



To Score or Not to Score

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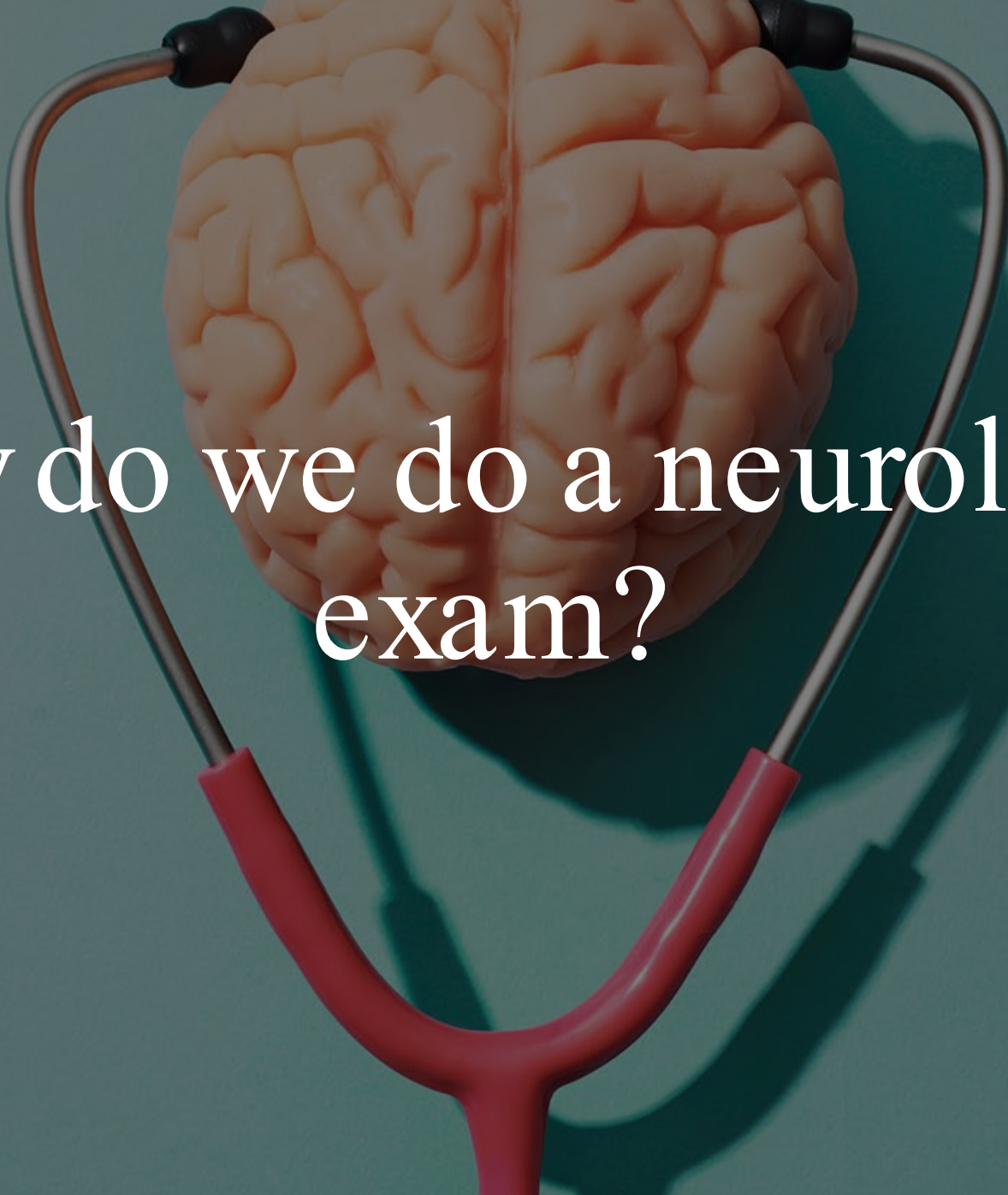
No
disclosures



Objectives

- Neuro exams
- Symptom recognition/localization
- NIHSS scoring



A human brain is shown from a top-down perspective, resting on a teal surface. A red stethoscope is draped around the brain, with its two earpieces positioned at the top and its chest piece at the bottom. The stethoscope's tubing is a dark, metallic-looking color. The brain is a realistic, fleshy orange-pink color with visible gyri and sulci. The entire scene is set against a solid teal background, which also shows a soft shadow of the brain and stethoscope.

Why do we do a neurologic
exam?

Purpose

Why is it important to
know exactly where the
stroke is in the brain?

Nurses need to know



Neurologic Examination VS NIHSS

Neuro Exam (6 components)

- LOC/Mental status
- Pupils & Cranial nerves
- Motor function
- Sensory
- Cerebellar & Coordination
- Speech, Language, Communication

NIHSS (11-components)

National Institutes of Health Stroke Scale	
Score = 0 Score = 1-4	No stroke Minor stroke
Score = 5-15 Score = 15-20 Score = 21-42	Moderate stroke Moderate to severe stroke Severe stroke
National Institutes of Health Stroke Scale score	
1a. Level of consciousness	0 = Alert; keenly responsive 1 = Not alert, but arousable by minor stimulation 2 = Not alert; requires repeated stimulation 3 = Unresponsive or responds only with reflex
1b. Level of consciousness questions: What is the month? What is your age?	0 = Answers two questions correctly 1 = Answers one question correctly 2 = Answers neither question correctly
1c. Level of consciousness commands: Open and close your eyes. Grip and release your hand.	0 = Performs both tasks correctly 1 = Performs one task correctly 2 = Performs neither task correctly
2. Best gaze	0 = Normal 1 = Partial gaze palsy 2 = Forced deviation
3. Visual	0 = No visual loss 1 = Partial hemianopia 2 = Complete hemianopia 3 = Bilateral hemianopia
4. Facial palsy	0 = Normal symmetric movements 1 = Minor paralysis 2 = Partial paralysis 3 = Complete paralysis of one or both sides
5. Motor arm 5a. Left arm 5b. Right arm	0 = No drift 1 = Drift 2 = Some effort against gravity 3 = No effort against gravity; limb falls 4 = No movement
6. Motor leg 6a. Left leg 6b. Right leg	0 = No drift 1 = Drift 2 = Some effort against gravity 3 = No effort against gravity 4 = No movement
7. Limb ataxia	0 = Absent 1 = Present in one limb 2 = Present in two limbs
8. Sensory	0 = Normal; no sensory loss 1 = Mild-to-moderate sensory loss 2 = Severe to total sensory loss
9. Best language	0 = No aphasia; normal 1 = Mild to moderate aphasia 2 = Severe aphasia 3 = Mute, global aphasia
10. Dysarthria	0 = Normal 1 = Mild to moderate dysarthria 2 = Severe dysarthria
11. Extinction and inattention	0 = No abnormality 1 = Visual, tactile, auditory, spatial, or personal inattention 2 = Profound hemi-inattention or extinction
Total score = 0-42.	

Alamri AF, Alamri FF, Alkhiri A, Alturki F, Alatawi Y, Alraddadi EA, Alqahtani MS, Alzahrani MS, Alharbi AR, Alghamdi M, Alghamdi S. National Institutes of Health Stroke Scale Scoring Tool Utilizing Medical Records: A Single-Center Validation Study. Med Princ Pract. 2026;35(3):244-254. doi: 10.1159/000549725. Epub 2025 Nov 28. PMID: 41313727; PMCID: PMC12885557.

NIHSS photo: pbrainmd.wordpress.com

Cont'd

Neuro Exam

1. LOC & MS
2. Pupils & Cranial Nerves
3. Motor Function
4. Sensory Function
5. Coordination/Cerebellar Function & Gait
6. Speech, Language & Communication

NIHSS

1. 1a. LOC 1b. LOC questions 1c. LOC commands
2. 2) Best gaze 3) Visual fields 4) Facial palsy
3. 5) Motor arm 6) Motor leg
4. 8) Sensory 11) Extinction/Inattention
5. Limb ataxia
6. 9) Best language 10) Dysarthria

Functional areas of the cortex

Brain Function (Segregated by Lobes)

FRONTAL LOBE:

Premotor Cortex:

Storage of motor patterns

Prefrontal Area:

Concentration
Elaboration of thought
Judgment
Inhibition
Personality
Emotional traits

Broca's Area:

Language production

TEMPORAL LOBE:

Auditory reception area
Expressed behavior
Receptive Speech
Memory / information retrieval

Motor Cortex:

Voluntary motor activity

PARIETAL LOBE:

Processing sensory input
Sensory discrimination
Body orientation
Primary somatic area
Secondary somatic area

Wernicke's Area:

Language comprehension

OCCIPITAL LOBE:

Visual reception area
Visual interpretation

BRAIN STEM:

Breathing
Digestion
Heart control
Blood vessel control
Alertness

CEREBELLUM:

Coordination and control
of voluntary movement

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Dominant/left brain:

- Right hemiparesis
- Right sensory problems
- “Looks toward the lesion”: left gaze preference
- Aphasia (comprehension/production)

Non-Dominant/right brain:

- Left hemiparesis
- left sensory problems
- “Looks toward the lesion”: right gaze preference
- left hemineglect (does not recognize own body part in space)

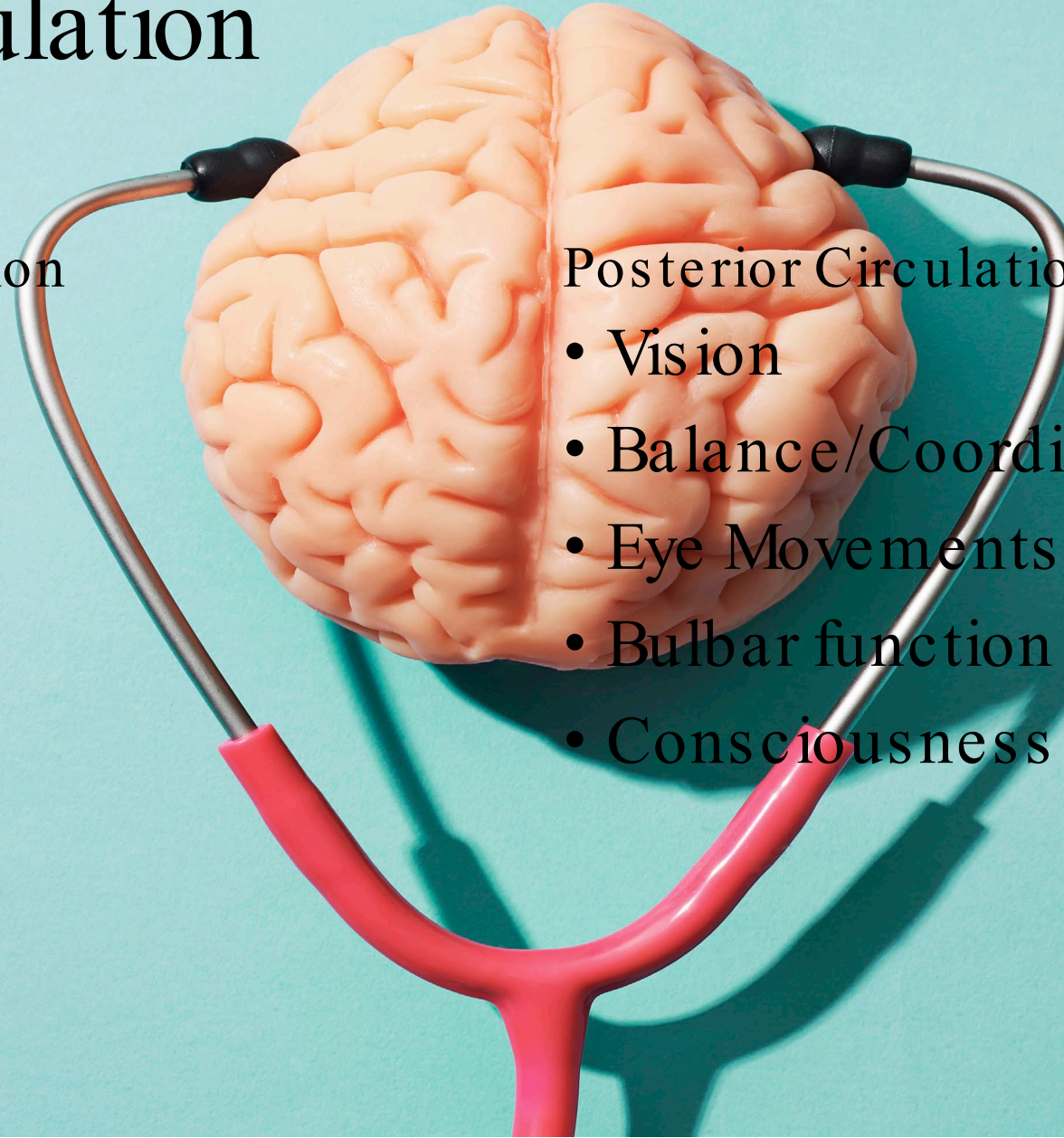
Brain Circulation

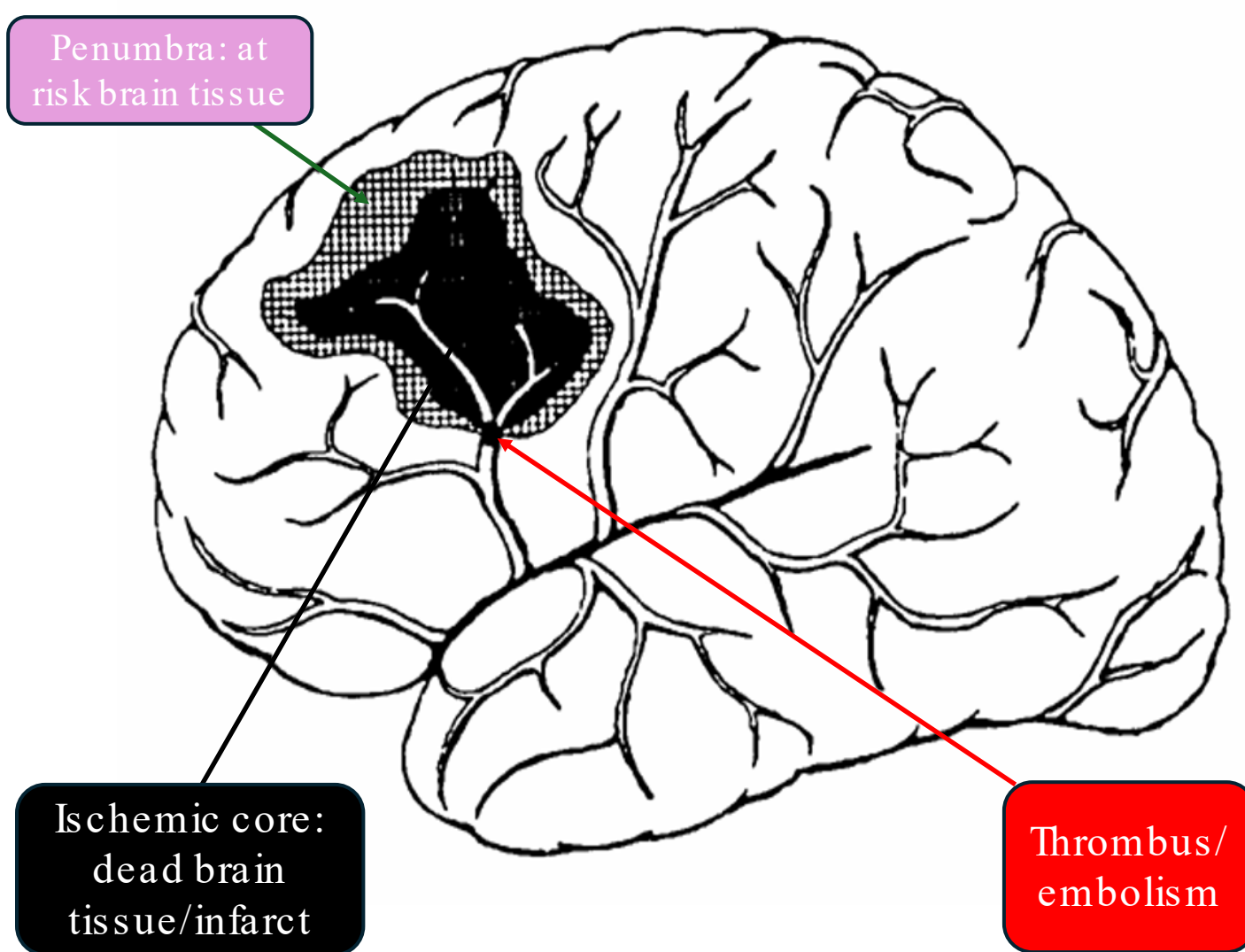
Anterior Circulation

- Motor
- Sensory
- Language
- Neglect

Posterior Circulation

- Vision
- Balance/Coordination
- Eye Movements
- Bulbar function
- Consciousness





Progression of symptoms

- First thoughts:
- Why?
 - New infarct?
 - Hemorrhage into the stroke?
 - Unwitnessed seizure?
 - Metabolic change?
 - Loss of collateral flow?
- Evaluation:
 - Vital signs
 - Imaging

Progression of symptoms
= stroke evolution or
previously healthy brain
is being damaged

- “Friends and Neighbors”
 - Astroke may initially involve only part of an arterial territory
 - Neurologic findings = territory involved
 - New neurologic findings = new part of brain being damaged
 - Involvement of more of the arterial territory: new aphasia, new gaze deviation; OR
 - Compression of a nearby structure due to brain swelling - Herniation

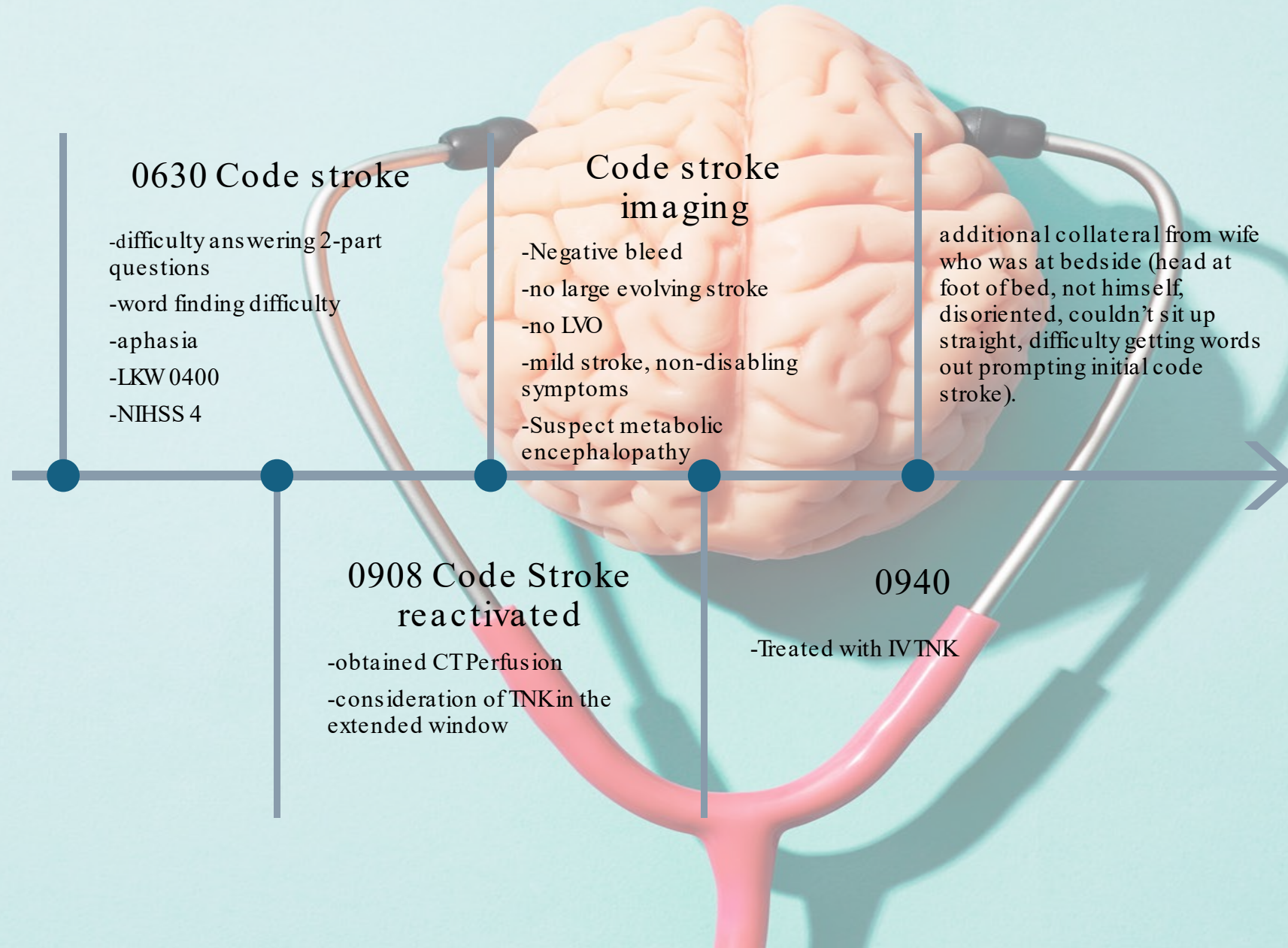




Case Studies



51 yo male PMH cardiomyopathy, Ef 15%, admitted for flu (fevers, nausea, vomiting, diarrhea).



LOC

- alert
- incorrect age, month

Facial Palsy

- Mild right facial weakness

Motor

- Strength 5/5 throughout
- RUE pronator drift
- Unstable gait

Sensory

- decreased sensation to light touch RUE/RLE

Best Language

- unable to describe scenario on NIHSS cards
- impaired sentence repetition (non-sensical)

Dysarthria

- mild slurred speech

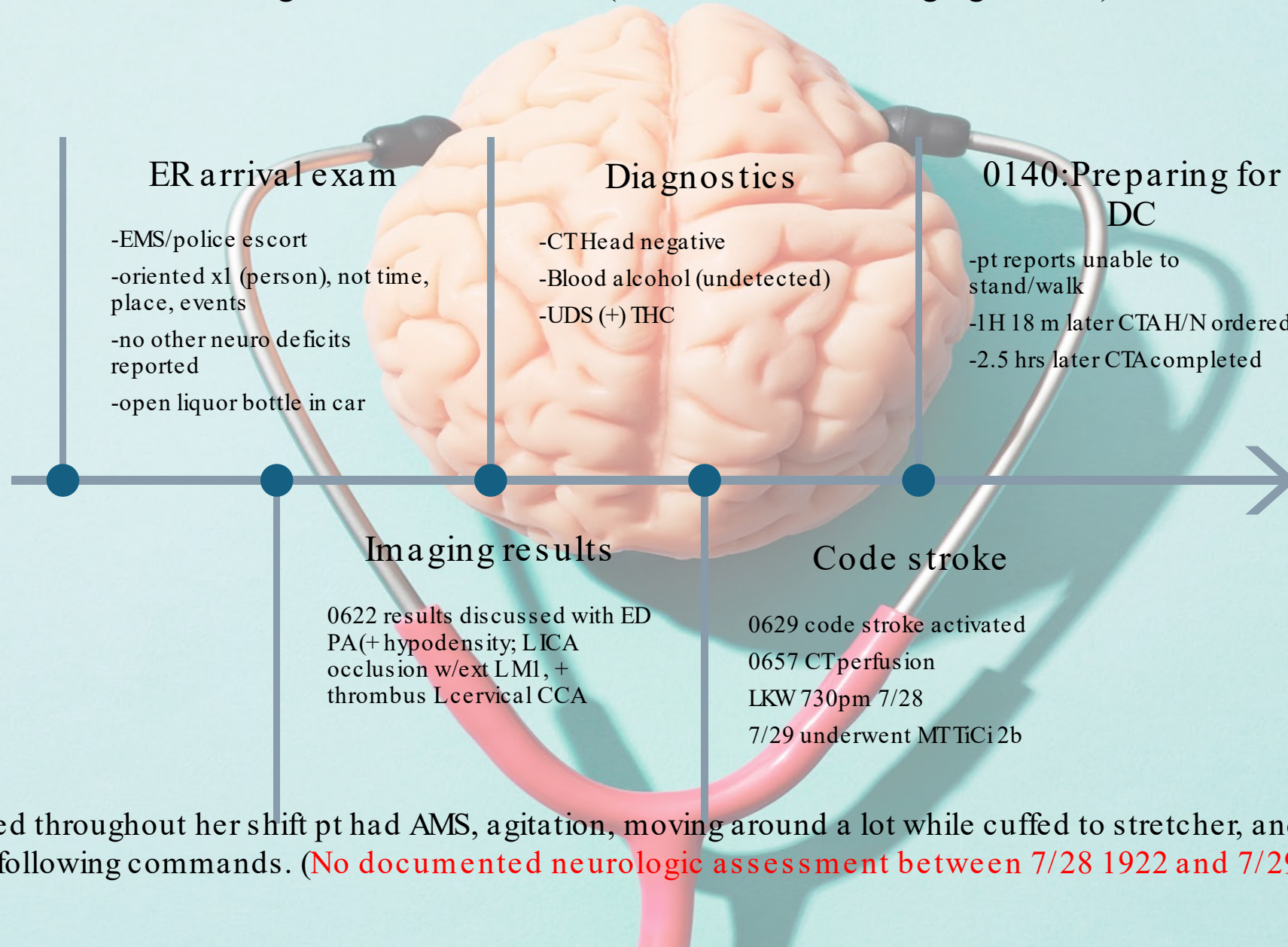
Extinction

- unable to sense right side touch w/DSS

To Score or Not to Score: What is the NIHSS?

- A. 5
- B. 9
- C. 12

48 y.o. female with PMHx of iron deficiency anemia, MDD, HTN, HLD, smoker? and vitiligo who presented with altered mentation and agitation, after a MVA (backed into EV charging station).



Bedside nurse reported throughout her shift pt had AMS, agitation, moving around a lot while cuffed to stretcher, and very hard to understand, but was following commands. (No documented neurologic assessment between 7/28 1922 and 7/29 1000am post MT)

LOC

- awake, alert
- intermittent thumbs up, not always appropriately

Best gaze

- no gaze preference
- +BTT

Facial Palsy

- right partial paralysis

Motor

- dense right hemiparesis

Best Language

- No command following
- Non-verbal

Sensory

- (-) withdrawal to pain RUE
- (+) weak withdrawal to pain RLE

To Score or Not to Score: What is the NIHSS?

- A. 14
- B. 17
- C. 19