Stroke : Acute Neurological Event d.t Vascular cause. (lasting less than 24h)
↳ Almost Always have Associated : Heart Disease
: Vascular % Factors

Oxfordshire community stroke project:

-> TACS
-> PACS
-> LACS
-> POCS
} all diff territories (vessels)
∴ diff signs.

con cause cytotoxic cerebral oedema
= No blood = No O_2 = No ATP
Extracellular H_2O into cells = swelling { ∴ No Na^+/K^+ ATPase function

TACS:

proximal MCA. < Bleed / infarction (60% d.t cardiac Emboli)

Signs: (All)
- Hemiplegia (contralat. to lesion)
- Hemianopia (contralat. to lesion)
- Disturbance of higher function
  : L. = Aphasia
  : R. = < Attention ↓ / Neglect.

PACS:

proximal MCA (sparing overlying cortex - leptomeningeal collaterals)
Distal cortical Branch occlusion (MCA/ACA)
usually -> Intracranial Atherosclerosis.
-> cardiac Embolus.

Signs: (Any 1)
- Pure Motor/sensory Deficit.
- Motor / sensory ↓ (+) Hemianopia
- Motor / sensory (+) New higher function Dysfxn.
- Higher function Dysfunction Alone.
- Higher function Dysfunction (+) Hemianopia.

Boundary Zone infarction -> presents as PACS
"Watershed" area affect
Systemic ↓ BP ± carotid disease = Hypoperfusion

POCS (post. circulation)

Basilar aa (Atheroma / Emboli) -> Paramedian aa. occlusion (Ant. Brainstem infarction)
Distal vessel occlusion (Emboli)
Vertebral aa. (occlusion d.t Aortic Disease)
↳ PICA (Dorsolat. Medullar infarction)
(cerebellum infarction)
↳ = Wallenberg syndrome.

Signs: (Any)
- ipsilat. CN III - XII palsy (+) contralat. Motor/sensory loss.
- cerebellar dysfunction (∅ long tract Deficit).
- isolated Hemianopia or cortical blindness.
- Bilateral Motor/sensory Deficit.

LACS:

Penetrating Endartery (in Basal Ganglia / Pons)
↳ d.t : MicroAtheroma
: Lipohyalinosis (irregular fibrosis & Hyaline) d.t leakage of proteins (chronic HTN.)

Signs:
- Pure Motor Stroke (PMS)
- Pure Sensory Stroke (PSS)
- Ataxic Hemiparesis (AH)
- Dysarthric clumsy-Hand syndrome
- Sensorimotor Stroke (SMS)

∅ higher fxn.

PMS / PSS / SMS ⇒ (@ least 2 adj Body regions affected)

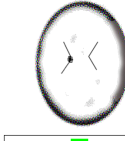
TACS
MCA infarction **OR** Basal Ganglia bleed
Involves deep structures, therefore dense hemiplegia (plus field defect, plus cortical loss)

Embolic, but poor prognosis usually

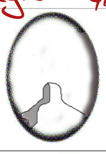
Management, including work-up depends on prognosis; either Warfarin OR
2°Stroke Prevention: **ABC S^2W**

PACS
Infarctions in anterior circulation

Potential for anti-coagulation
Investigate for emboli
Management: Warfarin OR
2°Stroke Prevention: **ABC S^2W**



LACS
- Chronic Hypertension, typically older people
- Defined syndromes
- Investigation not required
- 2°Stroke Prevention: **ABC S^2W**



PoCS
Straightforward clinical diagnosis.

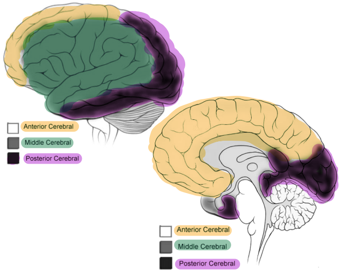
Potential for emboli exists, though lower than anterior circulation.

If no source of emboli:
2°Stroke Prevention: **ABC S^2W**

Table 1. Etiology of the various stroke syndromes.

	Ipsilateral Carotid Stenosis	Cardio-embolic	Small Vessel Disease	Primary Intracerebral Haemorrhage
TACS	••	•••	0	•
PACS	••	••	0	•
PoCS	(••)[1]	•	•	•
LACS	(•)[2]	0	••••	0[3]

1. Presence of ispilateral carotid stenosis with a PoCS is coincidental, and indicates diffuse vascular disease.
2. Presence of ispilateral carotid stenosis with a LaCS is coincidental, and indicates diffuse vascular disease.
3. Very rarely a small intracranial haemorrhage may result in a lacunar syndrome.



Etiology of Stroke:

Depends on population.

Large vessel Atheroembolic:
carotid & vertebral aa.
DM. HTN.

-> Younger pts = alt. aetiologies
↳ aa. Dissection
↳ Haemoglobinopathies
↳ vasculitis
↳ thrombophilias.

Cardioembolic:

High %	Medium %
Mech. valves ·	Mitral valve Disease ·
AF ·	LV Hypokinesis / Aneurysm ·
DCOM ·	AMI (1-6 Months ago) ·
AMI (past month) ·	congestive Heart failure. ·
LV / Atrial thrombi ·	Intraatrial septal Aneurysm / patent foramen ovale } ·
IE ·	

Non-Atherosclerotic vasculopathy

↳ Dissection of vertebral / carotid aa.
↳ Migraine (vasospasm induced Neuronal Damage)
↳ Arteriitis (SLE / Wagevers / takayasu / HIV)
↳ Drugs / OH Abuse
↳ Haematologic Disease
↳ Antiphospholipid syndromes

Special Investigations:

Uncontrasted CT = Essential < Haemorrhage vs occlusive Stroke
↳ always Early Aspirin regardless. (when waiting)
TTE (Thoracic Echo)
TEE (oesophageal Echo)
24h cardiac Holter Monitoring
carotid Doppler
ECG
CXR.
Lab -> FBC / U&E / ESR / Syphilis / CP / AP Ab
↳ Factor Deficiencies
↳ vasculitic profiles (ANA / collagen) screen.

Tests you always Do : Uncontrasted CT
: Syphilis VDRL/FTA }

Acute Stroke Management:

ABC'S
Neurological Screen
CT-Scan → Thrombolytic Rx
Lab → U&E / FBC / clotting Profile

haemorrhagic stroke = ϕ thrombolysis.

O₂

O₂ if sats < 95 % on room air
if O₂ & still < 95 % → airway obst.
→ Bronchospasm
→ Pul. oedema
→ Aspiration
→ pneumonia

check for.

Cardiac Monitoring

24h Monitor (holter)
Detect intermittent AF & other Arrhythmias.

Blood pressure:

↓ BP = could lead to ↓ cerebral perfusion in stroke pts.
∴ a mildly ↑ BP = Beneficial

∴ only ↓ BP if > 220 mmHg (Sys)
> 120 mmHg (Dia)
(+) ϕ ↓ BP by > 15-20 mmHg in first 24h

⇒ ACE-i – Enalapril / Catopril
⇒ Labetalol
⇒ IV Nitrates

Fluid Management

NPO if struggle to swallow
0.9% Saline (IV)
Daily urinary vol = 1000 – 1500 ml
ϕ overhydrate → Heart failure.

Hb

when < 10 = O₂ mask & Investigate
if polycythaemic = venepuncture

Glucose Management:

Most stroke pt = Diabetics
∴ check Hgt in all pts (screen)
∴ Avoid & Rx Hypoglycaemia
if Hgt > 10 = insulin on sliding scale

Temperature

fever ↑ Infarct size
∴ pyrexial screen [CXR / urine] Rx mpdns
Paracetamol!

How prevent complications:

Stroke Extension

Antiplatelet Agents → Aspirin

Aspiration & pneumonia

d.t ↓ LOC in Stroke
or swallowing Disturbances
∴ Assess swallowing fdn before feeding

↓ LOC

2-3 days post sx onset usually d.t cytotoxic
Brain swelling = midline shift
= ↑ ICP
= Herniation

⇒ Hyponatremia / Metabolic causes.
⇒ Hyperventilate pt. (↓ PCO₂ = vasoconstriction)
⇒ Mannitol (osmotic Diuretic)

Thrombosis prophylaxis

Clexane
Mech. calf pumps.

Siezure control (↑ cerebral O₂ Demands)

IV Lorazepam / Diazepam
→ ϕ prophylactic siezure control

Early mobilisation → physiotherapist within 24h.

Depression

common if Dopamine hemisphere involved
if MDE suspected = referral!

How to prevent further strokes

ABC S²W

A – Aspirin — can add a PPi with Aspirin.
B – BP ↓ (all can Benefit) → ACE-i / β-blockers
C – combo Aspirin & clopidogrel
S² – Surgery (if > 70% carotid Stenosis – CEA)
– Statin (HMG-CoA Reductase i)
W – Warfarin (Same) → if pt. has AF
(or NOAC'S) ↳ ϕ Age contraindication (prego only)

↳ CHA₂DS₂ – VASC score! } which pt needs Anti-coag. Meds. (for AF)