

SCRIPT

ACUTE ISCHEMIC STROKE WITH FIBRINOLYTIC BORDERLINE INDICATION



SCENARIO

#35

NAME

MARTIN MASTERSON

SPECIALTY

Neurology

DIFFICULTY LEVEL

ADVANCED

SIMULATION ENVIRONMENT

INTRA HOSPITAL - EMERGENCY ROOM

BODY INTERACT™
VIRTUAL PATIENTS

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

Scenario

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

Title

Acute ischemic stroke with fibrinolytic borderline indication

Context

Martin was found by his daughter lying on the floor of his home with left-sided weakness including facial asymmetry. Martin's daughter immediately called the emergency unit and he was brought to the Hospital.

Briefing

Male, 75 years old. Obese, high blood pressure, diabetes. Patient was found by his daughter lying on the floor with a bruise on his left arm and with left hemiparesis, three hours ago. Patient was completely asymptomatic six hours ago.

General learning objective

Recognize acute stroke.

Specific learning objectives

Start vital signs vigilance in acute care
Performance of neurological assessments (NIHSS)
Blood pressure management in acute stroke
Knowledge of relative and absolute contraindications to thrombolysis

Pre-simulation notes

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Environment

Intra Hospital - Emergency Room

Specialty

Neurology

Difficulty Level

Advanced

Reviewers

Angels Initiative

Patient characteristics

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

Avatar



Patient Name

Martin Masterson

Age

75 years

Race/Ethnicity

European/Caucasian

Smoker

No

Sedated

No

Agitated

No

Facial palsy

-100

Renal metabolic compensation

Auto

Gender

Male

Eye color

Brown

Conscious

Yes

Confused

No

Last meal over 2h

Yes

Speech impairment

No

Patient parameters

These parameter values are used by the simulator to initialize this scenario and correspond to a pre-treatment baseline.

Systolic arterial blood pressure (mmHg)

164

Heart rate (bpm)

87

Respiratory rate (/min)

12

Temperature (°C)

36.5

Urinary output (mL/kg/h)

0.59

Height (cm)

173

Diastolic arterial blood pressure (mmHg)

91

O2 saturation (%)

95

Blood glucose (mg/dL)

159

Hemoglobin (g/dL)

13.2

Weight (kg)

95

BMI

31.7

Potassium (mEq/L)

4.1

Sodium (mEq/L)

139

Physical examination

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. No upper airway abnormal noises.

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 - dullness.
Left: 1L - resonance; 2L - resonance; 3L - superficial cardiac resonance; 4L - superficial cardiac resonance; 5L - resonance.

O2 Sat (%)

1st Priority

95

Pulmonary auscultation

2nd Priority

Clear to auscultation, with normal vesicular murmurs in all sites.

Respiratory rate (/min)

1st Priority

12

Circulation

Blood pressure (mmHg)

1st Priority

164/91

Capillary refill time (s)

Not a priority

1.3

Cardiac auscultation

2nd Priority

Regular rate and rhythm, normal S1 and S2 sounds, no murmurs, gallops or rubs.

Heart rate (bpm)

1st Priority

87

Pulse palpation

Not a priority

Central - Amplitude: strong; Rhythmic.
Peripheral - Amplitude: strong; Rhythmic.

Urinary output (mL/kg/h)

2nd Priority

0.59

Disability

Blood glucose (mg/dL)	1st Priority	159
Glasgow Coma Scale	2nd Priority	14 - Mild impairment of consciousness (E4-V4-M6).
Pupil light reflex	Not a priority	Right: Size - 4 mm; Right eye light: 2 mm; Left eye light: 2 mm. Left: Size - 4 mm; Right eye light: 2 mm; Left eye light: 2 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.
Abdominal percussion	Not a priority	6R- tympanic; 7R- tympanic; 6L- tympanic; 7L- tympanic.
Temperature (°C)	2nd Priority	36.5

Dialogues

This is a complete list of all possible dialogue questions (on the left) and the corresponding responses (on the right).

History Taking

Chief Complaint

01. How are you feeling?	1st Priority	I doon't feel muuch the left side of my boody. It seems thaat I doon't haave much streeentgh on my left side.
02. What happened to you? (After question 1 is asked)	1st Priority	I remeember that suddeenly, I felt weeaak on my left siide, and fell, on the flooor.

History of Present Illness

03. When was the last time you had something to eat?	Not a priority	At luunch time.
04. What were you doing		I was in my living room at home, and I was

when you felt ill?

2nd Priority

going to the kitchen when I fell down, if I can remember it right.

05. What was the last thing you ate?

Not a priority

I had hamburgers with chips and a bit of cake, that my wife made.

06. Were you doing any physical activity when you became ill?

Not a priority

I wasn't making big efforts, but actually I was walking from one place to another.

07. Are you in pain at all?

1st Priority

No, I only don't have strength on the left side of my body.

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

(After question 2 is asked)

1st Priority

I can't remember when I started feeling like this.

Past Medical/Surgical History

09. Do you have any other health problems?

2nd Priority

I have diabetes and a high blood pressure, that I know of.

10. Do you have high blood pressure?

2nd Priority

Yes, I have. I don't know if it's very high, but I have it.

11. Do you have high cholesterol?

2nd Priority

My doctor didn't tell me that.

12. Have you ever been diagnosed as having diabetes?

Yes, my doctor told me that I have, after my last blood tests.

1st Priority

13. Have you had any severe illnesses or injuries before?

Noo, I never haad any serioous disease in my wholee liife.

2nd Priority

Medications and Allergies

14. Are you currently taking any medication?

Yes, I take lisinopriil, metformiin and aspiriin, if I'm riight.

1st Priority

15. Have you had any side effects from your medication?

Noo, I doon't think soo. I haveen't been feeling differeent with my medic aatioon.

2nd Priority

16. Are you taking any supplements?

Noo.

Not a priority

17. Do you have any allergies?

Noo.

1st Priority

Social History

18. Can you please tell me what you usually eat?

I admiit that I'm caare less with what I eat. I like eeating everything.

Not a priority

19. How active are you?

Noot reaally. At the weekaands I oonly go for a smaall waalk with my wiife.

Not a priority

20. Have you been under any stress lately?

Noo, I'm no longer workiing, so I spend muuch of my tiime resting at home.

2nd Priority

21. How often do you consume alcohol?	Not a priority	At luunch timee I like haviing my glass oof wiine.
22. Do you eat snacks between meals?	Not a priority	Yees, usually I eeat soome thang. I like eeating bread with haam and cheese at teea tiime.
23. Are you a smoker?	2nd Priority	Noo.
24. Any recent weight changes?	Not a priority	Noo that I've nooticed. I always have been overweeigh.
25. Have you felt any changes to your appetite?	Not a priority	Noo, I'm eeat aing what I uusually eeaat.

Medical Tests

The items below describe the possible test results in this scenario, including rules that may affect those results.

Decision aids

Stroke scale (NIHSS)	1st Priority	Ischemic embolic right stroke or no stroke: 12 - Moderate stroke Severe ischemic embolic right stroke or Fibrinolytic overdose: 23 - Severe stroke After Fibrinolytic: 6 - Moderate stroke After Thrombectomy: 4 - Minor stroke
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Electrophysiology

12-Lead ECG	2nd Priority	Sinus rhythm.
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Imaging

Cerebral CT angiography	1st Priority	Occlusion of the proximal M2 segment of the right Middle Cerebral Artery. No other pathological findings are visible.
Cerebral perfusion CT	1st Priority	Decreased Cerebral Blood Flow (CBF)

		and prolonged Mean Transit Time (MTT) in the right frontoparietal lobes; small frontal subcortical area of decreased Cerebral Blood Volume (CBV).
Chest CT	Not a priority	Absence of significant changes of pulmonary parenchyma density and pleural effusion.
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 distal M1 segment of the right middle cerebral artery. This information needs to be integrated clinically but it is likely related to an acute thrombus. There are no visible parenchymal lesions. The cerebral cisterns and ventricles are of normal volume. There are no signs of bone fractures. ASPECTS: 10.
Neck Doppler ultrasound	2nd Priority	Reduction of carotid flow by partial occlusion of the right carotid artery by atherosclerotic plaque.
Transcranial Doppler	2nd Priority	Distal occlusion of right MCA.
Transesophageal echocardiogram	Not a priority	Moderate left atrial dilation. Normal left ventricular size and function.
Transthoracic echocardiogram	Not a priority	No alterations found to cardiac morphology. Normal left ventricular systolic function.

Lab tests

Arterial blood gas	Not a priority	No significant alterations
Blood pH - 7.38 Hemoglobin (g/dL) - 13.2 PaO2 (mmHg) - 76 PaCO2 (mmHg) - 41.8 HCO3- (mEq/L) - 24.6 BE (mEq/L) - -0.74 O2 sat (%) - 95 Na+ (mEq/L) - 139 K+ (mEq/L) - 4.1 Cl- (mEq/L) - 101.5		

		Anion gap (mEq/L) - 13.61 Lactate (mg/dL) - 9 Due to simulation of test imprecision, there may be slight differences in the actual results.
Biochemistry	2nd Priority	Increase in Blood glucose. Decrease in GFR. Blood glucose (conventional) (mg/dL) - 159 Blood glucose (SI) (mmol/L) - 8.8 BUN (mg/dL) - 19 Serum creatinine (mg/dL) - 0.9 Creatinine clearance (mL/min) - 95 GFR (mL/min/1.73m²) - 83.26 Na⁺ (mEq/L) - 139 K⁺ (mEq/L) - 4.1 AST (IU/L) - 21 ALT (IU/L) - 32 AST/ALT - 0.66 AP (IU/L) - 78 CK (IU/L) - 113 Osmolarity (mOsm/L) - 294 CRP (mg/L) - 2.3 Due to simulation of test imprecision, there may be slight differences in the actual results.
Cardiac biomarkers	Not a priority	CK-MB Mass (ng/mL) - 2 Troponin I (ng/mL) - 0.01 Myoglobin (ng/mL) - 17
Coagulation tests	2nd Priority	aPTT (s) - 34 Prothrombin time (s) - 12.0 INR - 1.0
Complete blood count	2nd Priority	Decrease in Hematocrit. Leukocytes (/μL) - 8496 Neutrophils (/μL) - 4496 Lymphocytes (/μL) - 3197 Monocytes (/μL) - 407 Eosinophils (/μL) - 277 Basophils (/μL) - 107 Immature granulocytes (/μL) - 1 Erythrocytes (×10⁶/μL) - 4.3

		Hemoglobin (g/dL) - 13.2 Hematocrit (%) - 39 MCV (μm^3) - 91 MCH (pg/cell) - 30.1 MCHC (g/dL) - 35.1 RDW (%) - 12.1 Platelets ($\times 10^3/\mu\text{L}$) - 223
		Due to simulation of test imprecision, there may be slight differences in the actual results.
Lipid profile	Not a priority	No significant alterations. Total cholesterol (mg/dL) - 171 Triglycerides (mg/dL) - 145 HDL cholesterol (mg/dL) - 69 LDL cholesterol (mg/dL) - 73 Cholesterol ratio - 2.5
		Due to simulation of test imprecision, there may be slight differences in the actual results.
Urinalysis	Not a priority	No significant alterations. 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

Initial notifications

Initial notifications presented to the trainee after a specified amount of time after starting the simulation

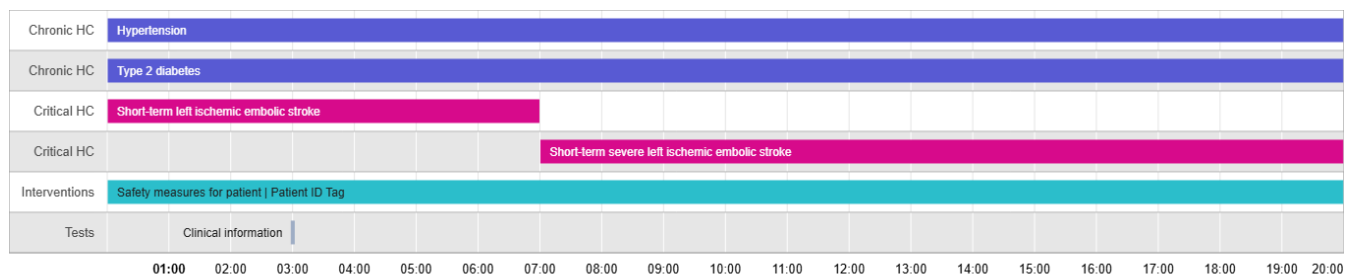
Medical test	Time	
Clinical information	03:00	Source: Emergency medical team report Previous medication: Takes lisinopril 20 mg daily, metformin 2000 mg daily, aspirin, 100 mg

daily.

Other information: Left-sided weakness detected three hours ago; Family member informed that patient was seen last time without symptoms six hours ago, he was found lying down with a small bruise in the left arm.

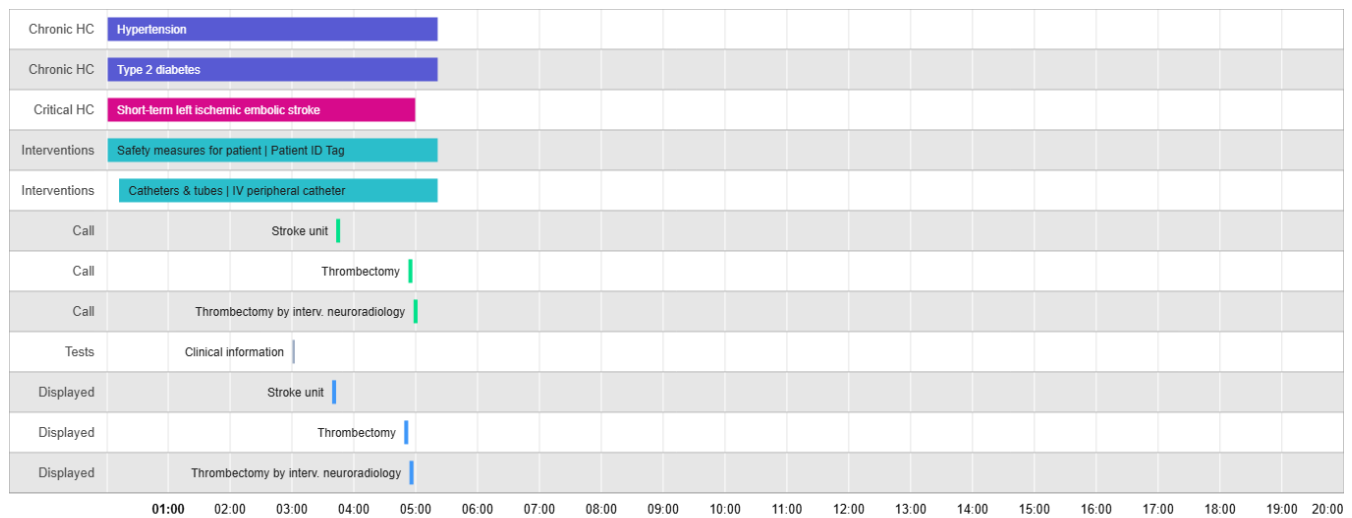
Baseline

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 - International

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



Management

The items below represent management actions relevant to solving this clinical scenario. Notes: 1st Priority – Mandatory items required for a successful outcome. 2nd Priority – Optional items considered adequate but not essential. Not a Priority – Unnecessary items that are inadequate or a waste of time.

i.1 - Call the Stroke unit

1st Priority

Message: "The patient is ready to undergo a thrombectomy. Do you want to proceed?"

If the user presses the button:

- Thrombectomy by interv. neuroradiology: Thrombectomy is performed and a video with a report is shown (see report in the "Notes" section below)
- Cancel: the case continues

Call | Stroke unit

i.2 - Request a thrombectomy by interv. neuroradiology

1st Priority

Message: "The stroke unit has been notified."

Call | Thrombectomy

Call | Thrombectomy by interv. neuroradiology

i.3 - Administer a fibrinolytic

2nd Priority

Medications | Fibrinolytics | Alteplase

Medications | Fibrinolytics | Tenecteplase

i.4 - Oxygen supplementation

2nd Priority

Interventions | Oxygen | High flow mask

Interventions | Oxygen | Nasal cannula

Question(s) during the simulation

Questions presented to the trainee in order to have a more detailed evaluation of the use of the clinical scenario.

Head CT question:

Question

Based on the patient's clinical assessment and the head CT findings, select the most likely diagnosis:

Correct answer

Acute ischemic stroke

2 Incorrect answer(s)

Head trauma

Brain abscess

Head CT question:

Question

Does this CT have signs of any intracranial hemorrhage?

Correct answer

No

1 Incorrect answer(s)

Yes

Head CT question:

Question

Based on the neurological assessment, please rate the stroke severity:

Correct answer

Moderate stroke

2 Incorrect answer(s)

Minor stroke

Severe stroke

Cerebral perfusion CT question:

Question

Are there any contraindications for thrombolysis?

Correct answer

No, the patient has no contraindications to thrombolysis, considering the result of CT perfusion

2 Incorrect answer(s)

Yes, because the patient was

last known well 6 hours ago

Yes, because the patient is taking aspirin

Cerebral CT angiography question:

Question

Correct answer

2 Incorrect answer(s)

Which vascular lesion is visible?

Occlusion of the right M2 MCA segment

No occlusion is visible

Occlusion of the top of the right ICA

Cerebral CT angiography question:

Question

Correct answer

2 Incorrect answer(s)

What is the extent of the established ischemic infarct in the CT scan?

No changes. ASPECTS: 10

Moderate lesion. ASPECTS: 6

Large infarct. ASPECTS: 0

Cerebral CT angiography question:

Question

Correct answer

1 Incorrect answer(s)

Does this patient have an indication for thrombectomy?

Yes

No

Question(s) after simulation

Questions presented to the trainee in order to have a more detailed evaluation of the use of the clinical scenario.

Summative Multiple Choice Question:

Question

What is the most likely diagnosis?

Correct answer

Ischemic stroke

3 Incorrect answer(s)

Cerebral venous thrombosis

Epileptic crisis

Arteriovenous malformation

Formative Multiple Choice Question:

Question

Regarding the use of thrombolysis in this patient:

Correct answer

The patient had a favorable CT perfusion “with small ischemic core” and a significant mismatch ratio; therefore, thrombolysis could be used

2 Incorrect answer(s)

Considering the patient was last known well 6 hours ago, thrombolysis is formally contraindicated

Considering the patient has an indication for thrombectomy, there is no indication for thrombolysis

Formative Multiple Choice Question:

Question

Considering the patient has a stenosis greater than 70% in

the right extracranial internal carotid artery, what is the correct therapeutic approach?

Correct answer

Best medical treatment and endarterectomy within the first 14 days

2 Incorrect answer(s)

Best medical treatment without indication for carotid intervention

Best medical treatment and endarterectomy after 30 days

Formative Multiple Choice Question:

Question

What is the minimum oxygen level accepted in the acute phase of stroke?

Correct answer

95%

2 Incorrect answer(s)

90%

80%

Handoff question

Question presented to the trainee to assess their ability to effectively communicate patient information during a transition of care. This question is optional.

Question

Summarize this Body Interact scenario using a structured handoff pattern.

Review handoff pattern

SBAR (Situation, Background, Assessment, Recommendation): Includes current condition and reason for handoff, relevant history and context, assessment details, and recommended

actions.

SOAP (Subjective, Objective, Assessment, Plan): Covers patient-reported symptoms and history, measurable data and findings, clinical impressions and diagnoses, and the treatment plan.

I-PASS (Illness Severity, Patient Summary, Action List, Situation Awareness and Contingency Planning, Synthesis by Receiver): Encompasses illness status, patient background, tasks and actions, potential changes and plans, and confirmation of understanding.

AT-MIST (Age, Time of incident or onset of symptoms, Mechanism of injury/Medical Complaint, Injuries or Inspections head-to-toe, vital Signs, and Treatments): Describes the cause of injury or medical complaint, findings from head-to-toe inspection, vital signs, and treatments provided.

Simulation Ending Messages

Feedback messages shown to the user based on specific successful or unsuccessful approaches, triggered by defined conditional rules.

Title	Type	Message	Conditional
Optimal Success	Success	Excellent work! You gathered the full clinical history and ensured comprehensive patient care. This thorough approach guarantees safe and accurate management, allowing you to better meet	Ischemic embolic right stroke was treated according to guidelines (0.09 mg/kg IV bolus + 0.81 mg/kg IV infusion) and Thrombectomy performed (case ends after 30 sec).

your patient's needs. Keep it up!

Failure

Failure

The patient suffered a severe intracranial hemorrhage, and underwent emergency neurosurgery. Recovered with severe permanent disability.

Health condition Severe Intracranial Hemorrhage was induced in the patient (case ends after 2 min).

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