

Avon Gloucestershire Wiltshire & Somerset Stroke Network

Acute Ischaemic Stroke Reperfusion Guidelines

Eligibility for consideration of IV treatment with alteplase

- Age over 18
 - Clinical diagnosis of stroke causing a measurable neurological deficit
 - Time of symptom onset is **known** (*Patients who wake up with symptoms are not eligible for thrombolysis*)
 - Sufficient time in 4.5 hour therapeutic window to assess and treat
- If "Yes" to ALL proceed to Acute Stroke Thrombolysis Pathway**

While patient in transit, or on arrival

- Contact clinician authorised to give rt-PA if not already aware
- Request immediate CT Brain and CT angiogram if no contra-indication; "Direct to CT" protocol if pre-alert
- Check previous medical history where available (eg discharge summaries) and renal function (contrast)

Whilst waiting for CT scan (but do not delay CT scan to do any of these):

- Focused history and examination, BM, GCS, NIHSS
- Gain iv access and take bloods (U+E, glucose, FBC, clotting and total cholesterol) and perform an ECG
- Check rt-PA exclusions (see page 2) with patient or family member
- If blood pressure consistently >185 SBP or >110 DBP, **consider intravenous nitrate or Labetolol** (see page 5, Management of Blood Pressure)
- Site manager to clear an appropriate bed urgently

Post CT Scan

Phone Network Consultant if unsure about thrombolysis

Do not leave a message on stroke network consultant phone.

- If no radiological exclusion criteria briefly reassess patient to ensure still deficit
- Provide information leaflet and obtain patient verbal assent to rt-PA treatment
- If patient is unable to assent, discuss with family, provide leaflet but act in patient's best interest
- Do not await blood results unless currently anticoagulated
- Reconstitute and administer rt-PA as soon as possible (see page 4)
- Withhold aspirin, heparin and warfarin or other direct oral anticoagulants for at least 24 hours

Consider thrombectomy (see also page 2) after rt-PA bolus given and infusion in preparation

- Check CT angiogram if performed
- If major vessel occlusion (M1, M2, Basilar) and NIHSS >6 patient may be candidate for thrombectomy
- Discuss immediately with stroke consultant onsite or via Network Out of Hours

Monitor and transfer patient to appropriate bed when available

- Check blood results and review eligibility to continue thrombolysis
- Monitor BP at 15 minute intervals during infusion, 1 hour intervals for 6 hrs and then 4-hourly up to 24 hrs

STOP infusion if:

- Anaphylaxis, marked hypotension-observe for lingual oedema
- Neurological deterioration –
 - Decline conscious level (2 points GCS eye/motor score) –requires urgent repeat CT
 - Decline NIHSS ≥ 4 points-requires urgent repeat CT
- \uparrow BP >185/110 mm Hg if sustained or associated with neurological deterioration
- Major systemic bleeding

Standard Post Thrombolysis Care for Stroke

- Avoid urinary catheterisation during thrombolysis and for 30 minutes after completion
- Avoid venous or arterial puncture during thrombolysis
- Avoid nasogastric tube placement for first 24 hours
- Consider CT scan @ 24 hours
- Start anti-platelet treatment (see local protocol for duration and dose) after 24 hours

CLINICAL EXCLUSIONS FROM THROMBOLYSIS

From the history:

Absolute contraindications:

- Active internal bleeding
- Major surgery or serious trauma within last 14 days
- Clinical diagnosis of subarachnoid haemorrhage even if CT normal
- Treatment dose low molecular weight Heparin within 24 hours
- Current treatment with one of the direct oral anticoagulants taken within the last 24 hours
- Warfarin if INR >1.7 (check urgently)

Relative contraindications (please discuss with a senior clinician):

- Recent CVA, head injury or cranial surgery (within 3 months)
- Seizure at stroke onset
- Any history of intracranial haemorrhage, brain tumour, intracranial AVM or aneurysm
- Recent (< 48 hours) lumbar puncture or (<1 week) arterial/venous puncture at non-compressible site
- Pregnancy – see notes below

Some contraindications to intravenous thrombolysis are not contraindications to thrombectomy (see last paragraph of this page)

On initial assessment:

- Coma (GCS <8) is a relative contraindication; coma can occur with basilar artery occlusion, get CTA
- Severe stroke (NIHSS >25) is a relative contraindication
- NIHSS < 4 except isolated disabling symptoms (e.g. severe dysphasia, homonymous hemianopia)
- Capillary blood glucose <2.8 or >22.0 (if hypoglycaemic treat with 50% glucose and reassess; if hyperglycaemic continue with protocol but await result of lab glucose before treating with rtPA)
- SBP>185 and/or DBP>110 after treatment with labetalol or nitrates

On lab results (if they are available):

- Platelets <100
- INR >1.7
- Plasma glucose <2.8 or >22.0 mmol/l

On CT brain:

- Intracranial haemorrhage (absolute contraindication)
- Other pathologies (most are relative contraindication, discuss with network consultant)

Thrombolysis in pregnancy:

There have been successful case reports. In these cases we would advise discussion with both the local obstetric team and the network stroke consultant

Thrombolysis and direct oral anticoagulants :

Currently, we would advise NOT giving thrombolysis if patient has or can be assumed to have taken these drugs in the last 24 hours. Discuss with network stroke consultant if any queries

THROMBECTOMY:

Some contraindications to intravenous thrombolysis are not contraindications to thrombectomy. This includes anti-coagulant treatment, recent surgery, recent stroke.

Time windows for thrombectomy are longer potentially up to 24 hours

If a patient has a disabling stroke and CTA shows a proximal occlusion then d/w local stroke consultant or network consultant via switch

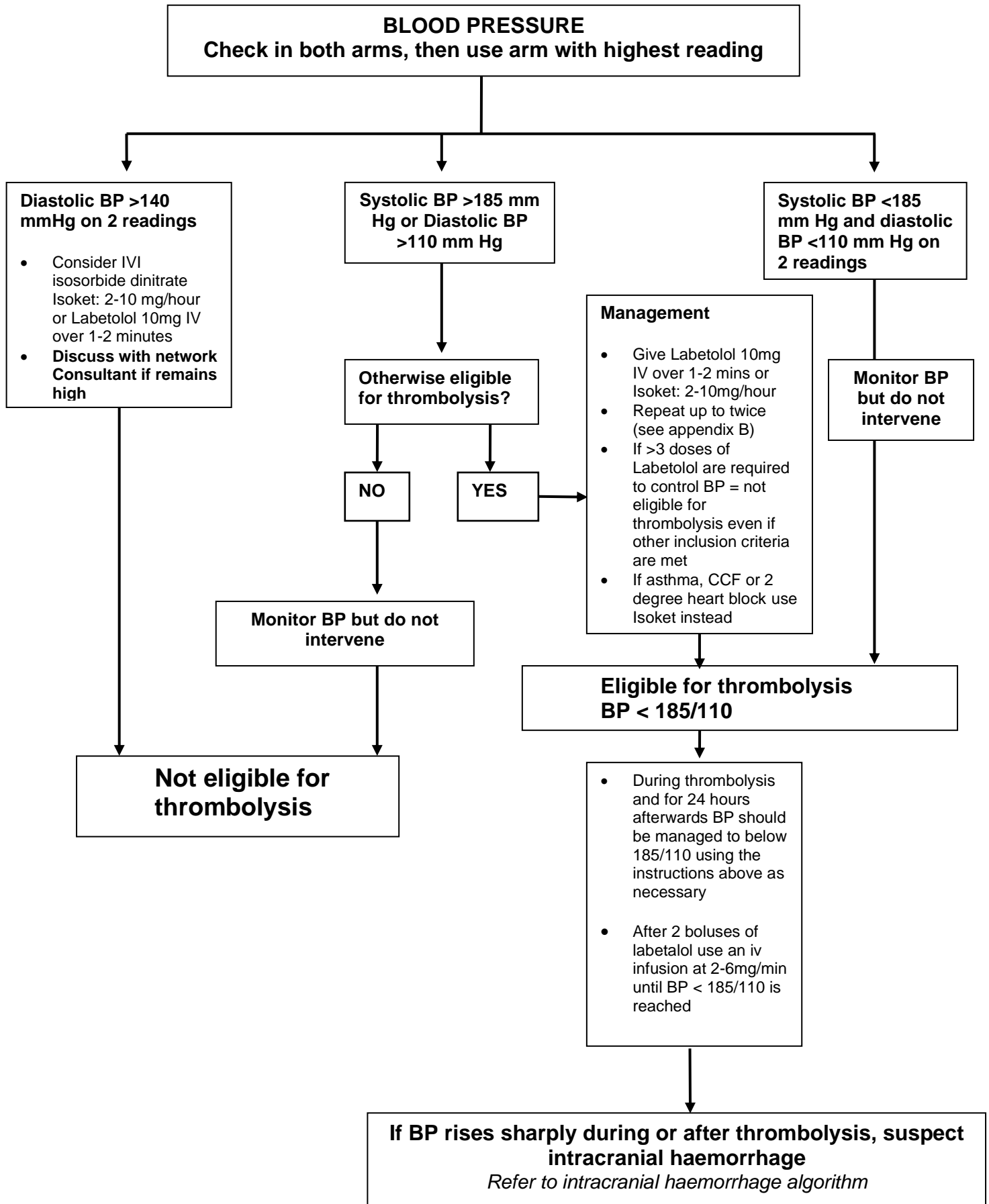
Item	Title	Score	National Institutes of Health Stroke Scale	Date: Time:	O/A	2 hrs	24 hrs	7/7 or discharge
1 A	Level of consciousness	0 1 2 3	Alert - keenly responsive Drowsy – <i>arousable by minor stimulation to obey/answer/respond</i> Stuporous – <i>requires repeated stimulation to attend, or is obtunded</i> Comatose – <i>responds only with reflex motor or autonomic effects or totally unresponsive</i>					
1 B	LOC Questions	0 1 2	Answers both correctly Answers one correctly Both incorrect	<i>Patient is asked to state the month and his/her age</i>				
1 C	LOC command	0 1 2	Obeys both correctly Obeys one correctly Both incorrect	<i>Patient is asked to open & close eyes, grip and release non-paretic hand</i>				
2	Best Gaze	0 1 2	Normal Partial gaze palsy – <i>gaze is abnormal in one or both eyes,</i> Forced deviation – <i>or total gaze paresis not overcome by oculoccephalic manouver</i>					
3	Visual Fields	0 1 2 3	No visual loss (or in coma) Partial hemianopia Complete hemianopia Bilateral Hemianopia – including cortical blindness					
4	Facial palsy	0 1 2 3	Normal Minor – <i>flattened nasolabial fold, asymmetry on smiling</i> Partial – <i>total or near total paralysis of lower face</i> Complete – <i>absent facial movement in upper and lower face on one or both sides</i>					
5a	Best Motor Right Arm	0 1 2 3 4	No drift – <i>holds limb at 90 degrees for full 10 seconds</i> Drift – <i>drifts down but does not hit bed</i> Some effort against gravity No effort against gravity No movement					
5b	Best Motor Left Arm	0 1 2 3 4	No drift – <i>holds limb at 90 degrees for full 10 seconds</i> Drift – <i>drifts down but does not hit bed</i> Some effort against gravity No effort against gravity No movement					
6a	Best motor Right leg	0 1 2 3 4	No drift – <i>holds limb at 45 degrees for full 5 seconds</i> Drift – <i>drifts down but does not hit bed</i> Some effort against gravity No effort against gravity No movement	<i>Lower limb weakness should always be tested with the patient supine.</i>				
6b	Best motor Left leg	0 1 2 3 4	No drift – <i>holds limb at 45 degrees for full 5 seconds</i> Drift – <i>drifts down but does not hit bed</i> Some effort against gravity No effort against gravity No movement					
7	Limb Ataxia	0 1 2	Absent (or in coma) Present in 1 limb Present in 2 limbs	<i>Ataxia is scored only if present out of proportion to weakness.</i>				
8	Sensory	0 1 2	Normal Partial loss – <i>patient feels pinprick is less sharp or is dull on affected side</i> Dense loss (or in coma) – <i>patient is unaware of being touched on face, arm leg</i>					
9	Best language	0 1 2 3	No aphasia Mild – moderate: <i>obvious loss of fluency or comprehension without significant limitation on ideas expressed,</i> Severe aphasia – <i>all communication is through fragmentary expression, great need for inference, questioning, and guessing by the listener who carries burden of communication.</i> Mute – <i>no usable speech or auditory comprehension, or in a coma</i>					
10	Dysarthria	0 1 2	Normal articulation Mild – moderate dysarthria – <i>patient slurs some words, can be understood with some difficulty</i> Unintelligible or worse – <i>speech is so slurred as to be unintelligible (absence of or out of proportion to dysphasia)</i>					
11	Extinction or inattention	0 1 2	No neglect (or in coma) Partial neglect – <i>visual, tactile, auditory, spatial, or personal inattention or extinction to bilateral simultaneous stimulation in one of the sensory modalities</i> Complete neglect – <i>profound hemi-inattention to one or more modalities, does not recognise own hand or orients only to one side of space</i>					
Total:								
Assessor signature:								

Rt-PA DOSE READY RECKONER

- Unless the patient or companion knows their recent weight, estimate it to the nearest 5 kg
- The total dose of rt-PA is 0.9 mg/kg or 90 mg, whichever is lower
- When the decision to treat has been made **do not delay**
- Make up one or two vials of rt-PA using the 50 ml diluent in each drug pack, making a solution of 1 mg/ml rt-PA
- Draw up and give 10% as a bolus over 1-2 minutes using a 10 ml syringe
- Draw up the remaining 90% (the 'infusion dose') into one or two 50 ml syringes and set up the syringe pump with the corresponding infusion rate in mls/hr. Doses above 50 mls will need a change of syringe at some point within the hour's infusion
- **Do not** give the cardiac dose
- **Do not** give more than 90 mg

	1	2	3	4	5
	Estimate of patients weight (kg)	Equivalent Imperial weight	Total dose (mg at 1 mg/ml)	Bolus dose (mls) given over 1-2 minutes	Infusion dose (mls) = infusion rate in mls/hr
One vial	45	7 st 1 lb	40	4.0	36.0
	50	7 st 12 lb	45	4.5	40.5
	55	8 st 9 lb	49	4.9	44.1
Two vials	60	9 st 6 lb	54	5.4	48.6
	65	10 st 3 lb	58	5.8	52.2
	70	11 st 0 lb	63	6.3	56.7
	75	11 st 11 lb	67	6.7	60.3
	80	12 st 8 lb	72	7.2	64.8
	85	13 st 5 lb	76	7.6	68.4
	90	14 st 2 lb	81	8.1	72.9
	95	14 st 13 lb	85	8.5	76.5
	≥100	15 st 10 lb	90	9.0	81.0

MANAGEMENT of BLOOD PRESSURE in potential thrombolysis patients with ACUTE ISCHAEMIC STROKE



INTRACRANIAL HAEMORRHAGE ALGORITHM

Haemorrhage following initial thrombolytic therapy for Stroke

