try to prevent SBP from falling below 140mmHg. This will include stopping patients normal antihypertensives
- Recommended target BP within first 24 hr of stroke is 150-180/90-100 mmHg. Consider stopping antihypertensive medication and give adequate hydration as first therapeutic measures
- **Do not** lower BP acutely unless >240/120 mmHg **and** there is other evidence of hypertensive encephalopathy –seek advice from stroke physician (phone Stroke unit on 6479/4087 during working week) or discuss with medical Registrar or Consultant on call for hospital that day.
- See Blood Pressure management section for detailed management.

For patients on Warfarin

- Ask for urgent INR for lab or do finger prick INR (available on ASU).
- If intracerebral haemorrhage see guideline on next page for further management.
- In patients with prosthetic valves and disabling cerebral infarct, stop warfarin for one week and replace with aspirin 300 mg once daily

Intracerebral Haemorrhage

As above if pt is on warfarin do INR finger prick test or urgent lab INR. Then phone or bleep Haematology laboratory to request activated prothrombin complex to reverse anticoagulation (Beriplex). Give activated prothrombin complex immediately. Also give Vitamin K 10mg IV STAT.

If patient has a prosthetic heart valve in situ discuss subsequent management with the cardiology registrar but look to correct anticoagulation fully initially achieving an INR of 1.0.

If patient is at high risk of VTE complication discuss appropriateness for venal caval filter placement with Stroke consultant. Pt should be assessed for foot impulse device immediately.

Consider neurosurgical referral (see section for neurosurgical referral)

If patient who has had initial intracerebral haemorrhage deteriorates consider repeat CT Brain imaging and neurosurgical referral if that is appropriate.

Discuss patient with Stroke consultant +/- Stroke radiology MDT meeting for further imaging i.e. MRI/MRA 6 weeks post stroke event to look for underlying pathology e.g. AVM, or neoplasm

If patient has had SAH direct discussion with neurosurgical team at QEH should be made immediately.

If SBP is consistently over 200mmHg in a patient with an Acute intracerebral haemorrhage consider use of antihypertensive in the form of GTN infusion 50mg in 50mls starting at 0.3mls/hr increasing by 0.3mls/hr increments every 30 mins (with initially 15 minute BP checks) to achieve no more than a 20mmHg decrease in BP initially

See hypertension guidelines for subsequent later management.

Follow general guidelines for subsequent Stroke management

Specific syndromes

Cerebral Venous Thrombosis

Common risk factors:

Pregnancy or puerperium, hormonal or chemotherapeutic agents, infections of the ear, face or neck, or thrombophilic disorders.

Clinical signs:

Headache, seizures, focal neurological signs, altered consciousness or papilloedema.

Diagnosis:

Diagnosis is confirmed using brain imaging either CTV or MRV. Please discuss patient with oncall registrar/ consultant. Initial plain CT may be normal or show infarction, haemorrhagic infarctions, or indeed oedema. A normal d-dimer should not overrule clinical suspicion and defer investigation.

Treatment:

Enoxaparin 0.75mg s/c b.d. with view to starting anticoagulation with warfarin after 2/7 aiming for an INR 2-3 with view for at least 6 months treatment.

Enoxaparin can be given even if there is haemorrhagic conversion of infarcts. If patient has a neurological decline in GCS or worsening neurology then an urgent CT brain should be repeated with discussion with on call registrar+/- consultant

Take a blood sample prior to warfarin treatment for a thrombophilia screen.

Treat epileptic seizures in the normal manner.

Pt will need driving advice as per current DVLA guidelines

Arterial Dissection

It is not an uncommon cause of stroke and carotid artery dissection must be considered in all patients that have incurred a neck injury prior to neurological developments. Arterial dissection can happen asymptotically and should be also considered a possible cause of stroke in all young stroke patients.

Investigation:

Fat suppressed MR angiography (discuss with Stroke consultant).
Please refer patient urgently for stroke review.

Treatment:

Individualised decisions are made on patients but standard antiplatelet treatment should be initiated pending stroke consultant review.
At present no trial evidence to suggest that anticoagulation is superior to antiplatelet therapy (review RCP Stroke guidelines for evidence).

Acute Stroke secondary referrals

Criteria for referral of Stroke patients to Neurosurgery

Discuss potential patients for referral with on call registrar or consultant to ensure patient is appropriate and suitable for onward referral e.g. premorbid health, current GCS, and underlying lesion.

Patients that are eligible for referral to neurosurgery are as follows .

- a/ Intracerebral Haematoma(ICH) GCS:M= \geq 5,E= \geq 2, and 10-100mls (axbxc/2).
- b/ Cerebellar ICH.
- c/ Subarachnoid Haemorrhage (see SAH guideline).
- d/ Ischaemic Infarction more than 50% MCA territory or > 145mls on MRI-DWI.
- e/ TPA or treatment related ICH.
- f/ Development of hydrocephalus.

Continued on next page

If patient is suitable for referral first transfer the CT or MRI images via the PACS link on your computer terminal (right clicking on image and scrolling down to 'send to' and selecting the QE option) or ask radiology to send the images across to Queen Elizabeth hospital (QEH).

Then phone switchboard to put you through Queen Elizabeth hospital, Birmingham and ask to bleep the neurosurgical registrar on call. He will ask details of the patient. Please document outcome of discussion in case notes and who the discussion was with and inform nursing staff in case urgent transport and transfer is required. If patient for transfer is potentially unstable discuss patient with on call registrar/consultant in case critical care review and assisted transfer is required

Critical Care Referral

If patients MEWS score or neurological status is worsening then first discuss patient's case with on call registrar+/- consultant on call as to whether patient will benefit from a critical care admission.

In a few patients being viewed for intrahospital transfer to QEH neurosurgical unit then patient may need critical care input to ensure safe transfer between hospitals.

In patients with malignant hypertension then admission to critical care 2 can be discussed for close observation and management.

In patients with status epilepsy should be discussed with critical care team.

SUBSEQUENT MANAGEMENT

Ensure stroke ward (4087) are aware of all patients with stroke not admitted to stroke unit. Members of stroke team will assess patient and arrange transfer to stroke unit, if other concurrent conditions allow

General

- Allow patient to sit up as tolerated (bed/chair) as soon as possible
- Mobilize conscious patients from day 1
- If no haemorrhage on CT, give aspirin 300 mg orally as loading dose and then 75-150mg orally as maintenance.
- If rectal or via nasogastric tube for two weeks then prescribe 150mg o.d.
- In patients with previous dyspepsia, add omeprazole to aspirin. In patients genuinely allergic to, or intolerant of aspirin, use clopidogrel 75 mg once daily (do not give concurrently with omeprazole as will reduce efficacy).
- Make sure patients who are nil by mouth receive all necessary medication (use rectal, IV or nasogastric tube)
- Treat pyrexia (temperature $>37.5^{\circ}\text{C}$) with paracetamol 1 g orally or rectally 6 hrly and exclude infective cause or DVT development.
- Avoid sedatives (e.g. temazepam, chlorpromazine, haloperidol) if possible

BLOOD PRESSURE MANAGEMENT

Aim is for **SBP** of around 150 – 180mmHg in the first 72hrs.

Hypotension

If BP is under **120/80 mmHg** stop all antihypertensives. See if patient is symptomatic and perform clinical examination to outrule sepsis, acute GI bleed or cardiogenic causes for lowered BP e.g MI, cardiac arrhythmia, PE.

Erect IV fluids if no evidence of cardiac failure- 1 litre N/saline 8hrly and consider elevating head of bed (be wary this may increase risk of chest aspiration and should not be done in drowsy patients).

If SBP is 120 -150 stop antihypertensive medications and keep BP under review.

Hypertension

Many patients have pre-existing hypertension before admission to hospital. There is clinical concern regarding lowering BP in the first 72hrs post stroke. It is therefore recommended to keep **SBP** between **150 -180 mmHg** in the first **72hrs post stroke**.

BP is commonly raised on patients on admission to hospital which will settle during pt's admission.

Therefore do not give any antihypertensives unless **BP** is persistently over **200/120 mmHg** in the first 1 week.

Ensure patient is on their normal antihypertensives were possible.

However in special circumstances BP lowering should be considered:

- In patients receiving **Stroke thrombolysis** their BP should be under 185/110 (see stroke thrombolysis guideline for initial BP management)
- Intracerebral haemorrhage with SBP over 200 mmHg
- Hypertensive encephalopathy
- Hypertensive nephropathy.
- Acute MI/ Hypertensive Heart failure.
- Aortic dissection.

Antihypertensive Drugs:

If SBP persistently over 200 mmHg:

Use amlodipine 5mg o.d or bendroflumethiazide 2.5mg o.d orally/NG

If patient is nil by mouth:

Discuss with senior medical staff GTN patch 5mg topically or GTN infusion (see below)

If BP is over 240/120mmHg (Discuss patient with Registrar or consultant on call):

Can use GTN infusion 50mg in 50mls starting at 0.3mls/hr with 0.3mls/hr incremental increase every 15minutes with BP checks..

Aim for initial 10mmHg decrease but no more than 20mmHg drop in BP . If BP drops by 20mmHg stop infusion and restart if BP goes above 240/120 at the lower rate.

BP is to be gently decreased to maintain cerebral perfusion.

Other drug options include Labetelol 5-10mg aliquot.

Longer term BP management

After 7 to 10 Days aim for a SBP under 160 mmHg

If Hypertensive aim to have patient on ACEI either ramipril or perindopril (Ensure there are no contraindications) using lowest dose titrating upwards every 3 days to achieve BP control. If amlodipine has been used initially this can be substituted or added to.

After 2 weeks aim for SBP under 140mmHg unless patient has severe bilateral carotid stenosis.

Long term aim would be to achieve BP under 130/80mmHg.

Use BHS guidelines for subsequent antihypertensive choice.

Nutrition

- In patients with severe strokes and dysphagia, consider nasogastric feeding within 24 hr (unless expected to die within hours or depressed level of consciousness)
- In mild strokes, where normal swallow expected to return, review after 48 hr and pass nasogastric tube if dysphagia still present
- Refer patients with persistent dysphagia for dietary advice
- If NG tube not tolerated and patient unable to take sufficient nasogastric/oral diet for 3 or more days, refer urgently for PEG (percutaneous endoscopic gastrostomy) or arrange for placement of a nasal bridge tube
- If nasogastric feeding successful but no significant recovery of swallowing occurs within 2-3 wks, consider referral for PEG
- If there is some recovery of swallowing and nasogastric feeding successful, PEG referral may not be necessary, continue nasogastric feeding until patient able to eat normally.
- All patients to be screened with MUST tool.

Pyrexia, Hyperglycaemia, Hydration, and Hypoxia

As per immediate treatment in first 24 hours on pages 7 + 8

Further investigations

For all patients

- If random glucose >7.5 mmol/L, request fasting glucose
- Lipid status (<48 hr after stroke or after six weeks)
- Chest X-ray (if indicated)

Specific investigations (not for all patients)

Discuss with stroke consultant on post take ward round.

- Consider early Carotid doppler USS if patient has had an anterior circulation infarct especially if they have made a good recovery from their stroke and they are a medically fit candidate for carotid surgery.
- Consider 72hr ECG tape to look for PAF(discuss with stroke team)
- In patients with new cardiac murmurs and an ongoing fever, consider echocardiography:
- Consider request bubble contrast echocardiogram in young patients (under 55yrs)with stroke to exclude atrial septal defect/patent foramen ovale
- Consider in patients with no risk factors for atheroma, request echocardiogram, and screen for arteritis (CRP, ANA, ANCA,) and thrombotic disorders (coagulation screen, lupus anticoagulant, protein C, protein S, antithrombin III (5 green topped tubes to haematology)
- In younger stroke patients and those without vascular risk factors, consider MR angiography to exclude dissection (prediscussed with stroke physician)
- In patients without vascular risk factors where the diagnosis is in doubt, consider MRI with DWI brain to confirm an infarct, show potential alternative pathology, or demonstrate normality
- If several repeated scans considered necessary to exclude recurrent silent ischaemic events, consider MR in preference to CT, to reduce radiation exposure (discuss with stroke physician)

POTENTIAL COMPLICATIONS AFTER ADMISSION

Pneumonia after starting oral fluids

- Reassess swallowing, treat as aspiration pneumonia – see Intranet antibiotic guideline for **Hospital-acquired pneumonia**.

Deep venous thrombosis/pulmonary embolism

- Treat in usual way if CT head scan has excluded haemorrhage – see **Deep venous thrombosis** and **Pulmonary embolism** guidelines
- In patients with haemorrhagic stroke and symptomatic DVT/PE, discuss anticoagulation or placement of a caval filter to prevent (further) pulmonary embolism with consultant

Shoulder pain

- Prevent by always supporting the weight of the arm and by not pulling on the affected arm
- Maintain correct position and adequate support, consult physiotherapist, consider paracetamol
- If pain persists, consider addition of NSAIDs, TENS or intra-articular corticosteroids

Depression

- Low index of suspicion (high prevalence). Consider if patient has emotional lability.
- In diagnosis and decision making consider acute delirium, patient environment, communication difficulties, pain, incontinence and constipation as these can be directly managed .
- If depressive symptoms are ongoing consider early use of citalopram if no contraindications.
- Stroke psychologist (based at west park) hospital can be utilised in difficult cases (discuss with senior nurse/consultant)

Seizures

- Treat conventionally

Pressure sores

- Prevent/treat

If Stroke patient deteriorates consider the following:

Malignant MCA syndrome

- If deterioration of consciousness within first 48 hr [(National Institute of Health Stroke Scale (NIHSS) (NIHSS list on ASU) in patients aged <60 yr with large MCA territory infarcts (NIHSS score >15), consider malignant MCA syndrome
- Arrange urgent CT head scan or MRI Brain and discuss with stroke consultant of the day (0800 to 2000) and after this with the neurosurgical registrar on call after senior doctor discussion on merits of this referral.
- signs on CT of an infarct of at least 50% of the middle cerebral artery territory with or without additional infarction in the territory of the anterior or posterior cerebral artery on the same side, or an infarct volume of >145 cm³ on diffusion weighted MRI confirm the diagnosis
- Untreated malignant MCA syndrome has 80% mortality but hemicraniectomy within first 48 hr has been shown to reduce mortality significantly – consider urgent referral to neurosurgery (within 24hr) to allow surgery within 48 hr

Other intracerebral causes

- Stroke progression/further stroke – highest risk in minor strokes/TIAs: make sure secondary prevention is in place from day 1
- Progression of intracerebral haemorrhage – if deterioration in neurological signs/level of consciousness after admission, rescan immediately and refer to neurosurgeons for advice (unless there are good reasons not to consider surgery). Recheck INR and correct, if necessary
- Cerebral emboli, or vasculitis
- Brain oedema (esp. in large parietal strokes)
- Hydrocephalus (esp. in cerebellar strokes or in patients with intracerebral haemorrhage, refer previously fit patients to neurosurgery)
- Haemorrhagic conversion (especially in large infarcts)
- Consider initial diagnosis is wrong and that patient could have encephalitis, meningitis or epilepsy.
- Consider: repeat CT/MR, EEG (for possible encephalitis or epilepsy), LP (if no evidence of raised ICP)

Non-brain causes

- Complications (see previous section)
- Coincident medical condition (e.g. hypoxia, hypoglycaemia, hyperglycaemia, pyrexia, infection, heart failure, fluid/electrolyte disturbance) – see relevant guidelines

SECONDARY PREVENTION AND ONGOING TREATMENT

Manage patients with antiphospholipid syndrome who have an acute ischaemic stroke in the same way as patients with acute ischaemic stroke without antiphospholipid syndrome

Anti-platelets

- Aspirin: once haemorrhage excluded by CT, unless contraindicated, 300 mg loading dose and then 75-150mg maintenance or until discharge. In patients with history of dyspepsia, add omeprazole
- After admission aim to add dipyridamole MR 200 mg twice daily (for 2 yr)
- In patients allergic to, or genuinely intolerant of aspirin, use clopidogrel 75 mg once daily as single antiplatelet agent

Atrial Fibrillation

- Warfarin: for all patients with atrial fibrillation/flutter (AF) who have no contraindications
- Two weeks after stroke, start slow induction dose of warfarin (no need to achieve rapid anticoagulation). Discuss best starting dose (1-5 mg) with consultant in older, frail, malnourished, multimorbid patients or those on multiple other medications.
- Stop antiplatelets once INR >2 in patients who are being anticoagulated.
- In mild non-disabling stroke, discuss with stroke consultant whether warfarin can be started earlier
- Anticoagulation intranet guidelines

Lipids

- If total cholesterol >3.5 mmol/L, give simvastatin 40 mg (10 mg if creatinine clearance <30 ml/min) at night.
- If patient intolerant of simvastatin consider pravastatin
- Aim for long term total cholesterol under 4 and LDL under 2. Simvastatin can be increased to 80mg or substituted for higher intensity statin.

Oral contraceptives/HRT

- Stop contraceptive pill/hormone replacement therapy (unless there is an important reason to continue). In premenopausal women, provide advice on alternative methods of contraception

Lifestyle

Smoking

- For inpatients prescribe nicotine replacement if patient is at risk of withdrawal symptoms
- All patients should be referred to smoking cessation service
- Refer patients directly to Wolverhampton smoking cessation service through Kim or Annette on the ward or by phoning **0800 073 42 42**

Alcohol

- Document weekly alcohol intake of patients and ensure that this is within WHO guidelines. Also ensure that there is no binge habit
- Give healthy alcohol advice and refer to alcohol liaison team if alcohol intake is excessive
- If excessive alcohol intake follow intranet guidelines on alcohol abuse management.

Obesity

- High prevalence. Weigh patient and do BMI.
- Refer to dietician for advice and encourage 'five a day'.
- Encourage exercise.
- Set realistic weight loss targets
- If diabetic and weight is increasing refer to diabetic team for further drug management review.
- Obese patients should be screened regularly for hypertension and diabetes.

REHABILITATION

- Admit all stroke patients to acute stroke unit and start active rehabilitation on day 1
- Unless consciousness impaired, sit out and mobilize from day 1
- Full multidisciplinary assessment; include nurses, occupational therapist, physiotherapist, doctors, and speech and language therapist to identify rehabilitation goals. Involve dietitian, social worker, pharmacist, other medical or surgical specialties, at a later date, as necessary

DISCHARGE POLICY

Patient and relatives

- Advise patient not to drive for one month. Check for hemianopia and hemi-inattention in all drivers. This is not always obvious to patient and disqualifies from driving until resolved. [Click here for up to date guidance.](#)
- Drivers must inform their insurers before driving again
- If back to normal within one month, patient may drive again
- If persistent deficit, patient must inform DVLA and await assessment
- Ensure patient and relatives are aware of diagnosis, discharge date, follow-up arrangements and secondary prevention measures
- Copy of discharge letter to patient and GP and one copy in notes

On Discharge

- Ensure that patient is on appropriate secondary prevention drugs e.g antiplatelets, statin and antiHTN.
- If patient is being commenced on Warfarin that an anticoagulation clinic review or GP review has been organised for ongoing INR surveillance. Ideal INR range and duration of treatment should be clearly stated.
- That patient has follow up organised at 4 weeks either with clinic review or stroke coordinators.
- If patient is from Stafford area that a copy of the discharge letter accompanies patient on transfer to Fair oak ward, Cannock Chase hospital or is printed off and given to the Stafford/Cannock stroke coordinators.
- All patient intended outpatient investigations have been organised.
- A discharge letter is sent to all patient GP's irrespective of intrahospital transfer on date of ward discharge.