Neurological diseases in the practice of a GP

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Stroke

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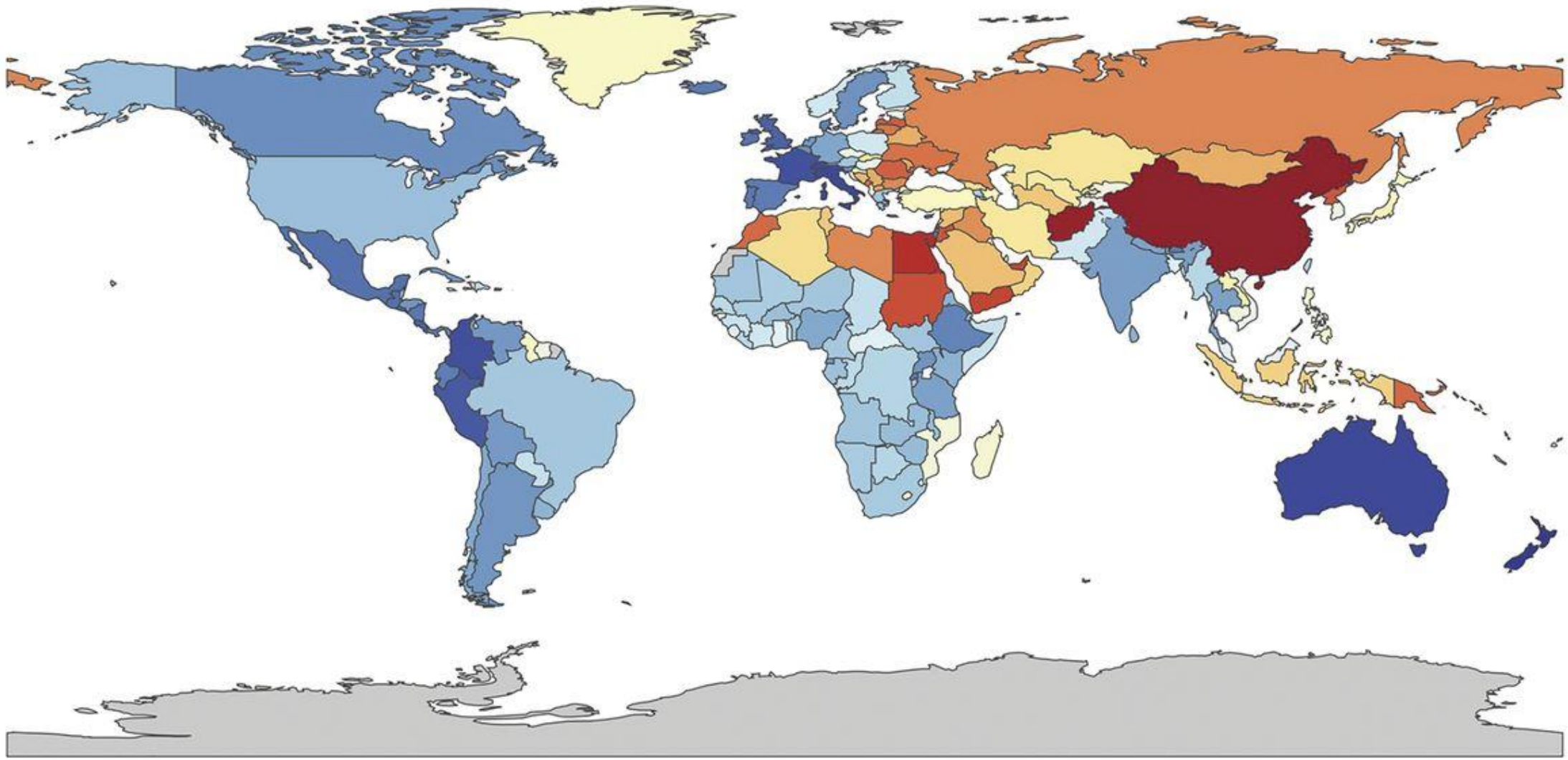
Stroke
Both sexes, Age-standardized, 2017, New cases per 100,000

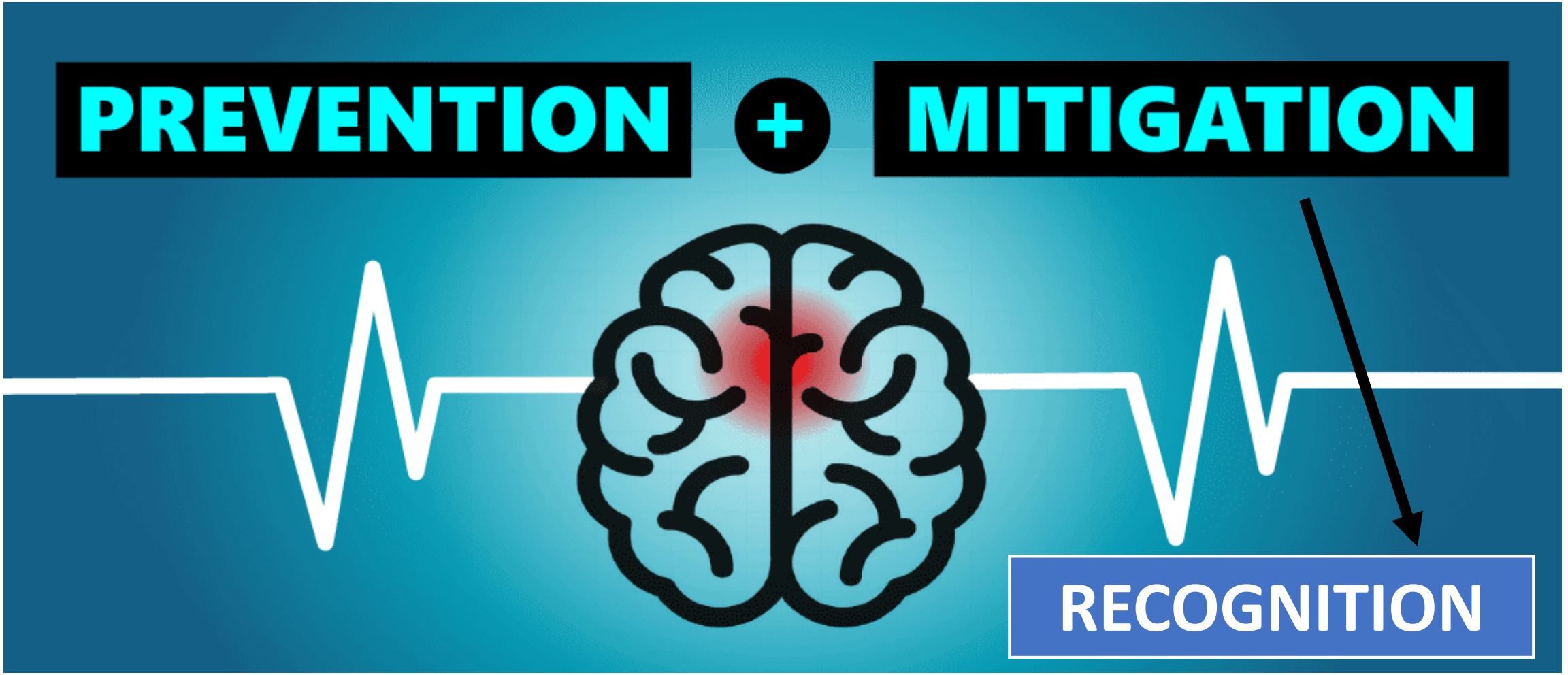


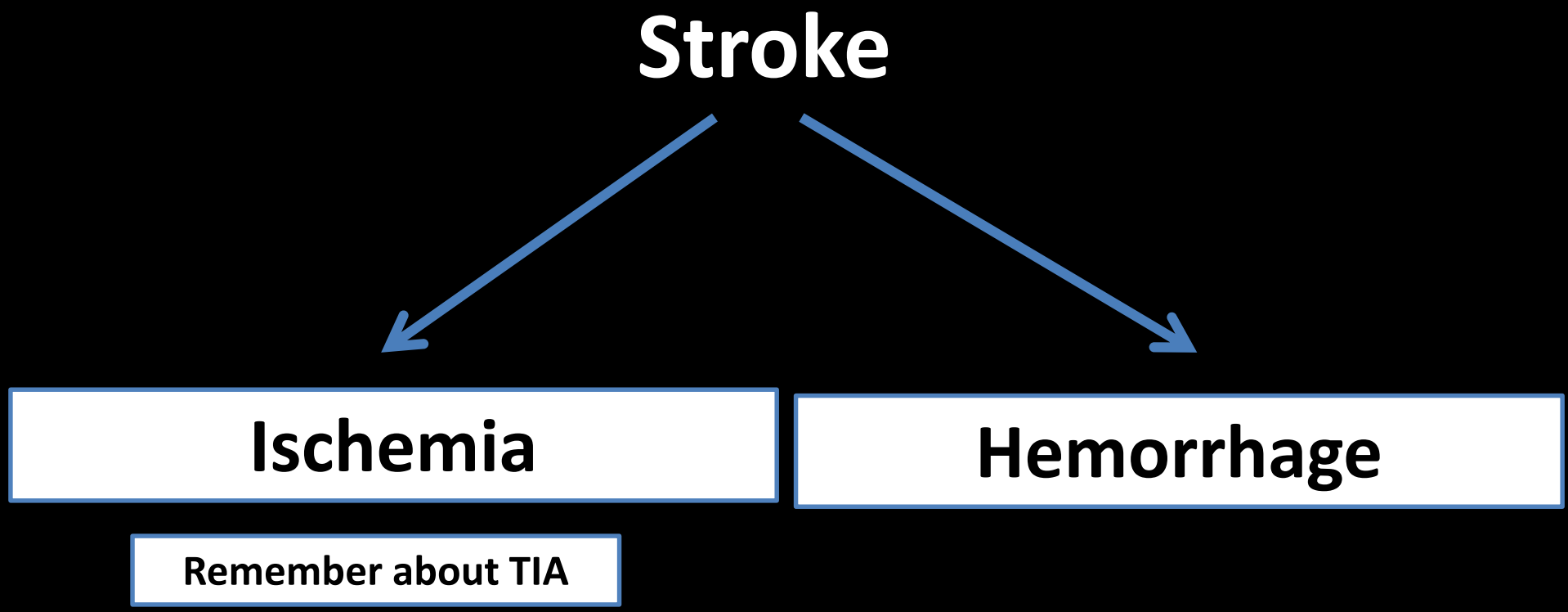
IHME

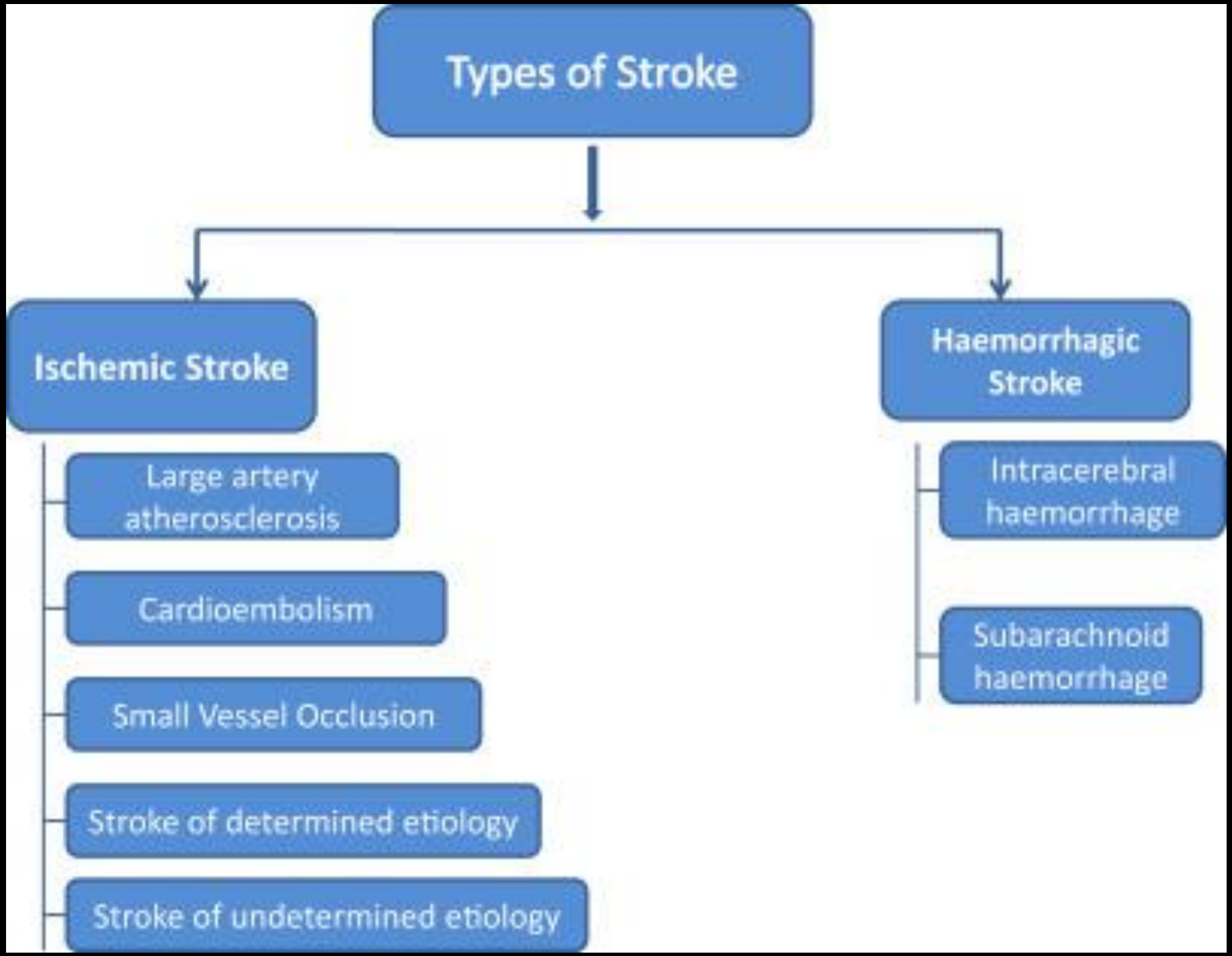
Some statistic data

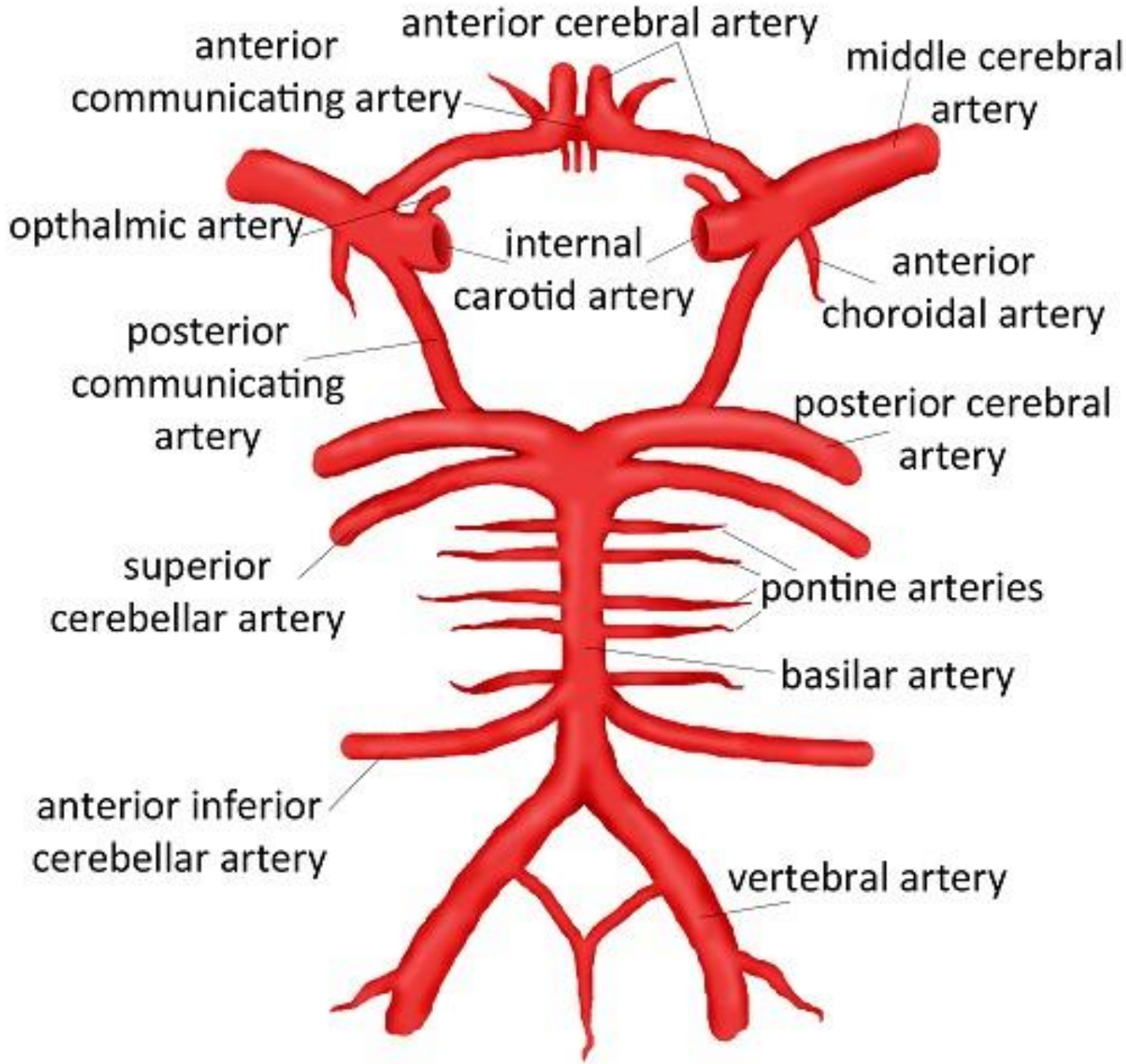
- **2 (3?) place in mortality**
- **1 place of population disability**
- **1/3 patient is people working age**
- **1/4 patient return to the work after stroke**

- Stroke affects an estimated 800,000 US patients annually;
- it is a major cause of preventable long-term morbidity as well as the fifth most common cause of death, killing almost 130,000 each year.[6,7]
- In more stark terms, in the United States, every 40 seconds, a person has a stroke; every 4 minutes, a person dies of stroke.[6,7]


PREVENTION
+
MITIGATION
RECOGNITION


Stroke
Ischemia
Hemorrhage
Remember about TIA


Types of Stroke
Ischemic Stroke
Large artery atherosclerosis
Cardioembolism
Small Vessel Occlusion
Stroke of determined etiology
Stroke of undetermined etiology
Haemorrhagic Stroke
Intracerebral haemorrhage
Subarachnoid haemorrhage


anterior cerebral artery
anterior communicating artery
middle cerebral artery
opthalmic artery
internal carotid artery
anterior choroidal artery
posterior communicating artery
posterior cerebral artery
superior cerebellar artery
pontine arteries
basilar artery
anterior inferior cerebellar artery
vertebral artery

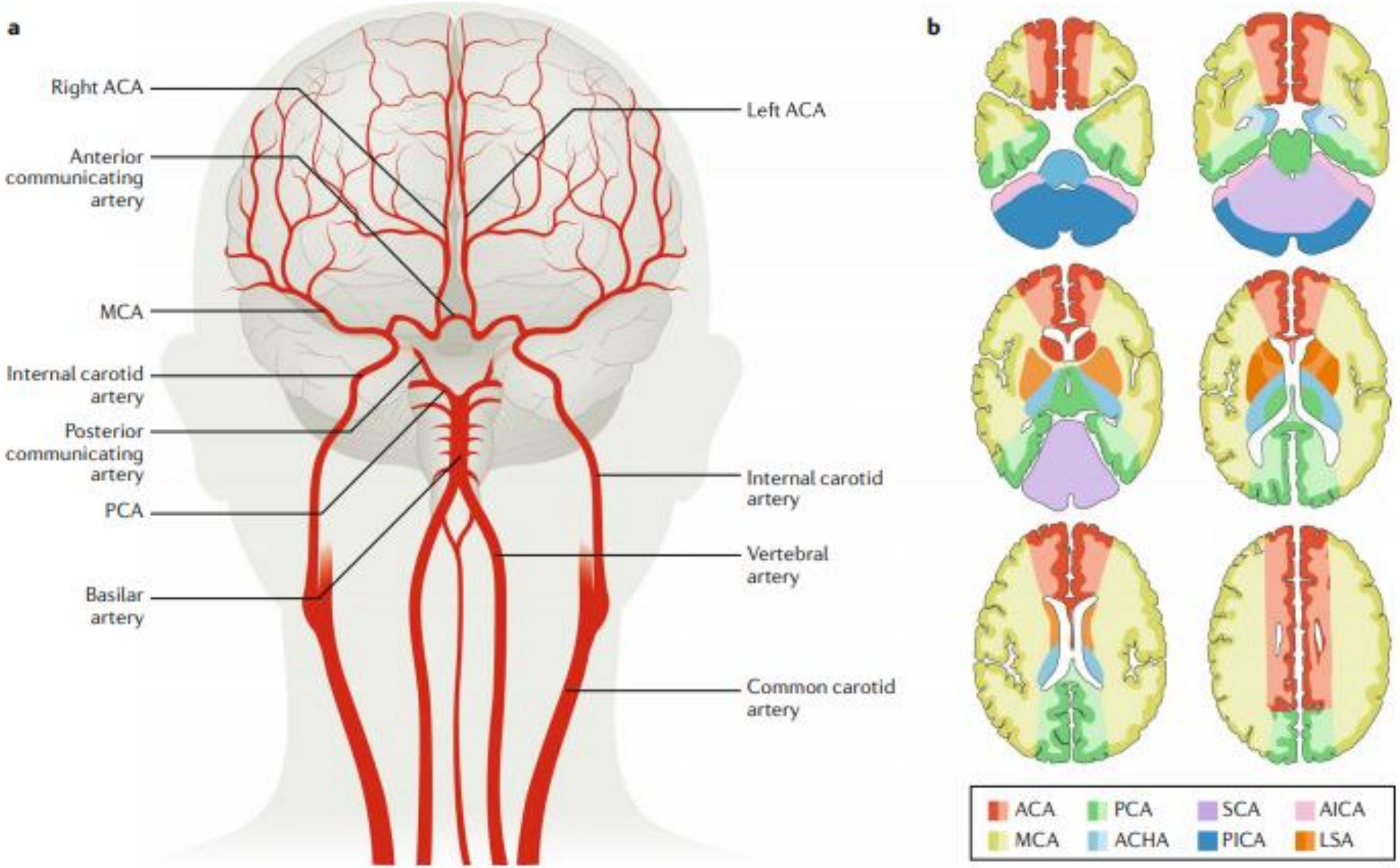


Fig. 3 | **Cerebral vasculature.** The major arteries of the brain (part **a**) and their vascular territories (part **b**). Although simplified here for illustrative purposes, an ischaemic stroke in one of these vessels could cause tissue damage in the regions highlighted. ACA, anterior cerebral artery; ACHA, anterior choroidal artery; AICA, anterior inferior cerebellar artery; LSA, lenticulostriate artery; MCA, middle cerebral artery; PCA, posterior cerebral artery; PICA, posterior inferior cerebellar artery; SCA, superior cerebellar artery. Part **b** adapted from REF.[197], Springer Nature Limited.

For patient


F.A.S.T.
Face Drooping
Arm Weakness
Speech Difficulty
Time to Call 911

Symptoms

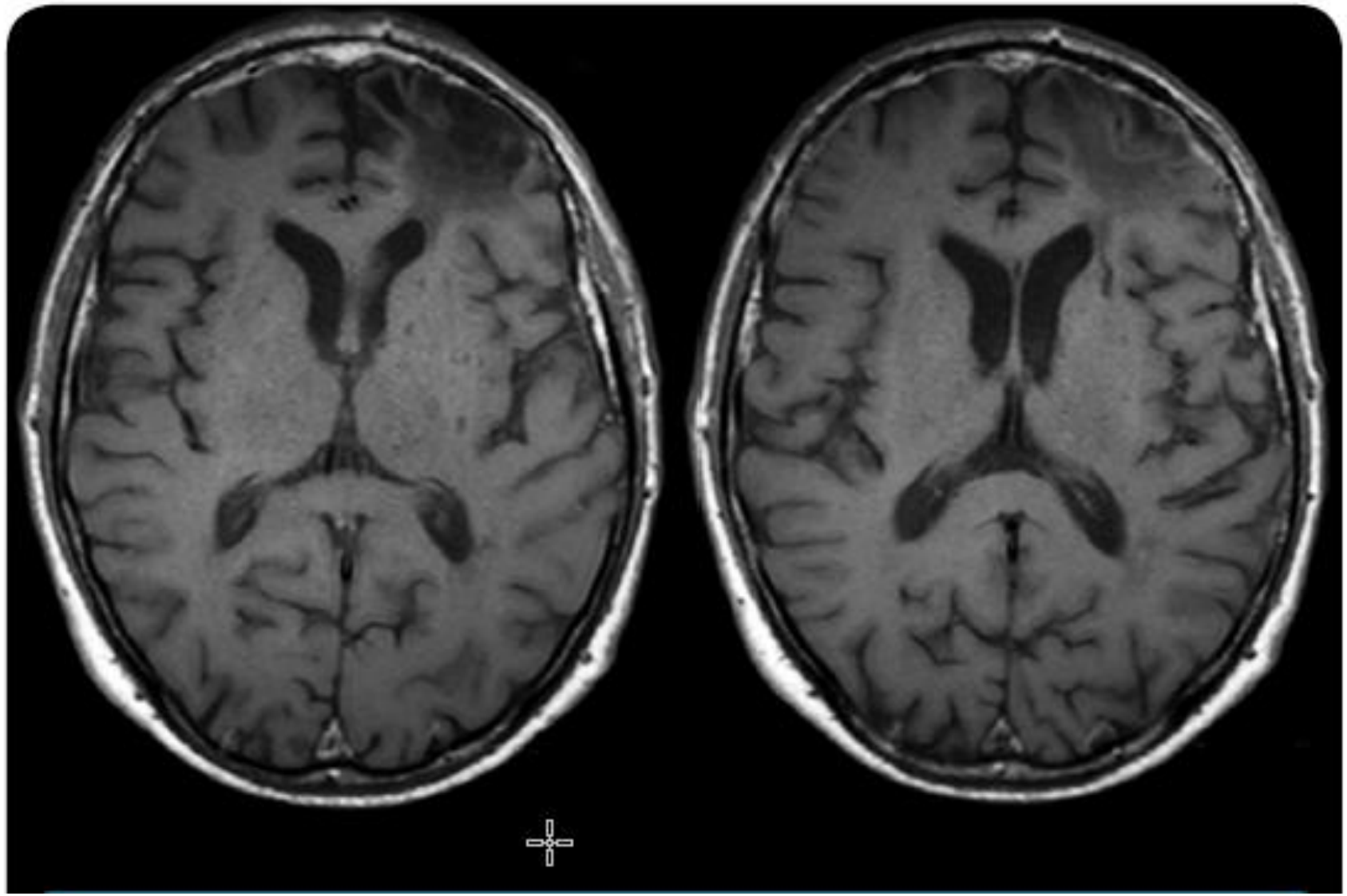
1. Weakness
2. Numbness
3. Speech
4. Vertigo/Dizziness
5. Visual disturbance
6. Loss of consciousness
7. Seizures
8. Headache

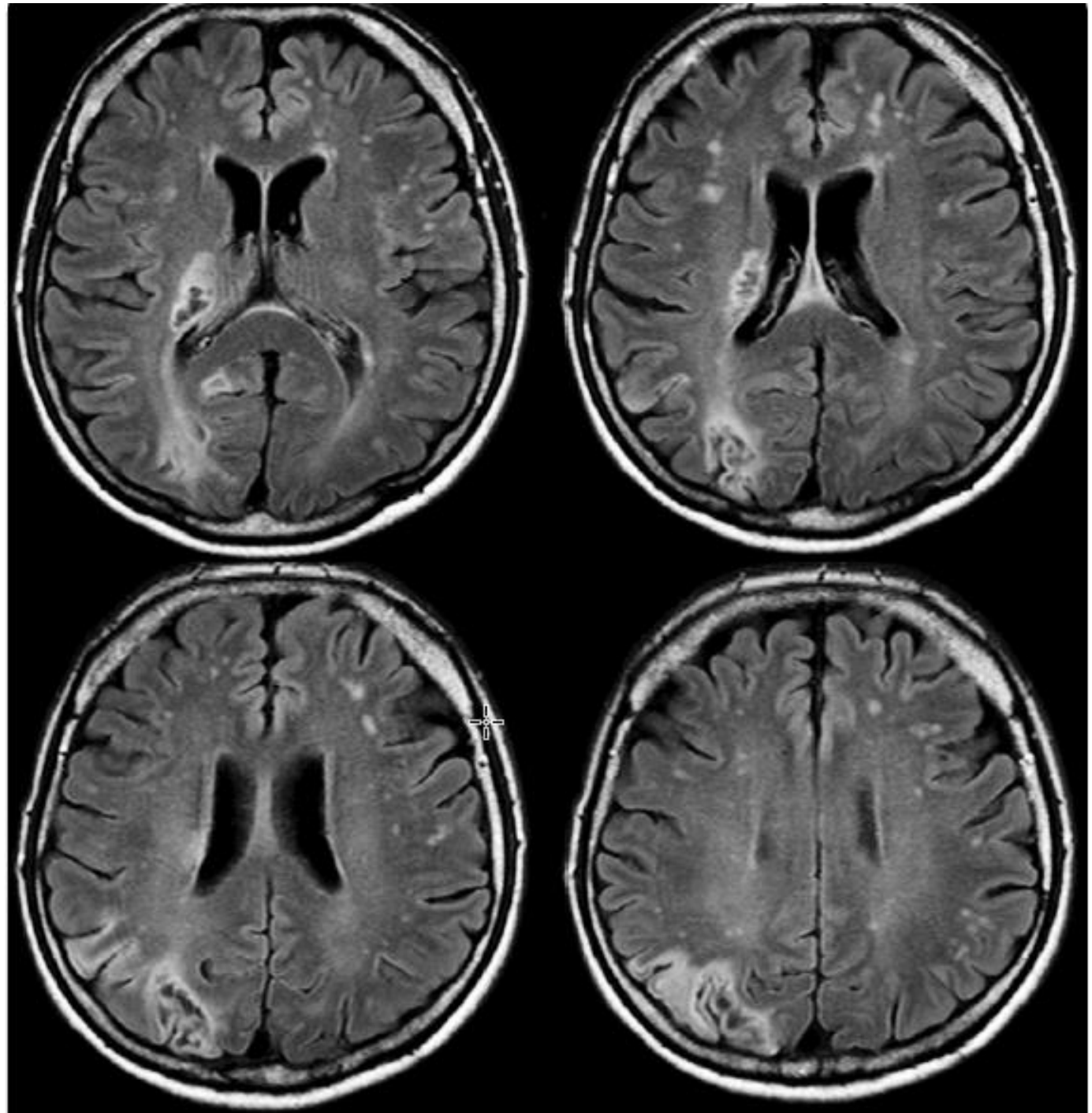
For hemorrhage usually

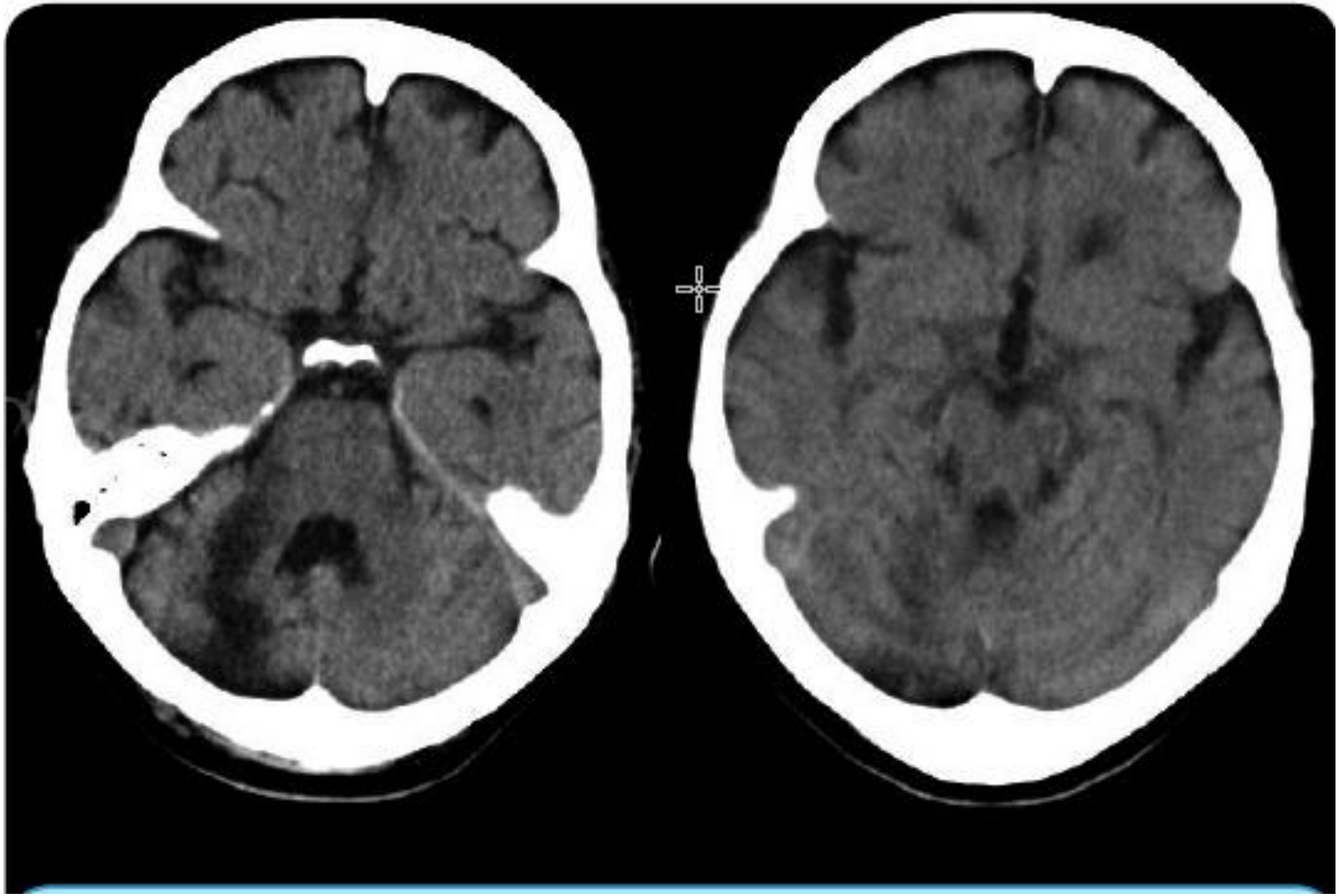
Depend on the cerebral artery

Acute

Usually unilateral

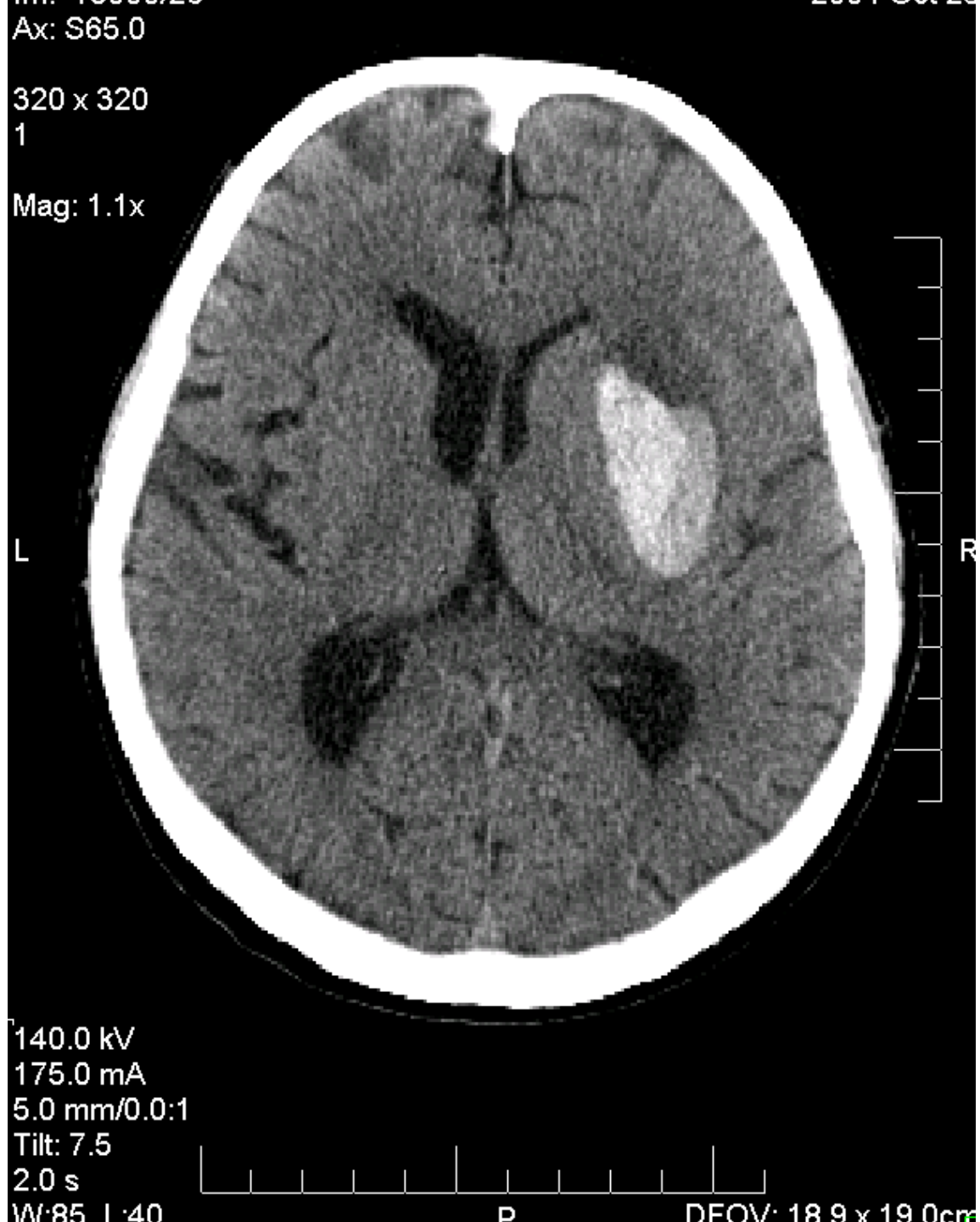


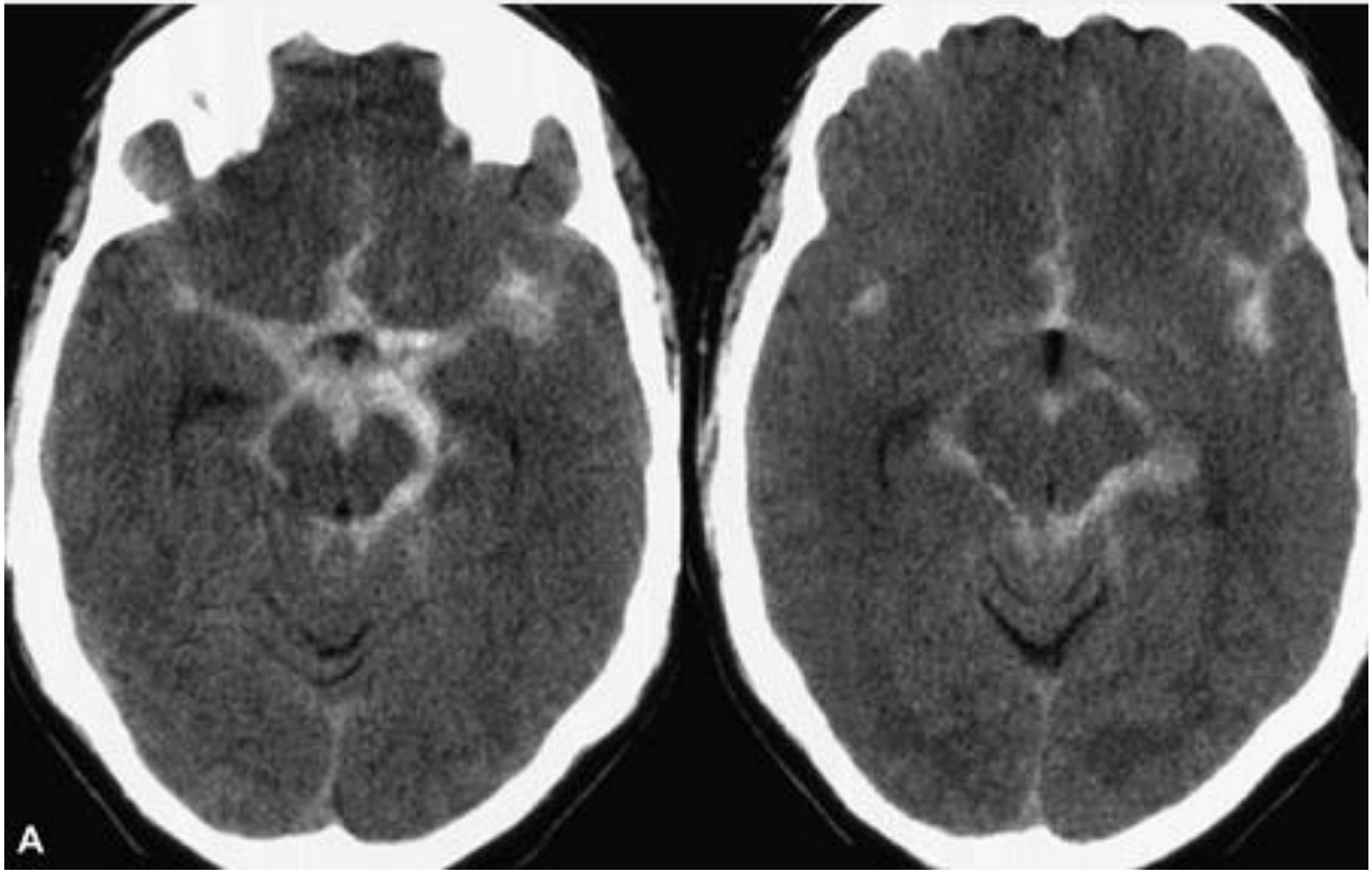




Some information about hemorrhage

- IS vs HS ratio 4:1
- Loss of consciousness and headache are the main symptoms
- Hypertension is the main risk factor
- Extremely high BP (more than 200 mm Hg)
- Mortality 30-50%


Ax: S65.0
320 x 320
1
Mag: 1.1x
L
R
140.0 kV
175.0 mA
5.0 mm/0.0:1
Tilt: 7.5
2.0 s
P


A

That will you do if you suspect stroke?

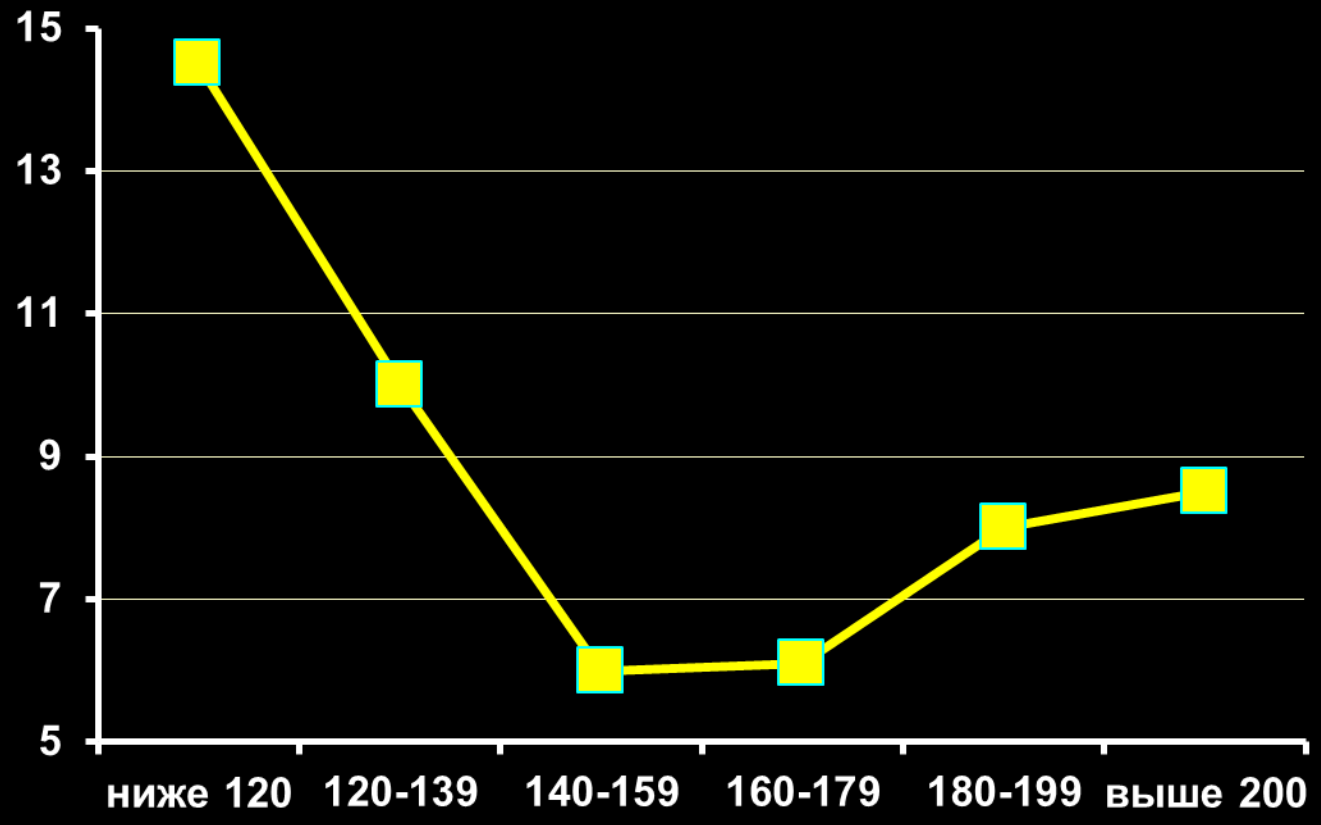
1. Call to emergency (time is brain!)
2. Measure BP. Do not lowering PB if it not up to 220 mmHg!
3. Measure glucose level. Not up to 10 mmol/l
4. Symptomatic

Time is brain!

- We have 4,5 h for thrombolysis
- We have 6 h for mechanical thrombectomy
- We have 24 h for mechanical thrombectomy (in case of BA occlusion)

BP and mortality

(IST, n=17 398)



Leonardi-Bee et al., 2002

BUT! If we have hemorrhage, we need BP decrease lower than 140 mm Hg!


Prevention

The TOAST classification denotes five subtypes of ischemic stroke:

- 1) large-artery atherosclerosis,
- 2) cardioembolism,

} 50-60% of all cases

- 3) small-vessel occlusion (lacunar stroke),
- 4) stroke of other determined etiology
- 5) stroke of undetermined etiology.

Secondary Prevention of Stroke

- A - Antiaggregants (aspirin, clopidogrel, extended-release dipyridamole, ticlopidine) or anticoagulants (apixaban, dabigatran, rivaroxaban, warfarin)
- B - Blood pressure–lowering medications
- C - Cessation of cigarette smoking, cholesterol-lowering medications, carotid revascularization
- D - Diet
- E – Exercise

Antiaggregants

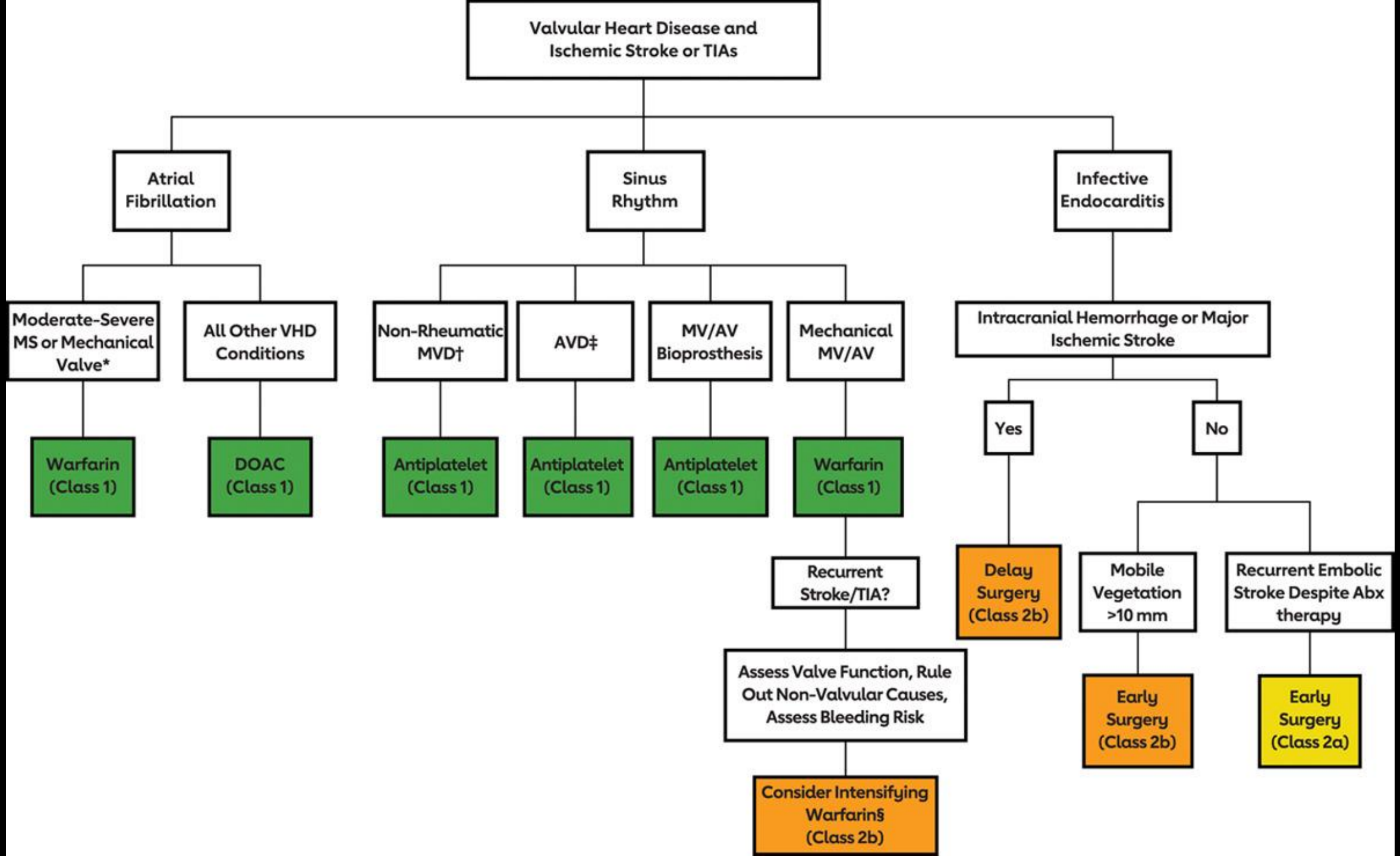
- **Aspirin**
- **Clopidogrel**
- **Ticagrelor**

Anticoagulants

- vitamin K antagonists (INR!)
- DOACs

Keypoint

1. Atrial fibrillation - DOACs
2. Mechanical heart valve – only warfarin
3. Venous stroke – warfarin better
4. ACS – double antiaggregants + anticoagulant
5. Stenting - double antiaggregants


Valvular Heart Disease and Ischemic Stroke or TIAs
Atrial Fibrillation
Sinus Rhythm
Infective Endocarditis
Moderate-Severe MS or Mechanical Valve*
All Other VHD Conditions
Non-Rheumatic MVD†
AVD‡
MV/AV Bioprosthesis
Mechanical MV/AV
Intracranial Hemorrhage or Major Ischemic Stroke
Warfarin (Class 1)
DOAC (Class 1)
Antiplatelet (Class 1)
Antiplatelet (Class 1)
Antiplatelet (Class 1)
Warfarin (Class 1)
Yes
No
Recurrent Stroke/TIA?
Delay Surgery (Class 2b)
Mobile Vegetation >10 mm
Recurrent Embolic Stroke Despite Abx therapy
Assess Valve Function, Rule Out Non-Valvular Causes, Assess Bleeding Risk
Early Surgery (Class 2b)
Early Surgery (Class 2a)
Consider Intensifying Warfarin§ (Class 2b)

Recommendations for Hypertension

Referenced studies that support recommendations are summarized in online Data Supplements 11 and 12.

COR	LOE	Recommendations
1	A	1. In patients with hypertension who experience a stroke or TIA, treatment with a thiazide diuretic, angiotensin-converting enzyme inhibitor, or angiotensin II receptor blockers is useful for lowering BP and reducing recurrent stroke risk.[185–189]
1	B-R	2. In patients with hypertension who experience a stroke or TIA, an office BP goal of <130/80 mm Hg is recommended for most patients to reduce the risk of recurrent stroke and vascular events.[185,190–194]
1	B-NR	3. In patients with hypertension who experience a stroke or TIA, individualized drug regimens that take into account patient comorbidities, agent pharmacological class, and patient preference are recommended to maximize drug efficacy.[188,189,195,196]
2a	B-R	4. In patients with no history of hypertension who experience a stroke or TIA and have an average office BP of ≥130/80 mm Hg, antihypertensive medication treatment can be beneficial to reduce the risk of recurrent stroke, ICH, and other vascular events.[190,191,193,197]

cholesterol-lowering medications

1. atorvastatin 40-80 mg daily or rosuvastatin 20 mg daily. Remember LDL level.
2. ezetimibe
3. evolocumab

- **All people under 45 yo must be testing for carotid stenosis**
- **Carotid Revascularization >70% stenosis**

Recommendations for Nutrition

Referenced studies that support recommendations are summarized in online Data Supplements 3 and 4.

COR	LOE	Recommendations
2a	B-R	1. In patients with stroke and TIA, it is reasonable to counsel individuals to follow a Mediterranean-type diet, typically with emphasis on monounsaturated fat, plant-based foods, and fish consumption, with either high extra virgin olive oil or nut supplementation, in preference to a low-fat diet, to reduce risk of recurrent stroke.[95,96]
2a	B-R	2. In patients with stroke or TIA and hypertension who are not currently restricting their dietary sodium intake, it is reasonable to recommend that individuals reduce their sodium intake by at least 1g/d sodium (2.5 g/d salt) to reduce the risk of cardiovascular disease (CVD) events (including stroke).[97,98]

40-minute sessions, 3 to 4 times per week of moderate- to vigorous-intensity aerobic activity

Summary

- Know about cause of stroke
- Active detection of the risk factors of stroke
- Screening for risk factors of stroke: BP, atherosclerosis & hyperlipidemia, diabetes, cardiac disease
- Remember about extracranial doppler
- Know about stroke symptoms and 4,5 hours therapeutic window
- Preventions is the best management of stroke!

Types of Headaches

Migraine

Hypertension

Stress

exam period

International Classification of Headache Disorders (ICHD-3)

Primary headache

- Migraine (with or without aura)
- Tension-type headache
- Trigeminal autonomic cephalalgias
- Other primary headache disorders

Secondary headache

- Headache attributed to trauma or injury to the head and/or neck
- Headache attributed to cranial and/or cervical vascular disorder
- Headache attributed to non-vascular intracranial disorder
- Headache attributed to a substance or its withdrawal
- Headache attributed to infection
- Headache attributed to disorder of homeostasis
- Headache or facial pain attributed to disorder of the cranium, neck, eyes, ears, nose, sinuses, teeth, mouth, or other facial or cervical structure
- Headache attributed to psychiatric disorder

Painful cranial neuropathies, other facial pain, and other headaches

- Painful lesions of the cranial nerves and other facial pain
- Other headache disorders.

Red flags of headache

Box 1. The SNOOP mnemonic may catch potentially life-threatening headaches

Systemic signs and disorders

Neurologic symptoms

Onset new or changed & patient >50 years old

Onset in thunderclap presentation

Papilledema, Pulsatile tinnitus,
Positional provocation, Precipitated by exercise

S	**Systemic symptoms**	Headaches with concurrent fever have a high sensitivity for neuro-infections, especially when accompanied by neck stiffness, decreased consciousness or neurological deficit.	Red Flag *Isolated fever is an orange flag
N	**History of Neoplasm**	High risk for metastatic brain tumors in patients with a known history of lung, breast cancer or malignant melanoma.	
N	**Neurological deficit**	A new headache accompanied by a neurological deficit has a high sensitivity for stroke.	
O	**Sudden Onset 'Thunderclap headache'**	Thunderclap headache has a high sensitivity for subarachnoid hemorrhage (SAH).	
O	**Older age (over 50 years)**	Headaches in older adults are more frequently associated with serious underlying etiology.	
P	**Pattern Change**	Recent change in the pattern or recent onset of a new headache (<3 months)	
P	**Positional headaches**	Orthostatic headaches are suggestive of intercranial hypotension.	
P	**Precipitated by cough**	Headaches worsened by coughing and sneezing are suggestive of Chiari malformations and posterior fossa lesions.	
P	**Papilledema**	Note: can be a normal variant in pediatrics, otherwise investigate for space-occupying lesions.	
P	**Progressive headache**	Continuous or progressive headaches are alarming as they are not features of any primary headache disorders.	
P	**Pregnancy/ Puerperium**	Headaches in the third trimester and puerperal period must be investigated for hypertensive disorders (e.g. pre-eclampsia), thrombosis, pituitary apoplexy and iatrogenic origin (e.g. Dural puncture headache).	

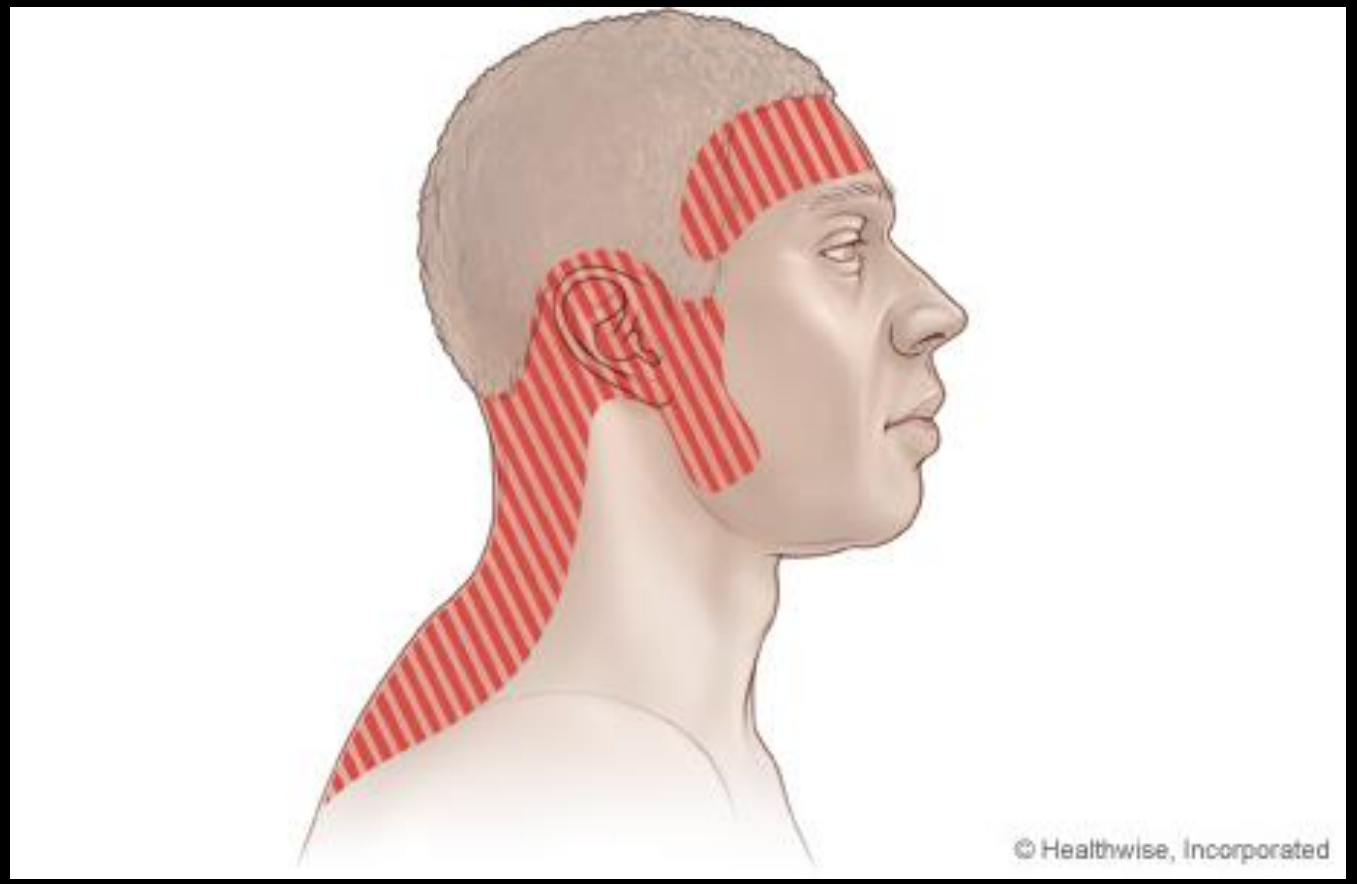
Red Flags

(http://cks.nice.org.uk/headache-assessment#!scenariorecommendation:1)

- Trauma followed by progressive symptoms
- Sudden, peaking within 5 minutes (sub-arach)
- Sudden, with neurological symptom
- Fever+neck stiffness+drowsy+photophobia
- Temporal artery tenderness
- Raised pressure-vomiting, postural, wakes from sleep. Papilloedema.
- Seizure
- History of cancer
- Severe unilateral eye pain.


Migraine
Headache

Tension headache



Dizziness

Vestibular
= vertigo

Non vestibular

Tell me what do you feel without word
“dizziness”

Cause of dizzy	Prevalence (%)
Vagal syncope / orthostatic hypotension	22,3
Vestibular	19,9
Dehydration & electrolytic abnormal	17,5
Cardiology and pulmonary disease	14,8
Stroke	6,4
Anemia	5,4
Psychiatry & functional disease	4,2
Hypoglycemia	3,6
Migraine	3,2
Intoxication	2,4
Multiple sclerosis	0,3

Complaints in vestibular pathology

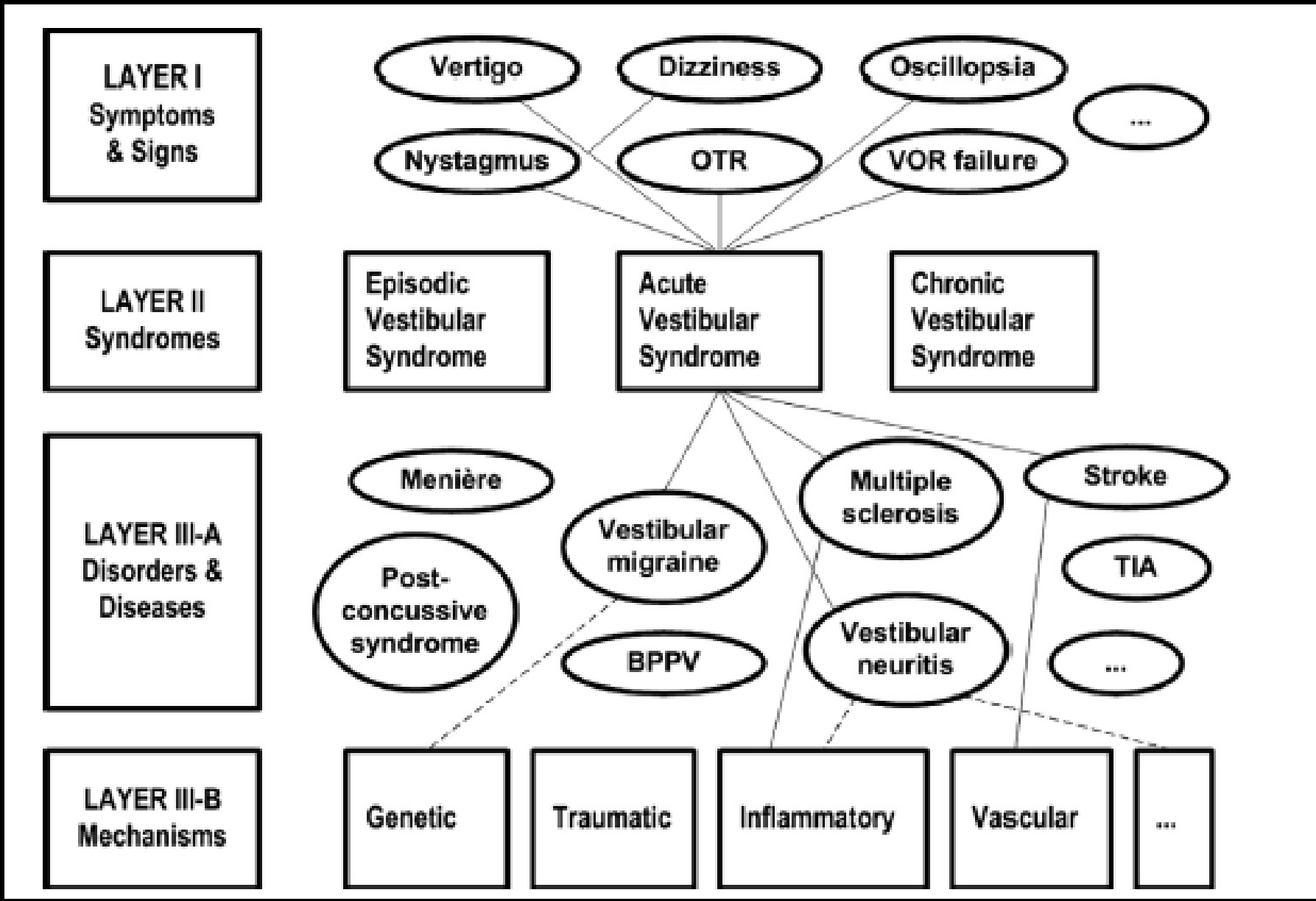
- Dizziness with rotation (vertigo) or feeling of sway on the ship
- Coordination trouble, grogginess
- Nausea, vomiting, sweating, sometimes fear
- Maybe acoustic symptoms (deafness and/or tinnitus)

Nystagmus

Peripheral	Central
Only horizontal	Any direction; If you see vertical – only central (!!!)
Do not change direction	Can change direction
No local symptomatic	Often local sings (cerebellar!)


Neurology

Video 1


LAYER I
Symptoms & Signs
Vertigo
Dizziness
Oscillopsia
...
Nystagmus
OTR
VOR failure
LAYER II
Syndromes
Episodic Vestibular Syndrome
Acute Vestibular Syndrome
Chronic Vestibular Syndrome
LAYER III-A
Disorders & Diseases
Menière
Vestibular migraine
Multiple sclerosis
Stroke
Post-concussive syndrome
TIA
BPPV
Vestibular neuritis
...
LAYER III-B
Mechanisms
Genetic
Traumatic
Inflammatory
Vascular
...

BPPV – benign paroxysmal positional vertigo

- The most common cause of vertigo. You will meet this disease!
- Complaints: intensive attacks of vertigo, trigger – head movement, duration – 1-2 min, often – nausea, vomiting.
- Diagnosis: Dix-Hallpike and roll test
- Treatment: Epley maneuver / barbecue maneuver
- ***You do not need any another management***

Thank you!