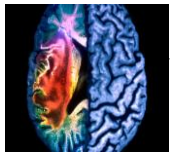
Acute Stroke Management



NATIONAL STROKE NURSING CONFERENCE

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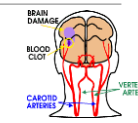
Overview



3rd leading cause of death

Leading cause of adult physical disability

≈7,500 new stroke events annually

≈ 2,500 new TIA events annually

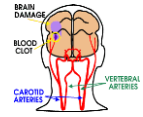
≈30,000 people have stroke related disability

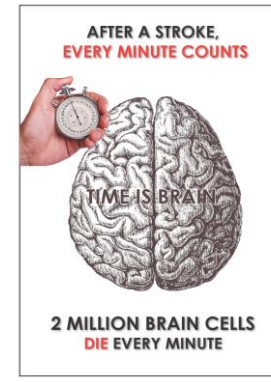
- 1/5 of nursing home residents there because of stroke
- Number of strokes will increase by 50% in the next 10 years.

Stroke is primarily a clinical diagnosis with:

- Sudden onset of focal neurological deficit
- Symptoms/signs lasting greater than 24 hrs with
- No apparent cause other than vascular

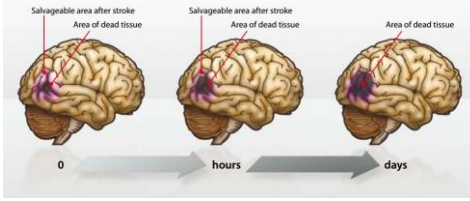
Clinical diagnosis can be relied on in most cases if there is a clear history of sudden onset of focal neurological deficit in a patient with vascular risk factors in the absence of trauma, seizures, pyrexia, severe headache, signs of raised ICP.





Time is brain (tPA)

Treatment is nearly twice as effective when administered within the first 90 mins (OR 2.81) as when administered within 90-180 mins (OR 1.55) and an OR 1.34 for 180-270 in ECASS III.



Case Presentation

Elizabeth 73 yo female BIBA
FAST +ve Acute onset dysphasia and R hemiparesis at 14.05 hrs
Hx: Was in kitchen making a cup of tea when husband arrived in and found patient confused and couldn't lift her right arm
Arrived in ED @ 14.52. **NIHSS** 18 **CT** 15.00
DT CT 8 min

The Golden 1/2 Hour

Thrombolysis / Thrombectomy

- Pre alert (book CT/CTA) pre arrival in ED
- NIHSS/ bloods/cannula/BG
- Vitals/ weight
- Confirm onset time
- History/ meds/CI
- Stroke team notified/assess
- CT /CTA
- tPA box
- CT report obtained
- Bolus TPA
- THROMBOLYSE

DTN

INCLUSION CRITERIA

- Clinical signs and symptoms of definite acute stroke
- Clear time of onset
- Presentation within 4.5 hrs of acute onset (>80 years 3 hrs)
- Haemorrhage excluded by CT scan

EXCLUSION CRITERIA

- Symptoms of ischaemic stroke began > 4.5 hrs
- Unconscious pt (Anterior circulation) not for basilar
- Active colitis, active peptic ulcer disease, severe liver disease inc hepatic failure, portal hypertension, oesophageal varices, active hepatitis, extensive angiodysplacia
- Uncontrolled HTN with persistent systolic >180mmHg or diastolic > 105mmHg
- Infective endocarditis: pericarditis or presence of ventricular aneurysm related to MI <1/12
- Intra- spinal surgery < 3 months
- Lumbar puncture within 7 days
- Uncontrolled blood glucose <3 mmol/L . Review 10min post treatment of hypoglycaemia
- Hypersensitivity to tPA or its components
- AVM especially if large and on same side of brain

BLEEDING RISK

- Hereditary or acquired bleeding disorder
- Recent severe/ dangerous bleeding from the GI or UT in the last 21days/recent unexplained drop in Hb
- Platelet count < 100 x 10^9 /L
- Current ACT unless INR <1.7 /NOAC in last 48hrs with elevated APPT or LMWH in 36hrs

History

Symptoms **unlikely** to be Stroke

(**non-focal non-lateralising** symptoms)

Light headedness/ faintness

'Blackouts' with altered or loss of consciousness or fainting

Generalized weakness and/or generalized sensory disturbance

Incontinence of urine or faeces

Episode of confusion

Drop attacks

Past Medical History
Nil of note, mR 0/5

The Modified Rankin Scale

0	**No symptoms at all.** The Subject should be unaware of any limitation of symptoms caused by the stroke, however minor.
1	**No significant disability despite symptoms; able to carry out all usual duties and activities.** The Subject has some symptoms as a result of the stroke, weather physical or cognitive –for example affecting speech, reading or writing; or physical movement; or sensation; or vision; or swallowing, or mood – but can continue to take part in all previous work, social and leisure activities. The crucial question to distinguish grade 1 from grade 2 may be, "Is there anything you can no longer do that you used to do until you had the stroke?" as a guide, an activity that was undertaken more frequently than monthly could be regarded as a "usual" activity.
2	**Slight disability; unable to carry out all previous activities but able to look after own affairs without assistance.** The Subject will be unable to undertake some activity that was possible before the stroke (e.g. driving a car, dancing, reading, working) but is still able to look after him/herself without help. For example, the Subject may need help with some aspects of dressing, moving around, feeding, toileting, preparing simple meals, shopping and travelling locally without needing assistance from anyone else. Supervision is not necessary. This grade assumes that the Subject could be left alone at home for periods of a week or more without concern.
3	**Moderate disability; requiring some help, but able to walk without assistance.** At this grade, the Subject is independently mobile (using aid or frame if necessary) and can manage dressing, toileting, feeding, etc but needs help from someone else for more complex tasks. For example, someone else may need to undertake shopping, cooking or cleaning and will need to visit the Subject more often than weekly to ensure that these activities are completed. The assistance can be advisory rather than physical: for example, a Subject who needs supervision or encouragement to cope with financial affairs would be in this grade.
4	**Moderately severe disability; unable to walk without assistance, unable to attend to own bodily needs without assistance.** The Subject requires someone else to help with daily tasks, whether walking, dressing, toileting or eating. This Subject will be visited at least once and usually twice or more times daily, or must live in proximity to carer. To distinguish grade 4 from grade 3, consider whether the Subject can regularly be left alone for moderate periods during the day.
5	**Severe disability; bedridden, incontinent and requiring constant nursing care and attention.** Someone else will need to be available during the day and at times during the night, though not necessarily a trained nurse.
6	**Dead**

THROMBOLYSIS with rt-PA: INCLUSION / EXCLUSION CRITERIA

INCLUSION CRITERIA: Guideline - ANSWER TO THE FOLLOWING QUESTIONS MUST BE YES

		Yes	N
1.	CT scan appearances consistent with acute ischaemic stroke / normal CT		
2.	Onset of symptoms within 4.5 hours prior to initiation of thrombolytic treatment (case 1 hour 8)		
3.	Measurable neurological deficit (motor, sensory, visual, ataxia, dysarthria, aphasia, unilateral neglect, impaired motor function, cognition, gaze, visual and/or neglect. Symptoms must be distinguishable from an episode of generalised ischaemia (i.e. syncope, seizure, or migraine)		
4.	Risks and benefits explained to patient or relative		

EXCLUSION CRITERIA Guidelines - ANSWER TO ALL OF THE FOLLOWING QUESTIONS should BE NO

5.	Symptoms of ischaemic attack began > 4.5 hours prior to initiation of or time of surgery (see exceptions)		
6.	Unconscious pt (Anterior circulation) not for basilar (Basilar occlusion may be treated beyond 4.5 hours)		
7.	Active colitis, active peptic ulcer disease, severe liver disease, inc. hepatic failure, portal hypertension, oesophageal varices and active hepatitis. Extensive angiodysplasia		
8.	Uncontrolled hypertension (systolic > 180mmHg or diastolic > 105mmHg)		
9.	Symptoms suggestive of subarachnoid haemorrhage, even if the CT scan is normal		
10.	Infective endocarditis, pericarditis or presence of ventricular aneurysm related to recent myocardial infarction < 1/12		
11.	Intra-spinal surgery < 3 months		
12.	Lumbar puncture < 7 days		
13.	Uncontrolled blood glucose < 3 mmol/L. Review 10 min post treatment		
14.	Hypersensitivity to rt-PA (Alteplase) or its components		
	Risk of bleeding		
15.	Hereditary or acquired bleeding disorder		
16.	Recent severe / dangerous bleeding from the gastrointestinal or urinary tract in last 21 days. Recent unexplained drop in haemoglobin		
17.	Platelet count < 100 x 10^9/L		
18.	Current anticoagulation (Warfarin/Heparin INR < 1.7, T < 1.7 should be carefully considered)		
19.	Anticoagulation (Warfarin/Heparin) in last 48 hours (if normal renal function) and longer if renal impairment and elevated sensitive laboratory tests such as APTT, INR, platelet count, ECT, TT or appropriate anti factor Xa activity assays. Consider alert retrieval		
20.	Administration of therapeutic heparin within the previous 48 hours with elevated APPT ratio, or low molecular weight heparin (LMWH) within 36 hours. Anti-factor Xa activity might be available (LMWH). See p 5		
	Risk of Stroke		
21.	Minor neurological deficit (NIHSS < 4) (but may benefit from thrombolysis e.g. deafness, hemiparesis)		
22.	Symptoms rapidly improving before infusion starts (> 50% NIHSS improvement) - Consider (FCTA / MRI shows large vessel occlusion		
23.	CHS surgery or significant stroke within the previous 3 months		
24.	Trauma with internal injuries, surgery or neuro surgery < 2 weeks. Traumatic external head massage < 10 days		
25.	Known History of spontaneous intracranial haemorrhage especially if cause is unknown		
26.	Acute pancreatitis Consider		
27.	Additional risks assessed if it is unknown about active bleeding or recent increasing size of size		
28.	Stroke in a patient with a history of cerebral palsy, or moderate to severe disability requiring daily help with ADLs		
29.	Seizure at stroke onset caution. Hemiparesis may be secondary to postictal phenomenon rather than stroke(see Rx. C)		
30.	Recent puncture of a non-compressible blood vessel (e.g. subclavian or jugular with puncture if not mechanically sealed or arterial puncture (excluding radial artery) within 7 days		
31.	Active proliferative retinopathies. Confirmed recent (< 1 month) retinal haemorrhage – discuss with Ophthalmologist		
32.	Neoplasm with increased bleeding risk		
33.	Creation if Myocardial Infarction < 1/12		
34.	Any history of central nervous system damage (i.e. neoplasm, aneurysm, intracranial or spinal surgery)		
35.	AVM especially if large and same side of brain		
36.	Pericardial disease of haemorrhagic		
37.	Previous Stroke AND Diabetes - (read if benefit felt to outweigh risks in individual cases		
38.	Pregnancy, or childbirth within the previous 2 weeks		
39.	tPA may be administered in selected patients under 18 years, although outside the current European Licence (class III, Level C)		

C.T. CAUTION CRITERIA

ANYONE STROKE OR AND CONSULTANT RADIOLOGIST SHOULD CHECK THE FOLLOWING C.T CAUTIONS.

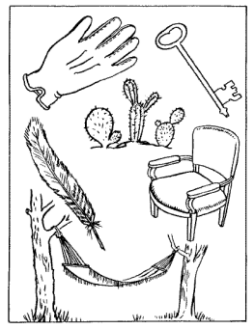
1.	High density lesion consistent with intracranial haemorrhage + alternate contraindication		
2.	Hypodensity in >1/3 MCA territory or equivalent area. ASPECTS < 7 – balance benefit versus risks		
3.	Extensive CT changes of widening infarction or mass effect on CT		

TABLE 1

NATIONAL INSTITUTES OF HEALTH STROKE SCALE (NIHSS)

ITEM	SCORE
Level of consciousness	
Alert	0 points
Drowsy	1 point
Stupor	2 points
Coma	3 points
Response to 2 questions (orientation)	
Know age and current month	0 points
Answers 1 question correctly	1 point
Cannot answer either question correctly	2 points
Response to 2 commands	
Follows 2 commands correctly	0 points
Follows 1 command	1 point
Cannot follow either command	2 points
Best gaze (movement of eyes to left or right)	
Normal eye movements	0 points
Partial gaze paresis to one side	1 point
Forced gaze palsy to one side	2 points
Visual fields	
No visual loss	0 points
Partial homonymous hemianopia	1 point
Complete homonymous hemianopia	2 points
Bilateral visual loss	3 points
Facial motor function	
No facial weakness	0 points
Minor unilateral facial weakness	1 point
Partial unilateral facial weakness	2 points
Complete paralysis of 1 or both sides	3 points
Upper-extremity motor function (right and left scored independently 0 – 8 points)	
Normal movement	0 points
Drift of upper extremity	1 point
Some effort against gravity	2 points
No effort against gravity but moves	3 points
No movement	4 points
Lower-extremity motor function (right and left scored independently 0 – 8 points)	
Normal movement	0 points
Drift of lower extremity	1 point
Some effort against gravity	2 points
No effort against gravity but moves	3 points
No movement	4 points
Limb ataxia (cannot be tested in presence of paresis)	
No limb ataxia	0 points
Ataxia present in 1 limb	1 point
Ataxia present in 2 limbs	2 points
Sensory function	
No sensory loss	0 points
Mild-to-moderate sensory loss	1 point
Severe-to-total sensory loss	2 points
Language	
Normal language	0 points
Mild-to-moderate aphasia	1 point
Severe aphasia	2 points
Mute	3 points
Articulation	
Normal articulation	0 points
Mild-to-moderate dysarthria	1 point
Severe dysarthria	2 points
Extinction or inattention (neglect)	
No neglect or extinction	0 points
Visual or sensory inattention or extinction	1 point
Profound inattention to visual and sensation	2 points

http://nihss-english.trainingcampus.net



DYSPHASIA

You know how.

Down to earth.

I got home from work.

Near the table in the dining room.

They heard him speak on the radio last night.

DYSARTHRIA

MAMA

TIP-TOP

FIFTY-FIFTY

THANKS

HUCKLEBERRY

BASEBALL PLAYER

CATERPILLAR

The level of stroke severity as measured by the NIH stroke scale scoring system:

0= no stroke

1-4= minor stroke

5-15= moderate stroke

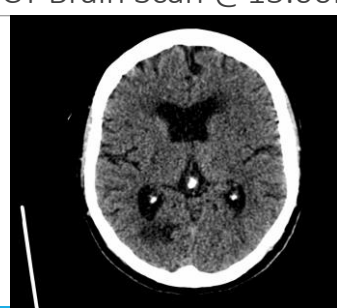
15-20= moderate/severe stroke

21-42= severe stroke

Case Presentation

Blood Glucose **5.9**
NIHSS -**18** (R HH, R facial, & dysphasia,R hemiparesis)
FBC,U/E normal
ECG **NSR**
Weight (hoist scales)-**74** kg
B/P **200/90**
Bladderscan

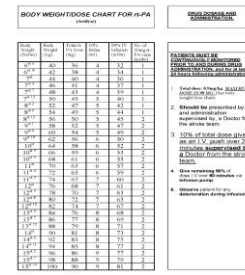
CT Brain Scan @15.00hrs



Case Presentation

Elizabeth
B/P **200/90** Labetalol 10mg IV
CT Brain-hyper attenuating focus in the proximal M1 portion of the left middle cerebral artery (MCA dot sign). Old R inferior occ inf
NIHSS 18, B/P 170/80
tPA commenced 65 min after onset of symptoms) **DTN 18min**

Administration of rtPA


BODY WEIGHT/DOSE CHART FOR rt-PA

Body Weight (kg)	Body Weight (lbs)	Dose (0.9 mg/kg)	10% Bolus (ml)	90% IV Infusion (ml/hr)	No of Vials (Vial = 50 mg)
67.5	148	60	6	54	1
67.5	149	61	6	55	1
68	150	61.2	6	55.2	1
68.5	151	62	6	56	1
69	152	62.1	6	56	1
69.5	153	63	6	57	1
70	154	63.2	6	57	1
70.5	155	64	6	58	1
71	156	64.1	6	58	1
71.5	157	65	6	59	1
72	158	65.2	6	59	1
72.5	159	66	6	60	1
73	160	66.1	6	60	1
73.5	161	67	6	61	1
74	162	67.2	6	61	1
74.5	163	68	7	61	1
75	164	68.1	7	61	1
75.5	165	69	7	62	1
76	166	69.2	7	62	1
76.5	167	70	7	63	2
77	168	70.1	7	63	2
77.5	169	71	7	64	2
78	170	71.2	7	64	2
78.5	171	72	7	65	2
79	172	72.1	7	65	2
79.5	173	73	7	66	2
80	174	73.2	7	66	2
80.5	175	74	7	67	2
81	176	74.1	7	67	2
81.5	177	75	8	68	2
82	178	75.2	8	68	2
82.5	179	76	8	69	2
83	180	76.1	8	69	2
83.5	181	77	8	69	2
84	182	77.2	8	70	2
84.5	183	78	8	70	2
85	184	78.1	8	71	2
85.5	185	79	8	71	2
86	186	79.2	8	72	2
86.5	187	80	8	72	2
87	188	80.1	8	73	2
87.5	189	81	8	73	2
88	190	81.2	8	74	2
88.5	191	82	8	74	2
89	192	82.1	8	75	2
89.5	193	83	8	75	2
90	194	83.2	8	76	2
90.5	195	84	8	76	2
91	196	84.1	8	77	2
91.5	197	85	8	77	2
92	198	85.2	8	78	2
92.5	199	86	9	77	2
93	200	86.1	9	78	2
93.5	201	87	9	78	2
94	202	87.2	9	79	2
94.5	203	88	9	79	2
95	204	88.1	9	80	2
95.5	205	89	9	80	2
96	206	89.2	9	81	2

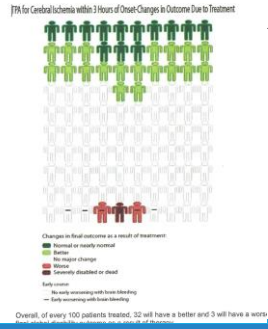
DRUG DOSAGE AND ADMINISTRATION.

PATIENTS MUST BE CONTINUOUSLY MONITORED PRIOR TO AND DURING DRUG ADMINISTRATION, and for at least 24 hours following administration.

1. Total dose: 0.9mg/kg, MAXIMUM DOSE 90 MG (Two Vials) (weight over 100kg)
2. **Should be** prescribed by, and administration supervised by, a Doctor from the stroke team.
3. 10% of total dose given as an I.V. push over 2 minutes **SUPERVISED by a** Doctor from the stroke team.
4. **Give remaining 90%** of dose IV over **60 minutes** via **infusion pump.**
5. **Observe** patient for any **deterioration during infusion.**

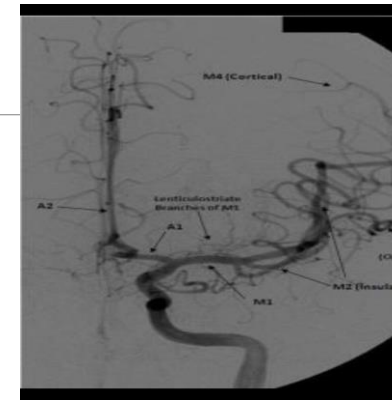
- 0.9mg/kg up to a maximum 90mg
- 10% given as bolus 1-2 min
- Remainder infused over 1 hour

- Perform neurological observations:
  - every 15min during infusion & for 1 hour after
  - every 30min for 6 hours
  - hourly up to 24 hours

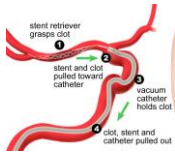


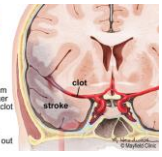
Case Presentation

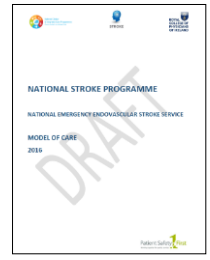
Scans to Beaumont
Bolus tPA given and infusion commenced
Suitable for thrombectomy, blue light to Beaumont L MCA thrombectomy, single pass, good result
Back to CCU,NIHSS 14, severe dyshasia, R HH, R hemiparesis
Repeat CT Brain



Thrombectomy






NATIONAL STROKE PROGRAMME

NATIONAL EMERGENCY ENDOVASCULAR STROKE SERVICE

MODEL OF CARE

2016

DRAFT

Indications for Urgent repeat CT Scan following Thrombolysis in Acute Ischaemic Stroke patients

Signs and symptoms of intracerebral haemorrhage:

New acute headache or worsening severity of headache

Acute hypertension

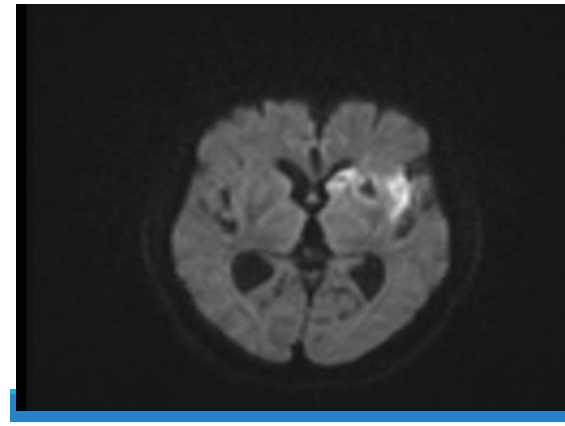
Nausea and vomiting

Agitation

Seizure.

Case Presentation

48 hrs post TPA, Thrombectomy
NIHSS **1**
MRI: L BG, L insula with some HT
SLT/ OT/ Physio Afib picked up in CCU



Case Presentation

D/C after LOS 17 days
Barthel Index 20/20
B/P- 137/86 MOCA 22/30
D/C SLT/OT/Physio
Review in Stroke Clinic Repeat CT brain, GFR59, start NOAC, stop Aspirin

Post STROKE Thrombolysis Care General Management

Bed rest for 24 hours (may not be essential if patient very stable)
Pulse oximetry - maintain O2 saturations above 95%
Maintain normal temperature. Paracetamol if temp > 37.5°C
Blood Glucose: maintain blood glucose < 10 mmol/l using IV insulin if necessary

No arterial punctures, NG tubes or central lines for 24 hours
No urinary catheters for at least 1 hour after infusion ended
Falls Risk Assessment and Prevention measures
Avoid suctioning whenever possible, caution giving mouthcare
No Aspirin, Clopidogrel or anticoagulant) for 24 hours
Repeat CT head at 24 hours
Hydration / Nutrition.

Acute Management of Stroke Assessment

Thrombolysis /urgent CT scan
Swallow Screening
Urinary retention (bladder scanner)
Cognitive(AMT 4) and communication assessment
Risk of developing skin/pressure sores
Needs related to positioning /mobilisation

Early phase medical care

O_2 sats
- Patients should receive supplemental O_2 if O_2 sats fall below 95%. Underlying causes for hypoxia such as pneumonia and PE should be considered

Temp
- =/> 37.5 C should be treated with Paracetamol (IV/PO/PR). Possible infection should be identified and treated with appropriate antibiotics.

Glucose
- Should be maintained between 4-11mmol/l. (d/w diabetic service re protocol)

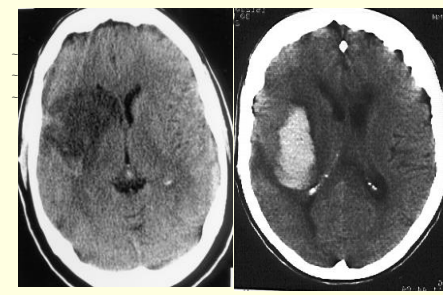
Blood Pressure
- Reduction in BP should **not** normally be undertaken in the acute phase of stroke
- urinary retention & other painful stimuli should be addressed
- If there is persistent severe HTN B/P 200/100, topical nitrates or labetalol I.V should be prescribed. BP should be mantained below 180/105 in patients who have received tPA or are being considered for tPA.

Hydration
- Assessed clinically and biochemically, should be maintained. Avoid hyponatraemia.

Nutrition
- Patients should be weighed and screened for malnutrition using a standardised measure such as MUST score
- Patients with dysphagia should have specialist Swallowing assessment
- If this is not feasible NG tube feeding should be considered

GCS
- Declining level of consciousness should prompt a search for neurological complications which may be clarified by CT/MRI scan

Haemorrhage Stroke



Key management steps in intracerebral haemorrhage

Brain and vascular imaging
- Imaging should be done to detect an underlying cause that requires early intervention—eg, vascular malformation, cerebral venous thrombosis, vasculitis, reversible cerebral vasoconstrictor syndrome where the likelihood of diagnosis is higher on the basis of patient age (>50 years), intracerebral haemorrhage location (peripheral or cortical), history of hypertension (absent), and presence of cerebral small vessel disease (imaging features)
- CT angiography spot sign predicts haematoma growth but whether this improves upon established clinical and haematoma predictive markers is still to be defined
- MRI can detect chronic microhaemorrhaging and cerebral superficial siderosis, which is helpful for the diagnosis of cerebral amyloid angiopathy

Stroke unit care

Lowering of blood pressure (systolic target <140 mm Hg over 1–2 h)

Correction of haemostatic abnormalities
- Consider whether there is a specific disease (eg, haematological disorder)
- Consider whether this disease is due to a specific anticoagulant drug and whether a reversal agent or antidote is required

Prevention of complications
- Careful identification of deteriorating patients requiring neurosurgical intervention
- Use of intermittent pneumatic compression therapy for venous thromboembolism prophylaxis
- Management of seizures

Search for the cause of the intracerebral haemorrhage

Prevention
- Lower blood pressure to prevent recurrent intracerebral haemorrhage and other serious vascular events
- Consider whether there is a high risk of recurrent intracerebral haemorrhage to prevent starting or restarting antithrombotic treatment to prevent ischaemic events
- Screen for cognitive impairment during follow-up

Clues to underlying causes of ICH

Deep perforating vasculopathy
- Haematoma located in the basal ganglia or brainstem; microbleeds or old intracerebral haemorrhage in the basal ganglia or brainstem; white matter lesions; lacunes

Cerebral amyloid angiopathy
- Lobar intracerebral haemorrhage; cortico-subcortical microbleeds; cortical superficial siderosis; apolipoprotein E ε4; cognitive decline; transient focal neurological episodes

Brain arteriovenous malformation
- Extension to other brain compartments; flow voids; calcification

Intracranial arterial aneurysm
- Disproportionate subarachnoid extension

Cavernous malformation
- Small, homogeneous intracerebral haemorrhage with no extension to other brain compartments

Intracranial venous thrombosis
- Headaches preceding intracerebral haemorrhage onset; intracerebral haemorrhage close to sinuses or veins; high relative oedema volume; onset in pregnancy or postpartum

Dural arteriovenous fistula
- Subarachnoid or subdural extension; abnormal dilated cortical vessels

Haemorrhagic transformation of cerebral infarction
- Substantial areas of acute ischaemic lesions adjacent to the intracerebral haemorrhage or diffuse acute ischaemic lesions in other arterial territories

Severe clotting factor deficiency such as haemophilia
- Abnormal coagulation tests

Tumour (primary/metastasis)
- Large perihaematomal oedema

Vasculitis
- Headaches; small acute ischaemic lesions in different arterial territories; focal diffuse arterial stenosis

Infective endocarditis
- Acute ischaemic lesions in different arterial territories; small irregular arterial aneurysms; diffuse brain microbleeds

Posterior reversible encephalopathy syndrome
- Thunderclap headaches; parietal and occipital asymmetrical oedematous lesions

Blood Pressure Targets

Situation	Target	Management
Ischaemic Stroke patient who is prescribed alteplase	BP less than 180 / 105 mmHg Maintain Systolic BP below 180mmhg and Maintain Diastolic BP below 105mmhg	• If BP cannot be brought to <180/105, do not give alteplase • Give meds as per below if needed • NB Monitor for increase post alteplase and treat accordingly • Monitor BP every 5 minutes on IV labetolol
Ischaemic Stroke patient who is not for alteplase	BP less than 200/100 mmHg Maintain Systolic BP below 200 mmhg and Maintain Diastolic BP below 100mmhg	• No evidence to hold pre-existing BP meds • Give meds as per below if needed
Ischaemic Stroke due to hypoperfusion	Maintain Systolic BP above 100 mmhg Or Maintain MAP above 100mmhg	• Head-down position • IV fluids • Oxygen supplementation • Hold antihypertensives • May need pressors in HDU/ICU
Intracerebral Haemorrhage	BP less than 140 / 90 mmHg Maintain Systolic BP below 140 mmhg and Maintain Diastolic BP below 90mmhg	• Give medications as per below

Medication Options

Labetolol 10mg IV over 1-2 mins. Repeat BP after 10 minutes, if systolic still elevated, Labetalol 10mg IV can be given again. May repeat every 10mins to max of 300mg; or give initial dose of 10mg and then infusion at 2-8 mg/min

GTN patch 5 mg topically (which can be increased to 20mg if required) however onset of action time is up to 30 mins, with a peak effect at 2 hours.

Glyceryl trinitrate IV starting as 5-10mcg/min and titrated according to 200mcg/min.

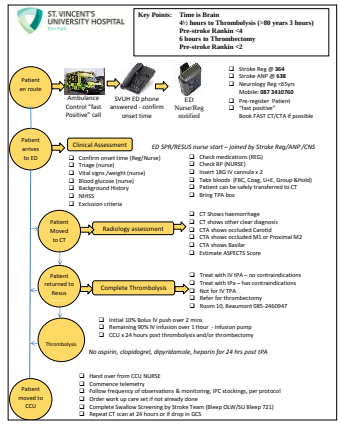
Nicardipine 5mg/hour IV infusion, may increase by 2.5 mg/hour every 5 mins to max 15 mg/hour

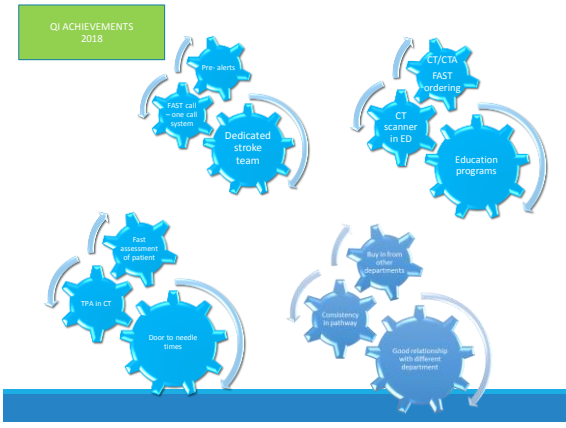
Stroke Unit Care
Preventing Complications

How common are post stroke complications?

Infection – 20% Aspiration pneumonia – 40%
Urinary tract infection (UTI) – 40%

Depression – 30%
Falls – 25%
Deep Vein Thrombus (DVT) – 6%
Pressure Ulcer – 3%
Musculoskeletal pain – 30%
Malnutrition - 16%
Seizure- 2-4%
Delirium – 28%





SVHG Stroke Service 2018

TIA Pathway pts from ED to AMU dedicated U/S carotid slots – FU in Stroke Prevention Clinic.

Acute Stroke
10 bedded Stroke unit (OLW 26 beds) 4 HASU beds
St. Agnes Ward continuing rehab
Full MDT
(One referral on whiteboard!)
Swallow screen bleep721
(350-400 per year)

Rehabilitation
18 SU beds **RHD**, 10 SU beds **SCH**
(>65/ <65)

Hyper acute stroke CPD Programme. Nurses in SU

Thrombolysis for acute ischaemic stroke **(11.3%).** FAST +ve to resus in ED. Call Stroke Team >65 Neurology <65 (Mon – Fri).Out of hours on call rota. **CCU** x 24 hours. **CTB/CTA**
NIHSS by ED.

Thrombectomy (6%)
for acute ischaemic stroke – CTA. 6/6/6. Scans to Beaumont by radiology.If MI thrombus, protocol 37 transfer.

B/P control for haem (if not for intervention) adm to SU.
KPI – 90% stroke pt admitted to SU within 4 hrs spending 90% of time there. Swallow screen within 4 hours.

Secondary Prevention Guidelines

BP aim clinic BP < 130/80 >50s CCB/diuretic +/-ACE,ARB
APT Asprin 300mg 2/52 Clopidogrel 75mg
Statin aim reduce total C < 4, LDL.C < 2
Afib NOAC (warfarin) INR 2-3, must be in TR >70%
Exercise moderate intensity 30min/day x5/wk
Diet fruit/oily fish
Alcohol 2u/day(women),3u/day(men)
Smoking cessation

The Golden 1/2 Hour

Thrombolysis / thrombectomy

- Pre alert (book CT/CTA) pre arrival in ED
- NIHSS/ weight bloods/cannula/BG
- Vitals/ weight
- Confirm onset time
- History meds/CI
- Stroke team notified/assess
- CT /CTA
- tPA box
- CT report obtained
- Bolus TPA
- THROMBOLYSE

DTN

INCLUSION CRITERIA

- Clinical signs and symptoms of definite acute stroke
- Clear time of onset
- Presentation within 4.5 hrs of acute onset (>80 years 3 hrs)
- Haemorrhage excluded by CT scan

EXCLUSION CRITERIA

- Symptoms of ischaemic stroke began > 4.5 hrs
- Unconscious pt (Anterior circulation) not for basilar
- Active colitis, active peptic ulcer disease, severe liver disease inc hepatic failure, portal hypertension, oesophageal varices, active hepatitis, extensive angiodyspacia
- Uncontrolled HTN with persistent systolic >180mmHg or diastolic > 105mmHg
- Infective endocarditis: pericarditis or presence of ventricular aneurysm related to MI <1/12
- Intra- spinal surgery < 3 months
- Lumbar puncture within 7 days
- Uncontrolled blood glucose <3 mmol/L . Review 10min post treatment of hypoglycaemia
- Hypersensitivity to tPA or its components
- AVM especially if large and on same side of brain

BLEEDING RISK

- Hereditary or acquired bleeding disorder
- Recent severe/ dangerous bleeding from the GI or UT in the last 21days/recent unexplained drop in Hb
- Platelet count < 100 x 10^9 /L
- Current ACT unless INR <1.7 /NOAC in last 48hrs with elevated APPT or LMWH in 36hrs