SCRIPT

EIGHT HOURS DELAY

SCENARIO #650

NAME
MARIA JONES

SPECIALTY
Neurology

SCENARIO DIFFICULTY
ADVANCED

SIMULATION ENVIRONMENT
EMERGENCY ROOM

TARGET
Medical

This patient is not a real patient and the clinical case, while clinically plausible, is fictional.

BODY INTERACT™
CLINICAL EDUCATION

Scenario

General description of the scenario info. Corresponds to the initial information presented to the trainee when selecting this scenario.

Title

Eight hours delay

Context

Mrs. Jones lost her consciousness and collapsed at home. Her daughter, who came home after work, did not witness the collapse but found her mother on the floor, awake, confused, and slightly short of breath.

Briefing

Female, 79 years old, who lost consciousness and collapsed at home. The daughter did not witness the collapse but estimated that she last saw her mom well when she left for work 8 hours ago, and EMS responded within 10 minutes.

General learning objective

In this scenario, the learner should:
Recognize acute stroke.
Evaluate eligibility for thrombectomy after more than six hours, using Dawn trial criteria.

Specific learning objectives

Important when questioning the patient:
Characterize the main complaints reported from the relative, and determine the onset time (more than six hours), past medical history, current medication

Fundamental in ABCDE:
Perform vital signs vigilance in acute care (blood glucose, blood pressure, oxygen saturation)
Evaluate the presence of stroke mimics
Perform neurological assessments using the NIHSS scale and detect neurological deficits

Complementary diagnostic exams you should order and interpret:
Complete blood count, cardiac biomarkers, and coagulation tests: no alterations
Head CT: identify occlusion in middle cerebral artery (MCA) territory
Cerebral CT angiogram: occlusion of the M1 segment on the left middle cerebral artery
Cerebral CT perfusion: decreased CBF and increased MTT in the territory of the left MCA, indicating a significant area of perfusion mismatch

About the treatment:
Evaluate eligibility for thrombectomy using Dawn trial criteria
Call for differentiated help - stroke unit and thrombectomy procedure through interventional neuroradiology

Environment

Emergency room

Specialty
Neurology

Difficulty
Advanced

Editors
Angels Initiative

Patient characteristics

Characterization of the patient's demographic, habits, behavior and specific status effects.

Avatar

First name
Maria

Last name
Jones

Age (years)
79

Gender
Female

Race/Ethnicity
Caucasian

Hair color
Light gray

Eye color
Brown

Smoker
No

Conscious
Yes

Sedated
No

Confused
Yes

Agitated
No

Last meal over 2h
Yes

Facial palsy
100

Speech impairment
Yes

Eyelid closure
20

Patient parameters

These parameter values are used by the simulator to initialize this scenario.

Systolic arterial blood pressure (mmHg)

Diastolic arterial blood pressure (mmHg)

170

95

Heart rate (bpm)
90

O2 saturation (%)
94

Respiratory rate (/min)
20

Blood glucose (mg/dL)
95

Temperature (ºC)
37.1

Hemoglobin (g/dL)
14.9

Urinary output (mL/kg/h)
0.8

Weight (kg)
68

Height (cm)
165

BMI
25.0

Potassium (mEq/L)
4.1

Sodium (mEq/L)
133

ABCDE assessment

The items below characterize the patient's physical examination and monitoring findings on admission.

Airway		
Airway observation	1st Priority	Airway is open, not obstructed and safe.
Breathing		
Chest palpation	Not a priority	Normal: 2L - normal; 2R - normal
Chest percussion	Not a priority	Right: 1R - resonance; 2R - resonance; 3R - resonance; 4R - resonance; 5R - resonance Left: 1L - resonance; 2L - resonance; 3L - superficial cardiac dullness; 4L - superficial cardiac dullness; 5L - resonance
O2 Sat (%)	1st Priority	94%
Pulmonary auscultation	2nd Priority	Clear to auscultation, with normal vesicular murmurs in all sites.
Respiratory rate (breath/min)	1st Priority	20 /min
Circulation		
Blood pressure (mmHg)	1st Priority	170/95 mmHg
Capillary refill time (seconds)	2nd Priority	2 seconds

Heart auscultation	2nd Priority	Regular rate and rhythm, normal S1 and S2 sounds, no murmurs, gallops or rubs.
Heart rate (bpm)	1st Priority	90 bpm
Pulse palpation	Not a priority	Central - Amplitude: normal; Rhythmic; Peripheral - Amplitude: normal; Rhythmic.
Urinary output (mL/kg/h)	Not a priority	0.8 mL/kg/h
Disability		
Blood glucose (mg/dL)	1st Priority	95 mg/dL
Glasgow Coma Scale	2nd Priority	Initial: 11 (E-3; V-3; M-5) HC active Severe Left Ischemic Embolic Stroke: 9 (E-2; V-2; M-5)
Pupil light reflex	2nd Priority	Right: Size - 4 mm; Right eye light: 2 mm; Left eye light: 2 mm Left: Size - 7 mm; Right eye light: 2 mm; Left eye light: 7 mm
Exposure		
Abdominal auscultation	Not a priority	Normal hydro-aerial sounds without abdominal murmurs.
Abdominal palpation	Not a priority	No rigidity. No pain. No guarding or signs of peritoneal irritation. No masses or palpable organomegalies.
Temperature (°C)	1st Priority	37.1°

Dialogues

This is a complete list of all the possible dialogue lines both by the health practitioner (on the left) and respective responses by the patient (on the right).

Medical condition

01. How are you feeling?	1st Priority	**Patient:** Boo... streen...
02. Can you tell me your name?		**Patient:** Haavv... laa...

1st Priority

03. Are you feeling any pain?

Patient: Diabee...knoow..

2nd Priority

04. What happened to her?

Patient's daughter: I found her on the living room floor, very confused and short of breath.

1st Priority

05. Is this the first time that this happened?

Patient's daughter: Three days ago she had an episode of numbness and tingling in the right limb, with slight confusion. But it was only for five minutes.

1st Priority

06. Does she have any health problems?

Patient's daughter: Yes, she has hypertension for about ten years.

1st Priority

07. How long has it been since the symptoms started?

Patient's daughter: I'm not sure, she was fine when I left to work... I think it was eight hours ago.

1st Priority

Medication

08. Is she currently taking any medication?

Patient's daughter: She is often non-compliant with her medication, I think she takes a diuretic for hypertension.

1st Priority

Nutrition

09. When was the last time that she had something to eat?

Patient's daughter: I'm not sure, maybe at lunch time.

2nd Priority

10. Do you know if she had any changes in weight recently?

Patient's daughter: She has gained a few weight recently, but she still is with normal values.

Not a priority

Activity

11. How active is she?

Patient's daughter: She does a few walks around the block, nothing much.

Not a priority

12. Do you know what she was doing when she felt ill?

Patient's daughter: I don't know... I was at work.

2nd Priority

Risk factors

13. Does she have any allergies?

Patient's daughter: No, nothing.

1st Priority

14. Does she smoke?

Patient's daughter: No, she never smoked.

2nd Priority

15. How often does she have an alcoholic drink?

Patient's daughter: She only drinks occasionally.

2nd Priority

16. Has she been under stress lately?

Patient's daughter: No, not really.

2nd Priority

Diagnostic strategies

The items below characterize the test results that are possible during this scenario, including rules that may condition test results.

Decision aids

Dawn criteria

1st Priority

If no imaging is done: Dawn criteria is not applicable at the moment
A table will appear with Group A, B and C left in blank. Data will only appear

		after NIHSS scale is done and results from CT images. It will be falling into group C. The following will be filled out: Age: 79 NIHSS: 20 Core volume: 31ml Time since onset: 8 Pre-Stroke mrS: 0 %MCA: <1/3 CTA occlusion: M1
Stroke scale (NIHSS)	1st Priority	Initial - 20 HC active Severe Left Ischemic Embolic Stroke - 26 Treatments adminstered: Thrombectomy - 4
Electrophysiology		
12-Lead ECG	2nd Priority	Sinus rhythm.
Imaging		
Cerebral CT angiogram	1st Priority	Occlusion of the M1 segment of the left middle cerebral artery. No other pathological findings are visible.
Cerebral perfusion CT	1st Priority	Decreased CBF and increased MTT in the territory of the left MCA. Decreased CBV in the left caudate and lenticular nucleus and adjacent corona radiata, with preserved CBV in the remaining territory of the left MCA, indicating a significant area of perfusion mismatch.
Chest X-ray	Not a priority	The lungs are clear. The heart is normal in size. The mediastinum is within normal limits.
Head CT	1st Priority	Spontaneous hyperdensity in the M1 segment of left MCA. Hypodensity of the left lenticular, caudate nucleus, and adjacent corona radiata, compatible with mild early signs of cerebral ischemia in the territory of the left MCA. No other acute lesions are visible. ASPECTS: 8
Transcranial doppler	Not a priority	Occlusion of the proximal M1 segment of the left MCA. All other intracranial

arteries have normal flow.

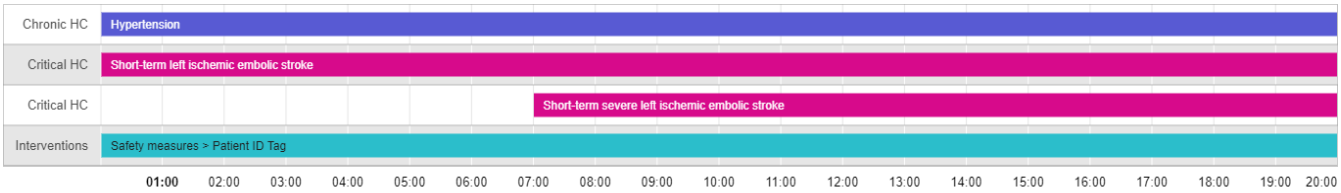
Lab tests

Arterial blood gas	Not a priority	Blood pH - 7.39 Hemoglobin (g/dL) - 12.8 PaCO2 (mmHg) - 42 HCO3- (mEq/L) - 24.6 BE (mEq/L) - 0.02 O2 sat (%) - 94 Na+ (mEq/L) - 133 K+ (mEq/L) - 4.1 Lactate (conventional) (mg/dL) - 9.0
Biochemistry	2nd Priority	BUN (mg/dL) - 19 Na+ (mEq/L) - 133 K+ (mEq/L) - 4.1 AST (IU/L) - 21 ALT (IU/L) - 32 AP (IU/L) - 78 CK (IU/L) - 113 CRP (mg/L) - 2.3
Cardiac biomarkers	2nd Priority	CK-MB Mass (ng/mL) - 2 Troponin I (ng/mL) - 0.01 Myoglobin (ng/mL) - 17
Coagulation tests	2nd Priority	aPTT (s) - 36 Prothrombin time (s) - 12.0 INR - 1.0
Complete blood count	2nd Priority	Leukocytes (/µL) - 8500 Neutrophils (/µL) - 4500 (53%) Lymphocytes (/µL) - 3200 (38%) Monocytes (/µL) - 410 (5%) Eosinophils (/µL) - 280 (3%) Basophils (/µL) - 110 (1%) Immature granulocytes (/µL) - 0 (0%) Erythrocytes (×106/µL) - 4.8 Hemoglobin (g/dL) - 14.9 Hematocrit (%) - 44 MCV (µm³) - 92 MCH (pg/cell) - 30 MCHC (g/dL) - 35 RDW (%) - 12.0 Platelets (x10³/µL) - 222
Urinalysis	Not a priority	Specific Gravity - 1.024 pH - 6.0 Urine color - Yellow Appearance - Clear

WBC Esterase - Negative
Protein - Negative
Albumin - Negative
Glucose - Negative
Ketones - Negative
Erythrocytes - Negative
Bilirubin - Negative
Urobilinogen, Semi-Qn - 0.0
Nitrite, Urine - Negative
Intoxicants - Negative

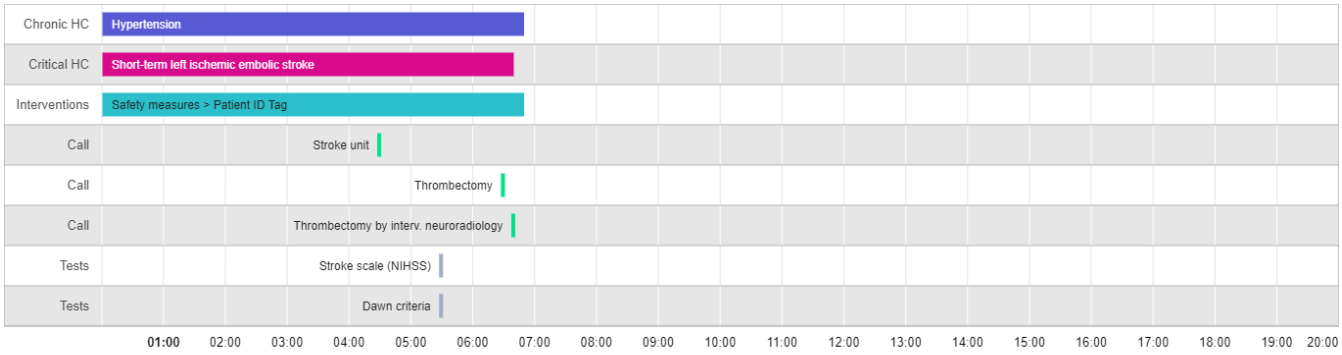
Baseline

This section is automatically generated and predicts scenario behavior assuming no actions by the trainee, which usually represents the worst-case scenario.



Optimal clinical approach

This section previews how the optimal approach resolves the scenario successfully. Comparison with Baseline may be useful to understand the scenario behavior.



Health conditions

This section characterizes the illnesses, or health conditions, the patient may be afflicted with in this scenario. These serve important foundational purposes in the scenario, as they can be used to: affect what the patient says in dialogues; influence how the patient deteriorates over time; condition examination, medical test and call results; and determine the adequate clinical approach required to solve the case successfully.

Chronic health conditions

Hypertension

Description: High blood pressure.

Critical health conditions

Short-term left ischemic embolic stroke

Description: Moderate blockage of a blood vessel in the left brain by a clot formed in another part of the body. Associated with broca aphasia. After a large amount of time leads to severe short duration left ischemic embolic stroke. When treated, broca aphasia is also reverted.
Solution: Thrombectomy.

Short-term severe left ischemic embolic stroke

Description: Severe blockage of a blood vessel in the left brain by a clot formed in another part of the body- Associated with broca aphasia. Immediately leads to consciousness impairment. When treated, broca aphasia is also reverted.
Solution: Thrombectomy.

Treatment priorities

Treatment items that are considered necessary or adequate to solve this scenario are listed below. Notes: 1st Priority - mandatory items to solve the case successfully. 2nd Priority - optional items that are considered adequate, but are not essential. Not a Priority - unnecessary items that are considered inadequate or a waste of time.

i.1 - Call - Stroke unit Call > Stroke unit	1st Priority	The stroke unit has been notified.
i.2 - Call - Thrombectomy Call > Thrombectomy	1st Priority	Initial: Please confirm eligibility before sending the patient to thrombectomy. After Dawn criteria is performed and results are given: The patient is ready to undergo a thrombectomy. Do you want to proceed?

i.3 - Call - Thrombectomy by interv. neuroradiology Call > Thrombectomy by interv. neuroradiology	1st Priority	Initial TICI of the left middle cerebral artery was 0. Thrombectomy was successfully performed with a final TICI of 3.
i.52 - Fibrinolytics - Alteplase Medications > Fibrinolytics > Alteplase	Not a priority	ESO guidelines "For patients presenting directly to a thrombectomy centre with ischaemic stroke of 4.5–9 h duration (known onset) with CT or MRI core/ perfusion mismatch and who are eligible for mechanical thrombectomy, the group members could not reach a consensus regarding whether intravenous thrombolysis should be used before mechanical thrombectomy.”

Differential diagnosis

Multiple choice question presented to the trainee in order to confirm whether they got the diagnosis right.

Question	What is the most likely diagnosis?
Correct answer	Ischemic stroke
3 Incorrect answers	Hemorrhagic stroke
	Brain tumor
	Brain abscess

Ending messages

Feedback messages presented to trainees for particular successful or failed approaches and the respective conditional rules that trigger these messages.

Title	Type	Message	Conditional
Trombectomy administered	**Success**	Your practice meets the guidelines' requirements.	

References

1. Powers WJ, Rabinstein AA, Ackerson T, et al. 2018 Guidelines for the Early Management of Patients With Acute Ischemic Stroke: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association. *Stroke*. March 2018.

2. Berge E, Whiteley W, Audebert H, et al. European Stroke Organisation (ESO) guidelines on intravenous thrombolysis for acute ischaemic stroke. *European Stroke Journal*. 2021;6(1):I-LXII.

2. Albers GW, Marks MP, Kemp S, et al. Thrombectomy for Stroke at 6 to 16 Hours with Selection by Perfusion Imaging. *New England Journal of Medicine*. 2018;378(8):708-718.

3. Nogueira RG, Jadhav AP, Haussen DC, et al. Thrombectomy 6 to 24 Hours after Stroke with a Mismatch between Deficit and Infarct. *New England Journal of Medicine*. 2018;378(1):11-21.